THE UNIVERSITY OF DA NANG
UNIVERSITY OF SCIENCE AND TECHNOLOGY

APPENDIX 1
COURSE SYLLABUS

DEGREE PROGRAM (Vietnamese):	**CÔNG NGHỆ KỸ THUẬT VẬT LIỆU XÂY DỰNG**
DEGREE PROGRAM (English):	**CONSTRUCTION MATERIALS ENGINEERING AND TECHNOLOGY**
CODE:	**7510105**
DEGREE:	**BACHELOR**

Da Nang 2022

Contents

1. Calculus 1

THE UNIVERSITY OF DANANG
UNIVERSITY OF SCIENCE AND TECHNOLOGY
Faculty of Road and Bridge Engineering

SOCIALIST REPUBLIC OF VIETNAM
Independence - Freedom - Happiness

UNDERGRADUATE PROGRAM

Awarded degree: Undergraduate/Bachelor

Name of the study program: Construction Materials Engineering and Technology Program Code: 7510105

SYLLABUS
Course name (Vietnamese): Giải tích 1
English name: Calculus 1

1. Course code:	3190111
2. Course abbreviation:	Calculus 1
3. Credits: **ECTS credits (*):**	04 5,67
4. Study workload:	*Total workload: 180 hours*
- Lecture:	40 hours
- Exercise:	20 hours
- Self-study/Assignment:	120 hours
5. Responsible persons:	
- Faculty/Division in charge:	**Faculty of Mathematics**
- Course coordinator:	**Dr. Pham Quy Muoi**
- Other lecturers:	Dr. Hoang Nhat Quy, Dr. Chu Van Tiep, Dr. Luong Quoc Tuyen, Dr. Le Hai Trung, Dr. Nguyen Thi Thuy Duong, Dr. Le Hoang Tri
6. Required and recommended pre-requisites for joining the course:	
- Required prerequisite:	None
- Recommended prerequisite:	None
- Corequisite:	None
7. Course type:	☒ Compulsory Selected elective Free elective
8. Knowledge clusters:	☒ Math and natural science General knowledge Core engineering fundamental knowledge Disciplinary knowledge Supportive knowledge Project/ Internship/ Graduate thesis

9. Course description:

Topics include basics knowledge about functions of one variable, limits, continuity, derivatives and differentials, integrals and applications.

10. Course learning outcomes (CLOs):

At the end of this course, students will be able to:

No	CLOs (1)	Knowledge (2)	Skills (3)	Attitudes (4)	Performance Indicators (PI)
1	Explaining the meaning of concepts and theorems related to limits, continuity, discontinuity, differential and integral of functions.	Understanding	Understand	Responding	1.1.1.
2	Abilitying approximation or applying some computer software to calculate proplems related to calculus.	Applying	Apply	Valuing	1.1.1. 7.1.2
3	Applying the theory of culculus of functions to do related mathematics exercises and practical problems in different disciplines.	Applying	Apply	Valuing	1.1.1.
4	Improving some important competencies and qualities such as mathematical thinking and reasoning, problem – solving and creativity, self-study; honesty, hard work, perseverance and discipline.	Applying	Apply	Valuing	1.1.1. 5.1.1. 5.1.2. 5.2.3.

11. Mapping of CLOs and Program learning outcomes (PLOs):

PLOs	PLO1	PLO2	PLO3	PLO4	PLO5	PLO6	PLO7	PLO8
Course distribution	IT				I		I	
CLO 1	X							
CLO 2	X						X	
CLO 3	X							
CLO 4	X				X			

12. Student responsibilities:

Student must:

- Attend at least 80% of the total periods of the course. Below this number, student will be banned from taking the final exam**.**
- Participate in team-work activities following the course's regulations;
- Self-study outside class to solve problems provided by lecturers;
- Complete all types of the course assessment.

13. Course assessment:

Assessment components	Assessment types	Assessment methods	Rubric	Weights of assessment types (%)	Weights of assessment components (%)	CLOs
A1. Formative assessment	A1.1. Attendance	P1.1. Check attendance	Attend at least 80% of the total periods of the course	10	30	CLO4
	A1.2. Assignment/ Presentation	P1.2. Essay/ oral presentation	R1.2.	10		CLO 1,2,3
A2. Midterm exam	A2.1. Midterm exam work	P2.1. Written exam	R2.1.	10		CLO 2,3
A3. Final exam	A3.1 Final exam work	P3.1. Written exam	R3.1.	20	20	CLO 1,2,3,4

14. Teaching and Learning plans:

14.1 Teaching and Learning plans for theoretical classes:

Week	Contents	Teaching and Learning activities	Assessment types	CLOs
1	Chapter 1: Functions, Limits and Continuity 1.1. Sets and Maps Introduction to sets, maps and elementary functions	**Teaching:** - State the definitions and explain the meaning of sets, maps and elementary functions **Learning in class:** - Listening - Do exercises following the guidance of the lecturer **Learning at home:** - Do exercises relate to sets, maps and elementary functions	A1.1, A1.2	CLO123
2	Chapter 1: Functions, Limits and Continuity 1.2. Limits of functions Definitions, properties of limits, Infinitely small and large quantities	**Teaching:** - State the definition and explain the meaning of limits - Guiding to do limits of functions **Learning in class:** - Listening - Do exercises following the guidance of the lecturer **Learning at home:** Do some exercises about limits of functions	A1.1, A1.2	CLO123
3	Chapter 1: Functions, Limits and Continuity 1.2. Continuity of functions	**Teaching:** - Write the formula to check the continuity of functions **Learning in class:**	A1.1, A1.2	CLO123

	Definitions and theorems continuity, discontinuity and classification of discontinuity	- Listening - Do exercises following the guidance of the lecturer **Learning at home:** Do exercises about continuity of functions		
4	Chapter 2: Differentiation of functions of a single variable 2.1. Derivatives and differentials Definition and meaning of derivative, differentiation rules, Derivatives of higher orders, Leibnitz formula, differentials and applications, differential of higher orders.	**Teaching:** - State definition and the meaning of derivatives and differentials **Learning in class:** - Listening - Do exercises following the guidance of the lecturer **Learning at home:** Do exercises about derivatives and differentials	A1.1, A1.2	CLO123
5	Chapter 2: Differentiation of functions of a single variable 2.2. Basics theorems Fermat theorem; Role theorem, Lagrange theorem; Cauchy theorem, L'Hospital rule, Taylor and Maclaurin formula	**Teaching:** - State definition and the meaning of Basics theorems Fermat theorem; Role theorem, Lagrange theorem; Cauchy theorem, L'Hospital rule, Taylor and Maclaurin formula **Learning in class:** - Listening - Do exercises following the guidance of the lecturer **Learning at home:** Do exercises about: Basics theorems Fermat theorem; Role theorem, Lagrange theorem; Cauchy theorem, L'Hospital rule, Taylor and Maclaurin formula	A1.1, A1.2	CLO123
6	Chapter 2: Differentiation of functions of a single variable 2.3. Applications of derivatives in sketching the graph of functions	**Teaching:** Applications of derivatives in sketching the graph of functions **Learning in class:** - Listening - Do exercises following the guidance of the lecturer **Learning at home:**	A1.1, A1.2	CLO123

		Do exercises about Applications of derivatives in sketching the graph of functions		
7	Mid-term exam work		**A2.1**	**CLO1234**
8	Chapter 3: Integrals 3.1. Indefinite Integrals Definitions and properties about indefinite integrals, methods to calculate integrals, indefinite integral of rational functions, trigonometric functions, etc	**Teaching:** - State the definition of indefinite integrals, methods to calculate integrals, indefinite integral of rational functions, trigonometric functions **Learning in class:** - Listening - Do exercises following the guidance of the lecturer **Learning at home:** Do exercises about indefinite integrals, methods to calculate integrals, indefinite integral of rational functions, trigonometric functions	A1.1, A1.2	CLO123
9	Chapter 3: Integrals 3.2. Definite integrals Motivation problem, definitions, integrability, integrable class of functions, Newton Leibnitz theorem, Mean value theorem, applications of integrals: area, volume length of a curve, area of a surface.	**Teaching:** State definition and the meaning of integrals **Learning in class:** - Listening - Do exercises following the guidance of the lecturer **Learning at home:** Do exercises about Newton Leibnitz theorem, Mean value theorem, applications of integrals: area, volume length of a curve, area of a surface.	A1.1, A1.2	CLO123
10	Chapter 3: Integrals 3.3. Improper integrals. Improper integrals of type I.	**Teaching:** State definition and the meaning of Improper integrals of type I. **Learning in class:** - Listening - Do exercises following the guidance of the lecturer **Learning at home:** Do exercises about Improper integrals of type I.	A1.1, A1.2	CLO123
11	Chapter 3: Integrals 3.4. Improper integrals of type II; Comparison theorems and geometric meaning.	**Teaching:** State definition and the meaning of Improper integrals of type II. **Learning in class:** - Listening - Do exercises following the guidance of the lecturer	A1.1, A1.2	CLO123

		Learning at home: Do exercises about Improper integrals of type II.		
12	Chapter 4: Functions of several variables 4.1. Functions of several variables, limits and continuity	**Teaching:** State Definitions: Functions of several variables, limits and continuity **Learning in class:** - Listening - Do exercises following the guidance of the lecturer **Learning at home:** Do exercises about Functions of several variables, limits and continuity	A1.1, A1.2	CLO123
13	Chapter 4: Functions of several variables 4.2. Partial derivatives, total differentials, chain rules, higher order derivatives and differentials, Schwartz theorem, Differentiation of implicit functions, Directional derivatives and applications	**Teaching:** State Definitions Partial derivatives, total differentials, chain rules, higher order derivatives and differentials, Schwartz theorem, Differentiation of implicit functions, Directional derivatives **Learning in class:** - Listening - Do exercises following the guidance of the lecturer **Learning at home:** Do exercises about Partial derivatives, total differentials, chain rules, higher order derivatives and differentials, Schwartz theorem, Differentiation of implicit functions, Directional derivatives	A1.1, A1.2	CLO123
14	Chapter 4: Functions of several variables 4.3. Extremes of a function of several variables Local maximum and minimum: definitions, critical points, necessary conditions for an extremes, Second derivative test.	**Teaching:** -State Definition of Extremes of a function of several variables **Learning in class:** - Listening - Do exercises following the guidance of the lecturer **Learning at home:** Do exercises about Extremes of a function of several variables	A1.1, A1.2	CLO123
15	Chapter 4: Functions of several variables 4.4. Conditional extremes, Lagrange mutipliers; greatest an	**Teaching:** -State Definition: Conditional extremes, Lagrange mutipliers; greatest an smallest values of functions of 2 variables.	A1.1, A1.2	CLO123

	smallest values of functions of 2 variables.	**Learning in class:** - Listening - Do exercises following the guidance of the lecturer **Learning at home:** Do exercises about Conditional extremes, Lagrange mutipliers; greatest an smallest values of functions of 2 variables.		
16	Chapter 4: Functions of several variables 4.5. Applications in geometry: Envelope, tangent plane and normal vector of a surface, normal plane and tangent vector of a curve.	**Teaching:** Applications in geometry: Envelope, tangent plane and normal vector of a surface, normal plane and tangent vector of a curve. **Learning in class:** - Listening - Do exercises following the guidance of the lecturer **Learning at home:** Do exercises about Applications in geometry: Envelope, tangent plane and normal vector of a surface, normal plane and tangent vector of a curve.	A1.1, A1.2	CLO123
17	Final exam work		A3.1	CLO1234

15. Course materials:

15.1. Main textbooks, course books:

[1] J. Stewart, *Calculus Early Transcendentals*, Brooks/Cole Publishing company (6th), 2003.

[2] Nguyen Dinh Tri, Ta Van Dinh, Nguyen Ho Quynh, *Advanced Mathematics (Volume 1,2), Education Publishing House, 2002.*

[3] Nguyen Dinh Tri, Ta Van Dinh, Nguyen Ho Quynh, *Advanced math exercises (Volume 1,2), Education Publishing House, 2002.*

15.2. References:

[1] Rogawski and C. Adam, *Calculus Early Transcendentals*, 3rd Edi. , Freeman & Company, 2015.

[2] H. Anton, I. Bivens, S. Davis, *Culculus Early Transcendentals*, 9th Edi., John Wiley & Sons, INC, 2009.

[3] S. Tan, *Calculus*, Brooks/Cole, 2010.

16. Scientific code of ethics:

- Students must respect their lecturers and other students.
- Students must comply with the university's academic integrity.
- Students must strictly follow the rules and regulations of the university.

17. Approved date:

18. Approved by:

Dean of Faculty	Program chair	Lecturer in charge
Cao Van Lam, PhD.	**Vo Duy Hung, PhD.**	

2. General Chemistry

THE UNIVERSITY OF DANANG
UNIVERSITY OF SCIENCE AND TECHNOLOGY
Faculty of Road and Bridge Engineering

SOCIALIST REPUBLIC OF VIETNAM
Independence - Freedom - Happiness

UNDERGRADUATE PROGRAM

Awarded degree: Undergraduate/Bachelor

Name of the study program: Construction Materials Engineering and Technology Program Code: 7510105

SYLLABUS
Course name (Vietnamese): Hóa đại cương
English name: General Chemistry (2LT +1TN)

1. Course Code:	1073670
2. Course abbreviation:	General Chemistry
3. Credits: **ECTS credits (*):**	3 credits 4,67
4. Study workload:	
- Lecture:	1.5 TC (22.5 Periods)
- Exercise:	0.5 TC (7.5 Periods)
- Practice/ Laboratory:	1,0 TC (30 Periods)
- Self-study/Assignment:	90 Periods
5. Responsible persons:	
- Faculty/Division in charge:	
- Course coordinator:	Associate Professor. Pham Cam Nam
- Other lecturers:	PhD. Duong The Hy; PhD. Ho Viet Thang; PhD. Nguyen Thi Thanh Xuan; PhD. Pham Ngoc Tung.
6. Required and recommended prerequisites for joining the course:	
- Required prerequisite:	None
- Recommended prerequisite:	Applied chemistry Engineering 1
- Corequisite:	None
7. Type of course:	☒ Compulsory Selected elective Free elective
8. Knowledge clusters:	☒ Math and natural science General knowledge Core engineering fundamental knowledge Disciplinary knowledge Supportive knowledge Project/ Internship/ Graduate thesis

9. Course description

This courrse belongs to the Math and Natural Science knowledge group of the training program. The course consists of 02 credits of theory and 01 credit of practice related to basic general knowledge of chemistry. Specifically: Concepts related to basic laws in chemistry; Atomic structure and the laws of changing properties of elements in the periodic table; Molecular structure and nature of chemical bonds; Basic concepts and knowledge of chemical thermodynamics, chemical kinetics, equilibrium, solutions, and concepts related to chemistry and electric current. With 1 practical credit, this course also helps learners to have basic laboratory skills related to laboratory safety rules when dealing with tools and chemicals; as well as master the basic operations related to the recognition of chemical environments, solution phase, titration, and electrochemistry.

10. Course Learning Outcomes

After completing the course, students will be able to

NO	Course Learning Outcomes(CLOs)	Knowledge	Skills	Attitude	Performance indicators (belongs to PLOs)
1	Understand the knowledge of general chemistry related to the basic laws of chemistry; atomic structure, molecule, periodic table and the law of variation in the mathematical system; the principles of thermodynamics, stoichiometry and the principle of equilibrium displacement; reaction rate and rate constant; solution formation, electrode potential and Nesnst equation.	A2. Understand	B2. Manipulate	C1. Receive	1.1.5.
2	Apply knowledge of General Chemistry to explain the nature of atomic/molecular bonds; explain the meaning of specific thermodynamic quantities in chemistry, calculate thermodynamic and kinetic quantities in chemical reactions.	A3. Manipulate	B2. Manipulate	C2. Q&A	1.1.5.
3	Implement some basic techniques in practical exercises related to General Chemistry knowledge; Processing and presenting experimental results.	A5. Evaluate	B3.Exactly		1.1.5. 2.1. 7.1.2.
4	Organize work in groups to make reports and discuss topics related to the knowledge of General Chemistry.		B3. Exactly	C2. Q&A	2.1. 5.1.1. 5.1.2.

11.The relationship between course learning outcomes (CLOs) and program learning outcomes (PLOs)

PLO	PLO 1	PLO 2	PLO 3	PLO 4	PLO 5	PLO 6	PLO 7	PLO 8
Contribution of the course	IT	IT			I		I	
CLO 1	X							
CLO 2	X							
CLO3	X	X					X	
CLO4		X			X			

12. Student responsibilities

- Attend at least 80% of the lessons of the part class;
- Participating in group work activities according to the regulations of the class;
- Self-study the problems assigned by the lecturer to do outside of class time;
- Complete all course assessments;
- If you miss more than 20% of the theory classes, you will not be able to take the final theory exam;
- If you miss more than 20% of practical/experimental periods, you will be assessed as failing this part;
- Write and complete the test report. If the report is not available, it will be judged as unsatisfactory.

13. Course assessments

Type of assesse ment	Performance assessment	Assessment methods	Rubric	Weighti -ng percenta -ge (%)	Course learning outcomes (CLOs)	Type of assess -ment
A1. Evalua-tion of the pro-cess	A1.1 Short class exer-cises Incorporate due dili-gence	P1.1. Class presenta-tion/Ques-tion + at-tendance	R1.1 - Proactivity, active par-ticipation in activities during class time (50-40%); - Results of assessment exercises in class (50%); - Attendance: make sure to attend the prescribed class (0-10%).	50	20	CLO 1,2,4
	A1.2 Work-book	P1.2. Work-book	-Complete the required assignments 50%; -The result is correct ac-cording to the answer	50		CLO 1,2,4
A2. Mid-term re-view	A2.1 Mid-term test	P2.1 Essay	R2.1 According to the answer content of the test.	100	20	CLO 1,2

A3. Final Assessment (CK)	A3.1 Final exam	P3.1 P2.1 Essay	R3.1 According to the answer content of the test.	100	40	CLO 1,2
A4. Review of Experiments	A4.1. Diligence	P4.1. Diligence (consciousness, behavior ...)	R4.1 - 100% compulsory attendance - Comply with laboratory regulations and be rigorous during practice hours	20	20	CLO 3
	A4.2 Experimental manipulation	P4.2. Experimental manipulation	R4.2 Correct operation	20		CLO3 ,4
	A4.3. Test report	P4.2. Experimental report book	R4.3 Write a complete, clear, coherent, well-reasoned test report with correct test results	30		CLO 3,4
	A4.4 Questions and Answers	P4.2 Answer the question	R4.4. Answer the question correctly	30		CLO 3

Type of assessement	**Performance assessment**	**Assessment methods**	**Rubric**	**Weighting percentage (%)**		**Course learning outcomes (CLOs)**
A1. Ongoing assessment	A1.1 Assignments / homeworks	P1.1.Exercises/Homeworks	R1.1	50	20	CLO 1, 2
	A1.3 Special topic reports	P1.3. Oral presentation in class	R1.3	50		CLO 1, 2, 3
A2. Mid-term Assessment	A2. Mid-term exam	P2. Written exam	R2.1	100	20	CLO 1, 2
A3. Final Assessment	A3. Final exam	P3. Written exam	R3.1	100	60	CLO 1, 2, 3

14. Teaching and learning plan

14.1. Teaching and learning plan

Week/Period (2 hours)	Detailed Content	Teaching and Learning Activities	Assessment	Course learning outcomes
1	Chapter 1: Basic concepts and laws of chemistry	Teach: - Introduction of course objectives; the position and role of	A1.1 A1.2	CLO1,2

Week/Period (2 hours)	Detailed Content	Teaching and Learning Activities	Assessment	Course learning outcomes
	1.1. The basic concepts 1.2. Basic laws of chemistry 1.3. Ways of expressing solution concentration 1.4. Exercises and discussions	the module in the training program of the industry; course output standards, assessment forms and weights of assessments, course content for each chapter. - Lectures combined with lecture slides - Ask questions for students to think and discuss. Learning in class: - Listening to lectures; - Answer the questions of the lecturer; - Ask questions of concerns; - Do quick exercises in class. Study at home: - Review chapter 1; - Prepare learning materials for the course according to the teacher's request.		
2, 3, 4	Chapter 2: Atomic and Molecular Structure - Periodic Table - Chemical Bonds 2.1. Atomic structure 2.2. The periodic law and the system of chemical elements 2.3. Chemical bonding and molecular structure 2.4. The states of matter 2.5. Exercises and discussions	Teach: Lectures combined with lecture slides. - Ask questions for students to think and discuss. Learning in class: - Listen to lectures -Answer the questions asked by the lecturer; - Ask questions of concerns; - Do quick exercises in class; - Present the results of the exercises of the previous chapter. Study at home: - Review chapter 2; - Do exercises of chapter 2 as required; - Prepare learning materials for the course according to the teacher's request.	A1.1 A1.2	CLO1,2,4
5,6,7	Chapter 3: Thermochemistry and Thermodynamics 3.1 Objectives of Thermochemistry	Teach: - Lectures combined with lecture slides - Ask questions for students to think and answer Learning in class:	A1.1 A1.2	CLO1,2,4

Week/Period (2 hours)	Detailed Content	Teaching and Learning Activities	Assessment	Course learning outcomes
	3.2 Basic concepts 3.3 First Law of Thermodynamics 3.4 Hess's Law 3.5 Second law of thermodynamics and the direction of a chemical process 3.6 Exercises and discussions	- Listening to lectures; - Answer the questions of the lecturer; - Ask questions of concerns; - Do quick exercises in class. Study at home: - Review chapter 3; -Do the exercises of chapter 3 as required; - Prepare learning materials for the course according to the teacher's request.		
8	Mid-term Assessment	Essay exam for theory	A2.1	CLO1.2
9	Chapter 4: Chemical Equilibrium 5.1 Reversible Reaction and Chemical Equilibrium 5.2 Equilibrium constant and rate of chemical reaction 5.3 Chemical Equilibrium Shift and Le Chatelier's Principle 5.4 Exercises and discussions	Teach: - Lectures combined with lecture slides - Ask students questions; think and answer; - Instructions for solving the required chapter 4 exercises. Learning in class: - Listening to lectures; - Answer the questions of the lecturer; - Ask questions of concerns; - Do quick exercises in class. Study at home: - Review the knowledge learned in chapter 4; - Do the exercises of the learned part of chapter 4 required; - Prepare learning materials for the course according to the teacher's request.	A1.1 A1.2	CLO1,2,4
10, 11	Chapter 5: Chemical Kinetics 5.1 Research object 5.2 Rate of chemical reaction 5.3 Some factors affect the reaction rate 5.4 Exercises	Teach: - Lectures combined with lecture slides - Ask questions for students to think and answer Learning in class: - Listen to lectures - Answer questions given by the teacher - Ask questions about matters of interest -Do quick homework in class	A1.1 A1.2	CLO1,2,4

Week/Period (2 hours)	Detailed Content	Teaching and Learning Activities	Assessment	Course learning outcomes
		Study at home: - Review the knowledge learned in chapter 5; - Do chapter 5 exercises as required; - Prepare learning materials for the course according to the teacher's request.		
12, 13	Chapter 6: Solution 6.1 Formation of solution 6.2 solution and dispersion systems 6.3 Dilute solution properties of non-electrolytes, non-volatiles 6.4 Electrolyte solution 6.5 Exercises and discussions	Teach: - Lecture combined with lecture slides; - Ask questions for students to think and answer; - Instructions for solving exercises in chapters 5 and 6. Learning in class: - Listening to lectures; - Answer the questions of the lecturer; - Ask questions of concerns; - Do quick exercises in class. Study at home: - Review learned knowledge of chapters 5 and 6; - Do exercises of chapter 6 as required; - Prepare learning materials for the course according to the teacher's request.	A1.1 A1.2	CLO1,2,4
14, 15	Chapter 7: Electrochemistry 7.1 Redox reaction 7.2 Use the Nernst equation to determine cell potentials 7.3 Cell Potentials 7.4 Introduction of electrochemical technology applications 7.5 Exercises and discussions 7.6 Preparation for the final exam	Dạy: - Lecture combined with lecture slides; - Ask questions for students to think and answer; - Instructions to solve the prescribed exercises of chapters 6,7. Learning in class: - Listening to lectures; - Answer the questions of the lecturer; - Ask questions of concerns; - Do quick exercises in class. Study at home: - Review the knowledge learned in chapters 6,7; - Do the exercises of chapter 7 required;	A1.1 A1.2	CLO1,2,4

Week/Period (2 hours)	Detailed Content	Teaching and Learning Activities	Assessment	Course learning outcomes
		- Prepare learning materials for the course according to the teacher's request.		
	Final Assessment	Essay exam	A3.1	CLO1,2

14.2. Teaching and learning plan for practice/experiment

Week/Period (2 hours)	**Detailed Content**	**Teaching and Learning Activities**	**Assessment**	**Course learning outcomes**
1,2	Course Introduction: Experiment Lession I: Laboratory techniques 1.1. Laboratory Rules 1.2 Safety principles in the laboratory 1.3 Instruments and equipment in the laboratory 1.4 Basic operations in the laboratory 1.5 How to use and clean tools and chemicals 1.6 Introduce how to calculate and mix chemicals according to given concentrations, how to titrate solutions	Teach: - Introduction of laboratory rules - Introduce tools, equipment and basic tool manipulation skills - Instructions for conducting the experiment - Ask questions for students to think and answer - Instructions on how to calculate, test reports. Learning in the lab: - Listen to lectures - Answer questions given by the teacher - Ask questions of concerns (if any) - Practice manipulative skills Study at home: Read the exercise in advance and understand the operations	A4.1 A4.2	CLO3,4
2,3	Experiment Lession II: Identify substances and solution environments (including lesson 2 and lesson 5)	Teach: - Instructions for conducting the experiment - Ask questions for students to think and answer - Calculation instructions, test reports. Learning in the lab: - Listen to lectures	A4.1 A4.2	CLO3.4

Week/Period (2 hours)	Detailed Content	Teaching and Learning Activities	Assessment	Course learning outcomes
		- Answer questions given by the teacher - Ask questions of concerns (if any) - Practice manipulative skills - Conduct experiments in groups Study at home: - Calculation of numbers - Write a report - Read the practice guide		
4,5	Experiment Lesson III: Dilute the reagent to the given concentration and titrate the acid-base solution (see instructions for practice lessons 6, 7)	Teach: - Instructions for conducting the experiment - Ask questions for students to think and answer - Calculation instructions, test reports. Learning in the lab: - Listen to lectures - Answer questions given by the teacher - Ask questions of concerns (if any) - Practice manipulative skills - Conduct experiments in groups Study at home: - Calculation of numbers - Write a report - Read the practice guide	A4.1 A4.2	CLO3,4
5,6	Experiment Lesson IV: Investigate the influence of factors on stoichiometry and reaction rate (see instructions for practice lessons 3 and 4)	Learning in the lab: - Listen to lectures - Answer questions given by the teacher - Ask questions of concerns (if any) - Practice manipulative skills - Conduct experiments in groups Study at home: - Prepare the test before coming to class.	A4.1 A4.2	CLO3,4

Week/Period (2 hours)	Detailed Content	Teaching and Learning Activities	Assessment	Course learning outcomes
		- Calculate the obtained experimental results - Report the experiment according to the instructions of the lecturer.		
5	Final exam	Review of the lab report and Q&A	A4.3 A4.4	CLO3

15. Materials:

15.1. Books, lectures, main textbooks:

1] Vu Dang Do, Theoretical basis of chemical processes Education Publishing House, Hanoi 2006. (Theory)

[2] Vu Dang Do, Trinh Ngoc Chau, Nguyen Van Noi, Exercises Theoretical basis of chemical processes Education Publishing House, Hanoi 2007.

[3] Experimental lecture on General Chemistry (internal circulation document - HCMUT)

14.2. Reference materials:

[4] Nguyen Dinh Chi, Dai Cuong Chemistry, Vietnam Education Publishing House, 2013

[5] Nguyen Dinh Chi, General Chemistry Exercises, Vietnam Education Publishing House, 2009

[6] Nguyen Duc Chung, General Chemistry, Publishing House of Vietnam National University, Ho Chi Minh City, 2009

[7] Silberberg, Chemistry -The Molecular Nature of Matter and Change. The McGraw Hill Companies, 2007

15. Scientific code of ethics:

- Students must respect a lecturer and other students.
- Students must comply with the University's academic integrity policy.
- Students must obey the rules and regulations of the university.

16. Approved date:

17. Approved by:

Dean of Faculty	Program chair	Lecturer in charge
Cao Van Lam, PhD.	**Vo Duy Hung, PhD.**	**Phan Cam Nam**

3. Marxism Leninism's Philosophy

THE UNIVERSITY OF DANANG
UNIVERSITY OF SCIENCE AND TECHNOLOGY
Faculty of Road and Bridge Engineering

SOCIALIST REPUBLIC OF VIETNAM
Independence - Freedom - Happiness

UNDERGRADUATE PROGRAM

Awarded degree: Undergraduate/Bachelor

Name of the study program: Construction Materials Engineering and Technology Program Code: 7510105

SYLLABUS
Course name (Vietnamese): Triết học Mac-Lenin
English name: Marxism Leninism's Philosophy

1. Course code:	2090150
2. Course abbreviation:	Marxism Leninism's Philosophy
3. Credits **ECTS credits (*):**	03 credits (45 periods) 4,25
4. Time distribution	
- Lecture:	03 credits (45 Periods)
- Exercise:	
- Self-study/Assignment:	90 Periods
5. Lecturers in charge	
- Faculty/Division in charge:	Faculty of Political Theory, University of Economics, University of Danang
- Course coordinator:	Associate Professor. Le Huu Ai
- Other lecturers:	1. PhD. Trinh Son Hoan, 2. M.Sc. Le Duc Tam, 3. PhD. Tran Hong Luu, 4. M.Sc Luu Thi Mai Thanh, 5. PhD. Le Van Thao, 6. PhD. Pham Huy Thanh
6. Required and recommended prerequisites for joining the course:	
- Required prerequisite:	None
- Recommended prerequisite:	None
- Parallel courses	None
7. Type of course	☒ Compulsory Selected elective Free elective
8. Knowledge clusters:	☒ Math and natural science General knowledge Core engineering fundamental knowledge

	Disciplinary knowledge Supportive knowledge Project/ Internship/ Graduate thesis

9. Course description

The course provides basic knowledge of Marxist-Leninist Philosophy: matter and consciousness; categories of dialectical materialism; the role of production and the nature of the production relations of a society explained by the level of development of its productive forces; infrastructure and superstructure; class and class struggle; humanism and the historical creative role of the masses.

10. Course Learning Outcomes (CLOs)

After completing the course, students will be able to:

No	Course Learning Outcomes (CLOs)	Knowledge	Skills	Attiude	Performance indicators (belongs to PLOs)
1	Present general knowledge about Marxist-Leninist philosophy	a2.Understand	b2.Presentation		1.5.2.
2	Identify the role of philosophy in social life	a2.Understand			1.5.2.
3	Analyze the basic contents of dialectical materialism	a4. Analyze			1.5.2.
4	Appreciate the contributions of dialectical materialism in creating worldview for learners	a4. Analyze			1.5.2.
5	Explain the basic contents of the materialist dialectic		b2.Manipu-late		3.2.
6	Describe the methodological significance of each content of the materialist dialectic			c1.Reception c2.Feedback	4.1.
7	Present the basic contents of historical materialism		b2. Manipulate		3.2.
8	Describe the value of historical materialism to society			c1.Reception c2.Feedback	4.1.

11. The relationship between course learning outcomes(CLOs) and program learning outcomes (PLOs)

PLO	PLO 1	PLO 2	PLO 3	PLO 4	PLO 5	PLO 6	PLO 7	PLO 8
Contribution of the course	I		IT	I				
CLO 1	X							
CLO 2	X							
CLO 3	X							
CLO 4	X							
CLO 5			X					
CLO 6				X				
CLO 7			X					
CLO 8				X				

12. Student responsibilities

Students must do the following tasks:

- Attend at least 80% of the lessons of the course;
- Do homework assigned in each chaper of the course;
- Self-study the problems assigned by the lecturer (outside of class time);
- Take the mid-term and final exams;
- Fully attend and complete the content of practices

13. Course assessments

The results of the course evaluation are based on the assessment of the student's activities during the course of study, the mid-term exam and the final exam expressed through the assessment; the course output standards are assessed; criteria, standards and weights of the assessments.

Type of assessment	**Performance assessment**	**Assessment methods**	**Rubric**	**Weighting percentage (%)**	**CLOs**
A1. Ongoing assessment	A1.1 Class Attendance	CLO1-8	Go to school fully. Do not miss more than 20% of the class.		20%
	A1.2 Exercises /homeworks	CLO1-8	Do the correct answer		
A2. Mid-term Assessment	A2.1 Mid-term exam	CLO3, CLO5	Meet the requirements of the answer	10	20%
A3. Final Assessment	A3.1 Final exam	CLO1,CLO3, CLO5, CLO7	Meet the requirements of the answer	10	60%

14. Teaching and learning plan

Week	Contents	Teaching and learning activities	Performance assessment	Course learning outcomes (CLOs)

8 (Theory + Discussion) Introduction to the course	Chapter 1: Philosophy and the role of philosophy in social life 1.1. An overview of philosophy 1.2. The basic problem of philosophy 1.3. Dialectics and metaphysics 1.4. Marxist-Leninist philosophy and its role in social life	Teach: - Lecturers introduce to students the subject objectives; the position and role of the subject in the training program of the industry; subject output standards, assessment forms and weights of assessments, course content according to chapters... - Teaching methods: TLM1, TLM2, TML 4, TML11, TML13, TML16 Learn in class: - Listen to lectures - Answer the teacher's questions. - Ask questions of concerns. Study at home: - Review the theory - Read the opening chapter, Textbook of Basic Principles of Marxism-Leninism- Ministry of Education and Training. National Political Publishing House 2009 and chapter 1 of the book Mac-Lenin Philosophy of the Ministry of Education and Training in 2006.	A1.1, A1.2, A2.1, A3.1	CLO1-8
20 (Theory + Discussion)	Chapter 2: Dialectical Materialism 2.1. Matter and its forms of existence 2.2. Awareness 2.3. The relationship between matter and consciousness 2.4. Two types of dialectics and materialistic dialectics 2.5. Basic principles of PBCDV 2.6. Basic rules of PBCDV 2.7. Pairs of basic categories of PBCDV	Teach: - Teaching methods: TLM1, TLM2, TML 4, TML11, TML16 Learn in class: - Listen to lectures - Answer the teacher's questions. - Ask questions of concerns. Study at home: - Review the theory - Read chapter 2, Textbook of Basic Principles of Marxism-Leninism- Ministry of Education and	A1.1, A1.2, A2.1, A3.1	CLO1-8

	2.8. Cognitive reasoning	Training. National Political Publishing House 2009 and chapters 2 and 3 of the Mac-Lenin Philosophy book of the Ministry of Education & Training in 2006.		
17 (Theory + Discussion)	Chapter 3: Historical Materialism 3.1. Material production and its role 3.2. Dialectic between the Forces of Production and the Relations of Production 3.3. Dialectic between infrastructure and superstructure 3.4. Socio-economic form 3.5. Class and ethnicity 3.6. State and Revolution 3.7. Social consciousness 3.8. Philosophy of man	Teach: - Teaching methods: TLM1, TLM2, TML 4, TML11, TML13 Learn in class: - Listen to lectures - Answer the teacher's questions. - Ask questions of concerns. Study at home: - Review the theory - Read chapter 3, Textbook of Basic Principles of Marxism-Leninism- Ministry of Education and Training. National Political Publishing House 2009; Textbook of Mac-Lenin Philosophy, the Central Council directs the compilation of the national curriculum. National Political Publishing House, Hanoi, 1999.	A1.1, A1.2, A2.1, A3.1	CLO1-8

Teaching-Learning mehods:

No	**TLM Code**	**Teaching and Learning Methods (TLM)**	**TLM group**	CLO1	CLO2	CLO3	CLO4
1	**TLM1**	Explicit Teaching	1	X	x	x	x
2	**TLM2**	Lecture	1	X	x	x	x
3	**TLM3**	Guest lecture	1				
4	**TLM4**	Problem Solving	2	X			
5	**TLM5**	Brainstorming	2				
6	**TLM6**	Case Study	2	X	x	x	x

7	**TLM7**	Role play	2				
8	**TLM8**	Game	2				
9	**TLM9**	Field Trip	2				
10	**TLM10**	Debates	3				
11	**TLM11**	Discussion	3	X	x	x	x
12	**TLM12**	Teamwork Learning	3				
13	**TLM13**	Inquiry	4	X	x	x	x
14	**TLM14**	Research Project	4				
15	**TLM15**	TBA	5				
16	**TLM16**	Work Assignment	6	X	x	x	x
17	**TLM17**	Other	7				

15. Materials

15.1. Books, lectures, main textbooks

[1]. Ministry of Education and Training, Basic principles of Marxism-Leninism, National Political Publishing House 2009.

15.2. Books and references:

[1]. Ministry of Education and Training, Marxist-Leninist Philosophy, National Political Publishing House 2006.

16. Scientific code of ethics:

- Students must respect a lecturer and other students.
- Students must comply with the University's Scientific code of ethics: policy.
- Students must obey the rules and regulations of the university.

17. Approved date:

18. Approved by:

Dean of Faculty	Program chair	Lecturer in charge
Cao Van Lam, PhD.	**Vo Duy Hung, PhD.**	

4. Descriptive Geometry - Engineering Drawing

THE UNIVERSITY OF DANANG
UNIVERSITY OF SCIENCE AND TECHNOLOGY
Faculty of Road and Bridge Engineering

SOCIALIST REPUBLIC OF VIETNAM
Independence - Freedom - Happiness

UNDERGRADUATE PROGRAM

Awarded degree: Undergraduate/Bachelor

Name of the study program: Construction Materials Engineering and Technology Program Code: 7510105

SYLLABUS

Course name (Vietnamese): Hình họa – Vẽ kỹ thuật

English name: Descriptive Geometry - Engineering Drawing

1. Course Code:	1032170
2. Course abbreviation:	Engineering Drawing
3. Credits: **ECTS credits (*):**	03 credits (45 Periods) 4,25
4. Study workload:	
- Theory	30 Periods
- Lecture:	15 Periods
- Exercise:	0
- Self-study/Assignment:	90 Periods
5. Responsible persons:	
- Faculty/Division in charge:	Division of Machine Design and Industrial Systems Engineering/Faculty of Transportation Mechanical Engineering,
- Course coordinator:	PhD. Nguyen Cong Hanh, PhD. Thai Ba Chien, Msc. Ton Nu Huyen Trang
- Other lecturers:	Division of Machine Design and Industrial Systems Engineering
6. Required and recommended prerequisites for joining the course:	
- Required prerequisite:	None
- Recommended prerequisite:	None
- Corequisite:	None
7. Type of course:	☒ Compulsory ☐ Compulsive Electives ☐ Electives
8. Knowledge clusters:	☐ Math and natural science ☒ General knowledge ☐ Core engineering fundamental knowledge

	☐ Disciplinary knowledge ☐ Supportive knowledge ☐ Project/ Internship/ Graduate thesis

9. Course description

The course aims to equip students with Vietnamese and international standards to form technical drawings. Draw and read types of representations of the internal and external structure of an object.

10. Course Learning Outcomes

After completing the course, students will be able to

NO	Course Learning Outcomes(CLO)	Knowledge	Skills	Attitude	Performance indicators (belongs to PLOs)
1	**Applying** Vietnamese and international standards to create technical drawings	A3. Applying	B2. Applying		1.2.6. 1.2.7.
2	**Solving** intersection problems as well as quantity problems of points, lines and planes, curves and surfaces	A3. Applying	B2. Applying		1.2.6. 1.2.7.
3	**Applying** learned-knowledge to represent 6 basic orthogonal projections, sub-projections, partial projections; draw sections and sectional view.	A3. Applying	B2. Applying		1.2.6. 1.2.7. 7.1.2.
4	**Selecting** the appropriate type of isometric and oblique projection to represent a 3D objects.	A3. Evaluating	B3. Val-uing		1.2.6. 1.2.7 3.1

11. The relationship between course learning outcomes (CLOs) and program learning outcomes (PLOs)

PLO	PLO 1	PLO 2	PLO 3	PLO 4	PLO 5	PLO 6	PLO 7	PLO 8
Contribution of the course	IT		I				I	
CLO 1	X							
CLO 2	X							
CLO 3	X							
CLO 4	X		X				X	

12. Student responsibilities:

Students must perform the following tasks:

- Attending at least 80% of the lessons of the course;
- Participating in teamwork activities according to the regulations of the class;
- Self-studying the problems assigned by the lecturer to do outside of class hours;
- Completing all course assessments.

13. Course assessments:

Type of assessment	Performance assessment	Assessment methods	Rubric	Weighting percentage (%)		Course learning outcomes (CLOs)
A1. Ongoing assessment	A1.1. Class Attendance	In-Class Exercise	Rubric 1	15	30	CLO 1, 2, 3
	A1.2. Group Assessment	Homework	Rubric 2	15		CLO 1, 2, 3
A2. Mid-term Assessment	A2.1. Mid-term exam	Written exam	Rubric 3	20	20	CLO 1, 2
A3. Final Assessment	A3.2. Final exam	Written exam	Rubric 4	50	50	CLO 1, 2, 3,4

14. Teaching and learning plan

Weeks/ Periods (4 Periods/ session)	Detailed contents of the course	Teaching and learning activities	Performance assessment	Course learning outcomes (CLOs)
1	**Chapter 1:** DRAWING MATERIALS AND TOOLS 1.1 Drawing documents 1.1.1. Drawing paper 1.1.2. Drawing pen 1.1.3. Eraser 1.1.4. Other object type 1.2 Drawing tools 1.2.1. Eke 1.2.2. Compass 1.2.3. Curved ruler 1.2.4. Draw curves 1.3 Sequence of drawing bold	Teaching: **Course introduction.** - Course objectives. - Preliminary content of the entire course program and study materials. - Organizational forms of teaching, tasks of students in each form of teaching. - Evaluation forms and rates. - lecture form + quick Q&A Instructions for preparing homework before going to class: - Read the course outline - Develop a study plan - Prepare study materials.	A1.1	CLO 1
2	**Chapter 2** - STANDARDS FOR THE PRESENTATION OF TECHNICAL DRAWINGS 2.1 Standards on technical drawings 2.2 Paper Size 2.2.1. ISO-A . series paper sizes 2.2.2. Paper margins and drawing frames	Teaching: lecture form + quick Q&A Instructions for preparing homework before going to class: - Read the course outline - Develop a study plan - Prepare study materials.	A1.1	CLO 1

	2.2.3. Title name 2.3 Ratio 2.4 Line type and stroke width 2.4.1. Line width 2.4.2. Line types and applications 2.4.3. Some rules about line forms 2.5 Writing letters 2.5.1. Size of letters and numbers 2.5.2. Typefaces 2.6 Record the size 2.6.1. Basic rules of sizing 2.6.2. Components of size 2.6.3. A number of symbols 2.6.4. Types of sizing			
3	**Chapter 3** - DRAWING GETHODS 3.1 Divide the object evenly 3.1.1. Divide a straight line 3.1.2. Divide an angle evenly 3.1.3. Divide a circle evenly 3.2 Drawing slope and taper 3.2.1. Draw slope 3.2.2. Draw taper 3.3 Drawing serial 3.3.1. Draw a tangent to a given circle 3.3.2. Draw a common tangent to two given circles 3.3.3. Draw arc with given radius connecting two given intersecting lines 3.3.4. Draw arc with given radius tangent to a line and a line given round 3.3.5. Draw arc with given radius tangent to two given circles 3.4 Draw some geometric curves 3.4.1. ellipse 3.4.2. Parabola	Teaching: lecture form + quick Q&A Instructions for preparing homework before going to class: - Read the course outline - Develop a study plan - Prepare study materials.		CLO 1

	3.4.3. Hyperbola 3.4.4. Si-shaped line 3.4.5. Archimedes Spiral Line 3.4.6. Multi-centred flat spiral 3.4.7. The opening body line of the circle 3.4.8. Cycloic Road 3.4.9. Epicycloid and Hypoxycloid Sugars Exercise 1 - DRAW GEOLOGY			
4	**Chapter 4 -** METHOD OF PERPENDICULAR PROJECTIONS 4.1 Concepts 4.2 Projection method 4.2.1. Radial projection 4.2.2. Parallel projection 4.2.3. Perpendicular projection 4.3 Representation of basic geometric elements 4.3.1. Score show 4.3.2. Line representation 4.3.3. Interdependence of points and lines 4.3.4. Plane representation 4.3.5. Interdependence of points, lines and planes	Teaching: lecture form + quick Q&A Instructions for preparing homework before going to class: - Read the course outline - Develop a study plan - Prepare study materials.		CLO 1,2
5	Chapter 5 - Representation of geometrical faces - points belonging to the face 5.1 Curve 5.1.1 Concepts 5.1.2 Some projection properties of curves 5.2 Geometric face 5.2.1 Polyhedral face 5.2.2 Curved surface 5.3 Visible-hidden representation of objects on views 5.4 Face-point representation of face 5.4.1 Representation of polyhedral faces 5.4.2 Representation of rotating circles	Teaching: lecture form + quick Q&A Instructions for preparing homework before going to class: - Read the course outline - Develop a study plan - Prepare study materials.		CLO 1,2

6	Chapter 6 – Drawing intersections of geometric objects 6.1 Concepts 6.2 The intersection of the line with the plane 6.2.1 The projection line intersects the normal plane 6.2.2 Projection plane intersecting the normal line 6.3 Intersection of two planes 6.3.1 Intersection of two projection planes of the same type 6.3.2 Intersection of projection plane with normal plane 6.4 Intersection of the line with face 6.4.1 Projection prismatic surface, projection rotating cylindrical surface intersecting any line 6.4.2 Projection line intersecting any face	Teaching: lecture form + quick Q&A Instructions for preparing homework before going to class: - Read the course outline - Develop a study plan - Prepare study materials.		CLO 1,2
7	6.5 Intersection of plane with face 6.5.1 Projection prismatic surface, projection rotating cylindrical surface intersecting any plane 6.5.2 Projection plane intersecting any surface 6.6 Projection plane transformation 6.6.1 Changing the vertical projection plane 6.6.2 Change the projection plane by 6.7 Intersection of two faces 6.7.1 Projection prism face or projection pillar intersecting any face 6.7.2 Two quadratic surfaces having two points of contact in common 6.7.3 Two rotating circles with the same axis intersect	Teaching: lecture form + quick Q&A Instructions for preparing homework before going to class: - Read the course outline - Develop a study plan - Prepare study materials.		
8	**Mid-term**		**A2.1**	**CLO 1, 2**

9	Chapter 7 - ORTHOGRAPHIC PROJECTION 7.1 Projection 7.1.1 Six basic projections 7.1.2 Subviews 7.1.3 Partial view 7.1.4 Quotes 7.2 Draw perpendicular projections of objects 7.2.1 Drawing projections of some types of intersections 7.2.2 Drawing perpendicular views from the measuring axis view Exercise 2 - DRAW ORTHOGRAPHIC PROJECTION	Teaching: lecture form + quick Q&A Instructions for preparing homework before going to class: - Read the course outline - Develop a study plan - Prepare study materials.		CLO 1,3
10	Chapter 8 - Reading the drawing and drawing the third view 8.1 Reading projection drawings 8.2 Draw the third view 8.3 Some examples of reading drawings and drawing the third view Exercise 3 - DRAWING THE THIRD SHOW	Teaching: lecture form + quick Q&A Instructions for preparing homework before going to class: - Read the course outline - Develop a study plan - Prepare study materials.		CLO 1,3
11	Chapter 9 - Section – sectional view 9.1 Concepts of sections and sectional view 9.2 Sections 9.2.1 Definition 9.2.2 General provisions for sections 9.2.3 Classification of sections 9.3 Material symbol on section 9.3.1 Regulations on cross-sectional brick lines 9.3.2 Material symbol samples on section 9.4 Sectional view 9.4.1 Definitions 9.4.2 Classification of Sectional view	Teaching: lecture form + quick Q&A Instructions for preparing homework before going to class: - Read the course outline - Develop a study plan - Prepare study materials.		CLO 1,3, 4

	9.4.3 Some general provisions on sections and sectional view Exercise 4 - SECTIONS AND SECTIONAL VIEW			
12	Chapter 10- Projection of measuring axis 10.1 Concepts 10.1.1 Constructing the measurement axis projection of a point 10.1.2 Deformation coefficient along the axes 10.1.3 Deformation coefficient theorem 10.2 Classification of measuring axis projection 10.2.1 Segmentation according to the measuring axis projection direction 10.2.2 Distribution by strain coefficient 10.3 Orthogonal measuring axis projection 10.4 Bevel gauge axis projection	Teaching: lecture form + quick Q&A Instructions for preparing homework before going to class: - Read the course outline - Develop a study plan - Prepare study materials.		CLO 1,3,4
13	10.5 Constructing the measuring axis projection 10.5.1. Select the measurement axis projection type 10.5.2. Construct the measurement axis projection of the object according to the orthogonal projections 10.6 Construct the section view on the measuring axis view Exercise 5 - SUMMARY PERFORMANCE	Teaching: lecture form + quick Q&A Instructions for preparing homework before going to class: - Read the course outline - Develop a study plan - Prepare study materials.		CLO 1,3,4
14	Exercise	Teaching: lecture form + quick Q&A Instructions for preparing homework before going to class: - Read the course outline - Develop a study plan - Prepare study materials.	A1.1	CLO 1,3,4
15	Review for the final exam	Teaching: lecture form + quick Q&A	A1.1	CLO 1,3,4

		Instructions for preparing homework before going to class: - Read the course outline - Develop a study plan - Prepare study materials.		
16	**Assessment A3.2**	**Final examination**	**A3.1**	**CLO1, 3, 4**

15. Materials:

15.1. Books, lectures, main textbooks:

[1]. Nguyen Cong Hanh, *Enginerring Drawing*, Construction Publishing House, Ha Noi, 2022.

15.2. Reference materials:

[1]. Nguyen Duc Sy, Duong Tho, Ton Nu Huyen Trang, *Descriptive geometry*, Construction Publishing House, Ha Noi, 2018.

[2]. RENDOW YEE, Architectural drawing, John Wiley Inc, Newyork 1998

[3] Colin H. Simmons, Manual of Engineering Drawing,Butterworth-Heinemann 2001, 2002

16. Scientific code of ethics:

- Students must respect a lecturer and other students.
- Students must comply with the University's academic integrity policy.
- Students must obey the rules and regulations of the university.

17. Approved date: 01/3/2022

18. Approved by:

Dean of Faculty	Program chair	Lecturer in charge
Cao Van Lam, PhD.	**Vo Duy Hung, PhD.**	**Nguyen Cong Hanh, PhD.**

5. English Elementary 2.1

THE UNIVERSITY OF DANANG
UNIVERSITY OF SCIENCE AND TECHNOLOGY
Faculty of Road and Bridge Engineering

SOCIALIST REPUBLIC OF VIETNAM
Independence - Freedom - Happiness

UNDERGRADUATE PROGRAM

Awarded degree: Undergraduate/Bachelor

Name of the study program: Construction Materials Engineering and Technology Program Code: 7510105

SYLLABUS
Course name (Vietnamese): Anh văn A2.1
English name: English Elementary A2.1

1. Course code:	4130501
2. Course abbreviation:	English Elementary A2.1
3. Credits: **ECTS credits (*):**	03 4,25
4. Study workload:	*Total workload:* 112.5 *hours*
- Lecture:	45 periods (~ 37.5 hours)
- Exercise:	
- Practice/ Laboratory:	
- Self-study/Assignment:	90 periods (~ 75 hours)
- ….	
5. Responsible persons	
- Faculty/Division in charge:	Faculty of English for specific purposes
- Course coordinator:	M.A. Truong Thi Anh Tuyet
- Other lecturers:	M.A. Pham Thi Thu Huong, M.A. Tran Vu Mai Yen
6. Required and recommended prerequisites for joining the course:	
- Required prerequisite:	Students have achieved level 1 (A1)
- Recommended prerequisite:	A1.1; A1.2
- Corequisite:	
7. Course type:	☒ Compulsory Selected elective Free elective
8. Knowledge clusters	☒ Math and natural science General knowledge Core engineering fundamental knowledge Disciplinary knowledge Supportive knowledge Project/ Internship/ Graduate thesis

9. Course description:

The course is designed to integrate four language skills of Listening, Speaking, Reading and Writing. The course includes 5 units with lessons, providing the students with knowledge of grammar, vocabulary, pronunciation to practice language skills at the first stage of the elementary level. After each lesson at school, students can practice intensively with references and online resources.

10. Course learning outcomes (CLOs):

At the end of this course, students will be able to:

No	CLOs (1)	Knowledge (2)	Skills (3)	Attitudes (4)	Performance Indicators (PI)
1	Understand and demonstrate basic knowledge related to English vocabulary, pronunciation, and grammar at the first stage of the elementary level.	A2. Understand			
2	Apply knowledge to comprehensively listen and read the main ideas of a description, a conversation on topics related to daily life and work.		B2. apply		
3	Communicate, describe issues, briefly express personal opinions on familiar topics related to personal interests, study, work or daily life.		B2. apply		
4	Write notes, simple instructions and short emails related to familiar topics.		B2. apply		
5	Develop a sense of self-study, self-training to complete learning goals, and a sense of responsibility for the assigned work.			C4. organize	

11. Mapping of CLOs and Program learning outcomes (PLOs):

PLOs	PLO1	PLO2	PLO3	PLO4	PLO5	PLO6	PLO7	PLO8
Course distribution	IT				I	I		
CLO 1	X					X		
CLO 2	X				X	X		
CLO 3	X				X	X		
CLO 4	X				X	X		
CLO 5	X				X			
CLO 6	X					X		

12. Student responsibilities:

Student must:

- Attend at least 80% of the total periods of the course, and finish at least 80% of the amount of online homework. Below this number, student will be banned from taking the final exam**.**
- Participate in team-work activities following the course's regulations.
- Self-study outside class to solve problems provided by lecturers;
- Complete all types of the course assessment.
- Show an honest and serious attitude; do not copy, cheat, or use documents during the test.

13. Course assessment:

Assessment components	Assessment types	Assessment methods	Rubric	Weights of assessment types (%)	Weights of assessment components (%)	CLOs
A1. Formative assessment	A1.1. Attendance/ Presentation	P1.1. Check attendance/ oral presentation	Attend at least 80% of the total periods of the course	W1.1. 50%	W1	CLO 1,2,3,4,5
	A1.2. Assignment	P1.2. Exercises	R1.2.	W1.2. 50%		CLO 1,2,3,4,5
A2. Mid-term exam	A2.1. Mid-term exam work	P2.1. Written exam/ Speaking test	R2.1.	W2. 100%	W2	CLO 1,2.3.4
A3. Final exam	A3.1 Final exam work	P3.1. Written exam and Speaking test	R3.1.	W3.1. 100%	W3	CLO 1,2,3,4

14. Teaching and Learning plans:

Week (3 periods)	**Contents**	**Teaching and Learning activities**	**Assessment types**	**CLOs**
1	**Unit 1: People** - Explorers - A family in Kenya	**Teaching:** - Hold class familiarization activities - Introduce the detailed course syllabus - Lecture, present, explain the topics, ask students to work in pairs or groups, correct the exercises and give feedback **In-class activities:** - Listen to lectures, and take notes,	A1.1, A1.2	CLO 1, 2,3,5

		- participate in group/pair discussions, - do exercises, present the topic **Outside class:** - Review and do homework - Prepare lesson, read materials the lecturer has requested		
2	**Unit 1: People** - The face of seven billion people - The first day	**Teaching:** - Warm-up - Lecture, present, explain the topics, ask students to work in pairs or groups, correct the exercises and give feedback **In-class activities:** - Listen to lectures, and take notes, - participate in group/pair discussions, - do exercises, present the topic **Outside class:** - Review and do homework - Prepare lesson, read materials the lecturer has requested	A1.1, A1.2	CLO 1, 2,3,4,5
3	**Unit 1: People** - Introduce yourself - Unit 1 Review and Memory Booster	**Teaching:** - Warm-up - Lecture, present, explain the topics, ask students to work in pairs or groups, correct the exercises and give feedback **In-class activities:** - Listen to lectures, and take notes, - participate in group/pair discussions, - do exercises, present the topic **Outside class:** - Review and do homework - Prepare lesson, read materials the lecturer has requested	A1.1, A1.2	CLO 1, 2,3,4,5
4	**Unit 2: Possessions** - A place called home - My possessions	**Teaching:** - Warm-up - Lecture, present, explain the topics, ask students to work in pairs or groups, correct the exercises and give feedback **In-class activities:** - Listen to lectures, and take notes, - participate in group/pair discussions, - do exercises, present the topic **Outside class:** - Review and do homework	A1.1, A1.2	CLO 1, 2,3,5

		- Prepare lesson, read materials the lecturer has requested		
5	**Unit 2: Possessions** - Global objects - At the shop	**Teaching:** - Warm-up - Lecture, present, explain the topics, ask students to work in pairs or groups, correct the exercises and give feedback **In-class activities:** - Listen to lectures, and take notes, - participate in group/pair discussions, - do exercises, present the topic **Outside class:** - Review and do homework - Prepare lesson, read materials the lecturer has requested	A1.1, A1.2	CLO 1, 2,3,4,5
6	**Unit 2: Possessions** - For sale - Unit 2 Review and Memory Booster	**Teaching:** - Warm-up - Lecture, present, explain the topics, ask students to work in pairs or groups, correct the exercises and give feedback **In-class activities:** - Listen to lectures, and take notes, - participate in group/pair discussions, - do exercises, present the topic **Outside class:** - Review and do homework - Prepare lesson, read materials the lecturer has requested	A1.1, A1.2	CLO 1, 2,3,4,5
7	**Unit 3: Places** - No-car zones - Places of work	**Teaching:** - Warm-up - Lecture, present, explain the topics, ask students to work in pairs or groups, correct the exercises and give feedback **In-class activities:** - Listen to lectures, and take notes, - participate in group/pair discussions, - do exercises, present the topic **Outside class:** - Review and do homework - Prepare lesson, read materials the lecturer has requested	A1.1, A1.2	CLO 1, 2,3,5
8	**Unit 3: Places** - Places and languages	**Teaching:** - Warm-up	A1.1, A1.2	CLO 1, 2,3,4,5

	- The city of Atlanta - MID-TERM TEST	- Lecture, present, explain the topics, ask students to work in pairs or groups, correct the exercises and give feedback **In-class activities:** - Listen to lectures, and take notes, - participate in group/pair discussions, - do exercises, present the topic **Outside class:** - Review and do homework - Prepare lesson, read materials the lecturer has requested	A2.1	
9	**Unit 3: Places** - My favourite city - Unit 3 Review and Memory Booster	**Teaching:** - Warm-up - Lecture, present, explain the topics, ask students to work in pairs or groups, correct the exercises and give feedback **In-class activities:** - Listen to lectures, and take notes, - participate in group/pair discussions, - do exercises, present the topic **Outside class:** - Review and do homework - Prepare lesson, read materials the lecturer has requested	A1.1, A1.2	CLO 1, 2,3,4,5
10	**Unit 4: Free time** - 100% identical? - Free time in the Arctic	**Teaching:** - Warm-up - Lecture, present, explain the topics, ask students to work in pairs or groups, correct the exercises and give feedback **In-class activities:** - Listen to lectures, and take notes, - participate in group/pair discussions, - do exercises, present the topic **Outside class:** - Review and do homework - Prepare lesson, read materials the lecturer has requested	A1.1, A1.2	CLO 1, 2,3,5
11	**Unit 4: Free time** - Extreme sports - A gap year	**Teaching:** - Warm-up - Lecture, present, explain the topics, ask students to work in pairs or groups, correct the exercises and give feedback **In-class activities:**	A1.1, A1.2	CLO 1, 2,3,4,5

		- Listen to lectures, and take notes, - participate in group/pair discussions, - do exercises, present the topic **Outside class:** - Review and do homework - Prepare lesson, read materials the lecturer has requested		
12	**Unit 4: Free time** - You have an email - Unit 4 Review and Memory Booster	**Teaching:** - Warm-up - Lecture, present, explain the topics, ask students to work in pairs or groups, correct the exercises and give feedback **In-class activities:** - Listen to lectures, and take notes, - participate in group/pair discussions, - do exercises, present the topic **Outside class:** - Review and do homework - Prepare lesson, read materials the lecturer has requested	A1.1, A1.2	CLO 1, 2,3,4,5
13	**Unit 5: Food** - Famous for food - Top five food market	**Teaching:** - Warm-up - Lecture, present, explain the topics, ask students to work in pairs or groups, correct the exercises and give feedback **In-class activities:** - Listen to lectures, and take notes, - participate in group/pair discussions, - do exercises, present the topic **Outside class:** - Review and do homework - Prepare lesson, read materials the lecturer has requested	A1.1, A1.2	CLO 1, 2,3,5
14	**Unit 5: Food** - An eater's guide to food labels - At the restaurant	**Teaching:** - Warm-up - Lecture, present, explain the topics, ask students to work in pairs or groups, correct the exercises and give feedback **In-class activities:** - Listen to lectures, and take notes, - participate in group/pair discussions, - do exercises, present the topic **Outside class:**	A1.1, A1.2	CLO 1, 2,3,4,5

		- Review and do homework - Prepare lesson, read materials the lecturer has requested		
15	**Unit 5: Food** - What do I do next? - Unit 5 Review and Memory Booster - Revision	**Teaching:** - Warm-up - Lecture, present, explain the topics, ask students to work in pairs or groups, correct the exercises and give feedback **In-class activities:** - Listen to lectures, and take notes, - participate in group/pair discussions, - do exercises, present the topic **Outside class:** Review and do homework	A1.1, A1.2	CLO 1, 2,3,4,5

15. Course materials:

15.1. Main textbooks, course books

[1]. [HUGES J., STEPHESON H., & DUMMETT P., 2019] Life A1-A2 Student's Book, 2nd Edition, National Geographic Learning, Cengage Learning Inc.

15.2. References

[1]. [HUGES J., STEPHESON H., & DUMMETT P., 2014] Life A1-A2 Work Book, National Geographic Learning, Cengage Learning Inc.

[2]. [RAYMOND M., 2015] Essential Grammar in Use, 4th edition, Cambridge University Press.

[3]. [MICHAEL M., FELLICITY O'DELL, 2017], English Vocabulary in Use – Elementary, 3rd edition, Cambridge University Press.

15.3. Online learning resources

- Resources for learning and practicing English on MytimeEnglish online account of UD;
- Resources for learning and practicing English at Student Web App - Life Elementary
- Resources for learning and practicing English on Life Elementary's online account at MyELT - Cengage Learning

16. Scientific code of ethics:

- Students must respect their lecturers and other students.
- Students must comply with the university's academic integrity.
- Students must strictly follow the rules and regulations of the university.

17. Approved date:

18. Approved by:

Dean of Faculty	Program chair	Lecturer in charge
Cao Van Lam, PhD.	**Vo Duy Hung, PhD.**	

6. Introduction to Construction Materials Engineering and Technology

THE UNIVERSITY OF DANANG
UNIVERSITY OF SCIENCE AND TECHNOLOGY
Faculty of Road and Bridge Engineering

SOCIALIST REPUBLIC OF VIETNAM
Independence - Freedom - Happiness

UNDERGRADUATE PROGRAM

Awarded degree: Undergraduate/Bachelor

Name of the study program: Construction Materials Engineering and Technology Program Code: 7510105

SYLLABUS
Course name (Vietnamese): Nhập môn ngành VLXD
English name: Introduction to Construction Materials Engineering and Technology

1. Course Code:	1093050
2. Course abbreviation:	Introduction to Construction Materials Engineering and Technology
3. Credits: **ECTS credits (*):**	2 credits 3,08
4. Study workload:	
- Theoretical hours	1 credit (15 periods)
- Assignments/Discussions	
- Practice/Experiment	
- PBL	1 credit (30 periods)
- Self-study	60 periods
5. Responsible persons:	
- Faculty/Division in charge:	Construction materials Division/ Faculty of Road and Bridge Engineering
- Course coordinator:	Do Thi Phuong, Msc
- Other lecturers:	Lecturers of Construction Material Division Vo Duy Hung, Ph.D Business guests
6. Required and recommended prerequisites for joining the course:	
- Required prerequisite:	None
- Recommended prerequisite:	None
- Corequisite:	None
7. Type of course:	☒ Compulsory ☐ Compulsive Electives ☐ Electives
8. Knowledge clusters:	☐Math and natural science General knowledge Core engineering fundamental knowledge Disciplinary knowledge

	☒ Supportive knowledge Project/ Internship/ Graduate thesis

9. Course description

The course introduces an overview of the profession and structure of education program of the construction materials engineering and technology (CMET); help students form personal skills, communication skills; familiarize the design thinking experiences on engineering projects to prepare them for learning in the following semesters.

10. Course Learning Outcomes

After completing the course, students will be able to

NO	Course Learning Outcomes(CLOs)	Knowledge	Skills	Attitude	Performance indicators (belongs to PLOs)
1	**Describe** profession in the field of CMET and discuss the education program of CMET, systematically approach the subjects of the education program	A1. Remember	B2. Perform	C1. Receive	3.1.1
2	**Explain** the benefits brought in applying the knowledge of CMET in the context of business and society	A2. Understand	A3. Accuracy	C3. Express attitude	3.2.2
3	**Recognize** the importance of morality and responsibilities of bachelors.	A2. Understand	A3. Accuracy	C3. Express attitude	4.1.1, 3.2.2
4	**Explain** the main components of project management; **apply** communication, teamwork, and presentation skills	A3. Apply	A3. Accuracy	C3. Express attitude	5.1 5.2

11. The relationship between course learning outcomes (CLOs) and program learning outcomes (PLOs)

PLO	PLO 1	PLO 2	PLO 3	PLO 4	PLO 5	PLO 6	PLO 7	PLO 8
Contribution of the course			I	IT	IT			
CLO 1			x					
CLO 2			x					
CLO 3			x	x				
CLO 4					x			

12. Student responsibilities:

Students must peform the following tasks:
- Attend at least 80% of the lessons of the class time;
- Participating in group-work activities following the regulations of the class
- Self-study the problems assigned by the lecturer
- Complete all course assessments.

13. Course assessments

Type of assessement	**Performance assessment**	**Assessment methods**	**Rubric**	**Weighting percentage (%)**		**Course learning outcomes (CLOs)**
A1. Theory assessment (Mid-term)	A1.1.Diligence	Attendance		10	40	
	A1.2. Assignments	Quiz	According to the answer	10		CLO 2, 4
	A1.3. Reports	Slides. Present. Question and answer	Rubric 1	10		CLO 1,2,3,4
A2. PBL Assessment (Final)	A2.1 Evaluate the project process, teamwork	Report progress	Rubric 2	20	60	CLO 2, 4
	A2.2. Project report	Demo product. Poster. Present. Question and answer	Rubric 3	40		CLO2, 3, 4

14. Teaching and learning plan

Weeks/ 3 periods	Contents	Teaching and learning activities	Performance assessment	Course learning outcomes (CLOs)
1	- Course objectives - Overview about the content of the course - Reference materials. - Teaching and learning activities - Tasks of students - Assign the report groups - Assessment methods **CHAPTER 1. INTRODUCTION OF CMET AND CAREER ORIENTATION**	- Teaching activities: + Lecture, explicit teaching, independent learning + Introduce course syllabus, teaching schedule - Learning activities in class (student) +Listen to the lecture +Think – Pair - Share - Learning at home	A1.1	CLO1, CLO2, CLO3

Weeks/ 3 periods	Contents	Teaching and learning activities	Perform-ance assessm-ent	Course learning outcome s (CLOs)
	1.1. History of Faculty of Bridge and Road Engineering, Con-struction materials Division 1.2. Overview of CMET 1.3. Education program 1.4. Opportunities and career orientation 1.5. Professional ethics	+ Read course syllabus + Prepare books, reference materials + Find out some issues related to the CMET + Prepare the content of chapter 2		
2	**CHAPTER 2: UNIVERSITY SKILLS** 2.1. What's different about studying at university? 2.2. What do new students need to prepare? 2.3. Group learning method 2.4. Personal learning method 2.5. Good learning skills 2.6. Scientific research skills 2.7. Necessary tools to prepare for learning	- Teaching activities: + Lecture, explicit teaching, independent learning - Learning activities in class +Listen to the lecture +Answer the questions given by the lecturer + Ask questions about issues of interest + Discussion and conclusion - Learning at home + Review the lessons + Prepare the content of chapter 3 and 4	A1.1	CLO1, CLO2, CLO4
3	**CHAPTER 3: COMMUNICATION SKILLS** 3.1 Communication definition 3.2 Basis of communication 3.3 Communication skills 3.4. Email writing skills 3.5. Writing skills **CHAPTER 4. PRESENTATION SKILLS** 4.1. Confident when presenting 4.2. Content creation and development 4.3. Introducing NABC Framework 4.4. Presentation skills	- Teaching activities: + Lecture, explicit teaching, independent learning - Learning activities in class +Listen to the lecture +Answer the questions given by the lecturer + Ask questions about issues of interest + Discussion and conclusion - Learning at home + Review the lessons + Prepare the content of chapter 3 and 4	A1.1 A1.2	CLO2, CLO4

Weeks/ 3 periods	Contents	Teaching and learning activities	Perform-ance assessm-ent	Course learning outcome s (CLOs)
4	**CHAPTER 4. PRESENTATION SKILLS (next)** 4.5. Professional slide making skills 4.6. Common mistakes and experience sharing **CHAPTER 5. TEAM WORKING SKILLS** 5.1. Question 5.2. The basic concepts 5.3. Differentiate between team and group 5.4. Formation stages 5.5. The individual's role in the group. Skills for developing teamwork. 5.6. Group conflict and conflict resolution skills	- Teaching activities: + Lecture, explicit teaching, independent learning - Learning activities in class (student) +Listen to the lecture + Group activities + Cognitive game + Case study "lost in the sea" - Learning at home + Review the lessons + Prepare the content of chapter 5 + Homework	A1.1 A1.2	CLO2, CLO4
5	CHAPTER 6. PROJECT MANAGEMENT SKILLS 6.1 Basic Concepts 6.2 Project planning steps 6.3 Project planning tools 6.4 Some issues to note	- Teaching activities: + Lecture, explicit teaching, independent learning - Learning activities in class +Listen to the lecture +Answer the questions given by the lecturer + Ask questions about issues of interest + Discussion and conclusion - Learning at home + Review the lessons + Prepare report + Homework	A1.1, A1.2	CLO2, CLO3, CLO4
6	Mid-term exam		A1.3	CLO1, 2, 3, 4
7	**CHAPTER 7. DESIGN THINKING** 7.1 An overview of design thinking 7.2. Question 7.3. Looking for ideas	- Teaching activities: + Lecture, explicit teaching, independent learning - Learning activities in class: +Listen to the lecture	A2.1	CLO2, CLO4

Weeks/ 3 periods	Contents	Teaching and learning activities	Perform-ance assessm-ent	Course learning outcome s (CLOs)
		+Answer the questions given by the lecturer + Ask questions about issues of interest (Students) + Discussion and conclusion - Learning at home (Students): + Review the lessons + Homework		
8+ 9 + 10 + 11 + 12 + 13 +14	**CHAPTER 7. DESIGN THINKING (next)** 7.4. Design project proposal 7.5. Project implementation - The product is a project related to basic materials (samples and posters or model) 7.5.1. Prepare 7.5.2. Perform 7.5.3. Control 7.5.4. Edit	- Teaching activities: + Lecture, explicit teaching, independent learning - Learning activities in class: +Listen to the lecture + Report + Ask questions + Discussion - Learning at home + Homework + Project completion	A2.1	CLO2, CLO4
15	**Project completion**	Demo project	A2.1	CLO2, CLO4
Final exam			A2.2	CLO2,3, 4

15. Materials:

15.1. Books, lectures, main textbooks:

[1] Pham et al, *Introduction to engineering*, Ho Chi Minh City National University Publishing House, 2014.

15.2. Reference materials:

[1] KOSKY et al, *Exploring Engineering: An Introduction to Engineering and Design*, 2010

[2] OAKES et al, *Engineering your Future – A Comprehensive Introduction to Engineering*, 2009

[3] Paul H. Wright, *Introduction to Engineering*

16. Scientific code of ethics:

- Students must respect a lecturer and other students.
- Students must comply with the University's academic integrity policy.
- Students must obey the rules and regulations of the university.

17. Approved date:

17. Approved by:

Dean of Faculty	Program chair	Lecturer in charge
Cao Van Lam, PhD.	**Vo Duy Hung, PhD.**	**Do Thi Phuong, MSc**

7. Calculus 2

THE UNIVERSITY OF DANANG
UNIVERSITY OF SCIENCE AND TECHNOLOGY
Faculty of Road and Bridge Engineering

SOCIALIST REPUBLIC OF VIETNAM
Independence - Freedom - Happiness

UNDERGRADUATE PROGRAM

Awarded degree: Undergraduate/Bachelor

Name of the study program: Construction Materials Engineering and Technology Program Code: 7510105

SYLLABUS
Course name (Vietnamese): Giải tích 2
English name: Calculus 2

1. Course code:	3190121
2. Course abbreviation:	Calculus 2
3. Credits: **ECTS credits (*):**	04 5,67
4. Study workload:	*Total workload: 180 hours*
- Lecture:	40 hours
- Exercise:	20 hours
- Self-study/Assignment:	120 hours
5. Responsible persons	
- Faculty/Division in charge:	**Faculty of Mathematics**
- Course coordinator:	**Dr. Pham Quy Muoi**
- Other lecturers:	Dr. Hoang Nhat Quy, Dr. Chu Van Tiep, Dr. Luong Quoc Tuyen, Dr. Le Hai Trung, Dr. Nguyen Thi Thuy Duong, Dr. Le Hoang Tri
6. Required and recommended pre-requisites for joining the course:	
- Required prerequisite:	None
- Recommended prerequisite:	Calculus 1
- Corequisite:	None
7. Course type:	☒ Compulsory Selected elective Free elective
8. Knowledge clusters	☒ Math and natural science General knowledge Core engineering fundamental knowledge Disciplinary knowledge Supportive knowledge

	Project/ Internship/ Graduate thesis

9. Course description:

This course includes concepts, formulas and applications of multiple integrals (double and triple integrals) , line integrals (type 1 and 2), surface integrals (type 1 and type 2), series (number and functional series) and ordinary differential equations.

10. Course learning outcomes (CLOs):

At the end of this course, students will be able to:

No	CLOs (1)	Knowledge (2)	Skills (3)	Attitudes (4)	Performance Indicators (PI)
1	Explaining the meaning of concepts and theorems related to multiple integrals, line integrals, surface integrals, differential equations, and series.	Understanding	Understand	Responding	1.1
2	Applying some software to calculate problems related to multiple integrals, line integrals, surface integrals and differential equations.	Applying	Apply	Valuing	1.1, 7.1
3	Applying theory of multiple integrals, line integrals, surface integrals, differential equations, and series to solve problems and applied problems in other sciences and in the real life.	Applying	Apply	Valuing	1.1
4	Organizing groups to solve some learning projects and some big problems based on mathematical models.	Applying	Apply	Valuing	1.1, 3.1, 4.1

11. Mapping of CLOs and Program learning outcomes (PLOs):

PLOs	PLO1	PLO2	PLO3	PLO4	PLO5	PLO6	PLO7	PLO8
Course distribution	IT				I		I	
CLO 1	X							
CLO 2	X						X	
CLO 3	X							
CLO 4	X				X			

12. Student responsibilities:

Student must:

- Attend at least 80% of the total periods of the course. Below this number, student will be banned from taking the final exam**.**
- Participate in team-work activities following the course's regulations;
- Self-study outside class to solve problems provided by lecturers;
- Complete all types of the course assessment.

13. Course assessment:

Assessment components	Assessment types	Assessment methods	Rubric	Weights of assessment types (%)	Weights of assessment components (%)	CLOs
A1. Formative assessment	A1.1. Attendance	P1.1. Check attendance	Attend at least 80% of the total periods of the course	W1.1. 33%	W1. 30%	
	A1.2. Assignment/ Presentation	P1.2. Essay/ oral presentation	R1.2.	W1.2. 67%		CLO 1,2,3
A2. Mid-term exam	A2.1. Mid-term exam work	P2.1. Written exam	R2.1.	W2. 100%	W2. 20%	CLO 1,2,3,4
A3. Final exam	A3.1 Final exam work	P3.1. Written exam	R3.1.	W3.1. 100%	W3.1 50%	CLO 1,2,3,4

14. Teaching and Learning plans:

Week	Contents	Teaching and Learning activities	Assessment types	CLOs
1	Chapter 1: Multiple integrals 1.1. Double integral Definitions, geometric meaning, properties, method of solving of double integral, the transformation into polar coordinates	**Teaching:** - State the definitions and explain the meaning of double integral - Guiding to do double integral in some different coordinates **Learning in class:** - Listening - Do exercises following the guidance of the lecturer **Learning at home:** - Do exercises about double integrals and some application of double integrals	A1.1, A1.2	CLO123
2	Chapter 1: (continuous) 1.2. Triple integral Definitions and properties of triple integral, the methods of solving of triple integral, variable transformation in triple integral	**Teaching:** - State the definition and explain the meaning of triple integral - Guiding to do triple integral **Learning in class:** - Listening - Do exercises following the guidance of the lecturer **Learning at home:** Do some exercises about: - Double integral, triple integral	A1.1, A1.2	CLO123

		- Some applications of multiple integrals		
3	Chapter 1: (continue) 1.2. Triple integral Variable transformation into cylinder coordinate, globular coordinate	**Teaching:** - Write the formula and guide to do triple integral in cylinder coordinate, in globular coordinate and some applying of them **Learning in class:** - Listening - Do exercises following the guidance of the lecturer **Learning at home:** Do exercises about triple integral in cylinder coordinate and in global coordinate	A1.1, A1.2	CLO123
4	Chapter 2: Line integral and surface integral 2.1. Line integral type 1 Definitions, properties, and applications (Students self-reading in textbook) 2.2. Line integral type 2 Definitions, properties, and applications and the relation between the line integral type 1 and line integral type 2; Green formula, the theorem 4 clauses equivalently and consequences	**Teaching:** - State definition and the meaning of line integral type 1 and type 2 - Guide to do line integral type 1 and type 2 - State and analysis the meaning of line integral and apply the Green formula **Learning in class:** - Listening - Do exercises following the guidance of the lecturer **Learning at home:** Do exercises about: - Line integral - Apply the Green formula	A1.1, A1.2	CLO123
5	2.3. Surface integral of first type Definitions, properties, and applications (Self-study) 2.4. Surface integral of the second type: 2.4.1. Definitions of two sided surface and surface integral of the second type; 2.4.2. Relationship between surface integral of the first type and	**Teaching:** - State definition and the meaning of surface integral type 1 and type 2 - Relationship between surface integral of the first type and surface integral of the second type; - Guide to do surface integral type 1 and type 2 **Learning in class:** - Listening - Do exercises following the guidance of the lecturer **Learning at home:**	A1.1, A1.2	CLO123

	surface integral of the second type; 2.4.3. Evaluate surface integral of the second type	Do exercises about: surface integral type 1 and type 2		
6	2.5. Ostrogradsky formula 2.6. Stokes formula	**Teaching:** - State and analyze the meaning of Ostrogradsky and Stokes formulas - Guide to apply Ostrogradsky and Stokes formulas **Learning in class:** - Listening - Do exercises following the guidance of the lecturer **Learning at home:** Do exercises about: Ostrogradsky and Stokes formulas	A1.1, A1.2	CLO123
7	Mid-term exam work		**A2.1**	**CLO1234**
8	Chương 3: Ordinary differential equations 3.1. Basic concepts Definitions, solutions, general solution, particular solution, singular solutions, Cauchy problems	**Teaching:** - State the definition of ODE, Cauchy problems, first order differential equations - Guide to Solve some common differential equations **Learning in class:** - Listening - Do exercises following the guidance of the lecturer **Learning at home:** Do exercises about: common of differential equations	A1.1, A1.2	CLO123
9	3.2. First order DEs Existence and Unique theorem, Geometry meaning, common equations: homogeneous, linear, Bernoulli, Total differential equations and Integrating factor.	**Teaching:** - State Existence and Unique theorem, Geometry meaning, - Guide to Solve some common differential equations **Learning in class:** - Listening - Do exercises following the guidance of the lecturer **Learning at home:** Do exercises about: 5 types of differential equations	A1.1, A1.2	CLO123

10	3.3. Second order differential equations Existence and Unique theorem, reduce order method Second order linear differential equations;	**Teaching:** - State Second order differential equations Existence and Unique theorem, reduce order method - Guide to Solve Second order linear differential equations; **Learning in class:** - Listening - Do exercises following the guidance of the lecturer **Learning at home:** Do exercises about: Second order linear differential equations	A1.1, A1.2	CLO123
11	3.4. Second order linear differential equations with constant equations; special cases: Euler equations.	**Teaching:** - Guide to Solve Second order linear differential equations; **Learning in class:** - Listening - Do exercises following the guidance of the lecturer **Learning at home:** Do exercises about: Second order linear differential equations with constant coefficients and Euler equation	A1.1, A1.2	CLO123
12	Chapter 4: series 4.1. Number Series Definitions: Number Series, partial sum, convergence and divergence. Basic Concepts and Theorems.	**Teaching:** State Definitions: Number Series, partial sum, convergence and divergence. Basic Concepts and Theorems.**Learning in class:** - Listening - Do exercises following the guidance of the lecturer **Learning at home:** Do exercises about: number series	A1.1, A1.2	CLO123
13	4.2. Positive series Definitions; Convergent Tests 4.3. Alternative series Absolute convergence, conditional convergence	**Teaching:** State Definitions: Number Series, partial sum, convergence and divergence. Basic Concepts and Theorems **Learning in class:** - Listening - Do exercises following the guidance of the lecturer **Learning at home:** Do exercises about: the convergence of number series	A1.1, A1.2	CLO123

14	4.4. Series of functions	**Teaching:** -State Definition of Series of functions -Guide to finding the convergent domain of a Series of functions **Learning in class:** - Listening - Do exercises following the guidance of the lecturer **Learning at home:** Do exercises about: Series of functions	A1.1, A1.2	CLO123
15	4.5.Power series and Taylor series Interval of convergence of power series, the continuity of power series, integration and differentiation of power series	**Teaching:** -State Definition Power series and Taylor series -Guide to finding Interval of convergence of power series **Learning in class:** - Listening - Do exercises following the guidance of the lecturer **Learning at home:** Do exercises about: Interval of convergence of power series, the continuity of power series, integration and differentiation of power series	A1.1, A1.2	CLO123
16	Fourier Series Definitions; Dirichlet theorems, Fourier series of a function of period 2l, Fourier cosine, Fourier sine, applications	Teaching: -State definition of Fourier Series -Guide to finding coefficients of Fourier series Learning in class: - Listening - Do exercises following the guidance of the lecturer Learning at home: Do exercises about: Fourier Series	A1.1, A1.2	CLO123
17	Final exam work		A3.1	CLO1234

15. Course materials:

15.1. Main textbooks, course books:

[1] J. Stewart, *Calculus Early Transcendentals*, Brooks/Cole Publishing company (6th), 2003.

[2] Nguyen Dinh Tri, Ta Van Dinh, Nguyen Ho Quynh, *Advanced Mathematics (Volume 2), Education Publishing House, 2002.*

[3] Nguyen Dinh Tri, Ta Van Dinh, Nguyen Ho Quynh, *Advanced math exercises (Volume 2), Education Publishing House, 2002.*

15.2. References:

[1] Rogawski and C. Adam, *Calculus Early Transcendentals*, 3rd Edi. , Freeman & Company, 2015.

[2] H. Anton, I. Bivens, S. Davis, *Culculus Early Transcendentals*, 9th Edi., John Wiley & Sons, INC, 2009.
[3] S. Tan, *Calculus*, Brooks/Cole, 2010.

16. Scientific code of ethics:

- Students must respect their lecturers and other students.
- Students must comply with the university's academic integrity.
- Students must strictly follow the rules and regulations of the university.

17. Approved date:

18. Approved by:

Dean of Faculty	Program chair	Lecturer in charge
Cao Van Lam, PhD.	**Vo Duy Hung, PhD.**	

8. Probability and Statistics

THE UNIVERSITY OF DANANG
UNIVERSITY OF SCIENCE AND TECHNOLOGY
Faculty of Road and Bridge Engineering

SOCIALIST REPUBLIC OF VIETNAM
Independence - Freedom - Happiness

UNDERGRADUATE PROGRAM

Awarded degree: Undergraduate/Bachelor

Name of the study program: Construction Materials Engineering and Technology Program Code: 7510105

SYLLABUS
Course name (Vietnamese): Xác suất thống kê
English name: Probability and Statistics

1. Course code:	3190041
2. Course abbreviation:	Probability and Statistics
3. Credits: **ECTS credits (*):**	03 4,25
4. Study workload:	*Total workload: 135 hours*
- Lecture:	35 hours
- Exercise:	15 hours
- Self-study/Assignment:	90 hours
5. Responsible persons	
- Faculty/Division in charge:	Faculty of Mathematics
- Course coordinator:	Dr. Ton That Tu
- Other lecturers:	Assoc.Prof.Dr. Le Van Dung, MSc. Nguyen Thi Hai Yen
6. Required and recommended prerequisites for joining the course:	
- Required prerequisite:	None
- Recommended prerequisite:	Calculus 2
- Corequisite:	None
7. Course type:	Compulsory Selected elective ☒ Free elective
8. Knowledge clusters:	☒ Math and natural science General knowledge Core engineering fundamental knowledge Disciplinary knowledge Supportive knowledge Project/ Internship/ Graduate thesis

9. Course description:

The course introduces probability theory and statistical methods. The learners åe introduced the basic contents of random events, probability; random variables and probability distribution rules; limit theorems; random vector, conditional expectation, covariance and correlation coefficient. Mathematical statistics includes the basic contents of sample theory, descriptive statistics, methods for estimating the parameters of random variables, testing statistical hypotheses and comparison problems.

10. Course learning outcomes (CLOs):

At the end of this course, students will be able to:

No	CLOs (1)	Knowledge (2)	Skills (3)	Attitudes (4)	Performance Indicators (PI)
1	Explaining the meaning of concepts, formulas and properties related to random events, probability, distribution laws, descriptive statistics, estimation and hypothesis testing problems.	Understanding	Understand	Responding	1.1.3
2	Applying statistical software to create statistical graphs and performance basic data analysis.	Applying	Apply	Valuing	1.1.3
3	Applying theory of probability and the distribution laws to solve the related problems.	Applying	Apply	Valuing	1.1.3
4	Applying theory of parameter estimation and hypothesis testing to make decisions for statistical problems	Applying	Apply	Valuing	1.1.3 3.1

11. Mapping of CLOs and Program learning outcomes (PLOs):

PLOs	PLO1	PLO2	PLO3	PLO4	PLO5	PLO6	PLO7	PLO8
Course distribution	IT		I					
CLO 1	X							
CLO 2	X							
CLO 3	X							
CLO4	X		X					

12. Student responsibilities:

Student must:

- Attend at least 80% of the total periods of the course. Below this number, student will be banned from taking the final exam**.**
- Participate in team-work activities following the course's regulations;
- Self-study outside class to solve problems provided by lecturers;
- Complete all types of the course assessment.

13. Course assessment:

Assessment components	Assessment types	Assessment methods	Rubric	Weights of assessment types (%)	Weights of assessment components (%)	CLOs
A1. Formative assessment	A1.1. Attendance	P1.1. Check attendance	Attend at least 80% of the total periods of the course	W1.1. 33%	W1. 30%	
	A1.2. Assignment/ Presentation	P1.2. Essay/ oral presentation	R1.2.	W1.2. 67%		CLO 1,2,3,4
A2. Midterm exam	A2.1. Midterm exam work	P2.1. Written exam	R2.1.	W2. 100%	W2. 20%	CLO 1,3
A3. Final exam	A3.1 Final exam work	P3.1. Written exam	R3.1.	W3.1. 100%	W3.1 50%	CLO 3,4

14. Teaching and Learning plans:

Week	Contents	Teaching and Learning activities	Assessment types	CLOs
1	Chapter 1: Probability 1.1. Sample space and events 1.2 Probability of event	**Teaching:** - State the definitions and explain the meaning of sample space, event, probability - Guiding to calculate probability of events **Learning in class:** - Listening - Do exercises following the guidance of the lecturer **Learning at home:** - Do exercises about calculation of probability of events	A1.1, A1.2	CLO 1, 3
2	Chapter 1: (continuous) 1.3 Conditional probability 1.4 Product law 1.5 Independence	**Teaching:** - State the definition and explain the meaning of conditional probability, independence - Guiding to calculate probability of events **Learning in class:** - Listening - Do exercises following the guidance of the lecturer **Learning at home:**	A1.1, A1.2	CLO 1, 3

		- Do exercises about calculation of probability of events		
3	Chapter 1: (continue) 1.6 Total laws of probability 1.7 Bayes formula 1.8 Bernoulli trials	**Teaching:** - State formulas: total laws of probability, Bayes, Bernoulli - Guiding to calculate probability of events **Learning in class:** - Listening - Do exercises following the guidance of the lecturer **Learning at home:** - Do exercises about calculation of probability of events	A1.1, A1.2	CLO 1, 3
4	Exercises for Chapter 1	**Teaching:** - Guiding to do exercises **Learning in class:** - Listening - Do exercises following the guidance of the lecturer	A1.1, A1.2	CLO 3
5	Chapter 2: Random variables 2.1. Definition 2.2 Probability distribution function 2.3 Types of random variables	**Teaching:** - State definition and the meaning of random variable, probability distribution function - Guide to do related examples **Learning in class:** - Listening - Do exercises following the guidance of the lecturer **Learning at home:** Do related exercises	A1.1, A1.2	CLO 1, 3
6	2.4 Expected value 2.5 Variance 2.6 Median 2.7 Independence	**Teaching:** - State definition and the meaning of Expected value, variance, median - Guide to do related examples **Learning in class:** - Listening - Do exercises following the guidance of the lecturer **Learning at home:** Do related exercises	A1.1, A1.2	CLO 1, 3
7	2.8 Some of important distribution laws	**Teaching:** - Introduce some of important distribution laws - Guide to do related examples	A1.1, A1.2	CLO 1, 3

		Learning in class: - Listening - Do exercises following the guidance of the lecturer **Learning at home:** Do related exercises		
8	2.9 Limit theorems Exercises for Chapter 2	**Teaching:** - Introduce limit theorems - Guide to do related examples **Learning in class:** - Listening - Do exercises following the guidance of the lecturer **Learning at home:** Do related exercises	A1.1, A1.2	CLO 1, 3
9	Mid-term exam (written exam, 50 mins)		A2.1	CLO 1,3
10	Chương 3: Random vector 3.1 Definition 3.2 Joint distribution	**Teaching:** - State the definition of random vector, joint distribution - Guide to do related examples **Learning in class:** - Listening - Do exercises following the guidance of the lecturer **Learning at home:** Do related exercises	A1.1, A1.2	CLO 1, 3
11	3.3 Conditional expected value 3.4 Covariance and correlation coefficient Exercises for Chapter 3	**Teaching:** - State the definitions and properties of conditional expected value, covariance and correlation coefficient - Guide to do related examples **Learning in class:** - Listening - Do exercises following the guidance of the lecturer **Learning at home:** Do related exercises	A1.1, A1.2	CLO 1, 3
12	Chapter 4: Descriptive statistics 4.1 Population and sample 4.2 Sample characteristics	**Teaching:** - State the basic concepts - Guide to do related examples and to use statistical software **Learning in class:** - Listening	A1.1, A1.2	CLO 1,2,4

	4.3 Statistical graphs	- Do exercises following the guidance of the lecturer **Learning at home:** Do related exercises		
13	Chapter 5: Parameter estimation 5.1 Point estimation 5.2 Confidence interval 5.2.1 CI for mean 5.2.2 CI for probability	**Teaching:** - State the basic concepts - Guide to do related examples **Learning in class:** - Listening - Do exercises following the guidance of the lecturer **Learning at home:** Do related exercises	A1.1, A1.2	CLO 1, 4
14	Chapter 6: Hypothesis testing 6.1 Basic concepts 6.2 Hypothesis testing for mean	**Teaching:** - State the basic concepts - Guide to do related examples **Learning in class:** - Listening - Do exercises following the guidance of the lecturer **Learning at home:** Do related exercises	A1.1, A1.2	CLO 1, 4
15	6.3 Compare means of two independent populations 6.4 Compare means of two dependent populations 6.5 Hypothesis testing for probability 6.6 Compare two probabilities	**Teaching:** - State the statistical hypothesis testing models - Guide to do related examples **Learning in class:** - Listening - Do exercises following the guidance of the lecturer **Learning at home:** Do related exercises	A1.1, A1.2	CLO 1, 4
16	Exercises for Chapter 5 and 6	**Teaching:** - Guide to do related exercises **Learning in class:** - Listening - Do exercises following the guidance of the lecturer	A1.1, A1.2	CLO 4
17	Final exam (written exam, 90 mins)		A3.1	CLO 3,4

15. Course materials:

15.1. Main textbooks, course books:

[1] Le Van Dung, Statistical probability textbook, Information and Communication Publishing House, 2016.

[2] Jay L. Devore, Probability and Statistics for Engineering and the Sciences, 8th Edition, Brooks/Cole, Cengage Learning, 2012.

15.2. References:

[1] Dang Hung Thang, Introduction to probability and applications, Educational Publishing House, 2008.

[2] Dang Hung Thang, Applied Statistics, Education Publishing House, 2008.

[3] Douglas C. Montgomery; George C. Runger, Applied Statistics and Probability for Engineers(4th Edition), John Wiley and Sons, Inc, 2007.

16. Scientific code of ethics:

- Students must respect their lecturers and other students.
- Students must comply with the university's academic integrity.
- Students must strictly follow the rules and regulations of the university.

17. Approved date:

18. Approved by:

Dean of Faculty	Program chair	Lecturer in charge
Cao Van Lam, PhD.	**Vo Duy Hung, PhD.**	

9. Physics 1

THE UNIVERSITY OF DANANG
UNIVERSITY OF SCIENCE AND TECHNOLOGY
Faculty of Road and Bridge Engineering

SOCIALIST REPUBLIC OF VIETNAM
Independence - Freedom - Happiness

UNDERGRADUATE PROGRAM

Awarded degree: Undergraduate/Bachelor

Name of the study program: Construction Materials Engineering and Technology Program Code: 7510105

SYLLABUS
Course name (Vietnamese): Vật lí 1
English name: Physics 1

1. Course code:	3050011
2. Course abbreviation:	Physics 1
3. Credits: **ECTS credits (*):**	3 4,25
4. Study workload:	*Total workload:* 45 *hours*
- Lecture:	29 periods (~ 29 hours)
- Exercise:	16 periods (~ 16 hours)
- Practice/ Laboratory:	0 periods (~ 0 hours)
- Self-study/Assignment:	90 periods (~ 90 hours)
5. Responsible persons	
- Faculty/Division in charge:	Faculty of Physics
- Course coordinator:	Dinh Thanh Khan
- Other lecturers:	1. PGS. TS. Nguyen Van Hieu 2. TS. Nguyen Quy Tuan 3. TS. Nguyen Thi Xuan Hoai 4. TS. Dung Van Lu 5. TS. Mai Thi Kieu Lien 6. TS. Nguyen Thi My Duc 7. ThS. Le Van Thanh Son 8. TS. Phung Viet Hai 9. TS. Hoang Dinh Trien 10. TS. Tran Thi Hong 11. TS. Nguyen Ba Vu Chinh 12. TS. Tran Quynh
6. Required and recommended prerequisites for joining the course:	
- Required prerequisite:	NA

- Recommended prerequisite:	Calculus 1
- Corequisite:	NA
7. Course type:	☒ Compulsory Selected elective Free elective
8. Knowledge clusters:	☒ Math and natural science General knowledge Core engineering fundamental knowledge Disciplinary knowledge Supportive knowledge Project/ Internship/ Graduate thesis

9. Course description:

Physics 1 provides learners with knowledge of Mechanics, Thermodynamics and Optics. The course helps learners to study important content such as:

- Properties and laws of motion of particles and rigid solids;
- The relationship between characteristic quantities of motion, the laws of change and conservation of momentum, angular momentum, energy;
- The relationship between work, heat and internal energy in thermodynamic processes and applications to study the operation of heat engines, refrigerator/heat pump;
- Properties and applications of light interference and diffraction.

In addition, the course also helps learners develop communication and teamwork skills.

10. Course learning outcomes (CLOs):

At the end of this course, students will be able to:

No	CLOs (1)	Knowledge (2)	Skills (3)	Attitudes (4)	Performance Indicators (PI)
1	Apply knowledge of dynamics and energy to solve problems in translational and rotational motion;	X			1.1.4
2	Apply knowledge of thermodynamics to solve problems related to energy conversion and efficiency of heat machines;	X			1.1.4
3	Apply knowledge of optics to solve problems related to interference and diffraction of light;	X			1.1.4
4	Explain common phenomena related to Mechanics, Thermaldynamics and Optics;		X		1.1.4 6.1.
5	Think critically and creatively;		X		1.1.4
6	Work in a team and communicate (written and oral);		X		1.1.4 5.1.1. 5.1.2. 5.2.3.
7	Demonstrate positive, proactive and responsible learning attitude.			X	

11. Mapping of CLOs and Program learning outcomes (PLOs):

PLO	PLO1	PLO2	PLO3	PLO4	PLO5	PLO6	PLO7	PLO8
Course distribution	IT				I	I		
CLO 1	X							
CLO 2	X							
CLO 3	X							
CLO 4	X					X		
CLO 5	X							
CLO 6	X				X			

12. Student responsibilities:

Student must:

- Attend at least 80% of the total periods of the course. Below this number, student will be banned from taking the final exam**.**
- Participate in team-work activities following the course's regulations;
- Self-study outside class to solve problems provided by lecturers;
- Complete all types of the course assessment.

13. Course assessment:

Assessment components	Assessment types	Assessment methods	Rubric	Weights of assessment types (%)	Weights of assessment components (%)	CLOs
A1. Formative assessment	A1.1. Quiz	P1.1. Ask and answer	R1.1. Based on the answer	W1.1. 17 %	W1. 30%	CLO 4, 5,7
	A1.2. Classroom assignment	P1.2. Exercises	R1.2. Based on the answer and scale	W1.2. 17%		CLO 1, 2, 3
	A1.3. Homework	P1.3. Collecting homework	R1.3. Based on the answer and scale	W1.3. 33%		CLO 1, 2, 3
	A1.4. Learning project	P1.4. Presentation	R1.4. Rubric for Learning project	W1.3. 33%		CLO 6, 7
A2. Mid-term exam	A2.1. Mid-term exam work	P2.1. Written exam	R2.1. Based on the answer and scale	W2.1. 100%	W2. 20%	CLO 1, 4
A3. Final exam	A3.1 Final exam work	P3.1. Written exam	R3.1. Based on the answer and scale	W3.1. 100%	W3. 50%	CLO 1, 2, 3, 4

14. Teaching and Learning plans:

Week (3 periods)	Contents	Teaching and Learning activities	Assessment types	CLOs
1	- INTRODUCTION TO PHYSICS 1. - CHAPTER 1: INTRODUCTION 1.1. Dimensions. SI units. 1.2. Significant Figures 1.3. Estimates and Order-of-Magnitude Calculations - CHAPTER 2: MOTION IN ONE DIMENSION (2+1) 2.1. Position, Displacement and Distance 2.2. Velocity and Speed 2.3. Particle Under Constant Velocity 2.4. Acceleration 2.5. Particle Under Constant Acceleration 2.6. Freely Falling Objects	**Introducing**: Teaching and learning methods, testing and evaluation methods, projects and division of the project teams. **Teaching:** - Presentation of chapters 1&2 - Give questions to discuss **In-class activities:** Ask and answer related questions. **Outside class:** - Solve problems of chapter 2 - Read chapter 3 in the textbook [1]	A1.2	CLO 1
2	CHAPTER 3: MOTION IN TWO DIMENSIONS (3+2) 3.1. The Position, Velocity, and Acceleration Vectors 3.2. Two-Dimensional Motion with Constant Acceleration 3.3. Projectile Motion 3.4. Particle in Uniform Circular Motion 3.5. Tangential and Radial Acceleration 3.6. Relative Velocity and Relative Acceleration	**Teaching:** - Presentation of chapter 3 - Give questions to discuss **In-class activities:** Ask and answer related questions. **Outside class:** - Solve problems of chapter 3 - Prepare for the presentation of problems.	A1.1 A1.2	CLO 1, 4, 5, 7
3	SOLVING EXERCISES 2 AND 3	**Teaching:** Instructions for solving problems **In-class activities:** - Present the solutions of problems; - Ask and answer related questions. **Outside class:** Read chapter 4 in the textbook [1]	A1.3	CLO 1

4	CHAPTER 4: THE LAWS OF MOTION AND APPLICATIONS (3+2) 4.1. Force and Mass 4.2. Newton's First Law 4.3. Newton's Second Law 4.4. Newton's Third Law 4.5. Normal, Frictional and Resistive Forces 4.6. General Problem-Solving Strategy	**Teaching:** - Presentation of chapter 4 - Give questions to discuss **In-class activities:** Ask and answer related questions. **Outside class:** Read chapter 5 in the textbook [1]	A1.2	CLO 1
5	CHAPTER 5: WORK and ENERGY (4+2) 5.1. Work Done by Forces 5.2. Work–Kinetic Energy Theorem 5.3. Potential Energy 5.4. Conservative and Non-conservative Forces 5.5. Conservation of Mechanical Energy	**Teaching:** - Presentation of chapter 5 - Give questions to discuss **In-class activities:** Ask and answer related questions. **Outside class:** - Read chapter 5 (cont.) in the textbook [1] - Solve problems of chapter 4 - Prepare for the presentation of problems.	A1.1 A1.2	CLO 1, 4, 5, 7
6	- CHAPTER 5: (cont.) 5.6. Conservation of Energy 5.7. Power - SOLVING PROBLEMS OF CHAPTER 4	**Teaching:** - Presentation of chapter 5 (cont.) - Give questions to discuss - Instructions for solving problems **In-class activities:** - Present the solutions of problems; - Ask and answer related questions. **Outside class:** Read chapter 6 in the textbook [1]	A1.1 A1.2 A1.3	CLO 1, 4, 5, 7
7	- CHAPTER 6: LINEAR MOMENTUM AND MOTION OF SYSTEM (3+1) 6.1. Linear Momentum and Its Theorem. 6.2. Center of Mass 6.3. Motions of Center of Mass 6.4. Conservation of Linear Momentum 6.5. Collisions 6.6. Rocket Propulsion	**Teaching:** - Presentation of chapter 6 - Give questions to discuss **In-class activities:** - Ask and answer related questions **Outside class:** Prepare for the mid-term test by - Review the knowledge of the chapters learned - Review the problems from chapters 2 to 4 - Do more similar exercises	A1.2	CLO 1

8	**Mid-term Test**	**Writing test** **Content: Chapters 2 - 4** **Outside class:** - Solve problems of chapters 5 and 6 - Prepare for the presentation of problems.	A2.1	CLO 1, 4
9	SOLVING PROBLEMS OF CHAPTERS 5 AND 6	**Teaching:** Instructions for solving problems **In-class activities:** - Present the solutions of problems; - Ask and answer related questions. **Outside class:** Read chapter 7 in the textbook [1]	A1.3	CLO 1
10	CHAPTER 7: ROTATION (4+2) 7.1. Motion of Rigid Objects 7.2. Angular Position, Velocity, and Acceleration 7.3. Rigid Object Under Constant Angular Acceleration 7.4. Torque 7.5. Equation in Rotational Motion Of Rigid Object 7.6. Work and Power in Rotational Motion 7.7. Rotational Kinetic Energy 7.8. Rolling Motion of a Rigid Object	**Teaching:** - Presentation of chapter 7 - Give questions to discuss **In-class activities:** - Ask and answer related questions **Outside class:** - Read chapter 7 (cont.) in the textbook [1] - Solve problems of chapter 7 - Prepare for the presentation of problems.	A1.1 A1.2	CLO 1, 4, 5, 7
11	- CHAPTER 7: (cont.) 7.9. Angular Momentum 7.9. Conservation of Angular Momentum - SOLVING PROBLEMS OF CHAPTER 7	**Teaching:** - Presentation of chapter 7 (cont.) - Give questions to discuss - Instructions for solving problems **In-class activities:** - Present the solutions of problems; - Ask and answer related questions. **Outside class:** Read chapters 8 and 9 in the textbook [1]	A1.1 A1.2 A1.3	CLO 1, 4, 5, 7

12	- CHAPTER 8: THE FIRST LAW OF THERMODYNAMICS (2+1) 8.1. Work, Heat and Internal Energy 8.2. The First Law of Thermodynamics 8.3. Applications of The First Law of Thermodynamics - CHAPTER 9: THE SECOND LAW OF THERMODYNAMICS (2 +1) 9.1. Heat Engines 9.2. Heat Pumps and Refrigerators	**Teaching:** - Presentation of chapters 8 and 9 - Give questions to discuss **In-class activities:** - Ask and answer related questions **Outside class:** - Read chapters 9 (cont.) and 10 in the textbook [1]	A1.1	CLO 2
13	CHAPTER 9: (cont.) 9.3. The Second Law 9.4. The Carnot Engine CHAPTER 10: INTERFERENCE OF LIGHT (2+1) 10.1. Interference in Thin Films 10.2. Air Wedge 10.3. Newton's Ring 10.4. Applications	**Teaching:** - Presentation of chapters 9 (cont.) and 10 - Give questions to discuss **In-class activities:** - Ask and answer related questions **Outside class:** - Solve problems of chapters 8 to 10 - Prepare for the presentation of problems	A1.1	CLO 2, 3
14	SOLVING PROBLEMS OF CHAPTERS 8 TO 10	**Teaching:** - Instructions for solving problems **In-class activities:** - Present the solutions of problems; - Ask and answer related questions. **Outside class:** Read chapter 11 in the textbook [1]	A1.3	CLO 2, 3
15	CHAPTER 11: DIFFRACTION PATTERNS AND POLARIZATION (3+1) 11.1. Diffraction Patterns 11.2. Diffraction Patterns from Narrow Slit 11.3. Diffraction Patterns from Grating	**Teaching:** - Presentation of chapter 11 - Give questions to discuss **In-class activities:** - Ask and answer related questions **Outside class:** - Solve problems of chapter 11	A1.1 A1.2	CLO 3, 4, 5, 7

	11.4. Diffraction of X-Rays by Crystals 11.5. Polarization of Light Waves	- Prepare for the presentation of problems and project		
16	- SOLVING PROBLEMS OF CHAPTER 11 - REPORTING PROJECTS	**Teaching:** - Instructions for solving problems **In-class activities:** - Present the solutions of problems; - Ask and answer related questions. - Present the project **Outside class:** Prepare for the final exam by - Review the knowledge of the chapters learned - Review the problems from chapters 5 to 11 - Do more similar exercises	A1.3 A1.4	CLO 3, 6, 7
17	FINAL EXAM	**- Writing test** **- Content: Chapters 5-11**	A3.1	CLO 1, 2, 3, 4

15. Course materials:

15.1. Main textbooks, course books:

[1] Tran Ngoc Hoi, Pham Van Thieu, General Physics: Principles and applications, Volume 1: Mechanics and Heat, Education Publishing House, 2006.

[2] Tran Ngoc Hoi, Pham Van Thieu, General Physics: Principles and applications, Volume 3: Optics and Quantum Physics, Education Publishing House, 2006.

15.2. References:

[1] Raymond A. Serway and Jr. J. W. Jewett, *Physics for Scientists and Engineers with Modern Physics 9th Ed.*, Cengage Learning, USA, 2014.

[2] Hugh D. Young and Roger A. Freedman, *University Physics with Modern Physics 13th Ed.*, Pearson Education, USA, 2012.

[3] Paul A. Tipler and Gene Mosca, *Physics for Scientists and Engineers 6th Ed.*, W. H. Freeman and Company, USA, 2008.

16. Scientific code of ethics:

- Students must respect their lecturers and other students.
- Students must comply with the university's academic integrity.
- Students must stricy follow the rules and regulations of the university.

17. Approved date:

18. Approved by:

Dean of Faculty	Program chair	Lecturer in charge
Cao Van Lam, PhD.	**Vo Duy Hung, PhD.**	

10. Electricity - Magnetic - Optical Experiment

THE UNIVERSITY OF DANANG
UNIVERSITY OF SCIENCE AND TECHNOLOGY
Faculty of Road and Bridge Engineering

SOCIALIST REPUBLIC OF VIETNAM
Independence - Freedom - Happiness

UNDERGRADUATE PROGRAM

Awarded degree: Undergraduate/Bachelor

Name of the study program: Construction Materials Engineering and Technology Program Code: 7510105

SYLLABUS
Course name (Vietnamese): Thí nghiệm Điện Từ – Quang
English name: Electricity - Magnetic - Optical Experiment

1. Course code:	3050660
2. Course abbreviation:	Electricity - Magnetic - Optical Experiment
3. Credits: **ECTS credits (*):**	1 1,83
4. Study workload:	*Total workload:* 15 *hours*
- Lecture:	0 periods (~ 0 hours)
- Exercise:	0 periods (~ xx hours)
- Practice/ Laboratory:	15 periods (~ 15 hours)
- Self-study/Assignment:	30 periods (~ 30 hours)
- ….	
5. Responsible persons	
- Faculty/Division in charge:	**Faculty of Physics**
- Course coordinator:	**Dinh Thanh Khan**
- Other lecturers:	- Trinh Ngoc Đat - Phan Lien - Le Vu Tryong Son
6. Required and recommended prerequisites for joining the course:	
- Required prerequisite:	No
- Recommended prerequisite:	No
- Corequisite:	No
7. Course type:	☒ Compulsory Selected elective Free elective
8. Knowledge clusters:	Math and natural science ☒ General knowledge Core engineering fundamental knowledge Disciplinary knowledge

	Supportive knowledge Project/ Internship/ Graduate thesis

9. Course description:

This course includes 05 experiments in the Electricity - Magnetic - Optical modules:
Practice 1: Become familiar with basic measuring tools
Practice 2: Measuring resistance by Wheatstone's bridge method
Practice 3: Magnetic fields in straight conductors
Practice 4: Measuring the refractive index of the glass plate with a microscope
Practice 5: Light interference and diffraction

10. Course learning outcomes (CLOs):

At the end of this course, students will be able to:

No	CLOs (1)	Knowledge (2)	Skills (3)	Attitudes (4)	Performance Indicators (PI)
1	***Analyze*** the theoretical basis of Mechanics and Thermodynamics experiments	X			1.1.4
2	***Practice*** Mechanics and Thermodynamics experiments properly and safely		X		1.1.4
3	***Analyze*** and ***interpret*** experimental results	X			1.1.4
4	***Write reports*** and ***present*** experimental results		X		1.1.4 6.1.
5	***Develop*** communication and teamwork skills		X		1.1.4
6	Show a ***positive, responsible and honest*** learning attitude			X	1.1.4 5.1.1. 5.1.2. 5.2.3.

11. Mapping of CLOs and Program learning outcomes (PLOs):

PLO	PLO1	PLO2	PLO3	PLO4	PLO5	PLO6	PLO7	PLO8
Course distribution	IT				I	I		
CLO 1	X							
CLO 2	X							
CLO 3	X							
CLO 4	X					X		
CLO 5	X							
CLO 6	X				X			

12. Student responsibilities:

Student must:

- Read the test manual carefully before coming to the laboratory.
- Must be able to design experimental procedures when entering the laboratory.
- Fully participate 100% of practice hours and report results.
- Attend the final exam.
- Actively organize self-study hours.

13. Course assessment:

Assessment components	Assessment types	Assessment methods	Rubric	Weights of assessment types (%)	Weights of assessment components (%)	CLOs
A1. Formative assessment	A1.1. Attend-ance	P1.1. Check attendance	Attend 100% of the total periods of the course	10%		CLO 6
	A1.2. Practice the experi-ments	P1.2. Check the results and attitude	R1.2 Rubric ER	10%		CLO 1,2, 3
A2. Final exam	A2.1 Presenta-tion A2.2 Final Report	P2.1. Presenta-tion P2.2. Report	R2.1 Rubric OPR R2.2. Rubric re-port	30% 50%		CLO 3,4,5 CLO 3,4

14. Teaching and Learning plans:

14.1 Teaching and Learning plans for theoretical classes:

14.2 Teaching and Learning plans for practical/ laboratory classes:

Week (4 peri-ods)	Contents	Teaching and Learning activities	Assessment types	CLOs
4	- Introduction to the course - Teaching theoretical basis and error theory - Familiarize with basic tools - Practice 1 experiment	**Instruction methods:** - Lecturers introduce to students the position and role of the subject in the program; CLOs, assessment forms and weights of assessments, course content by chapter... - Teaching the theory of experi-ments and the theory of errors. - Assign tasks to groups. **Practical activities:** - Group work on 1 experiment. Outside class activities: - Prepare for the next 2 experi-ments.	A1.1 A1.2	CLO 1,2,3, 6
5	- Practice 2 experiments	**Instruction methods:** - Assign tasks to groups. Practical activities: - Group work on 2 experiments.	A1.1 A1.2	CLO 1,2,3, 6

		Outside class activities: - Work in groups to: + Analyze and interpret experimental results. + Prepare for the final experiment.		
6	- Practice the last experiment. - Instructions for making reports and presentations.	**Instruction methods:** - Assign tasks to groups. - Instructions for making reports and presentations. **Practical activities:** - Group work on 1 experiment. **Outside class activities:** - Work in groups to: + Analyze and interpret experimental results. + Prepare for the final report and presentation.	A1.1 A1.2	CLO 1,2,3,6
7	- Presentation - Submit report	**Instruction methods:** **Practical activities:** - Presentation and discussion - Submit report	A2.1 A2.2	CLO 1,3,4,5

15. Course materials:

15.1. Main textbooks, course books:

[1] TS. Nguyen Quy Tuan, TS. Đinh Thanh Khan,TS. Dung Van Lu, TS. Mai Thi Kieu Lien, TS. Tran Thi Hong,TS. Nguyen Thi Xuan Hoai, PGS. TS. Đang Ngoc Toan, Laboratory textbook for General Physics (Mechanics, Heat, Electricity and Magnetism, Oscillation, and Optics), 2021.

15.2. References:

[1] Raymond A. Surway, John W. Jewett, Physics for scientists and engineers with modern physics, 2008

16. Scientific code of ethics:

- Students must respect their lecturers and other students.
- Students must comply with the university's academic integrity.
- Students must strictly follow the rules and regulations of the university.

17. Approved date:

18. Approved by:

Dean of Faculty	Program chair	Lecturer in charge
Cao Van Lam, PhD.	**Vo Duy Hung, PhD.**	

11. Basic Law

THE UNIVERSITY OF DANANG
UNIVERSITY OF SCIENCE AND TECHNOLOGY
Faculty of Road and Bridge Engineering

SOCIALIST REPUBLIC OF VIETNAM
Independence - Freedom - Happiness

UNDERGRADUATE PROGRAM

Awarded degree: Undergraduate/Bachelor

Name of the study program: Construction Materials Engineering and Technology Program Code: 7510105

SYLLABUS
Course name (Vietnamese): Pháp luật đại cương
English name: Basic Law

1. Course code:	2100010
2. Course abbreviation:	Basic Law
3. Credits: **ECTS credits (*):**	2 2,83
4. Study workload:	*Total workload:* xxx *hours*
- Lecture:	18 periods (~ xx hours)
- Exercise:	09 periods (~ xx hours)
- Practice/ Laboratory:	0 periods (~ xx hours)
- Self-study/Assignment:	09 periods (~ xx hours)
- ….	
5. Responsible persons	
- Faculty/Division in charge:	Faculty of Law, University of Economics
- Course coordinator:	
- Other lecturers:	
6. Required and recommended pre-requisites for joining the course:	
- Required prerequisite:	None
- Recommended prerequisite:	None
- Corequisite:	None
7. Course type:	☒ Compulsory Selected elective Free elective
8. Knowledge clusters:	Math and natural science ☒ General knowledge Core engineering fundamental knowledge Disciplinary knowledge Supportive knowledge Project/ Internship/ Graduate thesis

9. Course description:

This course aims to equip learners with the most basic knowledge about the State and the Law.

The basic content of the course includes: General issues on the State and the Law such as the State apparatus, the legal norm and legal relations, law violations. In addition, this course also provides learners some basic knowledge about anti-corruption.

10. Course learning outcomes (CLOs):

At the end of this course, students will be able to:

No	CLOs (1)	Knowledge (2)	Skills (3)	Attitudes (4)	Performance Indicators (PI)
1	Analyse the basis issues about the State and the Law.	A2			1.5.3.
2	Compare state agencies in the State apparatus of Vietnam.	A5	B4		1.5.3.
3	Analyse legal issues, legal relations, legal violations, implement laws and legal responsibilities.		B2		1.5.3.
4	Present issues of legal system, legal awareness and legislation			C4	1.5.3. 4.1.
5	Evaluate corruption prevention issues				1.5.3. 3.2 4.1.

11. Mapping of CLOs and Program learning outcomes (PLOs):

PLO	PLO1	PLO2	PLO3	PLO4	PLO5	PLO6	PLO7	PLO8
Course distribution	IT		T	T				
CLO 1	X							
CLO 2	X							
CLO 3	X							
CLO 4	X			X				
CLO 5	X		X	X				

12. Student responsibilities:

Student must:

- Attend at least 80% of the total periods of the course. Below this number, student will be banned from taking the final exam**.**
- Participate in team-work activities following the course's regulations;
- Self-study outside class to solve problems provided by lecturers;
- Complete all types of the course assessment.

13. Course assessment:

Assessment components	Assessment types	Assessment methods	Rubric	Weights of assessment types (%)	Weights of assessment components (%)	CLOs
A1. Formative assessment	A1.1. Attendance	P1.1. Check attendance	Attend at least 80% of the total periods of the course	W1.1. 20%	W1. 20%	CLO 1,2,3
A2. Mid-term exam	A2.1. Mid-term exam work	P2.1. Written exam	R2.1.	W2. 20%	W2 20%	CLO 4,5
A3. Final exam	A3.1 Final exam work	P3.1. Written exam	R3.1.	W3.1. 60%	W3 60%	CLO 1,2,3,4,5

14. Teaching and Learning plans:

Week (2 periods)	Contents	Teaching and Learning activities	Assessment types	CLOs
1	Chapter 1: 1.1. The origin, nature, concept and characteristic of the state 1.1.1. The origin and nature 1.1.2 The concept and characteristic 1.2 Type and form of the government 1.2.1 Type of the government 1.2.2 Form of the government	**Teaching:** 1.1. The origin, nature, concept and characteristic of the state **In-class activities:** 1.2 Type and form of the government **Outside class:**	A1.1, A1.2 A2.1 A3.1	CLO1,2
2	Chapter 2 2.1. The principles of organization and operation of the Government Apparatus of The Socialist Republic of Vietnam 2.1.1. Principle that all government powers belong to the people 2.1.2. Principle that Communist Party of Vietnam guides the government	**Teaching:** 2.1. The principles of organization and operation of the Government Apparatus of The Socialist Republic of Vietnam **In-class activities:** 2.2. The system of authorities in the Government	A1.1, A1.2	CLO3

	2.1.3. Principle of centralized democracy 2.1.4. Principle of equality, solidarity and help among peoples 2.1.5. Principle of socialist legislation 2.2. The system of authorities in the Government apparatus of the Socialist Republic of Vietnam 2.2.1. System of power authority 2.2.2. System of management authority 2.2.3. System of judgment authority 2.2.4. System of investigation authority 2.2.5. President	apparatus of the Socialist Republic of Vietnam **Outside class:**		
3	Chapter 3 3.1. The origin, nature, concept and characteristic of the law 3.1.1. Origin and nature 3.1.2. Concept and characteristic 3.2. Type and form of the law 3.2.1. Type of the law 3.2.2. Form of the law	**Teaching:** 3.1. The origin, nature, concept and characteristic of the law **In-class activities:** 3.2. Type and form of the law **Outside class:**	A1.1, A1.2 A2.1 A3.1	CLO3
4	Chapter 4 4.1. Legal norm 4.1.1. Concept and characteristic 4.1.2. Structure 4.1.3. Expression method 4.2. Legal relationship 4.2.1. Concept and characteristic 4.2.2. Classification	**Teaching:** 4.1. Legal norm 4.2. Legal relationship **In-class activities:** 4.3. The system of legal documents of the Socialist Republic of Vietnam **Outside class:**	A1.1, A1.2 A2.1 A3.1	CLO3

	4.2.3. The structure of the legal relationship 4.2.4. The bases give rise to, change or terminate the legal relationship 4.3. The system of legal documents of the Socialist Republic of Vietnam 4.3.1. Concept and characteristics 4.3.2. Contents of legal documents 4.3.3. Effectiveness of legal documents			
5	Chapter 5 5.1. Implementation of the law 5.1.1. Concept 5.1.2. Forms of implementation of the law 5.1.3. Regulations on the application of laws 5.2. Breaking the law 5.2.1. Concept and characteristics 5.2.2. Constituents violate the law 5.2.3. Types of offenses 5.3. Legal liability 5.3.1. Concept and characteristics 5.3.2. Types of liability	**Teaching:** 5.1. Implementation of the law 5.2. Breaking the law **In-class activities:** 5.3. Legal liability **Outside class:**	A1.1, A1.2 A2.1 A3.1	CLO3

6	Chapter 6 6.1. Law systems 6.1.1. Concept 6.1.2. Components 6.1.3. Grounds for the delineation of the law 6.1.4. Legalize the system 6.2. Legal knowledge 6.2.1. Concept and characteristics 6.2.2. Structure and classification 6.2.3. The relationship between legal consciousness and the law 6.3. Legislation 6.3.1. Concept 6.3.2. Principles of legislation	**Teaching:** 6.1. Law systems 6.2. Legal knowledge **In-class activities:** 6.3. Legislation **Outside class:**		

7	7.1. Concepts, characteristics and acts of corruption 7.1.1. Concepts 7.1.2. Characteristics 7.1.3. Acts of corruption and crime on corruption 7.2. Causes and consequences of corruption 7.2.1. Causes of corruption 7.2.2. Consequences of corruption 7.3. The importance of anti-corruption 7.3.1. Contribute to protecting the regime, building the rule of law 7.3.2. Contribute to economic growth, improve people's lives 7.3.3. Contribute to the maintenance of traditional ethical values, to healthy social relations 7.3.4. Contributing to strengthening the people's belief in the regime and the law 7.4. Responsibility to prevent corruption 7.4.1. Responsibility of citizens 7.4.2. Responsibilities of cadres, civil servants and officials	**Teaching:** 7.1. Concepts, characteristics and acts of corruption 7.2. Causes and consequences of corruption **In-class activities:** 7.3. The importance of anti-corruption 7.4. Responsibility to prevent corruption **Outside class:**		
8	Final exal (written exam, 90 mins)		A3.1	CLO 1,2,3,4,5

15. Course materials:

15.1. Main textbooks, course books:

[1] Le Thi Thu Hang (2019), General Law Textbook, Vietnam Education Publishing House.

[2] Hoang Thi Kim Que (2015), Textbook of Theory of State and Law, Hanoi National University Publishing House.

[3] Relevant legal documents.

16. Scientific code of ethics:

- Students must respect their lecturers and other students.
- Students must comply with the university's academic integrity.
- Students must strictly follow the rules and regulations of the university.

17. Approved date:

18. Approved by:

Dean of Faculty	Program chair	Lecturer in charge
Cao Van Lam, PhD.	**Vo Duy Hung, PhD.**	

12. English Elementary A2.2

THE UNIVERSITY OF DANANG
UNIVERSITY OF SCIENCE AND TECHNOLOGY
Faculty of Road and Bridge Engineering

SOCIALIST REPUBLIC OF VIETNAM
Independence - Freedom - Happiness

UNDERGRADUATE PROGRAM

Awarded degree: Undergraduate/Bachelor

Name of the study program: Construction Materials Engineering and Technology Program Code: 7510105

SYLLABUS
Course name (Vietnamese): Anh văn A2.2
English name: English Elementary A2.2

1. Course code:	4130311
2. Course abbreviation:	English Elementary A2.2
3. Credits: **ECTS credits (*):**	04 5,67
4. Study workload:	*Total workload:* 150 *hours*
- Lecture:	60 periods (~ 50 hours)
- Exercise:	
- Practice/ Laboratory:	
- Self-study/Assignment:	120 periods (~ 100 hours)
- ….	
5. Responsible persons	
- Faculty/Division in charge:	Faculty of English for specific purposes
- Course coordinator:	M.A. Le Thi Hai Yen
- Other lecturers:	M.A. Le Thi Hai Yen, M.A. Ho Le Minh Nghi
6. Required and recommended prerequisites for joining the course:	
- Required prerequisite:	Students have achieved level 1 (A1)
- Recommended prerequisite:	English Elementary 1
- Corequisite:	
7. Course type:	☒ Compulsory Selected elective Free elective
8. Knowledge clusters:	Math and natural science ☒ General knowledge Core engineering fundamental knowledge Disciplinary knowledge Supportive knowledge Project/ Internship/ Graduate thesis

9. Course description:

The course integrates four language skills of Listening, Speaking, Reading and Writing, for learners to develop and perfect their English skills at elementary level. The course includes 5 units with lessons, providing the students with knowledge of grammar, vocabulary, pronunciation to practice language skills on familiar topics. After each lesson at school, students can practice intensively with references and online resources.

10. Course learning outcomes (CLOs):

At the end of this course, students will be able to:

No	CLOs (1)	Knowledge (2)	Skills (3)	Attitudes (4)	Performance Indicators (PI)
1	Understand and demonstrate basic knowledge related to English vocabulary, pronunciation, and grammar at the elementary level.	A2. Understand			1.6.2. 6.2.
2	Apply knowledge to comprehensively listen and read the main ideas of a description, a conversation on topics related to daily life or past events.		B2. Apply		1.6.2. 6.2. 5.2.3. 5.2.6.
3	Communicate, describe issues, briefly express personal opinions on familiar topics related to study, job, tourism or past events.		B2. Apply		1.6.2. 6.2. 5.2.3. 5.2.6.
4	Write messages, thank-you letters, and short emails related to familiar topics.		B2. Apply		1.6.2. 6.2. 5.2.3.
5	Develop a sense of self-study, self-training to complete learning goals, and a sense of responsibility for the assigned work.			C4. Organize	1.6.2. 5.1.1. 5.1.2

11. Mapping of CLOs and Program learning outcomes (PLOs):

PLO	PLO1	PLO2	PLO3	PLO4	PLO5	PLO6	PLO7	PLO8
Course distribution	IT				I	I		
CLO 1	X					X		
CLO 2	X				X	X		
CLO 3	X				X	X		
CLO 4	X				X	X		
CLO 5	X				X			
CLO 6	X					X		

12. Student responsibilities:

Student must:

- Attend at least 80% of the total periods of the course, and finish at least 80% of the amount of online homework. Below this number, student will be banned from taking the final exam**.**
- Participate in team-work activities following the course's regulations;
- Self-study outside class to solve problems provided by lecturers;
- Complete all types of the course assessment.
- Show an honest and serious attitude; do not copy, cheat or use documents during the test.

13. Course assessment:

Assessment components	Assessment types	Assessment methods	Rubric	Weights of assessment types (%)	Weights of assessment components (%)	CLOs
A1. Formative assessment	A1.1. Attendance/ Presentation	P1.1. Check attendance/ oral presentation	Attend at least 80% of the total periods of the course	W1.1. 50%	W1	CLO 1,2,3,4,5
	A1.2. Assignment	P1.2. Exercises	R1.2.	W1.2. 50%		CLO 1,2,3,4,5
A2. Mid-term exam	A2.1. Mid-term exam work	P2.1. Written exam/ Speaking test	R2.1.	W2. 100%	W2	CLO 1,2.3.4
A3. Final exam	A3.1 Final exam work	P3.1. Written exam and Speaking test	R3.1.	W3.1. 100%	W3	CLO 1,2,3,4

14. Teaching and Learning plans:

Week (4 periods)	**Contents**	**Teaching and Learning activities**	**Assessment types**	**CLOs**
1	**Unit 6: Past lives** - Famous faces - Visiting the past - Lifelogging	**Teaching:** - Hold class familiarization activities - Introduce the detailed course syllabus - Lecture, present, explain the topics, ask students to work in pairs or groups, correct the exercises and give feedback **In-class activities:** - Listen to lectures, and take notes, - participate in group/pair discussions, - do exercises, present the topic **Outside class:** - Review and do homework - Prepare lesson, read materials the lecturer has requested	A1.1, A1.2	CLO 1, 2,3,5

2	**Unit 6: Past lives** - How was your evening? - Thanks!	**Teaching:** - Warm-up - Lecture, present, explain the topics, ask students to work in pairs or groups, correct the exercises and give feedback **In-class activities:** - Listen to lectures, and take notes, - participate in group/pair discussions, - do exercises, present the topic **Outside class:** - Review and do homework - Prepare lesson, read materials the lecturer has requested	A1.1, A1.2	CLO 1, 2,3,4,5
3	**Unit 7: Journeys** - Animal journeys - The deepest place on Earth - Review and Memory Booster Unit 6	**Teaching:** - Warm-up - Lecture, present, explain the topics, ask students to work in pairs or groups, correct the exercises and give feedback **In-class activities:** - Listen to lectures, and take notes, - participate in group/pair discussions, - do exercises, present the topic **Outside class:** - Review and do homework - Prepare lesson, read materials the lecturer has requested	A1.1, A1.2	CLO 1, 2,3,4,5
4	**Unit 7: Journeys** - Visit Colombia! - Travel money	**Teaching:** - Warm-up - Lecture, present, explain the topics, ask students to work in pairs or groups, correct the exercises and give feedback **In-class activities:** - Listen to lectures, and take notes, - participate in group/pair discussions, - do exercises, present the topic **Outside class:** - Review and do homework - Prepare lesson, read materials the lecturer has requested	A1.1, A1.2	CLO 1, 2,3,5
5	**Unit 7: Journeys** - The end of the road - Review and Memory Booster Unit 7	**Teaching:** - Warm-up - Lecture, present, explain the topics, ask students to work in pairs or groups, correct the exercises and give feedback **In-class activities:** - Listen to lectures, and take notes, - participate in group/pair discussions, - do exercises, present the topic **Outside class:** - Review and do homework	A1.1, A1.2	CLO 1, 2,3,4,5

		- Prepare lesson, read materials the lecturer has requested		
6	**Unit 8: Appearance** - Global fashions - People at festivals - Pink and blue	**Teaching:** - Warm-up - Lecture, present, explain the topics, ask students to work in pairs or groups, correct the exercises and give feedback **In-class activities:** - Listen to lectures, and take notes, - participate in group/pair discussions, - do exercises, present the topic **Outside class:** - Review and do homework - Prepare lesson, read materials the lecturer has requested	A1.1, A1.2	CLO 1, 2,3,4,5
7	**Unit 8: Appearance** - The photos of Reinier Gerritsen - Short and simple	**Teaching:** - Warm-up - Lecture, present, explain the topics, ask students to work in pairs or groups, correct the exercises and give feedback **In-class activities:** - Listen to lectures, and take notes, - participate in group/pair discussions, - do exercises, present the topic **Outside class:** - Review and do homework - Prepare lesson, read materials the lecturer has requested	A1.1, A1.2	CLO 1, 2,3,5
8	**Unit 8: Appearance** - Review and Memory Booster Unit 8 - MID-TERM TEST	**Teaching:** - Warm-up - Lecture, present, explain the topics, ask students to work in pairs or groups, correct the exercises and give feedback **In-class activities:** - Listen to lectures, and take notes, - participate in group/pair discussions, - do exercises, present the topic **Outside class:** - Review and do homework - Prepare lesson, read materials the lecturer has requested	A1.1, A1.2 A2.1	CLO 1, 2,3,4,5
9	**Unit 9: Entertainment** - The Tallgrass film festival - What's the future for TV? - Nature in art	**Teaching:** - Warm-up - Lecture, present, explain the topics, ask students to work in pairs or groups, correct the exercises and give feedback **In-class activities:** - Listen to lectures, and take notes, - participate in group/pair discussions, - do exercises, present the topic	A1.1, A1.2	CLO 1, 2,3,4,5

		Outside class: - Review and do homework - Prepare lesson, read materials the lecturer has requested		
10	**Unit 9: Entertainment** - Making arrangements - It looks amazing! - Review and Memory Booster Unit 9	**Teaching:** - Warm-up - Lecture, present, explain the topics, ask students to work in pairs or groups, correct the exercises and give feedback **In-class activities:** - Listen to lectures, and take notes, - participate in group/pair discussions, - do exercises, present the topic **Outside class:** - Review and do homework - Prepare lesson, read materials the lecturer has requested	A1.1, A1.2	CLO 1, 2,3,4,5
11	**Unit 10: Learning** - What have we learned? - How good is your memory? - Good learning habits	**Teaching:** - Warm-up - Lecture, present, explain the topics, ask students to work in pairs or groups, correct the exercises and give feedback **In-class activities:** - Listen to lectures, and take notes, - participate in group/pair discussions, - do exercises, present the topic **Outside class:** - Review and do homework - Prepare lesson, read materials the lecturer has requested	A1.1, A1.2	CLO 1, 2,3,4,5
12	**Unit 10: Learning** - Communication problems - Please leave a message after the tone	**Teaching:** - Warm-up - Lecture, present, explain the topics, ask students to work in pairs or groups, correct the exercises and give feedback **In-class activities:** - Listen to lectures, and take notes, - participate in group/pair discussions, - do exercises, present the topic **Outside class:** - Review and do homework - Prepare lesson, read materials the lecturer has requested	A1.1, A1.2	CLO 1, 2,3,4,5
13	**Unit 11: Tourism** - Planning a trip - On holiday - Review and Memory Booster Unit 10	**Teaching:** - Warm-up - Lecture, present, explain the topics, ask students to work in pairs or groups, correct the exercises and give feedback **In-class activities:** - Listen to lectures, and take notes,	A1.1, A1.2	CLO 1, 2,3,4,5

		- participate in group/pair discussions, - do exercises, present the topic **Outside class:** - Review and do homework - Prepare lesson, read materials the lecturer has requested		
14	**Unit 11: Toursim** - Should I go there? - A holiday in South America	**Teaching:** - Warm-up - Lecture, present, explain the topics, ask students to work in pairs or groups, correct the exercises and give feedback **In-class activities:** - Listen to lectures, and take notes, - participate in group/pair discussions, - do exercises, present the topic **Outside class:** - Review and do homework - Prepare lesson, read materials the lecturer has requested	A1.1, A1.2	CLO 1, 2,3,4,5
15	**Unit 11: Tourism** - A questionnaire - Review and Memory Booster - Revision	**Teaching:** - Warm-up - Lecture, present, explain the topics, ask students to work in pairs or groups, correct the exercises and give feedback **In-class activities:** - Listen to lectures, and take notes, - participate in group/pair discussions, - do exercises, present the topic **Outside class:** Review and do homework	A1.1, A1.2	CLO 1, 2,3,4,5

15. Course materials:

15.1. Main textbooks, course books

[1]. [HUGES J., STEPHESON H., & DUMMETT P., 2019] Life A1-A2 Student's Book, 2nd Edition, National Geographic Learning, Cengage Learning Inc.

15.2. References

[1]. [HUGES J., STEPHESON H., & DUMMETT P., 2014] Life A1-A2 Work Book, National Geographic Learning, Cengage Learning Inc.

[2]. [RAYMOND M., 2015] Essential Grammar in Use, 4th edition, Cambridge University Press.

[3]. [MICHAEL M., FELLICITY O'DELL, 2017], English Vocabulary in Use – Elementary, 3rd edition, Cambridge University Press.

15.3. Online learning resources

- Resources for learning and practicing English on MytimeEnglish online account of UD;
- Resources for learning and practicing English at Student Web App - Life Elementary
- Resources for learning and practicing English on Life Elementary's online account at MyELT - Cengage Learning

16. Scientific code of ethics:

- Students must respect their lecturers and other students.
- Students must comply with the university's academic integrity.
- Students must strictly follow the rules and regulations of the university.

17. Approved date:

18. Approved by:

Dean of Faculty	Program chair	Lecturer in charge
Cao Van Lam, PhD.	**Vo Duy Hung, PhD.**	

13. Physics 2

THE UNIVERSITY OF DANANG
UNIVERSITY OF SCIENCE AND TECHNOLOGY
Faculty of Road and Bridge Engineering

SOCIALIST REPUBLIC OF VIETNAM
Independence - Freedom - Happiness

UNDERGRADUATE PROGRAM

Awarded degree: Undergraduate/Bachelor

Name of the study program: Construction Materials Engineering and Technology

Program Code: 7510105

SYLLABUS
Course name (Vietnamese): Vật lí 2
English name: Physics 2

1. Course code:	3050641
2. Course abbreviation:	Physics 2
3. Credits: **ECTS credits (*):**	3 4,25
4. Study workload:	*Total workload:* 45 *hours*
- Lecture:	27 periods (~ 27 hours)
- Exercise:	18 periods (~ 18 hours)
- Practice/ Laboratory:	0 periods (~ 0 hours)
- Self-study/Assignment:	90 periods (~ 90 hours)
5. Responsible persons	
- Faculty/Division in charge:	Facuy of Physics
- Course coordinator:	Dinh Thanh Khan
- Other lecturers:	1. Associate. Prof. PhD. Nguyen Van Hieu 2. PhD. Nguyen Quy Tuan 3. PhD. Nguyen Thi Xuan Hoai 4. PhD. Dung Van Lu 5. PhD. Mai Thi Kieu Lien 6. PhD. Nguyen Thi My Đuc 7. Ms. Le Van Thanh Son 8. PhD. Phung Viet Hai 9. PhD. Hoang Đinh Trien 10. PhD. Tran Thi Hong 11. PhD. Nguyen Ba Vu Chinh 12. PhD. Tran Quynh
6. Required and recommended prerequisites for joining the course:	
- Required prerequisite:	NA

- Recommended prerequisite:	Physics 1
- Corequisite:	NA
7. Course type:	☒ Compulsory Selected elective Free elective
8. Knowledge clusters	☒ Math and natural science General knowledge Core engineering fundamental knowledge Disciplinary knowledge Supportive knowledge Project/ Internship/ Graduate thesis

9. Course description:

Physics 2 provides learners with knowledge of Electricity, Magnetism, and Modern physics. The course helps learners to study important content such as:

- Properties of electric field, electric potential energy and electric potential;
- Properties of magnetic field, sources of magnetic field;
- Laws of conduction;
- The basic concepts and laws in modern physics.

In addition, the course also helps learners develop communication and teamwork skills.

10. Course learning outcomes (CLOs):

At the end of this course, students will be able to:

No	CLOs (1)	Knowledge (2)	Skills (3)	Attitudes (4)	Performance Indicators (PI)
1	Determine the electric field, electric potential and electric potential energy of charged materials	X			1.1.4
2	Determine the magnetic field, magnetic force and magnetic energy caused by moving charges and curents	X			1.1.4
3	Apply knowledge of quantum physics to solve problems related to thermal radiation, photon, potential wells and atoms;	X			1.1.4
4	Explain common phenomena related to Electricity, Magnetism, and Modern physics;	X			1.1.4
5	Think critically and creatively;		X		1.1.4 6.1.
6	Work in a team and communicate (written and oral);		X		1.1.4
7	Demonstrate positive, proactive and responsible learning attitude.			X	5.1.1. 5.1.2. 5.2.3.

11. Mapping of CLOs and Program learning outcomes (PLOs):

PLO	PLO1	PLO2	PLO3	PLO4	PLO5	PLO6	PLO7	PLO8
Course distribution	I	IT			I			
CLO 1	X	X						
CLO 2		X						
CLO 3	X	X						
CLO 4		X						
CLO 5		X			X			
CLO 6					X			
CLO7	I	IT			I			

12. Student responsibilities:

Student must:

- Attend at least 80% of the total periods of the course. Below this number, student will be banned from taking the final exam**.**
- Participate in team-work activities following the course's regulations;
- Self-study outside class to solve problems provided by lecturers;
- Complete all types of the course assessment.

13. Course assessment:

Assessment components	Assessment types	Assessment methods	Rubric	Weights of assessment types (%)	Weights of assessment components (%)	CLOs
A1. Formative assessment	A1.1. Quiz	P1.1. Ask and answer	R1.1. Based on the answer	W1.1. 17 %	W1. 30%	CLO 4, 5,7
	A1.2. Classroom assignment	P1.2. Exercises	R1.2. Based on the answer and scale	W1.2. 17%		CLO 1, 2, 3
	A1.3. Homework	*P1.3. Collecting homework*	R1.3. Based on the answer and scale	W1.3. 33%		CLO 1, 2, 3
	A1.4. Learning project	P1.4. Presentation	R1.4. Rubric for Learning project	W1.3. 33%		CLO 6, 7
A2. Mid-term exam	A2.1. Mid-term exam work	P2.1. Written exam	R2.1. Based on the answer and scale	W2.1. 100%	W2. 20%	CLO 1, 4
A3. Final exam	A3.1 Final exam work	P3.1. Written exam	R3.1. Based on the answer and scale	W3.1. 100%	W3. 50%	CLO 1, 2, 3, 4

14. Plan of teaching and learning activities

Week (3 periods)	Contents	Teaching and Learning activities	Assessment types	CLOs
1	- Introduction - CHAPTER 1: COULOMB'S LAW AND ELECTROSTATIC FIELD (3T+2P) 1.1. Electric charge and matter 1.2. Coulomb's Law 1.3. Electric field lines 1.4. Superposition of electric field and applications 1.5. Motion of a charged particle in an electric field	*Lecturer's activities: - Preparing some questions on background related to CHAPTER 1 in order to check the learners' input. - Introduction of projects - Divide the project team - Teaching chapter 1 * Student's activities: - In class: + Participate in learning activities as requested by the lecturer. - Self learning: + Solve problems of chapter 1 + Read in advance the content of chapter 16, chapters 17 and 18 in the textbook [1]	A1.2	CLO 1
2	CHAPTER 2: GAUSS'S LAW (1T+1P) 2.1. Electric Flux 2.2. Gauss's law 2.3. Application of Gauss's law CHAPTER 3: ELECTRIC POTENTIAL (2T+2P) 3.1. Electric potential energy 3.2. Electric potential 3.3. Electric potential difference 3.4. Relationship between electric field and potential 3.5. Equipotential surfaces	* Lecturer's activities: - Teaching chapters 2 and 3 * Student's activities: - In class: + Participate in learning activities as requested by the lecturer. - Self learning: + Solve problems of chapters 2 and 3	A1.1 A1.2	CLO 1, 4, 5, 7
3	SOLVING PROBLEMS OF CHAPTERS 1 AND 2	* Lecturer's activities: - Guide to solve problems * Student activities: - In class: + Show how to solve the assigned problems; + Ask and answer related questions. - Self-study: Read CHAPTER 19 in the textbook [1]	A1.3	CLO1

4	CHAPTER 4: CAPACITANCE AND DIELECTRICS (2T+0P) 4.1. Induced charging 4.2. Capacitor and capacitance 4.3. Electric energy and energy density 4.4. Dielctrics and its applications	* Lecturer's activities: - Teaching chapters 2 and 3 * Student's activities: - In class: + Participate in learning activities as requested by the lecturer.	A1.2	CLO 1
	SOLVING PROBLEMS OF CHAPTER 3	* Lecturer's activities: - Guide to solve problems * Student activities: - In class: + Show how to solve the assigned problems; + Ask and answer related questions. - Self-study: Read CHAPTER 21 in the textbook [1]	A1.3	CLO1
5	CHAPTER 5: MAGNETIC FIELDS (3T+2P) 5.1. Magnetic field and magnetic force 5.2. Magnetic force acting on current-carring conductor 5.3. Torque on current loop 5.4. Motion of a charged particle in a magnetic field	* Lecturer's activities: - Teaching chapter 5 * Student's activities: - In class: + Participate in learning activities as requested by the lecturer. - Self learning: + Solve problems of chapters 5 + Read CHAPTER 19 in the textbook [1]	A1.2	CLO 2
6	SOLVING PROBLEMS OF CHAPTER 5	* Lecturer's activities: - Guide to solve problems * Student activities: - In class: + Show how to solve the assigned problems; + Ask and answer related questions. - Self-study: Read CHAPTER 22 in the textbook [1]	A1.3	CLO2
7	CHAPTER 6: SOURCE OF THE MAGNETIC FIELD (3T+2P) 6.1. The Biot-Savart's Law	* Lecturer's activities: - Teaching chapter 6 * Student's activities: - In class: + Participate in learning activities as requested by the lecturer. - Self learning: + Review chapters 1 to 5	A1.1 A1.2	CLO 2, 4, 5, 7

	6.2. The magnetic force between two parallel conductors 6.3. Ampere's law and applications 6.4. Magnetic flux and Gauss's law in magnetic field			
8	MID-TERM EXAM	- Exam Form: Writing - Contents: CHAPTERS 1-5 - Self-study: CHAPTERS 23 and 25 in textbook [1]	A2.1	CLO 1, 2, 4
9	CHAPTER 7: FARADAY'S LAW (2T+2P) 7.1. Faraday's law of induction 7.2. Motional emf 7.3. Lenz's law 7.4. Induced electric field CHAPTER 8: MAGNETISM IN MATTER (2T+0P) 8.1. Magnetic moment of atoms 8.2. Ferromagnetism, Paramagnetism, Diamagnetism	* Lecturer's activities: - Teaching chapters 7 and 8 * Student's activities: - In class: + Participate in learning activities as requested by the lecturer. - Self learning: + Solve problems of chapters 7 and 8	A1.2	CLO 2
10	SOLVING PROBLEMS OF CHAPTER 6 AND 7	* Lecturer's activities: - Guide to solve problems * Student activities: - In class: + Show how to solve the assigned problems; + Ask and answer related questions. - Self-study: Read CHAPTER 36 in the textbook [2]	A1.3	CLO2
11	CHAPTER 9: QUANTUM OPTICS (2T+1P) 9.1. Interaction of light and matter 9.2. Kirchhoff's law 9.3. Blackbody Radiation 9.4. The photoelectric effect 9.5. Photon	* Lecturer's activities: - Teaching chapter 9 * Student's activities: - In class: + Participate in learning activities as requested by the lecturer. - Self learning: + Solve problems of chapter 9 + Read CHAPTER 37 in the textbook [2]	A1.2	CLO 3

12	CHAPTER 10: QUANTUM MECHANICS (3T+1P) 10.1. de Broglie wave 10.2. Particle-wave duality 10.3. The Heisenberg's uncertainty principle 10.4. The wave function 10.5. The Schrodinger's equation 10.5. A particle in a well of finite height	* Lecturer's activities: - Teaching chapter 10 * Student's activities: - In class: + Participate in learning activities as requested by the lecturer. - Self learning: + Solve problems of chapter 10 + Read CHAPTER 38 in the textbook [2]	A1.1 A1.2	CLO 3, 4, 5, 7
13	SOLVING PROBLEMS OF CHAPTERS 9 AND 10 CHAPTER 11. ATOMIC PHYSICS (4T+2P) 11.1. The Hydrogen atom 11.2. The alkali metal atoms	* Lecturer's activities: - Guide to solve problems of chapters 9 and 10 - Teaching chapter 11 * Student activities: - In class: + Show how to solve the assigned problems; + Ask and answer related questions. - Self-study: Read CHAPTER 38 (cont.) in the textbook [2]	A1.1 A1.2 A1.3	CLO 3, 4, 5, 7
14	CHAPTER 11. ATOMIC PHYSICS (cont.) (4T+2P) 11.3. Quantization of angular moment and magnetic moment. Zeeman's effect. 11.4. Spin of electron 11.5. The quantum model of the hydrogen atom 11.5. Pauli's and energy principles	* Lecturer's activities: - Teaching chapter 11 (cont.) * Student's activities: - In class: + Participate in learning activities as requested by the lecturer. - Self learning: + Solve problems of chapter 11	A1.1 A1.2	CLO 3, 4, 5, 7
15	SOLVING PROBLEMS OF CHAPTER 11	* Lecturer's activities: - Guide to solve problems of chapter 11 * Student activities: - In class: + Show how to solve the assigned problems; + Ask and answer related questions. - Self-study: Prepare for the project report	A1.3	CLO2
16	REPORTING PROJECTS	* Lecturer's activities: - Guide and organize the project report * Student activities:	A1.4	CLO 6, 7

		- In class: + Present the project; + Ask and answer related questions. - Self-study: Review chapters 6 to 11 for the final exam		
17	FINAL EXAM	- Exam Form: Writing - Contents: CHAPTERS 6 - 11	A3.1	CLO 2, 3, 4

15. Course materials:

15.1. Main textbooks, course books:

[1] Tran Ngoc Hoi, Pham Van Thieu, General physics: Principles and applications, Volume 2: Electromagnetism, oscillations and waves, Education Publishing House, 2006.

[2] Tran Ngoc Hoi, Pham Van Thieu, General Physics: Principles and applications, Volume 3: Optics and Quantum Physics, Education Publishing House, 2006.

15.2. References:

[1] Raymond A. Serway and Jr. J. W. Jewett, *Physics for Scientists and Engineers with Modern Physics 9th Ed.*, Cengage Learning, USA, 2014.

[2] Hugh D. Young and Roger A. Freedman, *University Physics with Modern Physics 13th Ed.*, Pearson Education, USA, 2012.

[3] Paul A. Tipler and Gene Mosca, *Physics for Scientists and Engineers 6th Ed.*, W. H. Freeman and Company, USA, 2008.

16. Scientific code of ethics:

- Students must respect their lecturers and other students.
- Students must comply with the university's academic integrity.
- Students must stricy follow the rules and regulations of the university.

17. Approved date:

18. Approved by:

Dean of Faculty	Program chair	Lecturer in charge
Cao Van Lam, PhD.	**Vo Duy Hung, PhD.**	

14. Mechanics and Thermodynamics Experiment

THE UNIVERSITY OF DANANG
UNIVERSITY OF SCIENCE AND TECHNOLOGY
Faculty of Road and Bridge Engineering

SOCIALIST REPUBLIC OF VIETNAM
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UNDERGRADUATE PROGRAM

Awarded degree: Undergraduate/Bachelor

Name of the study program: Construction Materials Engineering and Technology Program Code: 7510105

SYLLABUS
Course name (Vietnamese): Thí nghiệm Cơ – Nhiệt
English name: Mechanics and Thermodynamics Experiment

1. Course code:	3050670
2. Course abbreviation:	Mechanics and Thermodynamics Experiment
3. Credits: **ECTS credits (*):**	1 1,83
4. Study workload:	*Total workload:* 15 *hours*
- Lecture:	0 periods (~ 0 hours)
- Exercise:	0 periods (~ xx hours)
- Practice/ Laboratory:	15 periods (~ 15 hours)
- Self-study/Assignment:	30 periods (~ 30 hours)
- ….	
5. Responsible persons	
- Faculty/Division in charge:	**Faculty of Physics**
- Course coordinator:	**Dinh Thanh Khan**
- Other lecturers:	- Trinh Ngoc Đat - Phan Lien - Le Vu Tryong Son
6. Required and recommended prerequisites for joining the course:	
- Required prerequisite:	No
- Recommended prerequisite:	No
- Corequisite:	No
7. Course type:	☒ Compulsory Selected elective Free elective
8. Knowledge clusters	☒ Math and natural science General knowledge Core engineering fundamental knowledge Disciplinary knowledge

	Supportive knowledge Project/ Internship/ Graduate thesis

9. Course description:

This course includes 05 experiments in the Mechanics and Thermodynamics modules:
Practice 1: Become familiar with basic measuring tools
Practice 2: Determining the coefficient of sliding friction using an inclined plane
Practice 3: Measuring the moment of inertia of a solid using the oscillation method
Practice 4: Measuring the viscosity coefficient of a liquid using the Stokes . method
Practice 5: Measuring the thermal expansion coefficient of a solid

10. Course learning outcomes (CLOs):

At the end of this course, students will be able to:

No	CLOs (1)	Knowledge (2)	Skills (3)	Attitudes (4)	Performance Indicators (PI)
1	***Analyze*** the theoretical basis of Mechanics and Thermodynamics experiments	X			1.1.4 2.1.
2	***Practice*** Mechanics and Thermodynamics experiments properly and safely		X		2.1.
3	***Analyze*** and ***interpret*** experimental results	X			1.1.4 2.1.
4	***Write reports*** and ***present*** experimental results		X		2.1.
5	***Develop*** communication and teamwork skills		X		2.1. 5.1.1. 5.1.2.
6	Show a ***positive, responsible and honest*** learning attitude			X	2.1. 5.2.3.

11. Mapping of CLOs and Program learning outcomes (PLOs):

PLO	PLO1	PLO2	PLO3	PLO4	PLO5	PLO6	PLO7	PLO8
Course distribution	I	IT			I			
CLO 1	X	X						
CLO 2		X						
CLO 3	X	X						
CLO 4		X						
CLO 5		X			X			
CLO 6					X			

12. Student responsibilities:

Student must:
- Read the test manual carefully before coming to the laboratory.
- Must be able to design experimental procedures when entering the laboratory.

- Fully participate 100% of practice hours and report results.
- Attend the final exam.
- Actively organize self-study hours.

13. Course assessment:

Assessment components	Assessment types	Assessment methods	Rubric	Weights of assessment types (%)	Weights of assessment components (%)	CLOs
A1. Formative assessment	A1.1. Attendance	P1.1. Check attendance	Attend 100% of the total periods of the course	10%		CLO 6
	A1.2. Practice the experiments	P1.2. Check the results and attitude	R1.2 Rubric ER	10%		CLO 1,2, 3
A2. Final exam	A2.1 Presentation A2.2 Final Report	P2.1. Presentation P2.2. Report	R2.1 Rubric OPR R2.2. Rubric report	30% 50%		CLO 3,4,5 CLO 3,4

14. Teaching and Learning plans:

14.1 Teaching and Learning plans for theoretical classes:

14.2 Teaching and Learning plans for practical/ laboratory classes:

Week (4 periods)	Contents	Teaching and Learning activities	Assessment types	CLOs
4	- Introduction to the course - Teaching theoretical basis and error theory - Familiarize with basic tools - Practice 1 experiment	**Instruction methods:** - Lecturers introduce to students the position and role of the subject in the program; CLOs, assessment forms and weights of assessments, course content by chapter... - Teaching the theory of experiments and the theory of errors. - Assign tasks to groups. **Practical activities:** - Group work on 1 experiment. Outside class activities: - Prepare for the next 2 experiments.	A1.1 A1.2	CLO 1,2,3, 6
5	- Practice 2 experiments	**Instruction methods:** - Assign tasks to groups.	A1.1 A1.2	CLO 1,2,3, 6

		Practical activities: - Group work on 2 experiments. Outside class activities: - Work in groups to: + Analyze and interpret experimental results. + Prepare for the final experiment.		
6	- Practice the last experiment. - Instructions for making reports and presentations.	**Instruction methods:** - Assign tasks to groups. - Instructions for making reports and presentations. **Practical activities:** - Group work on 1 experiment. **Outside class activities:** - Work in groups to: + Analyze and interpret experimental results. + Prepare for the final report and presentation.	A1.1 A1.2	CLO 1,2,3,6
7	- Presentation - Submit report	**Instruction methods:** **Practical activities:** - Presentation and discussion - Submit report	A2.1 A2.2	CLO 1,3,4,5

15. Course materials:

15.1. Main textbooks, course books:

[1] TS. Nguyen Quy Tuan, TS. Đinh Thanh Khan,TS. Dung Van Lu, TS. Mai Thi Kieu Lien, TS. Tran Thi Hong,TS. Nguyen Thi Xuan Hoai, PGS. TS. Đang Ngoc Toan, Laboratory textbook for General Physics (Mechanics, Heat, Electricity and Magnetism, Oscillation, and Optics), 2021.

15.2. References:

[1] Raymond A. Surway, John W. Jewett, Physics for scientists and engineers with modern physics , 2008

16. Scientific code of ethics:

- Students must respect their lecturers and other students.
- Students must comply with the university's academic integrity.
- Students must strictly follow the rules and regulations of the university.

17. Approved date:

18. Approved by:

Dean of Faculty	Program chair	Lecturer in charge
Cao Van Lam, PhD.	**Vo Duy Hung, PhD.**	

15. Linear Algebra

THE UNIVERSITY OF DANANG
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Faculty of Road and Bridge Engineering

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UNDERGRADUATE PROGRAM

Awarded degree: Undergraduate/Bachelor

Name of the study program: Construction Materials Engineering and Technology Program Code: 7510105

SYLLABUS
Course name (Vietnamese): Đại số tuyến tính
English name: Linear Algebra

1. Course code:	3190260
2. Course abbreviation:	Linear Algebra
3. Credits: **ECTS credits (*):**	04 4,25
4. Study workload:	*Total workload: 180 hours*
- Lecture:	40 hours
- Exercise:	20 hours
- Self-study/Assignment:	120 hours
5. Responsible persons	
- Faculty/Division in charge:	Faculty of Mathematics
- Course coordinator:	Assoc. Prof. Dr. Truong Cong Quynh
- Other lecturers:	Dr. Nguyen Ngoc Chau, Dr. Nguyen Dai Duong, Dr. Tran Nam Sinh, Phan Quang Nhu Anh
6. Required and recommended pre-requisites for joining the course:	
- Required prerequisite:	None
- Recommended prerequisite:	None
- Corequisite:	None
7. Course type:	☒ Compulsory Selected elective Free elective
8. Knowledge clusters:	☒ Math and natural science General knowledge Core engineering fundamental knowledge Disciplinary knowledge Supportive knowledge Project/ Internship/ Graduate thesis

9. Course description:

The Linear Algebra course is divided into 5 chapters. Chapter 1 introduces matrices and determinants. Chapter 2: introduces the system of linear equations students know in high school. Chapter 3: vector spaces. Chapter 4: linear maps and quadratic forms. Chapter 5: introduces Quadratic form. The knowledge presented in the module is fundamental to helping students, and it is easy to access when starting to familiarize yourself with advanced math.

10. Course learning outcomes (CLOs):

At the end of this course, students will be able to:

No	CLOs (1)	Knowledge (2)	Skills (3)	Attitudes (4)	Performance Indicators (PI)
1	Understand the meaning of operations on matrices, vector spaces, and linear maps	Understanding	Understand	Responding	1.1.2.
2	Apply matrix theory to physics, chemistry and other sciences.	Applying	Apply	Valuing	1.1.2. 7.1.2
3	Prove the basic results of matrix content, vector space and linear maps.	Applying	Apply	Valuing	1.1.2.
4	Improve a number of important competencies and qualities such as mathematical thinking and reasoning, problem-solving and creativity, and self-study; honesty, hard work, perseverance and discipline	Analysis	Work independently	Proactive, responsible	1.1.2. 3.1. 4.1

11. Mapping of CLOs and Program learning outcomes (PLOs):

PLOs	PLO1	PLO2	PLO3	PLO4	PLO5	PLO6	PLO7	PLO8
Course distribution	IT		I	I			I	
CLO 1	X							
CLO 2	X						X	
CLO 3	X							
CLO4	X		X	X				

12. Student responsibilities:

Student must:

- Attend at least 80% of the total periods of the course. Below this number, student will be banned from taking the final exam**.**
- Participate in team-work activities following the course's regulations;
- Self-study outside class to solve problems provided by lecturers;

- Complete all types of the course assessment.

13. Course assessment:

Review composition	**Assessment form**	**Evaluation methods**	**Rubric's Criterion**	**Review weight (%)**	**Component weights (%)**	**relevant course outcomes**
A1. Evaluation of the process	A1.1. Diligence	P1.1. Attendance	R1	30	20	CLO 1, 2
	A 1.2. Short exercises in class	P1.2. Presentation in class	R2	30		
	A 1.3: Report	P 1.3 Write a report and present in class	R3	30		
A2. Midterm review	A2.1 Midterm Examination	P2.1. Essay	R9	100	30	CLO1, 2
A3. Endterm assessment	A3.1 Final Examination	P3.1. Essay	R9	100	50	CLO,2, 3

14. Teaching and Learning plans:

Week/section	Details of Lesson/Chapter	Number of periods (LT/TH /TN)	Teaching and learning activities		Assessment form	relevant course outcomes
			Teaching methods	Learning methods		
I	Chapter 1: Matrices and determinant	10/5/0	Presentation, problem solving, discussion.	Read the materials in advance and listen lectures	A1.1, A1.2	CLO 1
1	1.1. Matrices and Operations on Matrices	4/1/0	Presentation, problem solving, discussion.	Read the materials in advance and listen lectures		CLO 1
2	1.2. Properties of determinant and inverse matrices	3/2/0/0	Presentation, problem solving, discussion.	Read the materials in advance and listen lectures	A.1.1, A.2.1, A.3.1	CLO 1
3	1.3 Rank of matrices, exercises	3/2/0/0	Presentation, problem-solving, discussion.	Read the materials in advance and listen to lectures	A.1.1, A.2.1, A.3.1	CLO1
II	Chapter 2: System of linear equations	9,5/5,5/0	Presentation, problem-solving, discussion	Read the materials in advance	A1.1, A1.2	CLO 1

				and listen to lectures		
4	2.1. System of linear equations	3,5/1,5/0	Presentation, problem-solving, dis-cussion.	Read the materials in advance and listen to lectures		CLO 1
5	2.2. Solving system of linear equations	3/2/0/0	Presentation, problem-solving, dis-cussion.	Read the materials in advance and listen to lectures	A.1.1, A.2.1,	CLO1
6	2.3. System of homo-geneous linear equa-tions	3/2/0/0	Presentation, problem-solving, dis-cussion.	Read the materials in advance and listen to lectures	A.1.1, A.2.1,	CLO1
III	Chapter 3: vector spaces	12/3/0	Presentation, problem-solving, dis-cussion.	Read the materials in advance and listen to lectures		CLO3
7	3.1. Definition and properties. Independent/dependent linear vectors .	5/0/0	Presentation, problem-solving, dis-cussion.	Read the materials in advance and listen to lectures		CLO3
8	Midterm exam			Read the materials in advance and listen to lectures		
9	3.2. Bases, dimension of vector spaces, sub-spaces, and rank of vector spaces.	3/2/0/0	Presentation, problem-solving, dis-cussion.	Read the materials in advance and listen to lectures	A.1.1, A.2.1, A.3.1	CLO 1,3
10	3.3. Sum and direct sum, quotient spaces.	2/1/0	Presentation, problem-solving, dis-cussion.	Read the materials in advance and listen to lectures	A.1.1, A.2.1, A.3.1	
IV	Chapter 4: linear maps	10/5/0	Presentation, problem-solving, dis-cussion.	Read the materials in advance and listen to lectures		CLO3
11	4.1. Definition and properties. Matrices,	4/1/0	Presentation, problem-	Read the materials in	A.1.1, A.1.2	CLO1,3

	image and kernel of linear maps.		solving, discussion.	advance and listen to lectures	A.3.1	
12	4.2. Linear transformations and basis transformations.	3/2/0/0	Presentation, problem-solving, discussion.	Read the materials in advance and listen to lectures	A.1.1, A.1.2 A.3.1	CLO1,3
13	4.3. Eigenvalues, eigenvectors, and algorithms to find eigenvalues and eigenvectors.	3/2/0/0	Presentation, problem-solving, discussion.	Read the materials in advance and listen to lectures	A.1.1, A.1.2 A.3.1	CLO 1,3
V	Chapter 5: Quadratic form	10/5/0	Presentation, problem-solving, discussion.	Read the materials in advance and listen to lectures		CLO1,3
14	5.1. Quadratic form Convert quadratic form to canonical form	3/0/0	Presentation, problem-solving, discussion.	Read the materials in advance and listen to lectures	A.1.1, A.1.2 A.3.1	CLO1,3
15	5.2. Exercises	2/1/0	Presentation, problem-solving, discussion.	Read the materials in advance and listen to lectures	A.1.1, A.1.2 A.3.1	CLO1,3
16	Final Exam					

15. Course materials:

15.1 Main textbooks, course books:

[1]. Tran Ngoc Hue, Linear Algebra and Analytical Geometry, Volume 1, Education Publishing House, 2021.

15.2 References:

[1]. Tran Ngoc Hue, Linear algebra, Hanoi National University Publishing House, 2019.

[2]. Tran Van Minh – Phi Thi Van Anh, Linear algebra, Transport Publishing House, 2007.

[3]. Dang Ngoc Duc, Nguyen Viet Đuc, Advanced Math: Linear Algebra, Danang Publishing House, 2009.

16. Scientific code of ethics:

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- Students must strictly follow the rules and regulations of the university.

17. Approved date:

18. Approved by:

Dean of Faculty	Program chair	Lecturer in charge
Cao Van Lam, PhD.	**Vo Duy Hung, PhD.**	

16. Marxist – leninist political economy

THE UNIVERSITY OF DANANG
UNIVERSITY OF SCIENCE AND TECHNOLOGY
Faculty of Road and Bridge Engineering

SOCIALIST REPUBLIC OF VIETNAM
Independence - Freedom - Happiness

UNDERGRADUATE PROGRAM

Awarded degree: Undergraduate/Bachelor

Name of the study program: Construction Materials Engineering and Technology Program Code: 7510105

SYLLABUS
Course name (Vietnamese): Kinh tế chính trị Mác - Lênin
English name: Marxist – leninist political economy

1. Course code:	2170020
2. Course abbreviation:	Marxist – leninist political economy
3. Credits **ECTS credits (*):**	02 (30 hours) 2,83
4. Time distribution	
- Lecture:	02 credits (30 hours)
- Exercise:	
- Self-study/Assignment:	60 hours
5. Lecturers in charge	
- Faculty/Division in charge:	Department of Political Theory, University of Economics, University of Danang
- Course coordinator:	Associate Prof. PhD Le Huu Ai
- Other lecturers:	1. PhD. sennior lecturer. Trinh Son Hoan, 2. Ms. sennior lecturer. Le Duc Tam, 3. PhD. sennior lecturer Tran Hong Lyu, 4. Ms.sennior lecturer GVC Luu Thi Mai Thanh, 5. PhD. Le Van Thao, 6. PhD. sennior lecturer. Pham Huy Thanh
6. Required and recommended prerequisites for joining the course:	
- Required prerequisite:	None
- Recommended prerequisite:	None
- Corequisite:	None
7. Course type:	☒ Compulsory Selected elective Free elective
8. Knowledge clusters:	☒ Math and natural science General knowledge

	Core engineering fundamental knowledge Disciplinary knowledge Supportive knowledge Project/ Internship/ Graduate thesis

9. Course description

The course is comprised of two main parts:

- The first part studies the political-economic issues of the capitalist mode of production in both the free competition and the monopoly stage.
- The second studies the issues of the socialist-oriented market economy and the relations among economic interests in Vietnam; Vietnam's industrialization, modernization and international economic integration.

10. Course Learning Outcomes (CLOs)

After completing the course, students will be able to:

No	Course Learning Outcomes (CLOs)	Knowledge	Skills	Attiude	Performance indicators (belongs to PLOs)
1.	**Analysis** of the characteristics, nature and laws of movement of the market economy; capitalist market economy	A3.Analyze	B2. Professionally	C2. Honest	1.5.2. 3.2. 4.1.
2.	**Analysis** of the characteristics and nature of the socialist-oriented market economy and economic benefit relations in Vietnam	A3.Analyze	B2. Professionally	C2. Honest	1.5.2. 3.2. 4.1.
3.	**Analyze** the process of industrialization, modernization and international economic integration of Vietnam.	A3Analyze	B2. Professionally	C2. Honest	1.5.2. 3.2. 4.1.

11. The relationship between course learning outcomes(CLOs) and program learning outcomes (PLOs)

PLO	PLO1	PLO2	PLO3	PLO4	PLO5	PLO6	PLO7	PLO8
Course distribution	I		IT	I				
CLO 1	X		X	X				
CLO 2	X		X	X				
CLO 3	X		X	X				

12. Student responsibilities

Students must do the following tasks:

- Attend at least 80% of the lessons of the course;

- Do homework assigned in each chaper of the course;
- Self-study the problems assigned by the lecturer (outside of class time);
- Take the mid-term and final exams;
- Fully attend and complete the content of practices

13. Course assessments

The results of the course evaluation are based on the assessment of the student's activities during the course of study, the mid-term exam and the final exam expressed through the assessment; the course output standards are assessed; criteria, standards and weights of the assessments.

Type of assessment	**Performance assessment**	**Assessment methods**	**Rubric**	**Weighting percentage (%)**	**CLOs**
A1. Ongoing assessment	A1.1 Class Attendance	CLO1-3	Go to school fully. Do not miss more than 20% of the class.		20%
	A1.2 Exercises /homeworks	CLO2	Do the correct answer		
A2. Mid-term Assessment	A2.1 Mid-term exam	CLO1-3	Meet the requirements of the answer	10	20%
A3. Final Assessment	A3.1 Final exam	CLO1-3	Meet the requirements of the answer	10	60%

14. Teaching and learning plan

Week	Contents	Teaching and learning activities	Performance assessment	Course learning outcomes (CLOs)
3 (Theory + Discussion)	Course Introduction Chapter 1: Objects, research methods and functions of Marxist-Leninist political economy 1.1. Overview of the formation and development of Marxist-Leninist political economy 1.2. Objects and research methods of Marxist-Leninist political economy 1.3. The function of Marxist-Leninist political economy	Teach: - Lecturers introduce to students the subject objectives; the position and role of the subject in the training program of the industry; subject output standards, assessment forms and weights of assessments, course content according to chapters... - Teaching methods: TLM1, TLM2, TML 4, TML11, TML13, TML16 Learn in class: - Listen to lectures - Answer the teacher's questions. - Ask questions of concerns.	A1.1, A1.2, A2.1, A3.1	CLO1-3

		Study at home: - Review the theory - Read the opening chapter, Textbook of Basic Principles of Marxism-Leninism- Ministry of Education and Training. National Political Publishing House 2009 and chapter 1 of the book Mac-Lenin Philosophy of the Ministry of Education and Training in 2006.		
20 (Theory + Discussion)	Chapter 2 COMMODITIES, MARKETS AND THE ROLE OF MARKET PARTICIPANTS 2.1. MARX'S THEORY ON THE PRODUCTION OF GOODS AND GOODS 2.1.1. Commodity production 2.1.2. Goods 2.1.3. Money 2.1.4. Services and some special goods 2.2. MARKET AND ROLE OF CHILDREN MARKET PARTICIPANTS 2.2.1. Market 2.2.2. The role of some key players in the market Study document - Chapter 2 - TEXT1 - REF2	Teach: - Teaching methods: TLM1, TLM2, TML4, TLM10, TLM16 Learn in class: - Listen to lectures - Answer the teacher's questions. - Ask questions of concerns. Study at home: - Review the theory - Read chapter 2, Textbook of Political Economy - Marxism for Non-Bachelor of Political Economy (National Political Publishing House)	A1.1, A1.2, A2.1, A3.1	CLO1-3
17 (Theory + Discussion)	Chapter 3: Surplus value in a market economy 3.1. Marxist-Leninist theory of surplus value 3.2. Capital accumulation	Teach: - Teaching methods: TLM1, TLM2, TML4, TML10 Learn in class: - Listen to lectures	A1.1, A1.2, A2.1, A3.1	CLO1-3

	3.3. Manifestations of surplus value in a market economy	- Answer the teacher's questions. - Ask questions of concerns. Study at home: - Review the theory - Read chapter 3, Textbook of Political Economy - Marxism for Undergraduate Degree in Political Economy (National Political Publishing House)		
	Chapter 4: Competition and Monopoly in a Market Economy 4.1. The relationship between competition and monopoly in a market economy 4.2. Monopolies and state monopolies in a market economy	Teach: - Teaching methods: TLM1, TLM2, TLM4, TLM10, TLM13 Learn in class: - Listen to lectures - Answer the teacher's questions. - Ask questions of concerns. Study at home: - Review the theory - Read chapter 4, Textbook of Political Economy - Marxism for Non-Bachelor of Political Economy (National Political Publishing House)	A1.1, A1.2, A3.1	CLO1-3
	Chapter 5: Socialist-oriented market economy and economic interest relations in Vietnam 5.1. Socialist-oriented market economy in Vietnam 5.2. Perfecting the socialist-oriented market economy institution in Vietnam 5.3. Economic interests in Vietnam	Teach: - Teaching methods: TLM1, TLM2, TLM4, TLM10, TLM13 Learn in class: - Listen to lectures - Answer the teacher's questions. - Ask questions of concerns. Study at home: - Review the theory - Read Chapter 5, Textbook of Political Economy - Marxism for Non-Bachelor of Political Economy (National Political Publishing House)		

	Chapter 6: Vietnam's industrialization, modernization and international economic integration 6.1. Industrialization and modernization in Vietnam 6.2. Vietnam's international economic integration	Teach: - Teaching methods: TLM1, TLM2, TLM4, TLM10, TLM13 Learn in class: - Listen to lectures - Answer the teacher's questions. - Ask questions of concerns. Study at home: - Review the theory - Read chapter 6, Textbook of Political Economy - Marxism for Non-Bachelor of Political Economy (National Political Publishing House)	A1.1, A1.2, A3.1	CLO1-3

15. Materials

15.1. Books, lectures, main textbooks

[1]. Ministry of Education and Training, Textbook of Political Economy - Marxism for Non-Bachelor of Political Economy, Publishing House. National politics.

[2]. Ministry of Education and Training, Ho Chi Minh Thought Textbook, Publishing House. National politics, 2010 - 2015.

15.2. Books and references:

[1]. Textbook of Marxist-Leninist Political Economy, the Central Council directs the compilation of national textbooks on Marxist-Leninist sciences, Ho Chi Minh Thought, Publishing House. National politics.

[2]. Documents of the Party Congress and Central Conference related to the lecture.

16. Scientific code of ethics:

- Students must respect a lecturer and other students.
- Students must comply with the University's academic integrity policy.
- Students must obey the rules and regulations of the university.

17.Approved date:

18. Approved by:

Dean of Faculty	Program chair	Lecturer in charge
Cao Van Lam, PhD.	**Vo Duy Hung, PhD.**	

17. Thermal Engineering

THE UNIVERSITY OF DANANG
UNIVERSITY OF SCIENCE AND TECHNOLOGY
Faculty of Road and Bridge Engineering

SOCIALIST REPUBLIC OF VIETNAM
Independence - Freedom - Happiness

UNDERGRADUATE PROGRAM

Awarded degree: Undergraduate/Bachelor

Name of the study program: Construction Materials Engineering and Technology Program Code: 7510105

SYLLABUS

Course name (Vietnamese): Kỹ thuật nhiệt

English name: Thermal Engineering

1. Course Code:	1040451
2. Course Sign:	Thermal Engineering
3. Credits: **ECTS credits (*):**	2 credits (30 Periods) 2,83
4. Study workload:	
- Lecture:	22 Periods
- Exercise:	08 Periods
- Practice/ Laboratory:	
- Self-study/Assignment:	60 Periods
5. Responsible persons:	
- Faculty/Division in charge:	Thermal Engineering Division/ Faculty of Heat and Refrigeration Engineering
- Course coordinator:	PhD. Thai Ngoc Son
- Other lecturers:	Assoc. PhD. Hoang Ngoc Dong Assoc. PhD. Tran Van Vang Assoc. PhD. Vo Chi Chinh Assoc. PhD. Tran Thanh Son PhD. Huynh Ngoc Hung PhD. Pham Duy Vu Msc. Ma Phuoc Hoang Msc. Bui Thi Huong Lan Msc. Le Thi Chau Duyen Msc. Nguyen Quoc Huy
6. Required and recommended prerequisites for joining the course:	
- Required prerequisite:	None
- Recommended prerequisite:	Calculus 2
- Corequisite:	Physics 2
7. Type of course:	☒ Compulsory Selected elective Free elective

8. Knowledge clusters:	Math and natural science General knowledge ☒ Core engineering fundamental knowledge Disciplinary knowledge Supportive knowledge Project/ Internship/ Graduate thesis

9. Course description

The Thermal Engineering module consists of two parts: The Engineering Thermodynamics section provides students with basic knowledge about the conversion between heat and work, the actual thermodynamic cycles; The Heat Transfer section provides students with basic knowledge about the methods of heat exchange, the method of calculating the amount of heat exchanged between two media.

10. Course Learning Outcomes

After completing the course, students will be able to

No	Course Learning Outcomes(CLO)	Knowledge	Skills	Attitude	Performance indicators (belongs to PLOs)
1	Present the laws of thermodynamics; Describe and differentiate the basic heat exchangers.	A1. Re-member			1.2.14
2	Explain common thermodynamics and heat transfer phenomena.	A2. Under-stand	B2. Ap-ply		1.2.14
3	Apply basic knowledge and laws of thermodynamics to investigate basic engineering thermodynamic processes and cycles; Apply heat and temperature field calculations to simple heat transfer problems.	A3. Apply	B3. Ac-curate		1.2.14

11. The relationship between course learning outcomes (CLOs) and program learning outcomes (PLOs)

PLO	PLO1	PLO2	PLO3	PLO4	PLO5	PLO6	PLO7	PLO8
Course distribu-tion	IT							
CLO 1	X							
CLO 2	X							
CLO 3	X							

12. Student responsibilities

Students must perform the following tasks:
- Attend at least 80% of the class periods;
- Participate in work groups that operate according to classroom regulations;
- Automatically learn about problems assigned by students to do outside of class time;
- Complete all session Performance Assessments.

13. Course assessments

Type of assessment	**Performance assessment**	**Assessment methods**	**Rubric**	**Weighting percentage (%)**		**Course learning outcomes (CLOs)**
A1. Ongoing assessment	A1.1 Diligence	P1.1. Attendance Sheet / Activity	R1.1	5	20	CLO 1
	A1.2 Short assignments	P1.2. Multiple choice exam	R1.2	5		CLO 1-3
	A1.3 Personal/ Group Assignments	P1.3. Report/ Writting	R1.3: Answer / score scale	10		CLO 2-3
A2. Mid-term Assessment	A2. Mid-term exam	P2. Multiple choice exam	R2.1: Answer / score scale	20	20	CLO 1-3
A3. Final Assessment	A3. Final exam	P3. Multiple choice exam	R3.1: Answer / score scale	60	60	CLO 1-3

14. Teaching and learning plan

Weeks/Periods	Detailed contents of the course	Teaching and learning activities	Performance assessment	Course learning outcomes (CLOs)
Week 1/Period 1-2	Introducing the information of lecturers, subject, assessment method **CHAPTER 1: OPENING CONCEPTS** **Lesson 1.1. Basic concepts** 1.1.1. Subjects and methodology of the research	**Teaching:** - The lecturer introduces to students the target of the subject; position and role of the subject in the education curriculum of the major; course learning outcomes, assessment types and	A1.1; A1.2	CLO 1, 2

Weeks/Periods	Detailed contents of the course	Teaching and learning activities	Performance assessment	Course learning outcomes (CLOs)
	1.1.2. Thermodynamics system - Concepts of thermodynamics system, environment, boundary, fluid. - Concepts of closed, open, adiabatic, isolated system. 1.1.3. States and state properties of a thermodynamics system - Concepts of states and state properties. - Concepts of specific volume, density, temperature (conversing of °C and K), (atmospheric, gage, vacuum) pressure (basic unit Pa, bar, MPa), internal energy and changes in internal energy of ideal gases, enthalpy and changes in enthalpy of ideal gases and changes in entropy. 1.1.4. Thermodynamics process of fluid and types work - Concepts of thermodynamics processes. - Concepts of thermodynamics cycles. - Concepts of energy of a thermodynamics system: external kinetic energy, external potential energy, internal energy, pushing energy, total energy of a closed/open system. - Concepts of heat and work (volume change work, pressure change work, performance on a	their weighting percentages, content of subject on chapter, etc. - Teaching; slides presenting - Raising questions for students to think and answer **Studying at class:** - Listening to the lecturer's teaching - Answering questions from the requesting of the lecturer - Raising questions to the related problem **Homework:** - Reading the thermal physics section in the Physics subject 2 - Reading the lecture of state equation for ideal gases [1], specific heat capacity of gas [1][2] - Doing assignments 1.1 – 1.7 [1] - Doing quiz tasks period 1-2		

Weeks/Periods	Detailed contents of the course	Teaching and learning activities	Performance assessment	Course learning outcomes (CLOs)
	graph, external work of closed and open system); signs of heat and work.			
Week 2/Period 3-4	**Lesson 1.2. Equation of state for ideal gases** 1.2.1. Ideal gases and actual gases 1.2.2. Equation of state of ideal gases - Equation of state for 1 kg and G kg ideal gases 1.2.3. Concepts of the mixture of ideal gases - Concepts of the mixture of ideal gases - Concept of partial volume and Amagat-Leduc's law - Concept of partial pressure and Dalton's law - Composition of a gas mixture: mass, volume, mole fraction 1.2.4. Mixture of ideal-gases equation of state	**Teaching:** - Teaching; slides presenting - Raising questions for students to think and answer **Studying at class:** - Listening to the lecturer's teaching - Answering questions from the requesting of the lecturer - Raising questions to the related problem **Homework:** - Reading the lecture of specific heat capacity of gas [1], first law of thermodynamics [1], [2] - Self-studying: examples 1.1 – 1.3 [1] - Doing assignments 1.1 – 1.5 [3] - Doing quiz tasks period 3-4	A1.1; A1.2	CLO 1-3
Week 3/ Period 5-6	**Lesson 1.3. Specific heat capacity of gas** 1.3.1. Concepts, classification and relation of types of specific heat capacity - Concept of specific heat capacity - Classification of specific heat capacity by unit, process, temperature (actual specific heat capacity), relation of C_p, C_v of ideal gases	**Teaching:** - Teaching; slides presenting - Raising questions for students to think and answer - Solving assignments **Studying at class:** - Listening to the lecturer's teaching - Answering questions from the requesting of the lecturer	A1.1; A1.2	CLO 1-3

Weeks/Periods	Detailed contents of the course	Teaching and learning activities	Performance assessment	Course learning outcomes (CLOs)
	1.3.2. Calculation of heat capacity based on specific heat capacity - By unit of measurement - By process: constant pressure, constant volume, polytropic **CHAPTER 2. LAWS AND FUNDAMENTAL PROCESSES OF THERMODYNAMICS;** **Lesson 2.1. The first law of thermodynamics** 2.1.1. Statement of the first law of thermodynamics - Total energy of a thermodynamics system - External work - Statement by words 2.1.2. Types of equation of the first law of thermodynamics - Types of equation related to du, di, dl, dl_{me} - The first law of thermodynamics of ideal gas	- Raising questions to the related problem **Homework:** - Reading the lecture of fundamental processes of thermodynamics [1], the second law of thermodynamics [1],[4] - Self-studying: examples 1.5 – 1.8 [1] - Doing assignments 1.6 – 1.7 [3], 1.9-1.10 [1] - Doing quiz tasks period 5-6		
Week 4/Period 7-8	**Lesson 2.2. Fundamental processes of thermodynamics of ideal gas** 2.2.1. Theoretical basis and content of investigate a thermodynamics process - Theoretical basis - Investigate steps 2.2.2. Evaluation of a polytropic process 2.2.3. Evaluation of special cases of polytropic process - Isobaric process - Isometric process	**Teaching:** - Teaching; slides presenting - Case study: raising questions for students to think and answer - Solving the first assignment - Assigning personal/group assignments – No 1. **Studying at class:** - Listening to the lecturer's teaching	A1.1; A1.3	CLO 1, 2, 3

Weeks/Periods	Detailed contents of the course	Teaching and learning activities	Performance assessment	Course learning outcomes (CLOs)
	- Isothermal process - Adiabatic process - Summary table of processes	- Answering questions from the requesting of the lecturer - Raising questions to the related problem **Homework:** - Reading the lecture of water vapor and its processes [1], moist air [1], [4] - Self-studying: Evaluating and noting to the notebook about the isobaric, isometric, isothermal and adiabatic processes - Reading the solving of assignments 2.11 – 2.15 [3] - Doing personal assignments – the first group of thermodynamics part		
Week 5/Period 9-10	**Lesson 2.3. The second law of thermodynamics** 2.3.1. Types of thermodynamics cycle and its efficiency - Thermodynamics cycle in clockwise direction: work, heat capacity of a cycle, thermal efficiency - Thermodynamics cycle in counterclockwise direction: work, heat capacity of cycle, coefficient of performance of a refrigerator and a heat pump 2.3.1. Types of thermodynamics cycle and its efficiency	**Teaching:** - Teaching; slides presenting - Raising questions for students to think and answer - Solving several assignments by multiple choices method - Solving inquiry of students about homework **Studying at class:** - Listening to the lecturer's teaching - Answering questions from the requesting of the lecturer	A1.1; A1.2	CLO 1, 2, 3

Weeks/Periods	Detailed contents of the course	Teaching and learning activities	Performance assessment	Course learning outcomes (CLOs)
	- Carnot cycle, thermal efficiency by q_1, q_2, T_1, T_2, comments on Carnot cycle - Reversed Carnot cycle, coefficient of performance of a refrigerator and a heat pump 2.3.2. Several ways for statement of the second law of thermodynamics 2.3.3. Entropy of a thermodynamics system. Application of entropy on heat capacity calculation	- Raising questions to the related problem **Homework:** - Reading section 2.3.2 [4], [2] - Doing assignments 2.20-2.22 [1]; 2.1 [3] - Reading beforehand and preparing lessons 3.1; 3.2 [1] - Doing quiz tasks period 9-10		
Week 6/Period 11-12	**CHAPTER 3. ACTUAL THERMODYNAMICS PROCESSES** **Lesson 3.1. Water vapor and its processes** 3.1.1. Water vapor and application - Phase diagram - Application 3.1.2. Isobaric vaporized process of water - Process description, heat capacity calculation of the process - Water vapor diagram PV and Ts, performing of isobaric, isochoric, isothermal and adiabatic processes on diagrams **Lesson 3.2. Moist air** 3.2.1. Definition, characteristic and classification of moist air - Definition, characteristic and classification: moist air, dry air, saturated air - State equation for components of moist air	**Teaching:** - Teaching; slides presenting - Raising questions for students to think and answer - Solving several tasks in the second assignment at class **Studying at class:** - Listening to the lecturer's teaching - Answering questions from the requesting of the lecturer - Raising questions to the related problem - Self-researching to determine thermodynamics properties of water and water vapor followed by the table [1,3] - Self-researching examples 3.1-3.3 [1], [2]	A1.1; A1.2	CLO 1, 2, 3

Weeks/Periods	Detailed contents of the course	Teaching and learning activities	Performance assessment	Course learning outcomes (CLOs)
	3.2.2. Properties of moist air - Absolute humidity, relative humidity, specific humidity, enthalpy - Dew point temperature 3.2.3. I-d diagram - Procedure to sketch I-d diagram - Performing exothermic, endothermic processes at constant pressure, drying process	- Doing assignments 3.8-3.10 [1]; 1.12 [3]; - Reading beforehand and preparing the lessons 3.3 [1]; 4.1 [1, 3] - Doing quiz task period 11-12		
Week 7/Period 13-14	**Lesson 3.3. Actual thermodynamics processes** 3.3.3. Throttling process - Concept - Changes of pressure, velocity, enthalpy, temperature before and after throttling process 3.3.4. Compression process - Concept, single stage compression process (ideal process) on p-v, T-s diagram, required work and produced heat during the compression process - Multistage compression process on p-v diagram: causes, advantages, pressure distribution among stages, required work and produced heat and cooling energy throughout process and on each stage	**Teaching:** - Teaching; slides presenting - Raising questions for students to think and answer - Solving several tasks in the second assignment at class - Assigning personal/ group assignment – No 2. thermodynamics part **Studying at class:** - Listening to the lecturer's teaching - Answering questions from the requesting of the lecturer - Raising questions to the related problem **Homework:** - Doing assignment 3.1-3.5 [1]; - Self-researching examples 4.1-4.4 [1] - Doing personal / group assignment – No 2. thermodynamics part	A1.1; A1.3.	CLO 1, 2, 3

Weeks/Periods	Detailed contents of the course	Teaching and learning activities	Performance assessment	Course learning outcomes (CLOs)
		- Revision and preparing for the mid-term test		
Mid-term exam week	**MID-TERM EXAM** **Method:** multiple choices **Group distribution:** followed by the groups of the academic department		A2.1	CLO 1, 2, 3
Week 8/Period 15-16	**CHAPTER 4. ACTUAL THERMODYNAMICS CYCLE** **Lesson 4.1. Internal combustion engine cycle** 4.1.1. Mixture of air-fuel combustion cycle - Mixture of air-fuel combustion cycle on PV diagram - Determining heat capacity q_1, q_2 - Work and efficiency of the cycle 4.1.2. Other special cycles - Isobaric combustion cycle - Isometric combustion cycle **Lesson 4.2. Rankine cycle: the ideal cycle for vapor power cycles** 4.2.1. Carnot cycle - Devices, performing on a diagram - Pros and cons 4.2.2. Rankine cycle - Devices, performing on a diagram, - Pros and cons; - Cycle efficiency	**Teaching:** - Analyzing pros and cons of mid-term test; solving mid-term test - Teaching; slides and videos presenting about cycles and actual devices - Raising questions for students to think and answer **Studying at class:** - Listening to the lecturer's teaching - Answering questions from the requesting of the lecturer - Raising questions to the related problem **Homework:** - Self-researching to compare efficiency of different heat supply methods - Self-researching examples 4.5-4.6, 4.9-4.12 [1] - Doing assignments 3.6-3.7 [1]; 4.6-4.10 [3], 4.2-4.3 [1]; - Reading beforehand and preparing lesson 5.1, 5.2 [1]	A1.1; A1.2	CLO 1, 2, 3

Weeks/Periods	Detailed contents of the course	Teaching and learning activities	Performance assessment	Course learning outcomes (CLOs)
		- Doing quiz tasks period 15-16		
Week 9/Period 17-18	**Lesson 4.3. The vapor-compression refrigeration cycle** 4.3.1. Devices schematic of vapor-compression refrigeration cycle - Devices schematic - Performing of the cycle on a diagram, 4.3.2. Coefficient of performance of a refrigerator and a heat pump	**Teaching:** - Teaching; slides and videos presenting about a refrigerator - Raising questions for students to think and answer - Solving the second assignment at class - Solving inquiry of students on homework - Assigning personal/group assignment – No 3. thermodynamics part **Studying at class:** - Listening to the lecturer's teaching - Answering questions from the requesting of the lecturer - Raising questions to the related problem **Homework:** - Accomplishing personal/ group assignment – No 3 - Reading beforehand and preparing lesson 6.1, 6.2 [1]	A1.1; A1.3	CLO 1-3
Week 10/Period 19-20	**CHAPTER 5. BASIC CONCEPTS OF HEAT TRANSFER** **Lesson 5.1. Describe the heat exchange process** 5.1.1 Characteristics of the heat exchange process 5.1.2. Heat exchange methods	**Teaching:** - Teaching; slides and videos presenting - Rising questions for students to think and answer **Studying in class:** - Listening to lectures	A1.1; A1.2	CLO 1-3

Weeks/Periods	Detailed contents of the course	Teaching and learning activities	Performance assessment	Course learning outcomes (CLOs)
	- Concept of basic methods, - Complex heat exchanger **Lesson 5.2. Basic concepts of heat transfer** 5.2.1. Temperature field and isothermal surface - 1,2,3-dimensional temperature field; Stable and unstable temperature field - Isothermal surface, isothermal line 5.2.2. Temperature gradient and heat flow	- Answering questions given by the teacher - Asking questions about matters of interest -Submit individual/group assignments – No 3 **Homework:** - Self-study to set up the differential equation of heat conduction with internal heat source [1,4] - Read beforehand, prepare the lesson Conduction of heat through the cylindrical wall [1] - Self-study examples 6.1-6.2 [1] - Do exercise 6.1-6.3 [1]; 3.1-3.2 [3] - Doing quiz tasks period 19 - 20		
Week 11/Period 21-22	**Lesson 6.3. Stable heat conduction without internal heat source (Continued)** 6.3.2. Heat conduction through the cylindrical wall - Heat conduction through 1layer cylindrical wall with type 1 boundary - Heat conduction through multi-layer cylindrical wall with type 1 boundary Class exercise No. 3 (1.5 periods) - Answer students' questions about homework	**Teaching:** - Teaching; slides and videos presenting - Rising questions for students to think and answer - Solving inquiry of students on homework - Solving several assignments by multiple choices method - Assigning personal/group assignment – No 1. Heat transfer part **Studying in class:** - Listening to lectures	A1.1; A1.3	CLO 1-3

Weeks/Periods	Detailed contents of the course	Teaching and learning activities	Performance assessment	Course learning outcomes (CLOs)
	- Solve some exercises in the form of multiple choice Assign individual/group assignments – No. 4	- Answering questions given by the teacher - Asking questions about matters of interest **Homework:** - Self-study examples 6.3-6.4 [1] - Do personal/group assignment – No 1. Heat transfer part - Read beforehand, prepare the lesson 7.1,7.2 [1]		
Week 12/Period 23-24	**Chapter 7. Convection** **Lesson 7.1. Basic concepts** 7.1.1. Definition and classification of convection - Concept of convection - Classification of natural and forced convection 7.1.2. Newton's formula and convection coefficient - Newton's formula - Convection coefficient 7.1.3. Factors affecting convection coefficient - Geometric conditions - Physical condition - Cause of movement - The flow mode of the fluid **Lesson 7.2. How to determine convection coefficient** 7.2.1. Similar standards and standard equations of convection - Basic similar standards for determining the convection coefficient - General standard equation	**Teaching:** - Teaching; slides and videos presenting - Rising questions for students to think and answer **Studying in class:** - Listening to lectures - Answering questions given by the teacher - Asking questions about matters of interest **Homework:** - Read beforehand, prepare the lesson 8.1, 8.2, 8.3 [1], [2] - Read: Steps to determine convection coefficient - Self-study examples 7.1-7.2 [1] - Do exercise 7.1, 7.2, 7.7 [1] - Doing quiz tasks period 23-24	A1.1; A1.2	CLO 1-3

Weeks/Periods	Detailed contents of the course	Teaching and learning activities	Performance assessment	Course learning outcomes (CLOs)
	7.2.2. Steps to determine convection coefficient (Self-study)			
Week 13/Period 25-26	**Chapter 8. Radiation** **Lesson 8.1. Basic concepts** 8.1.1. Features of radiation 8.1.2. Characteristic quantities of radiation - Radiation current Q (radiated power), - Radiation intensity E (radiative capacity, specific radiation, radiation intensity) - Monochromatic radiation intensity E_λ - Effective radiation intensity E_{hd} 8.1.3. Coefficients A, D, R and blackness -Characteristic coefficients for absorbers A, D, R - Characteristic coefficient for radiating body **Lesson 8.2. Basic laws of radiation** 8.2.1. Planck's law - For absolute black body - For gray body - Consequent 8.2.2. Stefan-Boltzmann's Law - For absolute black body - For gray body 8.2.3 Kirrchoff's Law **Lesson 8.3. Radiation between two enclosed surfaces** 8.3.1. Without radiation shield - Problem - Solution 8.3.2. With n radiation shields	**Teaching:** - Teaching; slides and videos presenting - Rising questions for students to think and answer **Studying in class:** - Listening to lectures - Answering questions given by the teacher - Asking questions about matters of interest **Homework:** - Self-study examples 8.1-8.5 [1] - Do exercise 8.6-8.10 [1]; 4.1-4.3 [3] - Doing quiz tasks period 25-26 - Read beforehand, prepare the lesson 9.1 [1]	A1.1; A1.2	CLO 1-3

Weeks/Periods	Detailed contents of the course	Teaching and learning activities	Performance assessment	Course learning outcomes (CLOs)
	8.3.3. Special cases of radiation between two enclosed surfaces - Two parallel sides without C - Two parallel sides with n radiation shields - F1<<F2			
Week 14/Period 27-28	**Chapter 9. Heat Transfer** **Lesson 9.1. Complex heat exchanger** 9.1.1. Concept of complex heat exchanger 9.1.2. Concept heat transfer **Lesson 9.2. Heat Transfer** 9.2.1. Heat transfer through flat wall - Heat transfer through 1 layer flat wall - Heat transfer through n layers flat wall 9.2.2. Heat transfer through cylindrical walls - Heat transfer through 1 layer flat wall - Heat transfer through flat wall n layers	**Teaching:** - Teaching; slides and videos presenting - Rising questions for students to think and answer - Assigning personal/group assignment – No 2. Heat transfer part **Studying in class:** - Listening to lectures - Answering questions given by the teacher - Asking questions about matters of interest **Homework:** - Self-study examples 9.1-9.2 [1] - Do personal/group assignment – No 2. Heat transfer part	A1.1; A1.3	CLO 1-3
Week 15/Period 29-30	**REVIEW**	**Teaching:** - Review and summarize course knowledge - Solve some exercises combining knowledge of thermodynamics and heat transfer; Sovle the class exercise No 4.	A1.1; A1.3	CLO 1-3

Weeks/Periods	Detailed contents of the course	Teaching and learning activities	Performance assessment	Course learning outcomes (CLOs)
		- Answer students' questions about homework **Studying in class:** - Listening to lectures - Answering questions given by the teacher - Asking questions about matters of interest **Homework:** - Review - Complete personal/group assignment – No 2. Heat transfer part and submit by the lecturer's deadline		
Final exam week	**FINAL EXAM** - Method: multiple choices - Time: 60 mins - Group distribution: Mix students among classes; general test		A3.1	CLO 1-3

15. Materials

15.1. Books, lectures, main textbooks

[1] Hoang Ngoc Dong, Thai Ngoc Son - *Thermal Engineering* – Construction Publisher, 2015.

15.2. Reference materials

[2] Vo Chi Chinh, Hoang Duong Hung, Le Quoc, Le Hoai Anh – *Thermal Engineering* – Science and Technology Publisher, 2006.

[3] Bui Hai, Hoang Ngoc Dong – *Thermal Engineering Workbook* – Science and Technology Publisher, 1999.

[4] Michael J. Moran et al - *Introduction to thermal systems engineering: thermodynamics, fluid mechanics, heat transfer* - New York: Wiley, 2003.

16. Scientific code of ethics:

- Students must respect a lecturer and other students.
- Students must comply with the University's academic integrity policy.
- Students must obey the rules and regulations of the university.

17. Approved date:

18. Approval by:

Dean of Faculty	Program chair	Lecturer in charge
Cao Van Lam, PhD.	**Vo Duy Hung, PhD.**	

18. Engineering Mechanics

THE UNIVERSITY OF DANANG
UNIVERSITY OF SCIENCE AND TECHNOLOGY
Faculty of Road and Bridge Engineering

SOCIALIST REPUBLIC OF VIETNAM
Independence - Freedom - Happiness

UNDERGRADUATE PROGRAM

Awarded degree: Undergraduate/Bachelor

Name of the study program: Construction Materials Engineering and Technology Program Code: 7510105

SYLLABUS

Course name (Vietnamese): Cơ lý thuyết
English name: Engineering Mechanics

1. Course code:	1033220
2. Course abbreviation:	Engineering Mechanics
3. Credits: **ECTS credits (*):**	02 credits (periods) 4,25
4. Study workload:	
- Lecture:	20 hours
- Exercise:	10 hours
- Practice/ Laboratory:	
- Self-study/Assignment:	60 hours
5. Responsible persons	
- Faculty/Division in charge:	
- Course coordinator:	Nguyen Đinh Son
- Other lecturers:	Nguyen Van Thien An, Nguyen Thi Kim Loan, Ngo Phan Thu Hyong, Pham Ngoc Quang, Vo Thanh Hoang
6. Required and recommended prerequisites for joining the course:	
- Required prerequisite:	None
- Recommended prerequisite:	
- Corequisite:	
7. Course type:	☒ Compulsory Selected elective Free elective
8. Knowledge clusters:	☒ Math and natural science General knowledge Core engineering fundamental knowledge Disciplinary knowledge Supportive knowledge

	Project/ Internship/ Graduate thesis

9. Course description

To develop an understanding of the fundamentals and principles engineering mechanics: statics and dynamics of particles, and rigid bodies in two and three dimensions including: kinematics and kinetics of particles and rigid bodies in 2D and 3D motion, Rotations, translations, oscillations.

Learn to solve equilibrium of rigid bodies including the calculations of moment of force, inertia moments of solid bodies, and basic structural analysis, and be able to determine the requirement for the equilibrium of particles and solid bodies.

To develop the ability to apply Newtonian mechanics to model and predict the responses of simple dynamical system (particle and rigid body) subjected to applied forces.

10. Course learning outcomes:

After completing this course, students will be able to:

STT	Chuẩn đầu ra học phần (CLO) (1)	Kiến thức (2)	Kỹ năng (3)	Thái độ (4)	Chỉ báo PI (thuộc PLO) (5)
1.	Model the real mechanical system into an equivalent model, determine the components of the bonding reaction	A4.Apply	Apply		1.2.1.
2.	Determine the characteristics of the reduced force system in the case of planar problem	A4.Apply	Apply		1.2.1.
3.	Apply the force system balance equation to find the binding reaction for the solid body.	A4.Apply	Apply		1.2.1.
4.	Modeling and determining the kinematic characteristics of solid bodies	A4.Apply	Apply		1.2.1.
5.	Modeling and applying the general theorems of dynamics to establish the equations of motion and associated reactions of the system	A4.Apply	Apply		1.2.1.

11. Mapping of CLOs and Program learning outcomes (PLOs):

PLO	PLO1	PLO2	PLO3	PLO4	PLO5	PLO6	PLO7	PLO8
Course distribution	IT							
CLO 1	X							
CLO 2	X							
CLO 3	X							
CLO 4	X							
CLO 5	X							

12. Student responsibilities:

Student must perform the following tasks:

- Attend classes not less than 80% of the prescribed class hours of the course;

- Do and submit individual/group assignments according to the regulations of the course;
- Participate in class activities as prescribed;
- Self-study the problems assigned by the lecturer to do outside of class time;
- Complete all types of the course assessment.

13.Course assessment:

Components	Assessment form	CLO	Assessment Criterion	Scale	Percentage
A1. Evaluate the process	A1.1. Attendance	5	80% of course	10	20%
	A1.2. Homework assignments	1, 2, 3, 4,5,6,7	submitted on time	10	
	A1.3. Teamworks	1, 2, 3, 4, 5,6,7	task accomplishment	10	
A2. Mid-term evaluation	A2.1. Midterm exam	1, 2, 3, 4	correctly	10	20%
A3. Final evaluation	A3.1. Final exam	4, 5, 6, 7	correctly	10	60%

14. Teaching and Learning plans:

Week	Contents	Teaching and Learning activities	Assessment types	CLOs
	Course Introduction PART I : PROVINCE Chapter 1: Basic concepts and static axiomatic systems Equilibrium concepts: Absolute solid; Equilibrium state; Force; Force system; Moment of force; Link. Static axiom system.	Teach: - Lecturers introduce to students the subject objectives; the position and role of the subject in the training program of the industry; subject output standards, assessment forms and weights of assessments, course content by chapter... - Lecturers guide theory and sample exercises, discuss in class. - Ask questions for students to think and answer Learning in class: - Listen to lectures - Answer questions posed by the teacher. - Ask questions about matters of interest Study at home: - Review the theory - Do homework	A1.1; A1.2,	CLO 1

		- Read and study new content (chapter 2) Returned product: chapter 1 homework at the end of the term.		
	Chapter 2: System Theory 2.1. Collapse the force system 2.2. Equilibrium condition of the force system 2.3. Static math problem	Teach: - Lecturers introduce to students the subject objectives; the position and role of the subject in the training program of the industry; subject output standards, assessment forms and weights of assessments, course content by chapter... - Lecturers guide theory and sample exercises, discuss in class. - Ask questions for students to think and answer Learning in class: - Listen to lectures - Answer questions posed by the teacher. - Ask questions about matters of interest Study at home: - Review the theory - Do homework - Read and study new content (chapter 2) Returned product: chapter 1 homework at the end of the term.	A1.1, A1.2,	CLO 1,2
	Chapter 3. Static problems 3.1. Special math problems 3.2. Balance of a VR;	Teach: - Lecturers introduce to students the subject objectives; the position and role of the subject in the training program of the industry; subject output standards, assessment forms and weights of assessments, course content by chapter... - Lecturers guide theory and sample exercises, discuss in class. - Ask questions for students to think and answer Learning in class:	A1.1, A1.2,	CLO 1,2,3

		- Listen to lectures - Answer questions posed by the teacher. - Ask questions about matters of interest Study at home: - Review the theory - Do homework - Read and study new content (chapter 2) Returned product: chapter 1 homework at the end of the term.		
	Chapter 3. Static problems 3.3 Planar force system: Balance of VR . system	Teach: - Lecturers introduce to students the subject objectives; the position and role of the subject in the training program of the industry; subject output standards, assessment forms and weights of assessments, course content by chapter... - Lecturers guide theory and sample exercises, discuss in class. - Ask questions for students to think and answer Learning in class: - Listen to lectures - Answer questions posed by the teacher. - Ask questions about matters of interest Study at home: - Review the theory - Do homework - Read and study new content (chapter 2) Returned product: chapter 1 homework at the end of the term.	A1.1; A1.2,	CLO 1,2,3
	Chapter 3. Static problems 3.3 Planar force system: Balance of VR . system	Teach: - Lecturers introduce to students the subject objectives; the position and role of the subject in the training program of the industry; subject output standards, assessment	A1.1; A1.2,	CLO 1,2,3

		forms and weights of assessments, course content by chapter... - Lecturers guide theory and sample exercises, discuss in class. - Ask questions for students to think and answer Learning in class: - Listen to lectures - Answer questions posed by the teacher. - Ask questions about matters of interest Study at home: - Review the theory - Do homework - Read and study new content (chapter 2) Returned product: chapter 1 homework at the end of the term.		
	Chapter 3. Static problems 3.3 Planar force system: Balance of VR . system	Teach: - Lecturers introduce to students the subject objectives; the position and role of the subject in the training program of the industry; subject output standards, assessment forms and weights of assessments, course content by chapter... - Lecturers guide theory and sample exercises, discuss in class. - Ask questions for students to think and answer Learning in class: - Listen to lectures - Answer questions posed by the teacher. - Ask questions about matters of interest Study at home: - Review the theory - Do homework - Read and study new content (chapter 2) Returned product: chapter 1 homework at the end of the term.		CLO 1,2,3

	Chapter 4: Point Kinetics 4.1. Preamble 4.2. Surveying the motion of points in the following forms: Vector, Cartesian, natural coordinates Chapter 5: Basic motion of a solid body 5.1. Translational motion 5.2. Motion of a rigid body about a fixed axis	Teach: - Lecturers introduce to students the subject objectives; the position and role of the subject in the training program of the industry; subject output standards, assessment forms and weights of assessments, course content by chapter... - Lecturers guide theory and sample exercises, discuss in class. - Ask questions for students to think and answer Learning in class: - Listen to lectures - Answer questions posed by the teacher. - Ask questions about matters of interest Study at home: - Review the theory - Do homework - Read and study new content (chapter 2) Returned product: chapter 1 homework at the end of the term.	A1.1; A1.2,	CLO 4
	Mid-term test		A2.1	CLO 1,2,3,4
	Chapter 6: Parallel motion of a solid body	Teach: - Lecturers introduce to students the subject objectives; the position and role of the subject in the training program of the industry; subject output standards, assessment forms and weights of assessments, course content by chapter... - Lecturers guide theory and sample exercises, discuss in class. - Ask questions for students to think and answer Learning in class: - Listen to lectures - Answer questions posed by the teacher.		CLO 4

		- Ask questions about matters of interest Study at home: - Review the theory - Do homework - Read and study new content (chapter 2) Returned product: chapter 6 homework at the end of the term.		
	Exercises on solid animals		A1.1; A1.2,	CLO 4
	PART III: LEARNING MOTIVATION Chapter 7: Dynamics of Points	Teach: - Lecturers introduce to students the subject objectives; the position and role of the subject in the training program of the industry; subject output standards, assessment forms and weights of assessments, course content by chapter... - Lecturers guide theory and sample exercises, discuss in class. - Ask questions for students to think and answer Learning in class: - Listen to lectures - Answer questions posed by the teacher. - Ask questions about matters of interest Study at home: - Review the theory - Do homework - Read and study new content (chapter 2) Returned product: chapter 6 homework at the end of the term.	A1.1; A1.2,	CLO 5
	Chapter 8: General theorems of dynamics	Teach: - Lecturers introduce to students the subject objectives; the position and role of the subject in the training program of the industry; subject output standards, assessment	A1.1; A1.2,	CLO 5

		forms and weights of assessments, course content by chapter... - Lecturers guide theory and sample exercises, discuss in class. - Ask questions for students to think and answer Learning in class: - Listen to lectures - Answer questions posed by the teacher. - Ask questions about matters of interest Study at home: - Review the theory - Do homework - Read and study new content (chapter 2) Returned product: chapter 1 homework at the end of the term.		
	Chapter 8: General theorems of dynamics	Teach: - Lecturers introduce to students the subject objectives; the position and role of the subject in the training program of the industry; subject output standards, assessment forms and weights of assessments, course content by chapter... - Lecturers guide theory and sample exercises, discuss in class. - Ask questions for students to think and answer Learning in class: - Listen to lectures - Answer questions posed by the teacher. - Ask questions about matters of interest Study at home: - Review the theory - Do homework - Read and study new content (chapter 2)		CLO 5

		Returned product: chapter 1 homework at the end of the term.		
	Exercises on hard work dynamics		A1.1; A1.2,	CLO 5
	Chapter 8: General theorems of dynamics 8.5. The kinetic energy theorem of the system	Teach: - Lecturers introduce to students the subject objectives; the position and role of the subject in the training program of the industry; subject output standards, assessment forms and weights of assessments, course content by chapter... - Lecturers guide theory and sample exercises, discuss in class. - Ask questions for students to think and answer Learning in class: - Listen to lectures - Answer questions posed by the teacher. - Ask questions about matters of interest Study at home: - Review the theory - Do homework - Read and study new content (chapter 2) Returned product: chapter 1 homework at the end of the term.	A1.1; A1.2,	CLO 5
	Exercises on hard work dynamics	Teach : - Guide some typical basic exercises - Students will do the exercises under the guidance of the teacher Learning in class : - Students do their own exercises in class with the guidance of the teacher		
	Final exam		A3.1	CLO 3,4,5

15.Course materials:

15.1.Main textbooks, course books:

[1 Department of Technical Mechanics, Theoretical Mechanics, Intranet of Polytechnic University 2006.

[2] Do Sanh, Nguyen Van Dinh, Nguyen Van Khang, Mechanics I and II, Hanoi Education Publishing House, 1996.

15.2.References:

[1] Do Sanh, Nguyen Van Dinh, Nguyen Nhat Le, Mechanics exercises (Section: Statics and Kinetics), Hanoi Education Publishing House, 2001.

[2] Le Doan Hong, Do Sanh, Mechanical exercises (Dynamics part), Hanoi Education Publishing House, 2003.

[3] Nguyen Van Đao, Nguyen Trong Chuyen, Theoretical mechanics, Hanoi University and Professional High School Publishing House, 1969.

16. Scientific code of ethics:

- Students must respect their lecturers and other students.
- Students must comply with the university's academic integrity.
- Students must strictly follow the rules and regulations of the university.

17. Approved date: /12/ 2020

18. Approved by:

Dean of Faculty	Program chair	Lecturer in charge
Cao Van Lam, PhD.	**Vo Duy Hung, PhD.**	

19. Geodesy

THE UNIVERSITY OF DANANG
UNIVERSITY OF SCIENCE AND TECHNOLOGY
Faculty of Road and Bridge Engineering

SOCIALIST REPUBLIC OF VIETNAM
Independence - Freedom - Happiness

UNDERGRADUATE PROGRAM

Awarded degree: Undergraduate/Bachelor

Name of the study program: Construction Materials Engineering and Technology Program Code: 7510105

SYLLABUS
Course name (Vietnamese): Trắc địa
English name: Geodesy

1. Course code:	1092510
2. Course abbreviation:	Geodesy
3. Credits: **ECTS credits (*):**	03 credits (90 periods) 4,50
4. Time distribution	
- Lecture:	60 Periods
- Exercise:	30 Periods
- Practice/ Laboratory:	0 Periods
- Self-study/Assignment:	90 Periods
5. Lecturers in charge	
- Faculty/Division in charge:	Fundamental Technology division/ Faculty of Road and Bridge Engineering
- Course coordinator:	Le Van Dinh, MSc.
- Other lecturers:	Phan Duc Tam, MSc. PhD. Student
6. Required and recommended prerequisites for joining the course:	
- Required prerequisite:	None
- Recommended prerequisite:	Calculus 2
- Corequisite:	Linear Algebra
7. Course type:	☒ Compulsory Selected elective Free elective
8. Knowledge clusters:	Math and natural science General knowledge ☒ Core engineering fundamental knowledge Disciplinary knowledge Supportive knowledge Project/ Internship/ Graduate thesis

9. Course description

The course belongs to the fundamental knowledge, equipping learners with general knowledge about mapping and construction geodesy in service of surveying, design, exploitation, construction and management of works in the Construction Material Engineering. The course consists the general knowledge of geodesy , mapping knowledge and a knowledge of construction geodesy.

10. Course Learning Outcomes (CLOs)

After completing the course, students will be able to:

No	Course Learning Outcomes (CLOs)	Knowledge	Skills	Attiude	Performance indicators (belongs to PLOs)
1	Present and explain: Structural principle, how to use some common geodetic equipment; methods of basic measurements and positioning; algorithm in calculation and processing of field measurements.	A2.Understand	A5.Evaluate	C.2. Feedback	
2	Use common geodetic equipment. Employ basic measurements and positioning for mapping and construction. Handling of measured data. Exploiting topographic data for planning and designing works.	A3.Manipulate	B2.Manipulate	C.2. Feedback	
3	Analyze and detect errors affecting the quality of cartographic surveying and the location of construction sites	A4. Analyze	B2.Manipulate	C.3. Attitude	
4	Evaluate and analyze the quality of topographic data, the accuracy of the location of construction sites	A3.Manipulate	B2.Manipulate	C.3. Attitude	

11. The relationship between course learning outcomes(CLOs) and program learning outcomes (PLOs)

PLOs	PLO1	PLO2	PLO3	PLO4	PLO5	PLO6	PLO7	PLO8
Contribution of the course	IT	IT			U			
CLO 1	X	X						
CLO 2	X	X			X			
CLO 3	X							
CLO 4	X							

12. Student responsibilities

Students must do the following tasks:
- Attend at least 80% of the lessons of the course;
- Do homework assigned in each chaper of the course;
- Self-study the problems assigned by the lecturer (outside of class time);
- Take the mid-term and final exams;
- Fully attend and complete the content of practices

According to the regulation of training program:
- If students absent over 20% from theoretical hours, students will not meet the requirements to take the final exam. If students absent over 20% from internship hours, students will fail at this course.

13. Course assessments

Type of assessment	Performance assessment	Assessment methods	Rubric	Weighting percentage (%)		CLOs
A1. Ongoing assessment	A1.1 Class Attendance	P1.1. Diligence	R1.1 Reported diligence	5	10	CLO2
	A1.2 Exercises /homeworks	P1.2. Do at class/Homeworks	R1.2 According to the answer and grading scale	5		CLO1,2,3,4
A2. Mid-term Assessment	A2.1 Mid-term exam	P2.1 Written exam	R2.1 According to the answer and grading scale	10	10	CLO 1, 2, 3
A3. Final Assessment	A3.1 Final exam	P3. Written exam	R3.1 According to the answer and grading scale	50	50	CLO 2, 3, 4
A4. Internship Assessment	A4.1. Class Attendance	P1.1 Diligence	R1.1 Reported diligence	10	10	CLO2
	A4.2. Present practical results	P2.1. Presenting and Defending	R1.2 According to the answer and grading scale	20	20	CLO1,2,3,4
*Students who do no meet the requirements of internship fail in all of the course.						

14. Teaching and learning plan

14.1. Teaching and learning plan for theoretical hours (2 Credit)

Week	Contents	Teaching and learning activities	Performance assessment	Course learning outcomes (CLOs)
1	Course introduction: - Objectives of the course. - Overview about content of the entire course - Books, ebooks, and related materials for the study	**Teaching activities:** - Lecturers introduce the course target to students; the pivotal role of the course in the training program in this	A1.1, A1.2	CLO 1

	- Organizational form of teaching, tasks of students in each form of teaching. - Assessment methods and weighting percentage (%) for each essessment types. **Chapter 1. Fundamental Knowledge (3 periods)** 1.1. Introduction 1.2. Units and rules for rounding numbers 1.3. Coordinate systems commonly used in geodesy	major; course learning outcomes; how to evaluate the grade of students in the course; basic contents in each chapter; materials… - Give a lecture and show the related slides - Ask some questions about issues for students in order to answer. **class:** - Listen to the lecture - Answer the questions given by the lecturer - Ask questions about issues of interest (Students) **home:** - Students review what they have learned at class.		
2	**Chapter 2**. **Theory of Error (3 periods)** 2.1. Concept – Classify the error measurement. 2.2. The accuracy standard of direct measurement result. 2.3. The accuracy standard of indirect measurement result.	**Teaching activities:** - Give a lecture and show the related slides - Ask some questions about issues for students in order to answer. **class:** - Listen to the lecture - Students think, discuss and answer the questions given by the lecturer. - Ask questions about issues of interest (Students) **home:** - Students review what they have learned at class. - Students do their homework in chapter 2 - read ahead the chapter 3	A1.1 A1.2	CLO1; CLO2; CLO3.
3	**Chapter 3. Angular measurement. (3 periods)** 3.1. Angular principles 3.2. Measure the horizontal angle. 3.3. Measure the vertical angle.	**Teaching activities:** - Give a lecture and show the related slides - Ask some questions about issues for students in order to answer. **class:** - Listen to the lecture - Students think, discuss and answer the questions given by the lecturer.	A1.1, A1.2	CLO 2

		- Ask questions about issues of interest (Students) **home:** - Students review what they have learned at class. - Students do their homework in chapter 3 - read ahead the chapter 4		
4	**Continue the rest of chapter 3 (Do exercises – 1 period)** **Chapter 4. Distance measurement. (2 periods)** 4.1. Distance principles 4.2. Direct measurements (self-study) 4.3. Indirect measurements.	**Teaching activities:** - Give a lecture and show the related slides - Ask some questions about issues for students in order to answer. **class:** - Listen to the lecture - Students think, discuss and answer the questions given by the lecturer. - Ask questions about issues of interest (Students) **home:** - Students review what they have learned at class. - read ahead the chapter 5	A1.1, A1.2 s	CLO 2
5	**Chapter 5. Height measurement. (3 periods)** 5.1. Height principles 5.2. Trigonometric height measurement. 5.3. Geometric height measurement.	**Teaching activities:** - Give a lecture and show the related slides - Ask some questions about issues for students in order to answer. **class:** - Listen to the lecture - Students think, discuss and answer the questions given by the lecturer. - Ask questions about issues of interest (Students) **home:** - Students review what they have learned at class from chapter 1 to chapter 5. - Do homeworks of chapter 4 and chapter 5		
6	Mid-term exam	At class, Written exam	A2.1	CLO 1, 2.
7	**Chapter 6. Geodetic Framework (3 periods)** 6.1. Introduction of geodetic framework	**Teaching activities:** - Give a lecture and show the related slides	A1.1, A1.2	CLO 1,2,3

	6.2. Some basic geodetic calculation 6.3. Height Framework in calculation	- Ask some questions about issues for students in order to answer. **class:** - Listen to the lecture - Students think, discuss and answer the questions given by the lecturer. - Ask questions about issues of interest (Students) **home:** - Students review what they have learned at class. - Students do their homework in chapter 6 - read ahead section 6.4.		
8	**Continue the section 6.3 and 6.4 (2 periods)** **Chapter 7. Mapping and terrain sections (1 period)** 7.1. Introduction of geodetic framework	**Teaching activities:** - Give a lecture and show the related slides - Ask some questions about issues for students in order to answer. **class:** - Listen to the lecture - Students think, discuss and answer the questions given by the lecturer. - Ask questions about issues of interest (Students) **home:** - Students review what they have learned at class. - Students do their homework in chapter 6 - read ahead chapter 7.	A1.1, A1.2	CLO 1,2,4
9	**Continue chapter 7. Mapping and terrain sections. (3 periods)** 7.2. Mapping and terrain section measurements. 7.3. Drawing and mapping processing 7.4. Use mapping and terrain section.	**Teaching activities:** - Give a lecture and show the related slides - Ask some questions about issues for students in order to answer. **class:** - Listen to the lecture - Students think, discuss and answer the questions given by the lecturer. - Ask questions about issues of interest (Students) **home:**	A1.1, A1.2	CLO 1,2,3,4

		- Students review what they have learned at class. - Students do their homework in chapter 7		
10	**Continue Chapter 7. (1 period)** **Chapter 8. Geodesy in construction site (2 period)** 8.1. Introduction some geodetic construction works at sites 8.2. Employ geodetic works at sites based on what designed	**Teaching activities:** - Give a lecture and show the related slides - Ask some questions about issues for students in order to answer. **class:** - Listen to the lecture - Students think, discuss and answer the questions given by the lecturer. - Ask questions about issues of interest (Students) **home:** - Students review what they have learned at class. - Students do their homework in chapter 8	A1.1, A1.2	CLO 1,2,3,4
11	**Teaching the rest contents of chapter 8. (3 periods)** 8.3. Some geodetic works at construction sites	**Teaching activities:** - Give a lecture and show the related slides - Ask some questions about issues for students in order to answer. **class:** - Listen to the lecture - Students think, discuss and answer the questions given by the lecturer. - Ask questions about issues of interest (Students) **home:** - Students review what they have learned at class. - Students do their homework in chapter 8	A1.1, A1.2	CLO 1,2,3,4

NOTE: Geodetic final exam: Peform the final exam when students have done to learn theoretical hours and internship.

14.2. Teaching and learning plan for internship (1 Credit)

NOTE: Employ one week of internship when students have done completely theoretical hours.(14.1)

Week (10 periods)	Contents	Teaching and learning activities	Performance assessment	Course learning outcomes (CLOs)

Monday	I. Introduction the course. II. Organize the internship and use the geodetic equipments. - Organizing the classes: The course divides into many groups, each group continue to divide into smaller, choose the leader in each group (beneficial responsibilities) - Introduction: Time, location, contents, rules, regulation. - Use the geodetic equipments: The leaders of groups sign to take the equipments. - Equipment: Levelling, Theodolite: setting up, levelling-up, navigate, read the result - Assign the internship area to students.	**Teaching activities:** - Lecturers introduce the course target to students; the pivotal role of the course in the training program in this major; course learning outcomes; how to evaluate the grade of students in the course; basic contents in each chapter; materials… - Give a lecture and show the related slides - Guide how to use the geodetic equipment. - Ask some questions about issues for students in order to answer and follow. **At sites:** - Listen to the guidance. - Answer the questions given by the lecturer - Employ some step in equipment, meet the requirement given by the lecturer. - Ask questions about issues of interest (Students) **home:** - Students review what they have learned at theoretical hours and internship materials of geodesy given by lecture.	A4.1	CLO 1,2
Tuesday	III. Establish the horizontal framwork. 3.1. Measurement part. Lesson 1: measure horizontal angle (HA). - Requirements: At assigned points, each group measures the HA in 2 rounds, take the data into the textbook and	**Teaching activities:** - Guide how to use the geodetic equipment. - Ask some questions about issues for students in order to answer and follow. **At sites:** - Do lesson 1 - Listen to the guidance.	A4.1	CLO 1,2,3

	compare the result with requirement. - Organization: Follow the rule and regulation given by lecturers and standards.	- Answer the questions given by the lecturer - Employ some step in equipment, meet the requirement given by the lecturer. - Ask questions about issues of interest (Students) **home:** - complete fully the report of lesson 1 - Students review what they have learned at theoretical hours and internship materials of geodesy given by lecture.		
Wednesday	Lesson 2: Measure the distance. - Requirement: At assigned points, each group measures distance between 2 points in 2 rounds by steel ruller, take the data into the textbook and compare the result with requirement. - Organization: Follow the knowledge, rule and regulation given by lecturers and standards. 3.2. Adjustment the horizontal plane rigid. From the data of lesson 1;2 and original data. Each group employs the adjustment work follow the method that students have learned, obey they rules and regulations.	**Teaching activities:** - Guide how to use the geodetic equipment. - Ask some questions about issues for students in order to answer and follow. **At sites:** - Do lesson 2 - Listen to the guidance. - Answer the questions given by the lecturer - Employ some step in equipment, meet the requirement given by the lecturer. - Ask questions about issues of interest (Students) **home:** - complete fully the report of lesson 2 - Students complete fully adjustment of horizontal plane rigid	A4.1	CLO 1,2,3
Thursday	IV. Establish vertical framework 4.1. Measurement part Lesson 3: Measure vertical framework.	**Teaching activities:** - Guide how to use the geodetic equipment. - Ask some questions about issues for students	A4.1	CLO 1,2,3

	- Requirement: Each group use the levelling device, boning rod; apply geometric height measurement, take the data into the textbook and compare the result with requirement. - Organization: Follow the knowledge, rule and regulation given by lecturers and standards. 4.2. Adjustment vertical plane rigid. - From the data of lesson 3 and original data. Each group employs the adjustment work follow the method that students have learned, obey they rules and regulations.	in order to answer and follow. **At sites:** - Do lesson 2 - Listen to the guidance. - Answer the questions given by the lecturer - Employ some step in equipment, meet the requirement given by the lecturer. - Ask questions about issues of interest (Students) **home:** - complete fully the report of lesson 3 - Students complete fully adjustment of verical plane rigid		
Friday	V. Locate the constructions Lesson 4: Employ geodetic works at sites based on what designed - Requirement: From the limited point, each group deploys geodetic works at site based on what designed, follow the method given by lecturers. Submit the result to lecturers in order to evaluate the result exactly. - Organization: The leader of each group assign tasks properly to members , follow the method, rule and regulation given by lecturers. VI. Completely done the report of course in the forms.	**Teaching activities:** - Guide how to use the geodetic equipment, explaination. - Ask some questions about issues for students in order to answer and follow - guide students to do the report of course. - process the data - finish the report of course. - grade the students' diligence	A4.1; A4.2.	CLO 1,2,3,4

15. Materials

15.1. Books, lectures, main textbooks

[1] Le Van Dinh, Pham Van Mang, Geodetic Lectures, Da Nang, 1992.

15.2. Reference materials

[1] Le Van Dinh, Lectures, 2017.

[2] Le Van Dinh, , Geodetic exercises, 2017.

[3] Pham Van Chuyen, , Fundamental Geodesy, Construction Publisher 2010.

[4] Vu Thang, Geodetic construction in practice, Construction Publisher 2002.

15.3. Software: Nicknet, Topo.

16. Scientific code of ethics:

- Students must respect a lecturer and other students.
- Students must comply with the University's academic integrity policy.
- Students must obey the rules and regulations of the university.

17. Approved date:

18. Approved by:

Dean of Faculty	Program chair	Lecturer in charge
Cao Van Lam, PhD.	**Vo Duy Hung, PhD.**	**Le Van Dinh, MSc**

20. Applied Mathematics 1

THE UNIVERSITY OF DANANG
UNIVERSITY OF SCIENCE AND TECHNOLOGY
Faculty of Road and Bridge Engineering

SOCIALIST REPUBLIC OF VIETNAM
Independence - Freedom - Happiness

UNDERGRADUATE PROGRAM

Awarded degree: Undergraduate/Bachelor

Name of the study program: Construction Materials Engineering and Technology Program Code: 7510105

SYLLABUS
Course name (Vietnamese): Toán ứng dụng 1
English name: Applied Mathematics 1

1. Course Code:	1092480
2. Course Abbreviation:	Applied Mathematics 1
3. Credits: **ECTS credits (*):**	02 credits (30 Periods) 2,83
4. Study workload:	
- Lecture:	30 Periods
- Exercise:	
- Practice/ Laboratory:	0
- Self-study/Assignment:	60 Periods
5. Responsible persons:	
- Faculty/Division in charge:	Construction materials Division/ Faculty of Road and Bridge Engineering
- Course coordinator:	PhD.Tran Trung Viet
- Other lecturers:	Prof.PhD. Hoang Phuong Hoa; PhD. Nguyen Van Te Ron
6. Required and recommended prerequisites for joining the course:	
- Required prerequisite:	None
- Recommended prerequisite:	Probability and Statistics
- Corequisite:	None
7. Type of course:	☒ Compulsory Selected elective Free elective
8. Knowledge clusters:	☒ Math and natural science General knowledge Core engineering fundamental knowledge Disciplinary knowledge Supportive knowledge

	Project/ Internship/ Graduate thesis

9. Course description

The course provides knowledge about the application of statistical probability in synthesis, experimental planning for the design, construction, experiment, and exploitation of construction. The course also provides students with knowledge about regression models using in the analysis of experimental results, analysis, and calculation of construction structures in general.

10. Course Learning Outcomes

After completing the course, students will be able to

NO	Course Learning Outcomes(CLO)	Knowledge	Skills	Attitude	Performance indicators (belongs to PLOs)
1	**Application** statistical probability in synthesis, analyzing data, designing	a3. Applying	a3. Applying	c3. Reacting	1.1.4; 4.3.2
2	**Applying** regression models in the analysis and evaluation of experimental data, structural analysis	a3. Applying	a3. Applying	c3. Reacting	1.1.4; 3.1.3; 9.2.1

11. The relationship between course learning outcomes (CLOs) and program learning outcomes (PLOs)

PLO	PLO1	PLO2	PLO3	PLO4	PLO5	PLO6	PLO7	PLO8
Contribution of the course	T		IT	IT				
CLO 1	X			X				
CLO 2	X		X					
CLO 3	X							

12. Student responsibilities

Students must perform the following tasks:

- Attending at least 80% of the lessons of the course;
- Participating in teamwork activities according to the regulations of the class;
- Self-studying the problems assigned by the lecturer to do outside of class hours;
- Completing all course assessments.

13. Course assessments

Type of assessment	Performance assessment	Assessment methods	Rubric	Weighting percentage (%)		Course learning outcomes (CLOs)
A1. Ongoing assessment	A1.1. Class Attendance	Attendance check	Rubric 3	50	20	

	A1.2. Group Assessment	Group homework	Rubric 2	50		CLO 1, 2, 3
A2. Mid-term Assessment	A2.1. Mid-term exam	Written exam	According to the answer and grading scale	100	20	CLO 1,2, 3
A3. Final Assessment					60	
	A3.2. Final exam	P3. Written exam	According to the answer and grading scale	100		CLO 1,2, 3

14. Teaching and learning plan

Weeks/ Periods (4 Periods/ session)	Detailed contents of the course	Teaching and learning activities	Performance assessment	Course learning outcomes (CLOs)
1	**Course introduction.** - Course objectives. - Preliminary content of the entire course program and study materials. - Organizational forms of teaching, tasks of students in each form of teaching. - Evaluation forms and rates. **Chapter 1. Statistical probability and its role in construction engineering** ***1.1 Introductions*** ***1.2 Incertaine and probability model*** ***1.3 Application in civil engineering*** **Chapter 2. Probability theory** ***2.1. Definitions*** ***2.2. Bayes theory***	Teaching: lecture form + quick Q&A Instructions for preparing homework before going to class: - Read the course outline - Develop a study plan - Prepare study materials. - Pre-read the document: + Ang A H-S. and W. H. Tang (1975), *Probability Concepts in Engineering Planning and Design:Volume IBasic principles*, John Wiley & Sons, Inc., USA + Lecture on Applied Mathematics 1	A1.1 A1.2	CLO1
2	**Chapter 2. Probability theory (Cont.)** ***2.3. Random variable and probability distribution*** ***2.4. The cumulative distribution function and the probability density function***	Teaching: lecture form + quick Q&A Instructions for preparing homework before going to class: - Read the course outline - Develop a study plan - Prepare study materials.	A1.1 A1.2	CLO1 CLO2

	2.4.1. The cumulative distribution functions 2.4.2. Probability density function ***2.5. Populations and statistical samples*** 2.5.1. Populations and sample 2.5.2. Expectations 2.5.3. Variance 2.5.4. Mean 2.5.6. Probability value ***2.6. Examples applied by Matlab***	- Pre-read the document: + Ang A H-S. and W. H. Tang (1975), *Probability Concepts in Engineering Planning and Design:Volume IBasic principles*, John Wiley & Sons, Inc., USA + Lecture on Applied Mathematics 1		
3	**Chapter 3. Probability distribution functions and applications** ***3.1. Common distributions functions*** 3.1.1. Normal distributions 3.1.2. Log Normal distributions 3.1.3. Uniform distributions 3.1.4. Exponential distributions 3.1.5. Weibull distributions 3.1.6. Other distributions ***3.2. Multivariate distribution functions*** 3.2.1. A random variable 3.2.2. Multivariable 3.2.3. Moment of multivariate distributions functions 3.2.4. MATLAB application to characterize the multivariable distribution function	Teaching: lecture form + quick Q&A Instructions for preparing homework before going to class: - Read the course outline - Develop a study plan - Prepare study materials. - Pre-read the document: + Ang A H-S. and W. H. Tang (1975), *Probability Concepts in Engineering Planning and Design:Volume IBasic principles*, John Wiley & Sons, Inc., USA + Lecture on Applied Mathematics 1	A1.1 A1.2	CLO1 CLO2
4	**Chapter 3. continued** ***3.3. Application of probabilistic models in analysis and presentation of experimental results*** 3.3.1. Analyze data 3.5.2. Presenting results	Teaching: lecture form + quick Q&A Instructions for preparing homework before going to class: - Read the course outline - Develop a study plan - Prepare study materials.	A1.1 A1.2	CLO1 CLO2

	3.4. Application of probabilistic models in civil engineering 3.4.1. Modeling the incertaines of materials properties 3.4.2. Modeling traffic problems 3.4.3. Classification of rain and flood intensity	- Pre-read the document: + Ang A H-S. and W. H. Tang (1975), *Probability Concepts in Engineering Planning and Design:Volume IBasic principles*, John Wiley & Sons, Inc., USA + Lecture on Applied Mathematics 1		
5	**Chapter 3. Continued** 3.4.4. Determining the safety level of the structure ***3.5. Examples applied by Matlab*** **Chapter 4. Methods of sample estimation and probability modeling** ***4.1. Parameter estimation*** 4.1.1. Method of Moment 4.1.2. The 1st and 2nd order moments estimation	Teaching: lecture form + quick Q&A Instructions for preparing homework before going to class: - Read the course outline - Develop a study plan - Prepare study materials. - Pre-read the document: + Ang A H-S. and W. H. Tang (1975), *Probability Concepts in Engineering Planning and Design:Volume IBasic principles*, John Wiley & Sons, Inc., USA + Lecture on Applied Mathematics 1	A1.1 A1.2	CLO1 CLO2
6	**Chapter 4. Contuned** 4.1.3. Estimated confidence interval 4.1.4. Maximum Likelihood method ***4.2. Testing statistical significance*** 4.2.1. Evaluation conditions 4.2.2. Testing statistical method **4.3. Linear models in statistical analysis** 4.3.1. Univariate linear model	Teaching: lecture form + quick Q&A Instructions for preparing homework before going to class: - Read the course outline - Develop a study plan - Prepare study materials. - Pre-read the document: + Ang A H-S. and W. H. Tang (1975), *Probability Concepts in Engineering Planning and Design:Volume IBasic principles*, John Wiley & Sons, Inc., USA + Lecture on Applied Mathematics 1	A1.1 A1.2	CLO1 CLO2
7	**Chapter 4. Continued**	Teaching: lecture form + quick Q&A	A1.1 A1.2	CLO1 CLO2

	4.3.2. Multivariable linear model 4.3.3. Linear model sum of least squares (LSE) ***4.4. Choosing a probability distribution*** 4.4.1. Maximum Likelihood method 4.4.2. K-Mean method	Instructions for preparing homework before going to class: - Read the course outline - Develop a study plan - Prepare study materials. - Pre-read the document: + Ang A H-S. and W. H. Tang (1975), *Probability Concepts in Engineering Planning and Design:Volume IBasic principles*, John Wiley & Sons, Inc., USA + Lecture on Applied Mathematics 1		
8	**Chapter 4. Continued** ***4.5. Examples applied by Matlab*** **Chapter 5. Linear regression model** ***5.1. Introduction*** ***5.2. Simple linear regressions*** 5.2.1 - What is Simple Linear Regression? 5.2.2 - What is the "Best Fitting Line"? 5.2.3 - The Simple Linear Regression Model 5.2.4 - What is The Common Error Variance? 5.2.5 - The Coefficient of Determination, R2 5.2.6 - (Pearson) Correlation Coefficient, r 5.2.7 - Some Examples 5.2.8 - R2 Cautions 5.2.9 - Hypothesis Test for the Population Correlation Coefficient 5.2.10. Examples applied by Matlab	Teaching: lecture form + quick Q&A Instructions for preparing homework before going to class: - Read the course outline - Develop a study plan - Prepare study materials. - Pre-read the document: + Ang A H-S. and W. H. Tang (1975), *Probability Concepts in Engineering Planning and Design:Volume IBasic principles*, John Wiley & Sons, Inc., USA + Lecture on Applied Mathematics 1	A1.1 A1.2	CLO1 CLO2
9	**Chapter 5. Continued** ***5.3. Multilinear Regressions*** 5.3.1 - Example on IQ and Physical Characteristics 5.3.2 - Example on Underground Air Quality	Teaching: lecture form + quick Q&A Instructions for preparing homework before going to class:	A1.1 A1.2	CLO1 CLO2

	5.3.3 - The Multiple Linear Regression Model 5.3.4 - A Matrix Formulation of the Multiple Regression Model 5.3.5 - Examples applied by Matlab	- Read the course outline - Develop a study plan - Prepare study materials. - Pre-read the document: + Ang A H-S. and W. H. Tang (1975), *Probability Concepts in Engineering Planning and Design:Volume IBasic principles*, John Wiley & Sons, Inc., USA + Lecture on Applied Mathematics 1		
10	**Chapter 6. Nonlinear regressions** 6.1 - Logistic Regression 6.2 - Polytomous Regression 6.3 - Further Logistic Regression Examples 6.4 - Poisson Regression 6.5 - Generalized Linear Models 6.6 - Nonlinear Regression 6.7 - Exponential Regression Example	Teaching: lecture form + quick Q&A Instructions for preparing homework before going to class: - Read the course outline - Develop a study plan - Prepare study materials. - Pre-read the document: + Ang A H-S. and W. H. Tang (1975), *Probability Concepts in Engineering Planning and Design:Volume IBasic principles*, John Wiley & Sons, Inc., USA + Lecture on Applied Mathematics 1	A1.1 A1.2	CLO1 CLO2
11	**Chapter 6. Continued** ***6.8. Examples applied by Matlab***	Teaching: lecture form + quick Q&A Instructions for preparing homework before going to class: - Read the course outline - Develop a study plan - Prepare study materials. - Pre-read the document: + Ang A H-S. and W. H. Tang (1975), *Probability Concepts in Engineering Planning and Design:Volume IBasic principles*, John Wiley & Sons, Inc., USA + Lecture on Applied Mathematics 1	A1.1 A1.2	CLO1 CLO2

12	**Review all the lessons**	Teaching: summarizing + Q&A Lesson preparation guide: review the entire program + prepare questions	A1.1 A1.2	CLO1 CLO2

15. Course materials:

15.1. Books, lectures, main textbooks:

[1]. Kottegoda N T. and R Rosso (2008),*Applied Statistics for Civil and Environmental Engineers*, 2nd Edition, Wiley-Blackwell, United Kingdom
[2]. Papoulis,A, and S. U.Pillai (2002), *Probability, Random Variables and Stochastic Processes*, McGraw-Hill, USA
[3]. Lecture on Applied Mathematics 1 of the Construction materials Division.

15.2. Reference materials:

[1]. Ang A H-S. and W. H. Tang (1975),*Probability Concepts in Engineering Planning and Design:Volume IBasic principles*, John Wiley & Sons, Inc., USA
[2]. Jonson R A. and C.B. Gupta (2005), *Miller and Freund's Probability and Statistics for Engineers*,Pearson Education, Inc., USA.

16. Scientific code of ethics:

- Students must respect a lecturer and other students.
- Students must comply with the University's academic integrity policy.
- Students must obey the rules and regulations of the university.

17. Approved date:

18. Approved by:

Dean of Faculty	Program chair	Lecturer in charge
Cao Van Lam, PhD.	**Vo Duy Hung, PhD.**	**Tran Trung Viet, PhD.**

21. History of Vietnamese Communist Party

THE UNIVERSITY OF DANANG
UNIVERSITY OF SCIENCE AND TECHNOLOGY
Faculty of Road and Bridge Engineering

SOCIALIST REPUBLIC OF VIETNAM
Independence - Freedom - Happiness

UNDERGRADUATE PROGRAM

Awarded degree: Undergraduate/Bachelor

Name of the study program: Construction Materials Engineering and Technology Program Code: 7510105

SYLLABUS

Course name (Vietnamese): Lịch sử Đảng Cộng sản Việt Nam
English name: History of Vietnamese Communist Party

1. Course code:	2090170
2. Course abbreviation:	History of Vietnamese Communist Party
3. Credits: **ECTS credits (*):**	02 (30 periods) 2,83
4. Time distribution	
- Lecture:	02 (30 periods)
- Exercise:	
- Self-study/Assignment:	60 periods
5. Lecturers in charge	
- Faculty/Division in charge:	Department of Political Theory, University of Economics, University of Danang
- Course coordinator:	Associate Prof.PhD. Ngo Van Ha
- Other lecturers:	1. PhD. Le Thi Tuyet Ba, 2. Ms. Đo Thi Hang Nga, 3. Ms. Tu Anh Nguyet, 4. PhD. Đinh Van Trong
6. Required and recommended prerequisites for joining the course:	
- Required prerequisite:	Not required
- Recommended prerequisite:	Philosophy of Marxism and Leninism
- Corequisite:	Not required
7. Course type:	☒ Compulsory Selected elective Free elective
8. Knowledge clusters:	Math and natural science General knowledge ☒ Core engineering fundamental knowledge

	Disciplinary knowledge Supportive knowledge Project/ Internship/ Graduate thesis

9. Course description

Besides to introduction and conclusion chapters, the course consists of 3 chapters related to scientific acknowledgement bout the subjects, purposes, tasks, research and learning methods of the History of the Communist Party of Vietnam; The Communist Party of Vietnam was established and led the revolution for founding nation (1930-1945); Leading two resistance wars, completing national liberation and reunification (1945-1975); Leading the country in the transition to socialism and conducting the innovation (1975-2018); Some great lessons under Party leadership. Thereby, it is possible to affirm the successes and advantages, highlighting the limitations and experiences in the revolutionary leadership process of the Party.

10. Course Learning Outcomes (CLOs)

After completing the course, students will be able to:

No	Course Learning Outcomes (CLOs)	Knowledge	Skills	Attiude	Performance indicators (belongs to PLOs)
1	Get an understanding of the foundation process of the Communist Party of Vietnam, the way of revolution, national liberation, and national reunification.	A2.Understand	A2.Understand	A2.Understand	1.5.2. 3.2. 4.1.
2	Analyze some primary contents in the historical significance of the foundation of the Communist Party of Vietnam, the process of implementing the revoltionary policies, national liberation, and national reunification.	A3. Determined	A3. Determined	A3. Determined	1.5.2. 3.2. 4.1.
3	Be aware of the policies of industrialization, economics, politics, building political system and new culture, etc.	A4. Analysis	A4. Analysis	A4. Analysis	1.5.2. 3.2. 4.1.
4	Pratice some fundamental contents in the process of the Party's leadership in implementing the industrialization, economic, and foreign policy guidelines, building a new political system and culture, etc.	A3. Determined	A3. Determined	A3. Determined	1.5.2. 3.2. 4.1.
5	Train learners in a theoretical thinking way, research ability, lifelong learning, presentation, communication, group work, etc., to comply with the Party's policies,	B4. Team work C3.	B4. Team work C3.	B4. Team work C3. Theoretical thinking	1.5.2. 3.2. 4.1. 5.1.

	State laws and are aware of the responsibility of citizens for society.	Theoretical thinking	Theoretical thinking		

11. The relationship between course learning outcomes(CLOs) and program learning outcomes (PLOs)

PLO	PLO1	PLO2	PLO3	PLO4	PLO5	PLO6	PLO7	PLO8
Contribution of the course	I		I	T	I			
CLO 1	X		X	X				
CLO 2	X		X	X				
CLO 3	X		X	X				
CLO 4	X		X	X				
CLO 5	X		X	X	X			

12. Student responsibilities

Students must do the following tasks:

- Attend at least 80% of the lessons of the course;
- Do homework assigned in each chaper of the course;
- Self-study the problems assigned by the lecturer (outside of class time);
- Take the mid-term and final exams;
- Fully attend and complete the content of practices

13. Course assessments

The results of the course evaluation are based on the assessment of the student's activities during the course of study, the mid-term exam and the final exam expressed through the assessment; the course output standards are assessed; criteria, standards and weights of the assessments.

Type of assessment	**Performance assessment**	**Assessment methods**	**Rubric**	**Weighting percentage (%)**	**CLOs**
A1. Ongoing assessment	A1.1 Class Attendance	CLO1-4	Go to school fully. Do not miss more than 20% of the class.		10%
	A1.2 Exercises /homeworks	CLO3-5	Do the correct answer		10%
A2. Mid-term Assessment	A2.1 Mid-term exam	CLO1-2	Meet the requirements of the answer	10	20%
A3. Final Assessment	A3.1 Final exam	CLO1-5	Meet the requirements of the answer	10	60%

14. Teaching and learning plan

Week	Contents	Teaching and learning activities	Performance assessment	Course learning outcomes (CLOs)
1 (Theory)	Course Introduction Introduction: Objects, content, research methods, study History of the Communist Party of Vietnam. I. STUDY OBJECTS 1.1. History of the Communist Party of Vietnam is a branch of historical science 1.2. Objects of study in the subject History of the Communist Party of Vietnam II. MANDATES 2.1. Functions of Party History Science 2.2. Mission III. RESEARCH METHODS, LEARNING HISTORY OF THE Communist Party of Vietnam 3.1. Theoretical foundations and methodologies 3.2. Research and study methods	Teach: - Lecturers introduce to students the subject objectives; the position and role of the subject in the training program of the industry; subject output standards, assessment forms and weights of assessments, course content according to chapters... - Teaching method: TLM1, TLM2 Learning in class: - Listen to lectures - Answer the teacher's questions. - Ask questions of concerns. Study at home: - Review the theory - Read the next post		
6 (Theory + Discussion)	Chapter 1: The Communist Party of Vietnam was born and led the	Teach: - Teaching methods:	A1.1, A2.1, A3.1	CLO1-5

	revolutionary cause of national liberation (1930-1945). I. THE VIETNAM COMMUNITY PARTY IS BEING AND THE FIRST POLITICAL LARGENCY OF THE PARTY 1.1. Historical context and role of Nguyen Ai Quoc in the process of campaigning for the establishment of the Party 1.2. The Party's Founding Conference and the Party's First Political Platform II. THE LEADING PARTY of the National Liberation Revolution (1930-1945) 2.1. Policy of the Party and revolutionary movement 1930-1931 2.2. The Party led the restoration of the organizational system and the people's revolutionary movement in the period 1932-1935 2.3. The Party led the movement for people's livelihood and democracy in the period 1936-1939 2.4. Party leading the national liberation movement and the August Revolution (from September 1939 to August 1945). 2.5. Historical significance and lessons learned of the August Revolution in 1945	TLM1, TLM2, TML 6, TML13 Learning in class: - Listen to lectures - Answer the teacher's questions. - Ask questions of concerns. Study at home: - Review the theory - Read the next post.		
7 (Theory + Discussion)	Chapter 2: The Party led two resistance wars against the French colonialists and the American imperialists (1945-1975) I. WAR AGAINST FRANCE 1945-1954 1.1. Historical background 1.2. The line of resistance against the French colonialists (1945-1954) 1.3. The leading party conducts resistance 1.4. Evaluate the process of the Party leading the resistance war II. THE LEADING PARTY OF THE RESISTANCE AGAINST US, SAVE THE COUNTRY (1954-1975) 2.1. Historical background	Teach: - Teaching methods: TLM1, TLM2, TML 6, TML13 Learning in class: - Listen to lectures - Answer the teacher's questions. - Ask questions of concerns. Study at home:	A1.1, A2.1, A3.1	CLO1-5

	2.2. The Party's line in the resistance war against the US, saving the country 2.3. The Party Leading the Resistance 2.4. Evaluate the process of the Party leading the resistance war	- Review the theory - Read the next post.		
4(Theory + Discussion)	Chapter 3: The party leading the country to transition to socialism (1954-1986) I. THE LEADING PARTY OF THE NORTH TO SOCIALIST (1954-1975) 1.1. Socialist revolutionary line in the North and the implementation direction of the Party from 1954 to 1965 1.2. The Party led the construction of socialism in the North from 1965 to 1975 1.3. Achievements, limitations and experiences (1954-1975) II. THE LEADING PARTY TRANSLATE THE COUNTRY TO SOCIALism FROM 1975 TO 1986 2.1. Leader in building and defending the unified Fatherland from 1975 to 1981 2.2. Leadership to overcome economic and social crisis from 1982 to 1986 2.3. Achievements, limitations and experiences of the period 1976-1986	Teach: - Teaching methods: TLM1, TLM2, TML 6, TML13 Learning in class: - Listen to lectures - Answer the teacher's questions. - Ask questions of concerns. Study at home: - Review the theory - Read the next post.	A1.1, A1.2, A2.1, A3.1	CLO1-5
10 (Theory + Discussion)	Chapter 4: The Party leads the renewal process along the socialist path (1986-2018). I. INNOVATION WAY AND IMPLEMENTATION OF THE FIRST ROAD (1986-1996) 1.1. Initiating and implementing the renovation policy (1986 - 1991) 1.2. Implement the reform policy for the period 1991 - 1996 II. PROCESSING INDUSTRIALIZATION, MODERNIZATION AND INTERNATIONAL IMPORTANCE (1996 - 2016)	Teach: - Teaching methods: TLM1, TLM2, TML 6, TML13 Learning in class: - Listen to lectures - Answer the teacher's questions.	A1.1, A1.2, A2.1, A3.1	CLO1-5

	2.1. Industrialization and modernization in the period 1996 - 2001 2.2. Industrialization and modernization in the period 2001 - 2006 2.3. Accelerating industrialization and modernization in the period 2006 - 2011 2.4. Accelerating industrialization and modernization in the period 2011 - 2016 2.5. Accelerating industrialization and modernization in the 2016-2017 period	- Ask questions of concerns. Study at home: - Review the theory - Read the next post.		
2 (Theory + Discussion)	Chapter 5: Some key lessons in the Party's leadership I. HOLDING THE FLAG OF NATIONAL INDEPENDENCE AND SOCIALism 1.1. Some concepts 1.2. National independence associated with socialism is an objective choice of Vietnamese history 1.3. National independence associated with socialism is the source of strength of the Vietnamese revolution II. REVOLUTION IS THE CAREER OF THE PEOPLE, BY THE PEOPLE AND FOR THE PEOPLE III. CONTINUOUSLY CONTINUOUSLY, STRENGTHENCE IN PARTY UNION, ALL PEOPLE'S UNITY, Ethnic Solidarity, INTERNATIONAL UNITY 3.1. Scientific basis of the lesson 3.2. lesson content IV. COMBINING THE POWER OF COUNTRY, COUNTRY WITH POWER OF TIME, INTERNATION 4.1. Purpose of request 4.2. Content 4.3. Meaning of the lesson. V. THE RIGHT LEADERSHIP OF THE VIETNAMESE COMMERCIAL PARTY IS THE LEADING FACTOR OF ASSURING THE WINNERS OF THE VIETNAM REVOLUTION	Teach: - Teaching methods: TLM1, TLM2, TML 6, TML13 Learning in class: - Listen to lectures - Answer the teacher's questions. - Ask questions of concerns. Study at home: - Review the theory - Read the next post.	A1.1, A1.2, A2.1, A3.1	CLO1-5

	5.1. The Party's perception and policy on the Party's leadership role 5.2. Practice has proven that the correct leadership of the Communist Party of Vietnam is the leading factor to ensure the victory of the Vietnamese revolution. 5.3. Current situation, revolutionary tasks and leadership role of the Communist Party of Vietnam			

15. Course materials:

14.1. Books, lectures, main textbooks

[1]. Ministry of Education and Training, History of the Communist Party of Vietnam, National Political Publishing House 2019.

14.2. Books and references:

[1]. Research Committee on History of the Central Party, History of the Communist Party of Vietnam, volume I (1920-1954), Truth Publishing House, 1981. pp.1-105.

[2]. Communist Party of Vietnam, Complete Party Document, Volume 1, National Program Publishing House, Hanoi, 1998, p. 614.

[3]. Communist Party of Vietnam, Complete Party Document - Brief Constitution of the Party, Brief Strategy of the Party, Summary Program of the Party, Brief Statute of the Communist Party of Vietnam; Conference summary report; The appeal, National Program Publishing House, H, 1998, volume 2, pp. 2-19.

[4]. Communist Party of Vietnam, Complete Party Document, National Program Publishing House, H, 2000, T.7, p.118

[5]. Communist Party of Vietnam, Complete Party Document, National Program Publishing House, H, 2002, T. 21, pp. 904

15. Scientific code of ethics:

Students must respect a lecturer and other students.

Students must comply with the University's academic integrity policy.

Students must obey the rules and regulations of the university.

16. Approved date:

17. Approved by:

Dean of Faculty	Program chair	Lecturer in charge
Cao Van Lam, PhD.	**Vo Duy Hung, PhD.**	

22. General Environment

THE UNIVERSITY OF DANANG
UNIVERSITY OF SCIENCE AND TECHNOLOGY
Faculty of Road and Bridge Engineering

SOCIALIST REPUBLIC OF VIETNAM
Independence - Freedom - Happiness

UNDERGRADUATE PROGRAM

Awarded degree: Undergraduate/Bachelor

Name of the study program: Construction Materials Engineering and Technology Program Code: 7510105

SYLLABUS
Course name (Vietnamese): Môi trường
English name: General Environment

1. Course code:	1170011
2. Course abbreviation:	General Environment
3. Credits: **ECTS credits (*):**	02 2,83
4. Study workload:	
- Lecture:	2 credits (30 hours)
- Exercise:	… credits (... hours)
- Practice/ Laboratory:	… credits (… hours)
- Self-study/Assignment:	60 hours
5. Responsible persons:	
- Faculty/Division in charge:	Faculty of Environment
- Course coordinator:	Le Phuoc Cuong, Ph.D.
- Other lecturers:	Le Thi Xuan Thuy, Ph.D., Pham Thi Kim Thoa, Ph.D.
6. Required and recommended pre-requisites for joining the course:	
- Required prerequisite:	N/A
- Recommended prerequisite:	N/A
- Corequisite:	N/A
7. Course type:	☒ Compulsory Selected elective Free elective
8. Knowledge clusters:	Math and natural science ☒ General knowledge Core engineering fundamental knowledge Disciplinary knowledge Supportive knowledge Project/ Internship/ Graduate thesis

9. Course description:

This course provides students with the basic knowledge of environment, resources and ecosystems, the knowledge of environmental pollution of air, water, soil, solid waste and some other types of pollution such as noise, heat, radiation; solutions to minimize environmental pollution to take appropriate actions in everyday life and the Concepts, principles and solutions for achieving environmental harmony and sustainable development, Vietnamese environmental law…

10. Course learning outcomes (CLOs):

At the end of this course, students should be able to:

No	(CLOs) (1)	Knowledge (2)	Skills (3)	Attitudes (4)	PLOs
1	**Explain** the concepts of environment, resources, environmental pollution due to development activities, climate change, the importance of environmental protection and rational exploitation and use of resources	L2 - Understanding		L2- Responding	PLO1
2	**Explain** the causes of environmental pollution and its impacts on people and resources due to development activities.	L2 - Understanding			PLO1
3	**Assess** human impacts on the environment and solutions to minimize those negative impacts	L5 - Evaluation	L3- Precision		PLO1 PLO4
4	**Apply** relevant knowledge to come up with suitable ideas and solutions to minimize negative impacts on the environment.	L3- Applying		L2- Responding	PLO4

11. Outcome Coverage: mapping to Program Learning Outcome (PLO)

PLO	PLO1	PLO2	PLO3	PLO4	PLO5	PLO6	PLO7	PLO8
Course contribution	IT		IT	IT				
CLO 1	X		X	X				
CLO 2	X		X	X				
CLO 3	X		X	X				
CLO4	X		X	X				
CLO5	X		X	X				

12. Student Responsibilities:

Students must:

- Attend at least 80% of the course to be eligible for the final examination
- Engage in class discussion with respect and attention
- Self-study, direct their own studying—outside the classroom
- Complete all homework and assignments in a timely manner

13. Course assessment:

Assessment Components	Assessment types	Rubric	Percentages (%)	Percentages of assessment components (%)	CLOs
A – On-going Assessment	A1.1 Quiz	R1.1 – rubric of PI 1.1	10	20	CLO1 CLO2 CLO3
	A1.2 Weekly homework	R1.2 – rubric of PI 1.2	10		
B – Midterm exam	B1. Written test	R2.1 – rubric of PI 2.1 R2.2 – rubric of PI 2.2	20	20	CLO1 CLO2 CLO3
C-Final exam	C1. Written test	R3.1 – rubric of PI 3.1 R3.2 – rubric of PI 3.2	60	60	CLO1 CLO2 CLO3 CLO4

14. Teaching and learning plan

Weeks (2 hours)	Contents	Teaching and learning activities	Assessm-ent Types	CLOs
1 (2)	Chapter 1. Basic concepts of environment, resources and ecosystems (6 hours) 1.1. Environment 1.1.1. Environmental concept 1.1.2. Environment structure 1.1.3. Environmental classification 1.1.4. Basic functions of the environment	- Activities to familiarize with the class - Introduce students to the subject's objectives; the position and role of the subject in the training program - Introduce detailed course outline - Introduction of textbooks and reference materials - Introduce the output standards of the course; assessment test forms and weighting of assessments **Teaching:** - Introduce and explain the contents of Environment by Powerpoint. - Discuss and explain students' questions. - Guide the content of the lecture on Resources **In-class study:** - Attend the lecture and listen - Take your own notes on main points	A1.1	CLO 1

		- Respond to questions raised by lecturer - Ask questions **Self study:** - Read textbooks and other relevant materials - Do homework of Chapter 1		
2 (2)	1.2. Resources 1.2.1. Resource concept 1.2.2. Resource classification 1.2.3. Basic characteristics of some popular resources 1.2.3.1. Land Resources 1.2.3.2. Forest resources 1.2.3.3. Water Resources 1.2.3.4. Some other resources (minerals, organisms, energy, etc.)	**Teaching:** - Introduce and explain the contents of Resources by Powerpoint. - Discuss and explain students' questions. - Guide the content of the lecture on Ecosystem **In-class study:** - Listen to lectures - Answer the teacher's questions - Ask questions about matters of interest **Self study:** - Read textbooks and other relevant materials	A1.1	CLO 1
3 (2)	1.3. Ecosystem 1.3.1. Ecosystem concept 1.3.2. Ecosystem structure 1.3.3. Ecosystem classification 1.3.4. The cycle of matter and energy flow in the ecosystem 1.4. Human impact on the environment and ecosystems 1.4.1. Exploitation of resources 1.4.2. Using chemicals 1.4.3. Fuel usage 1.4.4. The process of urbanization 1.4.5. Artificial technology	**Teaching:** - Introduce and explain the ecosystem content by Powerpoint. - Discuss and explain students' questions. - Guide in advance the lecture content on air, standards and sources of air pollutions by Powerpoint. **In-class study:** - Attend the lecture and listen - Take your own notes on main points - Respond to questions raised by lecturer - Ask questions **Self study:** - Read textbooks and other relevant materials	A1.1	CLO 1, 2
4 (2)	Chapter 2. Air pollution (7 hours) 2.1. Atmosphere and air standards 2.1.1. Air composition 2.1.2. Atmospheric structure	**Teaching:** - Introduce and explain the contents of air, standards and sources of air pollution by Powerpoint. - Discuss and explain students' questions.	A1.1	CLO 1, 2

	2.1.3. Air pollution 2.2. Sources of air pollution 2.2.1. Classify 2.2.2. Natural sources of pollution 2.2.3. Man-made sources of pollution 2.2.3.1. Household 2.2.3.2. Traffic 2.2.3.3. Industry	- Guide in advance the content of the lecture on air environmental pollutants **In-class study:** - Attend the lecture and listen - Take your own notes on main points - Respond to questions raised by lecturer - Ask questions - Take a quiz **Self study:** - Read textbooks and other relevant materials - Read, learn new content as required		
5 (2)	2.3. Air pollution agents 2.3.1. Air Pollutants 2.3.1.1. COx 2.3.1.2. SOx gas 2.3.1.3. NOx gas 2.3.1.4. H2S gas 2.3.1.5. Some other gases (CxHy, O_3, NH_3) 2.3.2. Dust 2.3.2.1. Source 2.3.2.2. Harm	**Teaching:** - Introduce and explain the contents of air, standards and sources of air pollution by Powerpoint. - Discuss and explain students' questions. - Guide in advance the content of the lecture on air environmental pollutants and solutions to protect the air environment **In-class study:** - Attend the lecture and listen - Take your own notes on main points - Respond to questions raised by lecturer - Ask questions - Take a quiz **Self study:** - Read textbooks and other relevant materials - Read, learn new content as required	A1.1	CLO 1, 2
6 (2)	2.3. Air pollution agents (cont'd) 2.3.3. Secondary pollution 2.3.3.1. Acid rain 2.3.3.2. Greenhouse effect 2.3.3.3. Ozone layer perforation	**Teaching:** - Introduce and explain the contents of air, standards and sources of air pollution by Powerpoint. - Discuss and explain students' questions. - Guide to make group reports (homework) on human impacts on the environment,	A1.1, A.1.2	CLO 3, 4

	2.3.3.4. Photochemical smoke 2.4. Solutions to protect the air environment 2.4.1. Planning solution 2.4.2. Hygienic isolation solution 2.4.3. Ecological solutions	ecosystems and air environment and give appropriate ideas and solutions to minimize negative impacts there. - Guide in advance the content of the lecture on the next solutions to protect the air environment and the characteristics of water resources **In-class study:** - Attend the lecture and listen - Take your own notes on main points - Respond to questions raised by lecturer - Ask questions - Take a quiz **Self study:** - Read textbooks and other relevant materials - Read, learn new content as required		
7 (2)	2.4. Solutions to protect the air environment (cont'd) 2.4.4. Technological Solutions 2.4.5. Solution to treat at the source 2.4.5.1. Dust treatment 2.4.5.2. Air treatment Chapter 3. Water pollution (6 hours) 3.1. Water resource characteristics 3.1.1. Water source and distribution of water in nature 3.1.2. Classification of water sources 3.1.3. Properties and composition of natural water: Physical properties, chemical composition, biological composition 3.1.4. Water pollution	**Teaching:** - Introduce and explain the contents of solutions to protect the air environment and water resource characteristics by Powerpoint. - Discuss and explain students' questions. - Guide to the content of the exam and how to evaluate the midterm exam. **In-class study:** - Listen to lectures - Answer the teacher's questions - Submit report and discuss - Ask questions and inquires about the content of the midterm exam - Take a quiz **Self study:** - Read textbooks and other relevant materials - Review the lesson, prepare for the midterm exam	A1.1, A.1.2	CLO 3, 4
8	Midterm exam		B1	CLO1, 2, 3, 4

9 (2)	3.2. Sources of water pollution 3.2.1. Human activities 3.2.2. Industrial production 3.2.3. Agricultural activities 3.2.4. Boat activities 3.2.5. Flowing water 3.2.6. Other sources of pollution 3.3. Factors that cause water pollution 3.3.1. Solids 3.3.2. Organic compounds	**Teaching:** - Introduce and explain the contents of sources of water pollution and water pollution agents by Powerpoint. - Discuss and explain students' questions. - Guide in advance the content of the lecture on the next water pollution agents and solutions to protect the water environment **In-class study:** - Attend the lecture and listen - Take your own notes on main points - Respond to questions raised by lecturer - Ask questions **Self study:** - Read textbooks and other relevant materials - Read, learn new content as required	A1.1, A.1.2	CLO 1, 2
10 (2)	3.3. Factors that cause water pollution (cont'd) 3.3.3. Nutrition 3.3.4. Heavy metals 3.3.5. The pathogen 3.4. Solutions to protect the water environment 3.4.1. Solutions for prevention and management of water resources 3.4.1.1. Sanitary conditions when discharging wastewater into the source 3.4.1.2. Water quality monitoring 3.4.1.3. Exploiting and rationally using water resources 3.4.1.4. Save and reuse water	**Teaching:** - Introduce and explain the contents of sources of water pollution and water pollution agents by Powerpoint. - Discuss and explain students' questions. - Guide to making group reports (homework) on human impacts on the water environment and giving ideas and appropriate solutions to minimize those negative impacts. - Guide in advance the content of the lecture on the next solutions to protect the water environment and the content 4.1 of chapter 4. **In-class study:** - Attend the lecture and listen - Take your own notes on main points - Respond to questions raised by lecturer - Ask questions **Self study:**	A1.1, A.1.2	CLO 1, 2

		- Read textbooks and other relevant materials - Read, learn new content as required		
11 (2)	3.4. Solutions to protect the water environment (cont'd) 3.4.2. Wastewater treatment methods and processes 3.4.2.1. Mechanical method 3.4.2.2. Biological method 3.4.2.3. Chemical method 3.4.2.4. Flow chart of wastewater treatment technology Chapter 4. Solid waste, soil pollution and other types of pollution (5 periods) 4.1. Solid waste 4.1.1. Solid waste concept 4.1.2. Origin and classification of solid waste 4.1.3. Impact of solid waste	**Teaching:** - Introduce and explain the contents of the water environmental protection solutions and the concept, origin and effects of solid waste by - Discuss and explain students' questions. - Guide to group report (homework) on human impacts and give ideas and appropriate solutions to minimize negative impacts on solid waste and land pollution . - Guide in advance the content of the next lecture on solid waste and soil pollution **In-class study:** - Attend the lecture and listen - Take your own notes on main points - Respond to questions raised by lecturer - Ask questions - Take a quiz **Self study:** - Read textbooks and other relevant materials - Read, learn new content as required	A1.1, A.1.2	CLO 3, 4
12 (2)	4.1.4. Measures to reduce solid waste pollution 4.1.4.1. Thorough collection of solid waste 4.1.4.2. Solid waste treatment 4.2. Pollution of the soil environment 4.2.1. The concept of environmental pollution 4.2.2. Sources of soil pollution 4.2.2.1. Agricultural activities	**Teaching:** - Introduce and explain the solid waste and soil pollution by Powerpoint. - Discuss and explain students' questions. - Guide in advance the lecture content on heat pollution and noise pollution - Guide to making group reports (homework) on human impacts and giving appropriate ideas and solutions to minimize negative	A1.1, A.1.2	CLO 1, 2, 3, 4

	4.2.2.2. Industrial activities 4.2.2.3. Living activities 4.2.2.4. Other activities 4.2.3. Effects of soil pollution 4.2.4. Protect the land environment 4.2.4.1. Preventive solutions	impacts on heat pollution and noise pollution **In-class study:** - Attend the lecture and listen - Take your own notes on main points - Respond to questions raised by lecturer - Ask questions - Take a quiz **Self study:** - Read textbooks and other relevant materials - Read, learn new content as required		
13 (2)	4.3. Heat pollution 4.3.1. Heat pollution concept 4.3.2. Sources of heat pollution 4.3.2.1. Natural processes 4.3.2.2. Man-made activities a/ Burning fuel b/ Urbanization c/ Building architecture 4.3.3. Effects of Heat pollution 4.3.4. Solution to overcome heat pollution 4.4. Noise pollution 4.4.1. The concept of noise pollution 4.4.2. Sources of noise pollution 4.4.2.1. Traffic activities 4.4.2.2. Industrial activities 4.4.2.3. Construction activities 4.4.2.4. Living activities 4.4.3. Effects of noise pollution 4.4.4. Solutions to overcome noise pollution	**Teaching:** - Introduce and explain the contents of heat pollution and noise pollution by Powerpoint. - Discuss and explain students' questions. - Guide in advance the lecture content on environment and sustainable development **In-class study:** - Attend the lecture and listen - Take your own notes on main points - Respond to questions raised by lecturer - Ask questions - Take a quiz **Self study:** - Read textbooks and other relevant materials - Read, learn new content as required	A1.1, A.1.2	CLO 1, 2, 3, 4
14 (2)	Chapter 5. Environment and sustainable development (6 hours) 5.1. The basic concepts 5.1.1. Development	**Teaching:** - Introduce and explain the contents on environment and sustainable development using Powerpoint.	A1.1	CLO 1, 2

	5.1.2. Sustainable Development 5.2. The urgency of the issue of sustainable development 5.2.1. Basic characteristics of present life 5.2.2. The urgency of the issue of sustainable development 5.2.3. Global Environmental Summits 5.3. Basic requirements between environment and development 5.3.1. Change the way of production 5.3.2. Lifestyle change	- Discuss and explain students' questions. - Guide in advance the content of the next lecture on environment and sustainable development **In-class study:** - Attend the lecture and listen - Take your own notes on main points - Respond to questions raised by lecturer - Ask questions - Take a quiz **Self study:** - Read textbooks and other relevant materials - Read, learn new content as required		
15 (2)	5.4. Principles of sustainable development and evaluation criteria 5.5. Urgent environmental issues in Vietnam 5.6. Sustainable socio-economic development 5.6.1. Green growth 5.6.1.1. National strategy on green growth in Vietnam 5.6.1.2. Building an ecological urban model 5.6.1.3. Building an eco-industrial park model	**Teaching:** - Introduce and explain the contents on environment and sustainable development using Powerpoint. - Discuss and explain students' questions. - Guide in advance the content of the next lecture on environment and sustainable development **In-class study:** - Attend the lecture and listen - Take your own notes on main points - Respond to questions raised by lecturer - Ask questions - Take a quiz **Self study:** - Read textbooks and other relevant materials - Read, learn new content as required	A1.1	CLO 1, 2
16 (2)	5.6.2. Sustainable development in Vietnam 5.6.2.1. Sustainable Development Strategy in Vietnam 5.6.2.2. Reducing greenhouse gas emissions and	**Teaching:** - Introduce and explain the next content on environment and sustainable development - Discuss and explain students' questions.	A1.1	CLO 1, 2

	responding to climate change in Vietnam 5.7. Environmental Protection law 5.7.1. The urgency to enact environmental protection laws 5.7.2. Basic contents of environmental protection laws	- Guide to the content of the exam and how to evaluate the midterm exam. **In-class study:** - Attend the lecture and listen - Take your own notes on main points - Respond to questions raised by lecturer - Ask questions and inquires about the content of the final exam - Take a quiz **Self study:** - Prepare for the final exam		
17	Final exam		C1	CLO1, 2, 3, 4

15. References:

15.1 Textbooks, course books:

[1]. Environmental pollution course. Danang University of Science and Technology, 2021

[2]. Tang Van Doan, Tran Duc Ha, Environmental engineering textbook. Education Publishing House, 1995.

15.2 Reference books:

[1]. Le Van Khoa, Environment and pollution. Education Publishing House, 1995.

[2]. Nguyen Duc Khien, Nguyen Kim Hoang, Environmental Security, Information and Communication Publishing House

[3]. Larousse. Petit Atlas, Endangered Species, Young Publishing House, 2008.

[4]. WingsBooks, Species of Plastic - When Plastic Rises, Kim Dong Publishing House, 2019

[5]. Hazel Henderson, Ikeda Daisaku, Global Environment and the Future of Humanity, Political Publishing House

16. Scientific code of ethics:

- Students must respect their lecturers and other students.
- Students must comply with the university's academic integrity.
- Students must strictly follow the rules and regulations of the university.

17. Approval date:

18. Approval by:

Dean of Faculty	Program chair	Lecturer in charge
Cao Van Lam, PhD.	**Vo Duy Hung, PhD.**	**Associate Prof. PhD. Le Phuoc Cuong**

23. Structural Mechanics

THE UNIVERSITY OF DANANG
UNIVERSITY OF SCIENCE AND TECHNOLOGY
Faculty of Road and Bridge Engineering

SOCIALIST REPUBLIC OF VIETNAM
Independence - Freedom - Happiness

UNDERGRADUATE PROGRAM

Awarded degree: Undergraduate/Bachelor

Name of the study program: Construction Materials Engineering and Technology Program Code: 7510105

SYLLABUS
Course name (Vietnamese): Cơ học Công trình
English name: Structural Mechanics

1. Course code:	1101382
2. Course abbreviation:	Construction machine
3. Credits: **ECTS credits (*):**	03 4,25
4. Study workload:	*Total workload: 135 hours*
- Lecture:	36 hours
- Exercise:	9 hours
- Self-study/Assignment:	90 hours
5. Responsible persons	
- Faculty/Division in charge:	
- Course coordinator:	PhD. Phan Đinh Hao
- Other lecturers:	M.Sc. Đo Minh Đuc; M.Sc. Le Cao Tuan
6. Required and recommended prerequisites for joining the course:	
- Required prerequisite:	Mechanical theory
- Recommended prerequisite:	Physics 1, Specialized math
- Corequisite:	None
7. Course type:	☒ Compulsory Selected elective Free elective
8. Knowledge clusters:	Math and natural science General knowledge ☒ Core engineering fundamental knowledge Disciplinary knowledge Supportive knowledge Project/ Internship/ Graduate thesis

9. Course description:

The content of this course has 7 chapters. Chapter 1 introduces an overview of load-bearing structures in construction, helping students orient the tasks, roles and meaning of the module. Chapter 2 presents how to analyze the geometrical structure of a planar system. Chapter 3 shows how to determine the geometrical characteristics of the cross-section and the mechanical properties of the material. Chapter 4 introduces the basic concepts of stress, internal force, how to determine and quickly draw internal force diagrams. Chapter 5 presents the bearing forms of the member sections, helping learners to design or evaluate the bearing capacity of the section. Chapter 6 shows how to determine the displacement of a straight bar system. Chapter 7 introduces superstatic and super-dynamic systems and the principle of determining internal forces in this type of system.

10. Course learning outcomes (CLOs):

At the end of this course, students will be able to:

NO	CLOs (1)	Knowledge (2)	Skills (3)	Attitudes (4)	Performance Indicators (PI)
1	Understand the role and meaning of load-bearing structures in construction works and the concepts used to describe and calculate the bearing capacity of structures.	Understanding		Responding	1.2.3
2	Identify some basic types of load-bearing structures and their applicability as load-bearing structures.	Remembering		Responding	1.2.3
3	Analyze the geometrical structure of the structural system.	Analyzing		Reply	1.2.3
4	Apply theory to calculate quantities such as geometrical characteristics, internal forces, stresses, displacements used to evaluate the bearing capacity of the structure.	Applying	Imitation	Reply	1.2.3
5	Analyze the specific working forms of the bearing member cross section.	Applying	Imitation		1.2.3
6	Assess the bearing capacity of the structure.	Evaluating			1.2.3

11. Mapping of CLOs and Program learning outcomes (PLOs):

PLOs	PLO1	PLO2	PLO3	PLO4	PLO5	PLO6	PLO7	PLO8
Course distribution	IT							
CLO 1	X							
CLO 2	X							
CLO 3	X							
CLO 4	X							
CLO 5	X							
CLO 6	X							

12. Student responsibilities:

Student must perform the following tasks:
- Attend classes not less than 80% of the prescribed class hours of the course;
- Do and submit individual/group assignments according to the regulations of the course;
- Participate in class activities as prescribed;
- Self-study the problems assigned by the lecturer to do outside of class time;
- Complete all types of the course assessment.

13. Course assessment:

Assessment components	Assessment types	Assessment methods	Rubric	Weights of assessment types (%)	Weights of assessment components (%)	CLOs
A1. Formative assessment	A1.1. Attendance	P1.1. Check attendance	R1.1	W1.1. 50%	W1. 20%	
	A1.2. Assignment/ Presentation	P1.2. Report	R1.2	W1.2. 50%		CLO 1,2,3,4,5,6
A2. Mid-term exam	A2.1. Mid-term exam work	P2.1. Written exam	R2.1	W2. 100%	W2. 30%	CLO 3,4,5
A3. Final exam	A3.1 Final exam work	P3.1. Written exam	R3.1.	W3.1. 100%	W3.1 50%	CLO 3,4,5,6

14. Teaching and Learning plans:

Week	Contents	Teaching and Learning activities	Assessment types	CLOs
1	Course Introduction Chapter 1. OVERVIEW OF SUBJECTS 1.1. Objects and research tasks of the subject 1.2. Research method of the subject 1.3. Assumptions and principles of cooperation 1.4. Classification of building structures. 1.5. Causes of internal force, deformation and displacement.	**Teaching/Instructions:** - Get acquainted with the class; - Lecturers introduce to students the subject objectives; the position and role of the subject in the training program of the industry; subject output standards, assessment forms and weights of assessments, course content by chapter,...; - Lecture combined with lecture slides; - Ask questions for students to think and answer. **Study/Research in class:** - Listening to lectures; - Answer the questions of the lecturer; - Ask questions of concerns. **Self-study:** - Review the theory;	A1.1	CLO 1; CLO 2

		- Read and study the contents of chapter 2; - Learn the course materials.		
2	Chapter 2. ANALYSIS OF THE GEOLOGICAL STRUCTURE OF THE ROOM SYSTEM 2.1. Classification of systems according to their ability to change geometric shapes. 2.2. Types of links and their properties. 2.3. How to connect hard pieces to form an invariant system.	**Teaching/Instructions:** - Set problems, give lectures in combination with lecture slides; - Ask questions for students to think and answer; - Ask students to solve class exercises related to the lesson content (checking the invariance of a system) **Study/Research in class:** - Listening to lectures; - Think, discuss and answer questions raised by the lecturer; - Ask questions about issues of interest related to the lesson content **Self-study:** - Review the theory; - Do homework on analyzing the geometrical structure of the system; - Read and study the content of chapter 3	A1.1, A1.2, A2.1.	CLO 3;
3	Chapter 2. (cont'd) ANALYSIS OF THE GEOLOGICAL STRUCTURE OF THE ROOM SYSTEM 2.3. How to connect hard pieces to form an invariant system. (cont'd) Chapter 3. GEOLOGICAL CHARACTERISTICS OF THE SECTION AND MECHANICAL PROPERTIES OF MATERIALS 3.1. Geometrical characteristics of the cross section. 3.1.1. Static moment and center of gravity of the section. 3.1.2. Moment of inertia about an axis.	**Teaching/Instructions:** - Teaching math problems involving many pieces of hardware; - Ask questions about the influence of the cross section on the bearing capacity of the bar through observing a simple experiment. Lectures combined with lecture slides; - Ask questions for students to think and answer; - Ask students to solve class exercises related to the content of the lesson (analyze the geometrical structure of the system; determine the geometrical features of some sections) **Study/Research in class:** - Listening to lectures; - Think, discuss and answer questions raised by the lecturer; - Ask questions about issues of interest related to the lesson content **Self-study:** - Review the theory; - Do homework on determining geometrical features of some cross-sections; - Read, learn the experiments to determine the mechanical characteristics of	A1.1, A1.2, A2.1.	CLO 3; CLO4

	3.1.3. Polar moment of inertia. 3.1.4. Centrifugal moment of inertia. 3.1.5. Parallel axis conversion formula. 3.1.6. Moment of inertia of some simple shapes.	the tension/compression bar of chapter 3 and the content of lesson 4		
4	Chapter 3. (cont'd) GEOLOGICAL CHARACTERISTICS OF THE SECTION AND MECHANICAL PROPERTIES OF MATERIALS 3.2. Mechanical properties of materials. 3.2.1. Material classification. 3.2.2. Tensile test. 3.2.3. Compression test. Chapter 4 STRENGTH AND INTERNAL POWER IN SMALL PROVINCIAL ROOM SYSTEM 4.1. The concept of stress - internal force. 4.1.1. Basic concepts of stress, types of stress, allowable stress.	**Teaching/Instructions:** - Ask questions about the bearing capacity of the actual structure through simple experiments and require to know about the bearing capacity to serve the calculation; - Question the meaning of the concept of stress; - Lecture combined with lecture slides; - Ask questions for students to think and answer; - Ask students to solve class exercises related to the lesson content (determine the support reaction and internal force on the section) **Study/Research in class:** - Listening to lectures; - Think, discuss and answer questions raised by the lecturer; - Ask questions of interest related to the lesson content. **Self-study:** - Review the theory; - Read and study the contents of chapter 4 (basic load-bearing structural systems: simple beam-frame)	A1.1, A1.2, A2.1, A3.1.	CLO 4.
5	Chapter 4 (cont'd) STRENGTH AND INTERNAL POWER IN SMALL PROVINCIAL ROOM SYSTEM 4.1.2. Power. 4.2. Method for calculating and quickly drawing internal force diagrams	**Teaching/Instructions:** - Raise the question of the existence of internal force; - Ask questions about how to represent internal force results after determination; - Lecture combined with lecture slides; - Ask questions for students to think and answer; - Ask students to solve class exercises related to the content of the lesson (calculate reaction forces and draw internal force diagrams) **Study/Research in class:**	A1.1, A1.2, A2.1, A3.1.	CLO 2, CLO 4.

		- Listening to lectures; - Think, discuss and answer questions raised by the lecturer; - Ask questions of interest related to the lesson content. **Self-study:** - Review the theory; - Do homework on calculating reaction force, internal force, drawing internal force diagram; - Read and study the contents of chapter 4 (simple beam-frame system)		
6	Chapter 4 (cont'd) STRENGTH AND INTERNAL POWER IN SMALL PROVINCIAL ROOM SYSTEM 4.3. Internal force in a simple beam-frame system. 4.4. Internal force in the staging system. 4.4.1. Definition, structure.	**Teaching/Instructions:** - Set the problem of basic load-bearing structural systems in practice; - Asking about the staging system; - Lecture combined with lecture slides; - Ask questions for students to think and answer; - Ask students to solve class exercises related to the content of the lesson (drawing internal force diagrams for a simple beam-frame system). **Study/Research in class:** - Listening to lectures; - Think, discuss and answer questions raised by the lecturer; - Ask questions of interest related to the lesson content. **Self-study:** - Review the theory; - Do your homework Draw an internal force diagram for a simple beam-frame system. - Read and study the content of chapter 4 (the method of separating eyes and simple sections to determine the longitudinal force of the trusses) and chapter 5 (the center of tension - compression bars)	A1.1, A1.2, A3.1.	CLO 2, CLO 4.
7	**Mid-term test**	Essay test – no materials are used; Time: 75 minutes	A2.1	CLO 2,3
8	Chapter 4 (cont'd) STRENGTH AND INTERNAL POWER IN SMALL PROVINCIAL ROOM SYSTEM 4.4.2. Eye separation method.	**Teaching/Instructions:** - Set up the problem of 1 rod only bearing axial force; - Lecture combined with lecture slides; - Ask questions for students to think and answer;	A1.1, A1.2, A3.1.	CLO 4, CLO 5, CLO 6.

	4.4.3. Simple cross section method. Chapter 5 Bearing Forms of Bar Structures 5.1. The bar is subjected to tension and compression at the right center. 5.2. Strength test problems when calculating cross section.	- Ask students to solve class exercises related to the content of the lesson (calculating the reaction forces to determine the longitudinal force in the trusses; drawing diagrams of internal forces, stresses, and strength tests for tension-compression bars) **Study/Research in class:** - Listening to lectures; - Think, discuss and answer questions raised by the lecturer; - Ask questions of interest related to the lesson content. **Self-study:** - Review the theory - Do homework on truss system and center tension/compression bar; - Read and study the content of chapter 5 (bending bars)		
9	Chapter 5 (cont'd) Bearing Forms of Bar Structures 5.3. The concept of flexural bars. 5.3.1. Pure bending bar. 5.3.2. Flat horizontal bending bar.	**Teaching/Instructions:** - Question about the working of beams; - Lecture combined with lecture slides; - Ask questions for students to think and answer; - Ask students to solve class exercises related to the content of the lesson (determine, draw stress diagrams and test the strength for the section of flexural bars) **Study/Research in class:** - Listening to lectures; - Think, discuss and answer questions raised by the lecturer; - Ask questions about issues of interest related to the lesson content **Self-study:** - Review the theory; - Doing homework (drawing internal force diagrams of beam system; determining, drawing stress charts and testing strength for flexural sections); - Read and study the contents of chapter 5 (torque bars, complex bearing bars)	A1.1, A1.2, A3.1.	CLO 4; CLO 5; CLO 6.
10	Chapter 5 (cont'd) Bearing Forms of Bar Structures 5.4. Torsion bar 5.5. Complex bearing bars	**Teaching/Instructions:** - Lecture combined with lecture slides; - Ask questions for students to think and answer; - Ask students to solve class exercises related to the lesson content (drawing the bar's torque chart; stress and strength	A1.1, A1.2, A3.1.	CLO 4; CLO 5; CLO 6.

	5.5.1. Oblique bending. 5.5.2. Bars subjected to flexural tension and compression. 5.5.3. Eccentric tension/compression bar.	test charts for complex torsion and load-bearing cross-sections) **Study/Research in class:** - Listening to lectures; - Think, discuss and answer questions raised by the lecturer; - Ask questions of interest related to the lesson content. **Self-study:** - Review the theory; - Do homework; - Read and study the content of chapter 5 (stability of the compression bar)		
11	Chapter 5 (cont'd) Bearing Forms of Bar Structures 5.6. Stability of the compression bar. Chapter 6 TRANSFORMATION OF THE RANGE SYSTEM 6.1. Concepts of deformation and displacement	**Teaching/Instructions:** - Set the problem through experiment with a simple compression bar; -Put the problem of displacement and its significance in the actual structure of the building; - Lecture combined with lecture slides; - Ask questions for students to think and answer; - Ask students to solve class exercises related to the lesson content (determine critical forces and related quantities) **Study/Research in class:** - Listening to lectures; - Think, discuss and answer questions raised by the lecturer; - Ask questions about issues of interest related to the lesson content **Self-study:** - Review the theory; - Do homework; - Read and study the content of chapter 6 (transposition of the bar system)	A1.1, A1.2, A3.1.	CLO 4; CLO 5; CLO 6.
12	Chapter 6 (cont'd) TRANSFORMATION OF THE RANGE SYSTEM 6.2. How to determine the displacement by multiplying the Vereshagin diagram.	**Teaching/Instructions:** - Lecture combined with lecture slides; - Ask questions for students to think and answer; - Ask students to solve class exercises related to the lesson content (determine displacements at sections in some basic structural systems) **Study/Research in class:** - Listening to lectures; - Think, discuss and answer questions raised by the lecturer; - Ask questions about issues of interest related to the lesson content	A1.1, A1.2, A3.1.	CLO 4, CLO 5; CLO 6.

		Self-study: - Review the theory; - Do homework on determining displacement at section in bar system.		
13	Chapter 7 INTRODUCTION TO SUPER-PERFORMANCE SYSTEM 7.1. The concept of super static and super dynamic systems 7.2. Calculation methods. 7.3. Internal force chart	**Teaching/Instructions:** -Ask the problem of a system consisting of multiple (redundant) connected pieces of hardware; - Lecture combined with lecture slides; - Ask questions for students to think and answer; **Study/Research in class:** - Listening to lectures; - Think, discuss and answer questions raised by the lecturer; - Ask questions of interest related to the lesson content. **Self-study:** - Review the theory; - Do homework on calculating a super-static, super-dynamic system of 1 unknown;	A1.1.	CLO 1, CLO 2.
14	Final exam	Essay test – no materials are used; Time: 90 minutes	A3.1	CLO 3,4,5,6

(Depending on the number of weeks of teaching, it is possible to adjust the teaching content for the weeks to suit the time)

15. Course materials:

15.1. Main textbooks, course books:

[1] Textbook of the Department of Structural Engineering. (Document)

[2] Le Van Ho, Construction mechanics, Education Publishing House – 1993. (Textbook).

[3] Tran Minh Tu, Nguyen Thi Bich Phuong and Tran Thuy Duong, Construction Mechanics, Construction Publishing House – 2019.

15.2. References:

[1] Vu Manh Hung, Mechanics and structures, Education Publishing House - 2003. (Reference book).

[2] Construction mechanics, Science and Technology Publishing House – 1991. (Reference textbook).

16. Scientific code of ethics:

- Students must respect faculty and other students;
- Laptops, tablets, and phones are only used for the purpose of taking lecture notes, calculating for lectures and exercises, absolutely not for other purposes;
- Students must comply with the University's academic integrity regulations;
- Students must abide by the rules and regulations of the School.

17. Approved date: / 07 /2021

18. Approved by:

Dean of Faculty	Program chair	Lecturer in charge

Cao Van Lam, PhD.	**Vo Duy Hung, PhD.**	**Do Minh Duc, M.Sc.**

24. Construction machine

THE UNIVERSITY OF DANANG
UNIVERSITY OF SCIENCE AND TECHNOLOGY
Faculty of Road and Bridge Engineering

SOCIALIST REPUBLIC OF VIETNAM
Independence - Freedom - Happiness

UNDERGRADUATE PROGRAM

Awarded degree: Undergraduate/Bachelor

Name of the study program: Construction Materials Engineering and Technology Program Code: 7510105

SYLLABUS
Course name (Vietnamese): Máy xây dựng
English name: Construction machine

1. Course code:	1102080
2. Course abbreviation:	Construction machine
3. Credits: **ECTS credits (*):**	02 2,83
4. Study workload:	*Total workload: 90 hours*
- Lecture:	25 hours
- Exercise:	5 hours
- Self-study/Assignment:	60 hours
5. Responsible persons	
- Faculty/Division in charge:	
- Course coordinator:	M.Sc. Nguyen Khanh Linh
- Other lecturers:	
6. Required and recommended prerequisites for joining the course:	
- Required prerequisite:	None
- Recommended prerequisite:	Graphical drawing - Engineering drawing, Mechanical theory
- Corequisite:	None
7. Course type:	☒ Compulsory Selected elective Free elective
8. Knowledge clusters	Math and natural science General knowledge ☒ Core engineering fundamental knowledge Disciplinary knowledge Supportive knowledge Project/ Internship/ Graduate thesis

9. Course description:

The course belongs to the compulsory knowledge block. The course teaches students to study construction machinery groups such as transport machines, lifting machines, earthmoving machines, foundation reinforcement machines, and building materials production machines. Train students in thinking ability when using machines and equipment in the production of building materials and construction works; calculating machine use, selecting and coordinating machines reasonably, using machines effectively.

10. Course learning outcomes (CLOs):

At the end of this course, students will be able to:

No	CLOs (1)	Knowledge (2)	Skills (3)	Attitudes (4)	Performance Indicators (PI)
1	Describe the structure and working principle of the machine	Understanding	Copy	Responding	1.2.9
2	Classify, name and list construction machines	Remember	Competently	Valuing	1.2.9
3	Compare machines with the same construction function, compare machines in the same machine group	Assessment Manipulate		Incorporate	1.2.9
4	Calculate the basic parameters of the machine	Analysis Manipulate	Exactly	Valuing	1.2.9
5	Explain some phenomena when the machine interacts with the object under construction	Assessment	Manipulate	Incorporate	1.2.9

11. Mapping of CLOs and Program learning outcomes (PLOs):

PLOs	PLO1	PLO2	PLO3	PLO4	PLO5	PLO6	PLO7	PLO8
Course distribution	IT							U
CLO 1	X							
CLO 2	X							
CLO 3	X							X
CLO 4	X							X
CLO 5	X							X

12. Student responsibilities:

Student must perform the following tasks:

- Attend classes not less than 80% of the prescribed class hours of the course;
- Do and submit individual assignments according to the regulations of the course;
- Self-study the problems assigned by the lecturer at home or in the library;
- Group discussion by topic;
- Complete all types of the course assessment.

13. Course assessment:

Assessment components	Assessment types	Assessment methods	Rubric	Weights of assessment types (%)	Weights of assessment components (%)	CLOs
A1. Formative assessment	A1.1. Attendance	P1.1. Check attendance	Attend at least 80% of the total periods of the course	W1.1. 50%	W1. 20%	
	A1.2. Assignment/ Presentation	P1.2. Essay/ oral presentation	R1.2. Do it right, draw it right, fully	W1.2. 50%		CLO 1,2,3
A2. Mid-term exam	A2.1. Mid-term exam work	P2.1. Written exam	R2.1. Meet the requirements	W2. 100%	W2. 20%	CLO 1,2,3,4
A3. Final exam	A3.1 Final exam work	P3.1. Written exam	R3.1. Meet the requirements	W3.1. 100%	W3.1 60%	CLO 1,2,3,4

14. Teaching and Learning plans:

Week	Contents	Teaching and Learning activities	Assessment types	CLOs
1	Course Introduction Chapter 1. General problems about construction machines 1.1 Classification, general structure, general requirements for construction machines 1.2 Power equipment 1.3 Basic components and assemblies	**Teach:** Announcement of detailed course outline Introduction to textbooks and reference materials Methods and thinking to approach the course Lectures combined with lecture slides Ask questions for students to think and answer **Learning in class:** - Course content according to chapter 1 Classification and general structure of construction machines Basic parts and assemblies - Listen to lectures, take notes - Answer questions given by the teacher - Ask questions about matters of interest **Study at home:** General requirements for construction machines Power equipment	A1.1, A2.1, A3.1.	CLO1,2

		Details and clusters not learned in class		
2	1.4 Construction machine drive 1.4.1 Mechanical transmission 1.4.2 Hydraulic transmission 1.5 Movement system	**Teach:** - Lectures combined with lecture slides - Ask questions for students to think and answer, discuss **Learning in class:** - Course content according to chapter 1 Drive by articulation Hydrostatic transmission Movement system - Listen to lectures, take notes - Answer questions given by the teacher - Ask questions about matters of interest **Study at home:** Friction drive and other types of articulation drive not learned in class Hydrodynamic drive	A1.1, A1.2, A2.1, A3.1	CLO 1,4
3	Chapter 2: Transporting Machine 2.1 Horizontal conveying machine 2.1.1 Means of transport by road 2.1.2 Transport by rail, water and air 2.2 Continuous conveying machine 2.2.1 Conveyors 2.2.2 Loading screw 2.2.3 Transport by the energy of the air flow	**Teach:** - Lectures combined with lecture slides - Ask questions for students to think and answer, discuss **Learning in class:** - Course content according to chapter 2 Rubber conveyor belts - Listen to lectures, take notes - Answer questions given by the teacher - Ask questions about matters of interest **Study at home:** Horizontal conveying machine Types of continuous conveying machines have not been learned in class	A1.1, A1.2, A2.1, A3.1	CLO 1,2,3,4
4	Chapter 3: Lifting Machine 3.1 Simple lifter 3.1.1 Size 3.1.2 Winch 3.1.3 Hoist	**Teach:** - Lectures combined with lecture slides - Ask questions for students to think and answer **Learning in class:** - Course content according to chapter 2 Electric winch Cable Hoist	A1.1, A1.2, A2.1, A3.1	CLO 1,2,3,4

		- Listen to lectures, take notes - Answer questions given by the teacher - Ask questions about matters of interest **Study at home:** Hydraulic jack Chain hoist and electric hoist		
5	Chapter 3 (continued): 3.2 Cranes 3.2.1 Self-propelled crane 3.2.2 Tower Crane 3.2.3 Children's Crane 3.2.4 Basic parameters and characteristic curves	**Teach:** - Lectures combined with lecture slides - Ask questions for students to think and answer, discuss **Learning in class:** - Course content according to chapter 3 Tower Crane Self-propelled crane Characteristic lines - Listen to lectures, take notes - Answer questions given by the teacher - Ask questions about matters of interest **Study at home:** Children's cranes and other cranes	A1.1, A1.2, A2.1, A3.1	CLO 1,2,3,4
6	Chapter 3 (Continued) 3.3 Bridge type lifter 3.3.1 Crane 3.3.2 Gantry crane 3.3.3 Cable car lifts	**Teach:** - Lectures combined with lecture slides - Ask questions for students to think and answer, discuss **Learning in class:** - Course content according to chapter 3 Crane Gantry Crane - Listen to lectures, take notes - Answer questions given by the teacher - Ask questions about matters of interest **Study at home:** Cable car lifter	A1.1, A1.2, A2.1, A3.1	CLO 1,2,3,4
7	Chapter 3 (Continued) 3.4 Hoist Chapter 4: Earthworks 4.1 Single bucket excavator 4.1.1 General use and classification	**Teach:** - Lectures combined with lecture slides - Ask questions for students to think and answer, discuss **Learning in class:**	A1.1, A1.2, A2.1, A3.1	CLO 1,2,3,4

	4.1.2 Front bucket excavator 4.1.3 Reverse bucket output machine 4.1.4 Productivity 4.2 Wheel Loaders and Excavators 4.2.1 Wheel Loaders 4.2.2 Excavator (Scraper) 4.2.3 Productivity	- Course content according to chapter 3 Hoist - Course content according to chapter 4 Backhoe excavator Backhoe excavator excavator transfer Productivity - Listen to lectures, take notes - Answer questions given by the teacher - Ask questions about matters of interest **Study at home:** Other types of single bucket excavators Excavator		
	Midterm test, homework guide		A2.1	
9	Chapter 4 (continued) 4.3 Bulldozers and levelers 4.3.1 Bulldozer 4.3.2 Leveling machine 4.3.3 Productivity	**Teach:** - Lectures combined with lecture slides - Ask questions for students to think and answer **Learning in class:** - Course content according to chapter 4 Bulldozers Productivity - Listen to lectures, take notes - Answer questions given by the teacher - Ask questions about matters of interest **Study at home:** Leveling machine	A1.1, A1.2, A3.1	CLO 1,2,3,4,5
10	Chapter 4 (Continued) 4.1 Soil compactor 4.1.1 Types of static force compactors 4.1.2 Compaction by vibration and compaction by dynamic force 4.1.3 Productivity	**Teach:** - Lectures combined with lecture slides - Ask questions for students to think and answer, discuss **Learning in class:** - Course content according to chapter 4 Types of static force compactors Vibrating table dress - Listen to lectures, take notes - Answer questions given by the teacher	A1.1, A1.2, A3.1	CLO 1,2,3,4,5

		- Ask questions about matters of interest **Study at home:** Types of compactors that have not been learned in class		
11	Chapter 5: Foundation reinforcement machines and equipment 5.1 Piling machine 5.1.1 General structure of pile driving machine 5.1.2 Types of hammer machines 1. Diesel hammer 2. Vibrating hammer	**Teach:** - Lectures combined with lecture slides - Ask questions for students to think and answer, discuss **Learning in class:** - Course content according to chapter 5 General structure of pile driving machine Pipeline diesel hammer Soft jointed vibrating hammer - Listen to lectures, take notes - Answer questions given by the teacher - Ask questions about matters of interest **Study at home:** Types of hammers that have not been learned in class	A1.1, A1.2, A3.1	CLO 1,2,3,5
12	Chapter 5 (continued) 5.2 Piling machines and wicking machines 5.2.1 Piling Machine 5.2.2 Drain plug machine	**Teach:** - Lectures combined with lecture slides - Ask questions for students to think and answer, discuss **Learning in class:** - Course content according to chapter 5 Absorbent sponge plug machine Sand pile lowering vibrator - Listen to lectures, take notes - Answer questions given by the teacher - Ask questions about matters of interest **Study at home:** Pile pressing robot Pile presses	A1.1, A1.2, A3.1	CLO 1,2,3,5
13	5.3 Earth Drilling Machine 5.3.1 General use 5.3.2 Drilling hole making operations 5.3 3 Common rock drills	**Teach:** - Lectures combined with lecture slides - Ask questions for students to think and answer, discuss **Learning in class:**	A1.1, A1.2, A3.1	CLO 1,2,3,5

		- Course content according to chapter 5 Drilling hole making operations Circulating Drill Cable impact drill - Listen to lectures, take notes - Answer questions given by the teacher - Ask questions about matters of interest **Study at home:** Types of drills that have not been learned in class		
14	Chapter 6: Building material production machine 6.1 Concrete mixer 6.1.1 Uses and classifications 6.1.2 Parts and devices 6.1.3 Freestanding mixer 6.1.4 Forced mixer	**Teach:** - Lectures combined with lecture slides - Ask questions for students to think and answer, discuss **Learning in class:** - Course content according to chapter 6 Components and mechanisms of concrete mixers Overturning freestyle mixer Vertical rotary forced mixer - Listen to lectures, take notes - Answer questions given by the teacher - Ask questions about matters of interest **Study at home:** Other types of freestanding mixers Horizontal rotary type forced mixer	A1.1, A1.2, A3.1	CLO 1,2,3,4
15	Chapter 6 (continued) 6.2 Concrete compactor 6.2.1 Uses and classifications 6.2.2 Internal compactor 6.2.3 Face compactor 6.3 Ice machine 6.3.1 Stone Crusher 6.3.2 Stone Screening Machine	**Teach:** - Lectures combined with lecture slides - Ask questions for students to think and answer, discuss **Learning in class:** - Course content according to chapter 6 Soft shaft dress Ruler dress Ice crusher - Listen to lectures, take notes - Answer questions given by the teacher - Ask questions about matters of interest **Study at home:**	A1.1, A1.2, A3.1	CLO 1,2,3,4

		Other types of compactors Ice machine		
16	Chapter 7: Specialized construction machines 7.1 Asphalt concrete spreader 7.2 Asphalt concrete batching plant Chapter 8: Exploiting and using machines in construction 8.1 Technical maintenance and repair of construction machines 8.2 Storage and transportation of construction machinery 8.3 Safety in the use of construction machinery Review, guide to take the exam	**Teach:** - Lectures combined with lecture slides - Ask questions for students to think and answer, discuss **Learning in class:** - Course content according to chapter 7 Asphalt concrete batching plant Review - Listen to lectures, take notes - Answer questions given by the teacher - Ask questions of concerns, **Study at home:** Plastic concrete spreader Other specialized construction machines Mining construction machines	A1.1, A1.2, A3.1	CLO 1,2,3,4
17	Final exam		A3.1	CLO 1,2,3,4,5

(Depending on the number of weeks of teaching, it is possible to adjust the teaching content for the weeks to suit the time)

15. Course materials:

15.1. Main textbooks, course books:

[1]. Luu Ba Thuan, Construction Machinery Textbook, Construction Publishing House, Hanoi, 2008.

15.2. References:

[1]. Nguyen Van Hung, Pham Quang Dung, Nguyen Thi Mai, Construction Machinery, Science and Technology Publishing House, Hanoi, 1998.

[2]. Truong Quoc Thanh, Lifting machines and equipment, Science and Technology, Hanoi, 1999.

[3]. Pham Huu Dong, Earthmoving machines, Hanoi Construction Publishing House, 2004.

[4]. Tran Quang Quy, Construction material production machines, Transport Publishing House, Hanoi, 2001.

16. Scientific code of ethics:

- Students must respect lecturers and other students, students have a spirit of healthy competition in learning.
- Students must come to school on time, fully attend the required activities of the lecturer; have high self-study spirit.
- Be honest with the data, must comply with the academic integrity regulations of the University.
- Students must abide by the rules and regulations of the School.

17. Approved date: / 07 /2021

18. Approved by:

Dean of Faculty	Program chair	Lecturer in charge
Cao Van Lam, PhD.	**Vo Duy Hung, PhD.**	**Nguyen Khanh Linh, MSC**

25. Engineering Geology

THE UNIVERSITY OF DANANG
UNIVERSITY OF SCIENCE AND TECHNOLOGY
Faculty of Road and Bridge Engineering

SOCIALIST REPUBLIC OF VIETNAM
Independence - Freedom - Happiness

UNDERGRADUATE PROGRAM

Awarded degree: Undergraduate/Bachelor

Name of the study program: Construction Materials Engineering and Technology Program Code: 7510105

SYLLABUS
Course name (Vietnamese): Địa chất công trình
English name: Engineering Geology

1. Course code:	1092460
2. Course abbreviation:	Engineering Geology
3. Credits: **ECTS credits (*):**	2 credits (30 periods) 3,67
4. Time distribution	
- Lecture:	30 Periods
- Exercise:	
- Practice/ Laboratory:	
- Self-study/Assignment:	60 Periods
5. Responsible persons	
- Faculty/Division in charge:	
- Course coordinator:	
- Other lecturers:	
6. Required and recommended prerequisites for joining the course:	
- Required prerequisite:	None
- Recommended prerequisite:	Construction materials
- Parallel courses:	None
7. Type of course	☒ Compulsory Selected elective Free elective
8. Knowledge clusters:	Math and natural science General knowledge ☒ Core engineering fundamental knowledge Disciplinary knowledge Supportive knowledge Project/ Internship/ Graduate thesis

9. Course description

The Engineering Geology module provides learners with knowledge about engineering geology such as: rock-forming minerals, construction soils and rocks in the earth's crust, classification of construction soils and properties of construction soils. construction; Hydrogeological basis of works, calculating the infiltration flow of underground water in different cases, lowering the groundwater level and draining the foundation pit; The processes and phenomena geology dynamics works; Methods and technology of engineering geological survey, construction geological survey records.

10. Course Learning Outcomes (CLOs)

After completing the course, students will be able to:

No	Course Learning Outcomes (CLOs)	Knowledge	Skills	Attitude	Performance indicators (PLOs)
1	Present basic knowledge of engineering geology, hydrogeology recognize engineering geological phenomena	a2.Understand	Perform		1.2.5 5.1
2	Calculate physico-mechanical properties in ground & foundation works. Caculate the seepage of underground water in certain ground	b2.Manipulate	Perform		1.2.5
3	Evaluation of elements of engineering geological conditions, methods and technologies in engineering geological survey	b2.Manipulate	Perform		1.2.5
4	Analysis of engineering geological survey reports, borehole cylinders, engineering geological cross-sections, table of physical and mechanical indicators of soil and rock	a5.Evaluate	Perform	Perform	1.2.5
5	Ability to work in groups: students can cooperate, divide work, listen to the opinions of others, participate actively...	a3.Manipulate	Competently	Organization	5.1

11. The relationship between course learning outcomes (CLOs) and program learning outcomes (PLOs)

PLOs	PLO1	PLO2	PLO3	PLO4	PLO5	PLO6	PLO7	PLO8
Contribution of the course	IT				TU			
CLO 1	**X**				**X**			
CLO 2	**X**							

CLO 3	**X**							
CLO 4	**X**							
CLO 5					**X**			

12. Student responsibilities

Students must do the following tasks:
- Attend at least 80% of the lessons of the course;
- Join group in work activities according to the regulations of the class;
- Self-study the problems assigned by the lecturer (outside of class time);
- Complete all course assessments.

13. Course assessments

Type of assessment	**Performance assessment**	**Assessment methods**	**Rubric**	**Weighting percentage (%)**		**CLOs**
A1. Ongoing assessment	A1.1 Exercises /homeworks	P1.1. Diligence	R1.2	W1.15%	W1. 15%	CLO5
	A1.2 Exercises /homeworks	P1.2. Do at class/Homeworks	R1.1	W1.210%		
A2. Mid-term Assessment	A2. Mid-term exam	P2. Written exam	R2.1	W2.120%	W2. 20%	CLO1 CLO2 CLO3
A3. Final Assessment	A3. Final exam	P3. Written exam	R3.1	W3.150%	W3. 50%	CLO1 CLO2 CLO3
A4. Đánh giá cuối kỳ thực tập	A4.1. Class Attendance	P1.1. Diligence	R4.1	W4.15%	W4. 15%	CLO2 CLO3 CLO4
	A4.2. Internship report	P2.1 The degree of completion of the Internship report	R4.2	W4.210%	W1. 15%	CLO5

14. Teaching and learning plan

14.1 Teaching and learning plan for the theory part

Week	**Contents**	**Teaching and learning activities**	**Performance assessment**	**Course learning outcomes (CLOs)**
1/(1-2)	Course introduction: - Objectives of the course. - Overview about content of the entire course	- Teaching activities: + Give a lecture + Guide the students to prepare a lesson at home including: * Reading the course syllbi * Building up study plan	A.1.1 A.1.2	CLO1

	- Books, ebooks, and related materials for the study - Organizational form of teaching, tasks of students in each form of teaching. - Assessment methods and weighting percentage (%) for each essessment types. **CChapter 1.TYPES OF LAND AND STONE BUILT IN THE EARTH OF THE EARTH** 1.1. The Earth *1.1.1. Concept of the Earth* *1.1.2. Interior structure of the Earth* 1.1.3. Earth's thermal field	* Prepare materials for study at class - Learning activities in class: +Listen to the lecture +Answer the questions given by the lecturer + Ask questions about issues of interest (Students) + Discussion and conclusion (Students-Students, Students-the Lecturer) - Learning at home (Students): Review the lessons, do exercises		
2/(3-4)	1.2. Mineral *1.2.1. Concept of Mineral* 1.2.2. Crystal shape and structure of minerals *1.2.3- Typical properties of Mineral* *1.2.4. Classification & Description of Mineral* ***Group exercises on minerals*** 1.3.TYPES OF LAND AND STONE BUILT IN THE EARTH OF THE EARTH 1.3.1. Magma rock	- Teaching activities: + Give a lecture + Guide the students to prepare a lesson at home including: * Reading the course syllbi * Building up study plan * Prepare materials for study at class - Learning activities in class: +Listen to the lecture +Answer the questions given by the lecturer + Ask questions about issues of interest (Students) + Discussion and conclusion (Students-Students, Students-the Lecturer) - Learning at home (Students): Review the lessons, do exercises	A.1.1 A.1.2	CLO1 CLO5
3/(5-6)	1.3.2. Sedimentary rock 1.3.3. Metamorphic rock	- Teaching activities: + Give a lecture + Guide the students to prepare a lesson at home including: * Reading the course syllbi * Building up study plan	A.1.1 A.1.2	CLO1 CLO5

		* Prepare materials for study at class - Learning activities in class: +Listen to the lecture +Answer the questions given by the lecturer + Ask questions about issues of interest (Students) + Discussion and conclusion (Students-Students, Students-the Lecturer) - Learning at home (Students): Review the lessons, do exercises		
4/(7-8)	**Chương 1(tt)** 1.3.4. Geotechnical assessment of soil and rock quality in engineering geological monoliths 1.3.5. Composition and structure of construction soil ***Group exercise on stones*** 1.4. LAND CLASSIFICATION IN CONSTRUCTION 1.4.1. Separate classification of construction land 1.4.2. Classification of specialized construction land 1.4.3. Classification of construction land area	- Teaching activities: + Give a lecture + Guide the students to prepare a lesson at home including: * Reading the course syllbi * Building up study plan * Prepare materials for study at class - Learning activities in class: +Listen to the lecture +Answer the questions given by the lecturer + Ask questions about issues of interest (Students) + Discussion and conclusion (Students-Students, Students-the Lecturer) - Learning at home (Students): Review the lessons, do exercises	A.1.1 A.1.2	CLO1 CLO2
5/(9-10)	1.5. CHARACTERISTICS OF CONSTRUCTION LAND 1.5.1. Dispersion system of construction land 1.5.2. Physicochemical properties of construction soil 1.5.3. Physical properties of construction soil 1.5.4. Mechanical properties of construction soil Exercise Chapter 1	- Teaching activities: + Give a lecture + Guide the students to prepare a lesson at home including: * Reading the course syllbi * Building up study plan * Prepare materials for study at class - Learning activities in class: +Listen to the lecture +Answer the questions given by the lecturer + Ask questions about issues of interest (Students)	A.1.1 A.1.2	CLO1 CLO2

		+ Discussion and conclusion (Students-Students, Students-the Lecturer) - Learning at home (Students): Review the lessons, do exercises		
6/(11-12)	**Chapter2. Engineering hydology** 2.1. Basic problems on undergroud water *2.1.1. General concept of* undergroud water *2.1.2. Forming origin and existing types of undergroud water.* *2.1.3. Main physico-chemical properties of undergroud water* *2.1.4. Typical corrosion of undergroud water interacted with concrete* *2.1.5. Distribution and Movement of undergroud water* 2.2. Classification of undergroud water depending on its disbution *2.2.1. In aeration zone* *2.2.2. Non-pressure water*	- Teaching activities: + Give a lecture + Guide the students to prepare a lesson at home including: * Reading the course syllbi * Building up study plan * Prepare materials for study at class - Learning activities in class: +Listen to the lecture +Answer the questions given by the lecturer + Ask questions about issues of interest (Students) + Discussion and conclusion (Students-Students, Students-the Lecturer) - Learning at home (Students): Review the lessons, do exercises	A.1.1 A.1.2	CLO1 CLO2
7/(13-14)	**Chapter2. (tt)** *2.2.3. Artezi water* 2.3. Basic engineering hydology. *2.3.1. General concept of movement of underground water.* *2.3.2. Basic Calculation on stable Seepage*	- Teaching activities: + Give a lecture + Guide the students to prepare a lesson at home including: * Reading the course syllbi * Building up study plan * Prepare materials for study at class - Learning activities in class: +Listen to the lecture +Answer the questions given by the lecturer + Ask questions about issues of interest (Students) + Discussion and conclusion (Students-Students, Students-the Lecturer) - Learning at home (Students): Review the lessons, do exercises	A.1.1 A.1.2	CLO1 CLO2
8	Mid-term exam	Written exam	A2	CLO1

				CLO2
	Chương 2 (tt) 2.4. Calculation on stable Seepage *2.4.1. Stable Seepage in homogeneous strata* *2.4.2. Stable Seepage in heterogeneous strata* *2.4.3. Calculation the seepge to borehole* ***Exercises chapter 2***	- Teaching activities: + Give a lecture + Guide the students to prepare a lesson at home including: * Reading the course syllbi * Building up study plan * Prepare materials for study at class - Learning activities in class: +Listen to the lecture +Answer the questions given by the lecturer + Ask questions about issues of interest (Students) + Discussion and conclusion (Students-Students, Students-the Lecturer) - Learning at home (Students): Review the lessons, do exercises	A.1.1 A.1.2	CLO1 CLO2
10/(17-18)	2.5. CALCULATION OF STABILITY PERFORMANCE OF SUGAR WATER TO DRILL (Drill well) 2.5.1. Concept 2.5.2. Movement of underground water to the complete borehole 2.5.3. Movement of underground water to the borehole is incomplete 2.6. LOWING WATER LEVELS AND DRYING THE FOUNDATION 2.6.1. Seepage flow to horizontal single drainage works 2.6.2. Infiltration flow to the horizontal drainage system (with rainwater seeping down) 2.6.3. Permeation current to borehole 2.6.4. Seepage flow to the foundation pits of the works Exercises chapter 2	- Teaching activities: + Give a lecture + Guide the students to prepare a lesson at home including: * Reading the course syllbi * Building up study plan * Prepare materials for study at class - Learning activities in class: +Listen to the lecture +Answer the questions given by the lecturer + Ask questions about issues of interest (Students) + Discussion and conclusion (Students-Students, Students-the Lecturer) - Learning at home (Students): Review the lessons, do exercises	A.1.1 A.1.2	CLO1 CLO2

11/(19-20)	**Chapter 3. Geological phenomena** 3.1 Tectonic movement of Crust *3.1.1. Concept of tectonic movement* *3.1.2. Basic geological structures due to tectonic movements* 3.2. Weathering *3.2.1. Concept* *3.2.2. Weathering types* *3.2.3. Weathering zones* *3.2.4. Assessment on degree and intensity of weathering* *3.2.5. Affect of weatheing and preventive solution*	- Teaching activities: + Give a lecture + Guide the students to prepare a lesson at home including: * Reading the course syllbi * Building up study plan * Prepare materials for study at class - Learning activities in class: +Listen to the lecture +Answer the questions given by the lecturer + Ask questions about issues of interest (Students) + Discussion and conclusion (Students-Students, Students-the Lecturer) - Learning at home (Students): Review the lessons, do exercises	A.1.1 A.1.2	CLO1 CLO2
12/(21-22)	3.3. Erosion *3.3.1. Concept* *3.3.2. Generation, improvement condition of mechanical erosion* *3.3.3. Affect of mechanical erosion and preventive solution* 3.4. Quick ground *3.4.1. Concept* *3.4.2.* Quicksand *3.4.3. Quick clay* *3.4.4. Preventive solution* Chapter 3 Exercises	- Teaching activities: + Give a lecture + Guide the students to prepare a lesson at home including: * Reading the course syllbi * Building up study plan * Prepare materials for study at class - Learning activities in class: +Listen to the lecture +Answer the questions given by the lecturer + Ask questions about issues of interest (Students) + Discussion and conclusion (Students-Students, Students-the Lecturer) - Learning at home (Students): Review the lessons, do exercises	A.1.1 A.1.2	CLO1 CLO2
13/(23-24)	3.5. Karst *3.5.1. Concept* *3.5.2. Karst shapes* *3.5.3. Reason and Condition for generation and improvement of karst* *3.5.3. Karst zoning* *3.5.4. Treatment solution* 3.6. Mass movements in slopes	- Teaching activities: + Give a lecture + Guide the students to prepare a lesson at home including: * Reading the course syllbi * Building up study plan * Prepare materials for study at class - Learning activities in class: +Listen to the lecture	A.1.1 A.1.2	CLO1 CLO2

	3.6.1. Concept *3.6.2. Classification of mass movements in slopes* *3.6.3. Reason and Condition for generation and improvement of mass movements in slopes* *3.6.4. Affection and preventive solution* 3.7. Earthquake *3.7.1. Concept* *3.7.2. Research on earthquake* *3.7.3. Distribution of earthquake in Viet Nam & all over the world* *3.7.4. Excuting condition in earthquake area* *3.7.5. Some solutions for mitigation of damage caused by earthquake*	+Answer the questions given by the lecturer + Ask questions about issues of interest (Students) + Discussion and conclusion (Students-Students, Students-the Lecturer) - Learning at home (Students): Review the lessons, do exercises		
14/(25-26)	**Chapter 4. METHOD AND TECHNOLOGY OF GENERAL SURVEYING GEOGRAPHIC SURVEY** 4.1. General principles *4.1.1. Stages of engineering geological investigation* *4.1.2. Program, content of engineering geological investigation* *4.1.3. Engineering geological conditions & problems* 4.1.4. Complex classification of engineering geological conditions	- Teaching activities: + Give a lecture + Guide the students to prepare a lesson at home including: * Reading the course syllbi * Building up study plan * Prepare materials for study at class - Learning activities in class: +Listen to the lecture +Answer the questions given by the lecturer + Ask questions about issues of interest (Students) + Discussion and conclusion (Students-Students, Students-the Lecturer) - Learning at home (Students): Review the lessons, do exercises	A.1.1 A.1.2	CLO3 CLO4
15/(27-28)	**Chapter 4 (cont.)** 4.2. *Medthods of engineering geological investigation* *4.2.1. Mapping* *4.2.2. Geophysical survey* *4.2.3. Drilling*	- Teaching activities: + Give a lecture + Guide the students to prepare a lesson at home including: * Reading the course syllbi * Building up study plan * Prepare materials for study at class	A.1.1 A.1.2	CLO3 CLO4

	4.2.4. Taking samples & In-door tests *4.2.5. Insitu tests* *4.2.6. Long-term monitoring* 4.2.7. The work of editing documents in the room 4.2.8. Construction geological survey report	- Learning activities in class: +Listen to the lecture +Answer the questions given by the lecturer + Ask questions about issues of interest (Students) + Discussion and conclusion (Students-Students, Students-the Lecturer) - Learning at home (Students): Review the lessons, do exercises		
16/(29-30)	4.4. Engineering geological investigation for serving designing & excuting construction work *4.3.1. For civil engineering* *4.3.2. For road engineering* *4.3.3. For bridge engineering* *4.3.4. For hydro engineering*	- Teaching activities: + Give a lecture + Guide the students to prepare a lesson at home including: * Reading the course syllbi * Building up study plan * Prepare materials for study at class - Learning activities in class: +Listen to the lecture +Answer the questions given by the lecturer + Ask questions about issues of interest (Students) + Discussion and conclusion (Students-Students, Students-the Lecturer) - Learning at home (Students): Review the lessons, do exercises	A.1.1 A.1.2	CLO3 CLO4
17	**Final exam**	Written exam	A.3	CLO1 CLO2 CLO3 CLO4

14.2. Practice part

The practical lesson plan starts from week 6 onwards of the semester. Each experimental group has a maximum of 30 students.

Week	**Contents**	**Teaching and learning activities**	**Performance assessment**	**Course learning outcomes (CLOs)**

1	LESSON 1: Introduction (Introduction to the subject and preparation of practical tools) LESSON 2: Classify soil and rock in the room 2.1. Soil classification 2.1.1. Clay soil (sticky soil) 2.1.2. Sandy soil (loose soil) 2.1.3. A practical guide to preliminary identification of cohesive and loose soils 2.2. Rock classification 2.2.1. Magma Stone 2.2.2. Sedimentary rock 2.2.3. Metamorphic rock 2.2.4. Practical guide to recognize some common stones	Teaching activities: The teacher guides students on how to identify some types of soil and rock commonly used in construction, and allows students to identify specific soil and rock samples in the laboratory. Learning activities: Groups of students learn, recognize some soil samples in the room, write diaries	A.4.1 A.4.2	CLO1, CLO4, CLO5

2	LESSON 3: GENERAL SURVEY REPORT AND GEOGRAPHIC CUTTING SURFACE BASED ON DRILLING WOOD DOCUMENTS 3.1. Construction geological survey report 3.2. Instructions for drawing simple engineering geological sections through drill holes 1. Introduce the content of the borehole cylinder, including: Soil layer, soil name, soil layer number, distribution of soil layers, distance between drill holes, field test results such as: SPT... 2. Introduce the general layout of the engineering geological section, synthesize data of the boreholes to draw the hypothetical boundary of the soil layers. 3. Instructions for drawing a specific geotechnical section through drill holes. LESSON 4. GUIDELINES FOR READING BASIC INFORMATION ON GEOGRAPHICAL MAP	Teaching activities: The teacher gives students direct access to a geotechnical investigation report of a specific project, instructs students to read the report content and exploit the necessary information (borehole cylinders, experimental data, properties, etc.) ground mechanics, geological eye surface, etc.) in the report serving the calculation and design of the works. Teacher Guides students to draw the GCC section based on available drill hole documents Instruct students to read the information on the GCC map Learning activities: Students learn about the contents of the GCC report, read the borehole cylinder, the GCC cross section Students draw the CC section according to the given data	A.4.1 A.4.2	CLO1, CLO4, CLO5
3	LESSON 5. FACT SURVEY	Teaching activities: - Focus on student attendance Lead students to conduct field surveys at a few locations in Da Nang city to identify soil and rock, geological phenomena such as weathering, landslides, etc. at the scene.	A.4.1 A.4.2	CLO1, CLO3, CLO4, CLO5

		Learning activities: - Students focus fully on observing, listening and journaling. - Student groups coordinate and assign tasks to complete the teacher's requirements		
4.	Final exam	Submit a Report	A.4.2	CLO1, CLO4, CLO5

15.Materials:

15.1. Books, lectures, main textbooks

[1] Nguyen Thi Ngoc Yen, Tran Khac Vy, *Engineering Geology,* Construction Publishing House, Ha Noi, 2020

[2] Nguyen Thi Ngoc Yen, Nguyen Hoang Giang, Nguyen Thu Ha, *Engineering geology exercises,* Scientific and technical publishing house, Ha Noi, 2021.

15.2. Reference materials

[1] Tran Thanh Giam, *Geotechnique,* Scientific and technical publishing house, Ha Noi, 2020.

[2] Nguyen Uyen, *Engineering geology exercises*, Construction Publishing House, Ha Noi, 2007

16. Scientific code of ethics:

- Students must respect a lecturer and other students.
- Students must comply with the University's academic integrity policy.
- Students must obey the rules and regulations of the university.

17. Approved date:

18. Approved by:

Dean of Faculty	Program chair	Lecturer in charge
Cao Van Lam, PhD.	**Vo Duy Hung, PhD.**	**Nguyen Thi Ngoc Yen, PhD.**

26. Soil Mechanics

THE UNIVERSITY OF DANANG
UNIVERSITY OF SCIENCE AND TECHNOLOGY
Faculty of Road and Bridge Engineering

SOCIALIST REPUBLIC OF VIETNAM
Independence - Freedom - Happiness

UNDERGRADUATE PROGRAM

Awarded degree: Undergraduate/Bachelor

Name of the study program: Construction Materials Engineering and Technology Program Code: 7510105

SYLLABUS
Course name (Vietnamese): Cơ học Đất
English name: Soil Mechanics

1. Course code:	1092490
2. Course abbreviation:	Soil Mechanics
3. Credits: **ECTS credits (*):**	2,5 3,75
4. Study workload:	
- Lecture:	1,6 Credits
- Exercise:	0,4 Credits
- Practice/ Laboratory:	0,5 Credits
- Self-study/Assignment:	60 hours
5. Lecturers:	
- Faculty/Division in charge:	Geotechnical Engineering Division/Faculty of Road & Bridge Engineering
- Course coordinator:	Assoc. Prof. Do Huu Dao
- Other lecturers:	MsC. Nguyen Thu Ha Dr. Pham Van Ngoc Dr. Nguyen Thi Ngoc Yen Dr. Bach Quoc Tien MsC. Nguyen Thi Phuong Khue
- Faculty/Division in charge:	
6. Required and recommended pre-requisites for joining the course:	
- Required prerequisite:	No
- Recommended prerequisite:	Chemistry, Theorical mechanic
- Parallel courses:	No
7. Course type:	☒ Compulsory Selected elective Free elective
8. Knowledge clusters:	Math and natural science

	General knowledge ☒ Core engineering fundamental knowledge Disciplinary knowledge Supportive knowledge Project/ Internship/ Graduate thesis

9. Course description:

This unit provides students witi theorectical knowledge of soil physical and mechanical properties, determine the stress and strain in soils under loading and seft-weigth of soils, estimate the foundation settlement over time, predict the soil bearing capacity, slope stability and earth pressure for retaining walls.

10. Course learning outcomes:

On satisfactory completion of the unit, students have ability to:

STT	Course Learning Outcomes (CLO) (1)	Bloom Taxanomy (2)	Skill (3)	Attitude (4)	CDIO Syllabus (PLO) (5)
1	Present and explain the composition and structure of soil; calculate the normal physical and mechanical properties of the soil; soil status assessment and classification.	Understand and classify			1.2.4
2	Calculate the stress in the ground, calculate the settlement for the building foundation and settlement over time; Calculation to determine the bearing capacity for the ground, the stability of the slope and calculate the earth pressure acting on the retaining wall.	Present and apply			1.2.4
3	Analyze the factors affecting the properties of construction soil and evaluate the properties of soil.	Analyze and evaluate			1.2.4
4	Understand the experimental procedures and operating laboratory instruments and equipment to determine the normal physical and mechanical parameters of soil in the laboratory.	Understand, present, practice	Operational accuracy		2.1
5	Follow the principles and support teamwork	Argue, compare, combine	Organized, Proficient	present ideas, respect, discuss, cooperate	5.1.1 5.1.2 5.2.3

11. CLOs and PLOs mapping:

PLO	PLO1	PLO2	PLO3	PLO4	PLO5	PLO6	PLO7	PLO8
Contribution of the Course	IT	IT			TU			
CLO 1	X							
CLO 2	X							
CLO 3	X							
CLO 4		X						
CLO 5					X			

12. Student responsibilities:

Students must perform the following tasks:
- Attend classes at least 80% class hours of the module;
- Make and submite individual / group assignments in accordance with the module;
- Listen to the use of laboratory equipment;
- Group exercises are assigned
- Submit individual reports as required by the module;
- Discuss and answer some problems raised by the lecturer;
- Complete a final examination.

13. Assessment:

The unit assessment results are based on assessments of student activities throughout the course of the study, midterm and final examinations expressed through the assessment; output standards of the unit are evaluated; criteria, standards and weightings of the assessments.

Component	Assessment style	Assessment methods	Criteria	Weight	Weight	CLOs
A1. Progress assessment	A1.1 Short assignments	P1.1. Presentation in class / Quiz	R1.1	W1.1 5%	W1. 10%	CLO1,2, 3,5
	A1.2 Personal/ Group homeworks/	P1.2. Workbook report and class presentation	R1.2	W1.2 5%		CLO 5
A2. Mid-term assessment	A2.1. Mid-term test	P2. Essay test	Meet the requirements of the answers	W2.1 20%	W2. 20%	CLO 1,2
A3. Final assessment	A3.1. Final test	P3. Essay test	Meet the requirements of the answers	W3.1 50%	W3. 50%	CLO 1,2,3
A4. Final assessment for Lab testing	A4.1. Practice in class	P4.1. Result of the experiment tests	Practice on schedule and record full data collection.	W4.1 5%	W4. 20%	CLO4, CLO5

	A4.2. Report assessment	P4.2. Result of the experiment report	Review and analyze the results of the experiment.	W4.2 5%		
	A4.3. Final assessment	P4.3. Essay (30 mins)	Meet the requirements of the answers	W4.3 10%		

14. Teaching and learning plan

14.1. Study plan for Soil Mechanics

Week / Study session	Course Content	CLOs	Teaching and Learning Activities	Assessment
1	**Introductory (1 hour)** **Chapter 1. Physical nature of soil and soil classification (2 hours of theory)** 1. Formation of soil 1.1. Weathering process 1.2. Types of sediment 2. The composition of soil 2.1. Solid 2.2. Water 2.3. Air 3. The soil structure 4. Soil physical parameters 4.1. Experimental physical parameters	CLO1	**Teaching:** - Lecturer introduces students to the subject; the position and role of the course in the curriculum; output standard of the unit, the forms of examination and assessment and the weight of the assessment, the content of the unit according to the chapter… - Combine with lecture slides - Ask students to think and answer **Studying in class:** - Listening - Answering the questions of the lecturer giving - Ask questions of concerned issues **Studying at home:** - Review the theory **- Reading, researching new content (Section 4.5.6 of Chapter 1)**	**A1.1; A1.2, A1.3.**
2	**Chapter 1. Physical soil properties and soil classification** **(1 hour of theory and 1 hour of exercises)** 4. Physical parameters of soil 4.2. Physical parameters determined by calculation 5. Soil classification and assessment of soil state 5.1. Soil classification 5.2. Soil state **6. Mechanical soil properties** **Chapter 2: Determining the stress in soils**	CLO1 CLO2	**Teaching:** - Lecture combining lecture slides - Ask students to think and answer - Ask students to do homework of Chapter 1 **Studying in class:** - Listening - Answering the questions of the lecturer giving - Ask questions of concerned issues - Exercise of Chapter 1 **Studying at home:** - Review the theory and do exercise of Chapter 1 **- Reading, researching new content (Section 3,4 of Chapter 2)**	**A1.1; A1.2, A1.3.**

	(1 hour of theory) 1. Concept 2. Stress distribution due to external load 2.1 Stress discussion in soils due to point load 2.2 Stress discussion in 3D dimensions			
3	**Chapter 2: Determining the stress in soils** **(3 hours of theory)** **2. Stress distribution due to external load.** 2.3 Stress distribution in case of plane strain and plane stress 3. Stress distribution inhomogeneous soils 3.1 Layer soils underlaid with a hard layer 3.2 Layer soils underlaid with a soft layer 4. Stress distribution under the footing 4.1 3D case 4.2 Plane strain and stress	CLO1 CLO2	**Teaching:** - Lecture combining lecture slides - Ask students to think and answer **Studying in class:** - Listening - Answering the questions of the lecturer giving - Ask questions of concerned issues **Studying at home:** - Review the theory - Reading, researching new content (Section 5 of Chapter 2)	**A1.1,** **A1.2,** **A1.3,**
4	**Chapter 2: Determining the stress in the soil** **(1 hour of theory and 1 hour of exercises)** 5. Stress distribution due to the soil self-weight. 5.1 Homogeneous soils 5.2 Layer soils 5.3 Layer soils with groundwater **5.4 Layer soils with groundwater under pressure.** **Chapter 3. Deformation and settlement of soil** (1 hour of theory) 1. General concept. 2. Deformation of soil. 2.1. Classification of soil deformation	CLO1 CLO2	**Teaching:** - Lecture combining lecture slides - Ask students to think and answer - Ask students to do homework of Chapter 2 **Studying in class:** - Listening - Answering the questions of the lecturer giving - Ask questions of concerned issues - Exercise of Chapter 2 **Studying at home:** - Review the theory and exercise of chapter 2 - Reading, researching new content (Section 2,3 of Chapter 3)	**A1.1,** **A1.2,** **A1.3,**
5	**Chapter 3. Deformation and settlement of soil** (3 hours of theory)	CLO1 CLO2	**Teaching:** - Lecture combining lecture slides - Ask students to think and answer	**A1.1;** **A1.2,** **A1.3.**

	2. Soil deformation 2.2. Characteristics of soil deformation. 2.3. Factors affecting soil deformation. 3. Estimate the final settlement 3.1. Basic case: Soil settlement in oedometer tests. 3.2. Estimate the final settlement		**Studying in class:** - Listening - Answering the questions of the lecturer giving - Ask questions of concerned issues **Studying at home:** - Review the theory - Reading, researching new content (Section 4 of Chapter 3)	
6	**Chapter 3. Deformation and settlement of soil** (1.5 hours of theory and 1.5 hours of exercise) 4. Consolidation theory and estimate soil settlement over time. 4.1. K.Terzaghi theory 4.2. Estimate the final consolidation settlement over time in the one-dimensional condition.	CLO1 CLO2	**Teaching:** - Lecture combining lecture slides - Ask students to think and answer - Ask students to do exercise of Chapter 3 **Studying in class:** - Listening - Answering the questions of the lecturer giving - Ask questions of concerned issues - Exercise of Chapter 3 **Studying at home:** - Review the theory **- Reading, researching new content (Chapter 4)**	**A1.1; A1.2, A1.3.**
7	**Mid-term examination**	CLO1 CLO2	Essay	A2.1
8	**Chapter 4. Soil strength and stability** (3 hours of theory) 1. General concept. 2. Soil shear strength 2.1. Ultimate shear strength of the soil 2.2. Factors affecting the soil shear strength 3. Method of limit equilibrium state and Mohr-Coloumn conditon 3.1 Stable equilibrium and limit equilibrium state at any point in the ground. 3.2 Limit equilibrium condition Mohr - Coulomb 4. Determine the soil bearing capacity 4.1. The method based on linear analysis and limit equilibrium condition	CLO1 CLO2 CLO3 CLO4	**Teaching:** - Lecture combining lecture slides - Ask students to think and answer **Studying in class:** - Listening - Answering the questions of the lecturer giving - Ask questions of concerned issues **Studying at home:** - Review the theory - Reading, researching new content (Section 4, 5 of Chapter 4)	**A1.1; A1.2, A1.3; A1.4**

9	**Chapter 4. Soil strength and stability** (1.5 hours of theory and 1.5 hours of exercise) 4. Determine the soil bearing capacity 4.2 Method of calculation based on the limit equilibrium theory. 5. Slope stability 5.1. Conditions for slope stability 5.2. Slope stabiliy using the method of circular slip surfaces 6. Introduce Geotechnical software : Plaxis and GeoSlopeW	CLO1 CLO2 CLO3 CLO4	**Teaching:** - Lecture combining lecture slides - Ask students to think and answer - Ask students to do exercise of Chapter 4 **Studying in class:** - Listening - Answering the questions of the lecturer giving - Ask questions of concerned issues - Exercise of Chapter 4 **Studying at home:** - Review the theory - Reading, researching new content (Section 1,2,3 of Chapter 5)	**A1.1; A1.2, A1.3; A1.4**
10	**Chapter 5. Determine the earth pressure on the retaining wall** (3 hours of theory) 1. General concept. 1.1. Retaining wall classification. 1.2. Earth pressure and classificaion. 1.3. Theory of determining earth pressures on retaining wall. 2. Method of determining static earth pressure on the wall. 3. The earth pressure theory using C.A.Coulomb method. 3.1. Determine the maximum active earth pressure using C.A.Coulomb theory. 3.2. Determine the minimum passive earth pressure on the retaining wall.	CLO1 CLO2 CLO3	**Teaching:** - Lecture combining lecture slides - Ask students to think and answer **Studying in class:** - Listening - Answering the questions of the lecturer giving - Ask questions of concerned issues **Studying at home:** - Review the theory - Reading, researching new content (Section 4, 5 of Chapter 5)	**A1.1; A1.2, A1.3; A1.4**
11	**Chapter 5. Determine the earth pressure on the retaining wall** (2 hours of theory and 1 hour of exercise) 4. Methods based on the limit equilibrium theory. 4.1. Determine the earth pressure using W.J.R.Rankine method	CLO1 CLO2 CLO3	**Teaching:** - Lecture combining lecture slides - Ask students to think and answer - Ask students to do exercise of Chapter 5 **Studying in class:** - Listening - Answering the questions of the lecturer giving - Ask questions of concerned issues	**A1.1; A1.2, A1.3; A1.4**

	4.2. Determine the earth pressure using toV.V.Xôclovski method. 5. Determine the earth pressure in common cases. 5.1. External loads acting on the ground. 5.2. The inclined wall and flat ground. 5.3. The fills including layer soils behind the wall. 5.4. The fills with groundwater		- Exercise of Chapter 5 **Studying at home:** - Review the theory and do exercise of Chapter 5 **- Review all the knowledge of the module.**	
16	**Final examination**	CLO1 CLO2 CLO3 CLO4	**Essay**	**A3.1**

14.2. Study plan for Soil Mechanics Testing

Week / Study session	**Content**	**CLOs**	**Teaching and Learning Activities**	**Assessment**

12	Course Introduction: **Lesson 1: Experimental method to determine the volume of natural volume of soil by ring knife.** **Lesson 2: Experimental method for determining moisture of soil** **Lesson 3: Experimental method to determine soil specific mass.**	**CLO1, CLO2, CLO3**	**Teaching:** - Lecturer introduces students to the subject; the position and role of the course in the curriculum; the subject of the course, the forms of examination and assessment of the weight of the assessment, the content of the module according to the chapter ... - To introduce of laboratory equipment and how to use for each lesson. To guide to experimental sequence. - To ask questions for students to discuss - To check the experimental data of the groups and how to calculate. **Classroom study:** - Listening - To answer the questions of the lecture. - To ask questions of concern - To take note of what the lecture emphasize and note. **Study at home:** - To review the worksheets in the class. Self-explanatory sequences of visual experiments in the classroom and document combinations. **- To calculate the results of experiments done** **- To read, study the content of the remaining articles**	**A1.1; A1.2,**

13	**Lesson 4: Experimental methods to determine the soil particle size.** **Lesson 5: Experimental method to determine the liquid limit by Vaxiliep dropping.** **Lesson 6: Experimental methods to determine the plastic limit of soil.**	**CLO1, CLO2, CLO3**	**Teaching:** - To introduce of laboratory equipment and how to use for each lesson. To guide to experimental sequence. - To ask questions for students to discuss - To check the experimental data of the groups and how to calculate. **Classroom study:** - Listening - To answer the questions of the lecture. - To ask questions of concern - To take note of what the lecture emphasize and note. **Study at home:** - To review the worksheets in the class. Self-explanatory sequences of visual experiments in the classroom and document combinations. - **To calculate the results of experiments done** - To read, study the content of the remaining articles	**A1.1, A1.2,**
14	**Lesson 7: Experimental method for determining compaction when compressing a shaft without hatching.** **Lesson 8: Experimental methods to determine the shear strength of soil in direct machine.**	**CLO1, CLO2, CLO3, CLO4**	**Teaching:** - To introduce of laboratory equipment and how to use for each lesson. To guide to experimental sequence. - To ask questions for students to discuss - To check the experimental data of the groups and how to calculate. - To ask students to work in class and answer student questions **Classroom study:** - Listening - To answer the questions of the lecture. - To ask questions of concern - To take note of what the lecture emphasize and note.	**A1.1, A1.2,**

			Study at home: - Review the theory, equipment and test sequences. - Complete the test report as required	
15	**Final exam**	**CLO2, CLO3, CLO4**	**Submit reports and exams (essay 30 mins).**	**A2.1, A3.1**

15. Materials:

15.1 Books, lectures, main curriculum:

[1]. **Le Xuan Mai, Do Huu Dao**. *Soil Mechanics.* Construction Publisher, Ha Noi, 2005.

[2]. **Nguyen Thi Phuong Khue, Nguyen Thu Ha, Pham Van Ngoc**. *Soil Mechnics Testing.* Construction Publisher, Ha Noi, 2022.

15.2 References:

[1]. **Vu Cong Ngu, Nguyen Van Dung**. *Soil Mechanics.* Science and Technique Publisher, Ha Noi, 2002.

[2]. **Vu Cong Ngu, Nguyen Van Thong**. *Soil Mechnics exercise.* Education Publisher, Ha Noi, 2006.

[3]. **Bui Anh Dinh**. *Soil Mechnics.* Education Publisher, Ha Noi, 2004.

[4]. **Cao Van Chi, Trinh Van Cuong**. *Soil Mechnics.* Education Publisher, Ha Noi, 2003.

[5]. **R.Whitlow**. *Soil Mechanics set 1 and 2.* Education Publisher 1997.

Software

[1] Software used: Microsoft Word, Exel, Autocad

[2] Calculating software: Geo Slope, Plaxis

16. Scientific code of ethics:

Honesty, responsibility, respect and cooperation in science.

17. Approved date: / /2022

18. Approved by:

Dean of Faculty	Program chair	Lecturer in charge
Cao Van Lam, PhD.	**Vo Duy Hung, PhD.**	**Dr. Pham Van Ngoc.**

27. Construction Materials (Theory and Experiment)

THE UNIVERSITY OF DANANG
UNIVERSITY OF SCIENCE AND TECHNOLOGY
Faculty of Road and Bridge Engineering

SOCIALIST REPUBLIC OF VIETNAM
Independence - Freedom - Happiness

UNDERGRADUATE PROGRAM

Awarded degree: Undergraduate/Bachelor

Name of the study program: Construction Materials Engineering and Technology Program Code: 7510105

SYLLABUS

Course name (Vietnamese): Vật liệu xây dựng
English name: Construction Materials (Theory and Experiment)

1. Code:	1091863
2. Course abbreviation:	Construction Materials
3. Credits: **ECTS credits (*):**	2,5 (45 hours) 3,75
4. Time distribution (Hours):	
- Theory:	30
- Exercise and group discussion:	0
- Experiment	15
- Self studying:	75
5. Lecturers:	
- Faculty/Division in charge:	Construction materials division
- Course coordinator:	M.Sc. Nguyen Thi Tuyet An
- Other lecturers:	Lecturers in Construction materials division
6. Required and recommended prerequisites for joining the course:	
- Required prerequisite:	None
- Recommended prerequisite:	General Chemical
- Corequisite:	Geotechnics, Soil Mechanics
7. Type course:	☒ Compulsory Selected elective Free elective
8. Knowledge clusters:	Math and natural science General knowledge ☒ Core engineering fundamental knowledge Disciplinary knowledge Supportive knowledge Project/ Internship/ Graduate thesis

9. Course description:

Course of construction material introduces basic knowledge about the main materials used in construction: Natural stone Material, construction ceramic, Inorganic binder, Concrete using inorganic binder, Wooden, etc. This course equip students with knowledge of composition, structure, production principles, mechanical properties, applications, experimental methods to determine the mechanical and physical properties of materials; the basis of quality assessment and how to choose the appropriate type of construction materials for each project.

This is the basis for subjects in the basic group of industries such as Foundations, Reinforced Concrete Structures, Introduction of materials in construction, Applied chemistry, Worker Internship; Mathematics majoring in construction materials; specialized subjects such as Architectural Engineering, Construction Ceramic Technology, Concrete Technology, Construction materials Inspection and Testing, Light weight Concrete Technology...

10. Course learning outcomes (CLOs):

After completing the course, students have ability to:

No	Course Learning Outcomes (CLOs)	Knowledge	Skills	Attitude	Performance indicators (belongs to PLOs)
1	Present and explain the composition, structure, production principles, mechanical and mechanical properties, applications, testing methods of Construction materials.	a2. Understand		c1. Receiving c2. Responding	1.2.8 8.1.1
2	Calculating the mechanical and physical parameters of Construction materials from experimental data	a3. Apply	b2. Manipulation		1.2.8 2.2.1
3	Analyze the factors affecting the quality of Construction materials	a4. Analyze		c1. Receiving c2. Responding	1.2.8 8.5.1,8.5.4
4	Evaluation of the quality of Construction materials	a5. Evaluate		c1. Receiving c2. Responding	1.2.8
5	Demonstrate experimental procedures and operate basic laboratory instruments and equipment		b1. Imitation	c1. Receiving c2. Responding	2.1.1 2.2.1
6	Adhere to principles and support teamwork			c2. Responding c3. Valuing	5.1.2 5.2.3,5.2.6

11. CLOs AND PLOs MAPPING

PLOs	PLO1	PLO2	PLO3	PLO4	PLO5	PLO6	PLO7	PLO8
Contribution of the course	IT	IT			U			I

CLO1	X							X
CLO2	X	X						
CLO3	X							X
CLO4	X							
CLO5		X						
CLO6					X			

12. Student responsibilities:

Students must do the following tasks:

- Attend at least 80% class hours;
- Attend 100% of the experimental periods of the course, if there is one or more absences of the experiment (without the teacher's consent) or the evaluation result of the experimental section A4 < 5 points (scale of 10). are not allowed to take the final test.
- Participating in group work activities according to the regulations of the course;
- Self-study at home or at library;
- Do mid-term and final exams.

13. ASSESSMENT

The results of the course evaluation are based on the assessment of the student's activities during the course of study, the mid-term exam and the final exam; the course output standards are assessed; criteria, standards and weights of the assessments.

Students must participate in the experiment at all experimental hours, without 1 session, the final evaluation score of the experiment (A4) is zero. Students who do not achieve the experimental score (less than 4.0 points on a scale of 10), then not allowed to take the final theory exam and the final score is taken as 0

Type of assessment	**Performance assessment**	**Assessment methods**	**Rubric**	**Weighting percentage (%)**		CLOs
A1. Ongoing assessment	A1.1 Exercises /homeworks	P1.1. Do at class/Homeworks	Rubric R1.1	W1.150%	W1. 20%	CLO1,CLO2
	A1.2 Class Attendance	P1.3. Diligence	Rubric R1.2	W1.250%		CLO2, CLO4
A2. Mid-term Assessment	A2. Mid-term exam	P2. Written exam	Answers of test	W2.1100 %	W2. 20%	CLO1, CLO2
A3. Final Assessment	A3. Final exam	P3. Written exam	Answers of test	W3.1100 %	W3. 40%	CLO1,CLO2, CLO3, CLO4
A4. Final assessment for Lab testing	A4.1 Diligence	Diligence	Diligence	W4.10%	W4. 20%	
	A4.2 Group report on the experimental results	report	Rubric R4.2	W4.230%		CLO6

	A4.3 Personal report on the experimental results	Report	Rubric R4.3	W4.370%		CLO1, CLO2, CLO4, CLO5

14. Teaching and learning plan

14.1 THEORY PART

Week (2 hours per week)	Content	CLOs	Teaching and Learning Activities	Assessment
1	**Course Introduction** - Objectives, CLOs. - Contents and studying materials. - Teaching and learning activities. - Assessment. Chapter 0: **Introduction to construction materials and history of construction material technology.** Chapter 1. **Main physico-mechanical properties of construction materials.** 1.1 Main physical properties 1.1.1. Absolute density 1.1.2. Apparent density 1.1.3. Bulk density 1.1.4. Denseness, porosity	CLO2	Teaching method: lecture Preparation of students before class: - Read course syllabus - Build learning plan - Prepare studying materials - Pre-reading: + Construction materials, Phung Van Lu, Pham Duy Huu, Phan Khac Tri **(pp.11-21)**	A1.1
2	Chapter 1. **Cont'd** 1.1 Main physical properties (cont'd) 1.1.5. Water content 1.1.6. Water absorption 1.1.7. Water saturationg 1.1.8. Permeability and water resistance 1.1.9. Thermal transmission 1.1.10. Fire resistance, thermal resistance	CLO2	Teaching method: lecture Preparation of students before class: pre-reading + Construction materials, Phung Van Lu, Pham Duy Huu, Phan Khac Tri **(pp.22-37)**	A1.1
3	Chapter 1. **Cont'd** 1.2. Main mechanical properties 1.2.1. Deformation and Strain 1.2.2. Strength	CLO2	Teaching method: lecture Preparation of students before class: pre-reading + Construction materials, Phung Van Lu, Pham Duy Huu, Phan Khac Tri **(pp.22-37)**	A1.1
4	Chapter 1. **Cont'd**	CLO2	Teaching method: lecture	A1.1

	1.2. Main mechanical properties (cont'd) 1.2.3. Hardness 1.2.4. Wearing 1.2.5. Impact load resistance 1.2.6. Abrasion Chapter 2. **Rock Materials** 2.1. Definition and classification 2.1.1. Definition 2.1.2. Classification 2.2. Common rocks used in construction 2.2.1. Igneous rocks (magma) 2.2.2. Sedimentary rocks 2.2.3. Metamorphic rocks		Preparation of students before class: pre-reading + Construction materials, Phung Van Lu, Pham Duy Huu, Phan Khac Tri **(pp.46-58)**	
5	Chapter 3. **Ceramic Construction materials** 3.1. Definition and classification 3.2. Raw materials 3.3. Manufacturing procedure 3.4. Properties and technical requirements of brick	CLO1 CLO2 CLO3 CLO4	Teaching method: lecture Preparation of students before class: pre-reading + Construction materials, Phung Van Lu, Pham Duy Huu, Phan Khac Tri **(pp.59-76)**	A1.1
6	Chapter 3. **Cont'd** 3.5. Properties and technical requirements of tile Chapter 4. **Inorganic binders** 4.1. Definition and classification 4.2. Air lime	CLO1 CLO2 CLO3 CLO4	Teaching method: lecture Preparation of students before class: pre-reading + Construction materials, Phung Van Lu, Pham Duy Huu, Phan Khac Tri **(pp.104-110)**	A1.1
7	Chapter 4. **Cont'd** 4.3. Portland cement 4.3.1. Definition 4.3.2. Raw materials 4.3.3. Manufacturing procedure 4.3.4. Main mineral composition 4.4.5. Setting anf hardening process	CLO1	Teaching method: lecture Preparation of students before class: pre-reading + Construction materials, Phung Van Lu, Pham Duy Huu, Phan Khac Tri **(pp.115-133)**	A1.1
8	Chapter 4. **Cont'd** 4.3. Portland cement (cont'd) 4.3.6. Physico-mechanical properties	CLO1 CLO2 CLO3 CLO4	Teaching method: lecture Preparation of students before class: pre-reading + Construction materials, Phung Van Lu, Pham Duy Huu, Phan Khac Tri **(pp.134-138)**	A1.1
9	Chapter 4. **Cont'd** 4.3. 4.3. Portland cement 4.3.6. Physico-mechanical properties (cont'd) 4.4. Other Portland cements 4.3.1. Pozzolanic Portland cement	CLO1 CLO2 CLO3 CLO4	Teaching method: lecture Preparation of students before class: pre-reading + Construction materials, Phung Van Lu, Pham Duy	A1.1 A2.1

	4.3.2. Blended Portland cement 4.3.3. Sulfate resistance Portland cement 4.3.4. White Portland cement		Huu, Phan Khac Tri **(pp.139-144)**	
10	Chapter 5. **Properties of concrete** 5.1. Definition and classification 5.2. Heavyweight concrete 5.2.1. Definition 5.2.2. Material components	CLO1 CLO2 CLO3 CLO4	Teaching method: lecture Preparation of students before class: pre-reading + Construction materials, Phung Van Lu, Pham Duy Huu, Phan Khac Tri **(pp.166-170)** + TCVN 7570:2006, TCVN 7572:2006	A1.1
11	Chapter 5. **Cont'd** 5.2. Heavyweight concrete (cont'd) 5.2.2. Material components (cont'd) 5.3. Properties of fresh concrete and concrete 5.3.1. Workability of fresh concrete	CLO1 CLO2 CLO3 CLO4	Teaching method: lecture Preparation of students before class: pre-reading + Construction materials, Phung Van Lu, Pham Duy Huu, Phan Khac Tri **(pp.165-171)** Personal homework: calculate physico-mechanical properties of construction materials	A1.1 A1.2
12	Chapter 5. **Cont'd** 5.3. Properties of fresh concrete and concrete (cont'd) 5.3.2. Strength of concrete 5.3.3. Shrinkage and expansion during setting and hardening time 5.3.4. Strain of concrete 5.3.5. Deformation due to hydration heat 5.3.6. Durability of concrete 5.3.7. Water resistance of concrete	CLO1 CLO2 CLO3 CLO4	Teaching method: lecture Preparation of students before class: pre-reading + Construction materials, Phung Van Lu, Pham Duy Huu, Phan Khac Tri **(pp.151-160)** + TCVN 3118:2011	A1.1
13	Chapter 5. **Cont'd** 5.4. Design mix proportions of concrete Chapter 6. **Mortar** 6.1. Definition 6.2. Material components	CLO1 CLO2	Teaching method: lecture Preparation of students before class: pre-reading + Construction materials, Phung Van Lu, Pham Duy Huu, Phan Khac Tri **(pp.171-183)** + Instruction of concrete mix proportions design.	A1.1
14	Chapter 6. **Cont'd** 6.3. Properties of fresh mortar and mortar 6.3.1. Workability of fresh mortar 6.3.2. Strength of mortar 6.3.4. Binding abiility of mortar Chapter 7. **Organic binders**	CLO1 CLO2 CLO3 CLO4	Teaching method: lecture Preparation of students before class: pre-reading + Construction materials, Phung Van Lu, Pham Duy Huu, Phan Khac Tri **(pp.264-**	A1.1

	7.1. Definition and classification 7.2. Bitumen 7.2.1. Definition 7.2.2. Mineral compositions		**290)** + Construction materials, Pham Duy Huu, Ngo Xuan Quang **(pp.234-248)**	
15	Chapter 7. **Cont'd** 7.2. Bitumen (cont'd) 7.2.3. Main physico-mechanical properties 7.3. Construction products using bitumen Chapter 8. **Wood** 8.1. Definition and classification 8.2. Main physico-mechanical properties 8.3. Constructions using wood	CLO1 CLO2 CLO4	Teaching method: lecture Preparation of students before class: pre-reading + Construction materials, Phung Van Lu, Pham Duy Huu, Phan Khac Tri **(pp.227-247)**	A1.1 A3.1

14.2. EXPERIMENT PART

Week (2 hours per week)	Content	*Teaching and Learning Activities*	*Assesment*	*CLOs*
1	**Course introduction.** - Course objectives. - Preliminary content of the entire course program and learning materials. - Organizational forms of teaching, tasks of students in each form of teaching. - Evaluation forms and rates. Part I: SOME MECHANICAL INDICATORS OF MATERIALS FOR PRODUCTION OF CONSTRUCTION AND FRUITS Lesson 1: POOCLAND Cement 1/ Specific weight 2/ Standard ductility 3/ Condensation time 4/ Test method for flexural and compressive strength (preparation of test pieces) Lesson 2: CHAPTER STONE, FIBER 1/ Density, Volumetric Weight, Water Absorption (Aggregate with Dmax≤ 40mm)	Teaching: the form of both teaching and practice Instructions for preparing homework before going to class: - Read the course outline - Develop study plans, form groups. - Prepare study materials. - Pre-read the document: + Instructions for the experiment of Construction materials of the department of Construction materials, standards: TCVN 4030:2003 TCVN 6017:2015 TCVN 6017:2015 TCVN 6016:2011 TCVN 7572-5:2006 TCVN 7572-5:2006 TCVN 7572-6:2006 TCVN 7572-2:2006	A4.1 A4.2	CLO2 CLO4 CLO5 CLO6

	2/ Density, Volumetric weight, water absorption (aggregate with Dmax 40mm) 3/ Volumetric porous mass 4/ Seed composition Lesson 3 CONSTRUCTION SAND 1/ Specific weight 2/ Volumetric porous mass 3/ Grain composition of sand			
2	Part I : Mechanical properties of raw materials (continued) Lesson 1: Portland Cement (continued) 4/ Bending strength and compressive strength. Lesson 2: crushed stone, gravel (continued) 5/ Concentration of flattened lozenges 6/ The content of weathered, soft seeds 7/ Stamping compression in the cylinder. Lesson 3 Sand (continued) 8/ Content of clay dust Part II : Concrete and Concrete Mixtures 1/ Composition proportion design 2/ Compressive strength (Preparation of test samples). 3/ Calculate the final composition. Part III: electives Lesson 1: Bricks (choose one) 2/ Compressive strength (Preparation of test specimens) 3/ Bending strength (Preparation of test specimens) Lesson 2: Roof tiles (optional 2) 3/Bending load (Preparing test pieces)	Teaching: the form of both teaching and practice Instructions for preparing the lesson: read the material in advance + Guide to Testing Construction materials, Standards codes: TCVN 7572-8:2006 TCVN 7572-13:2006 TCVN 7572-17:2006 TCVN 7572-11:2006 Instruction on designing concrete components of all kinds - Construction Ministry 2000 TCVN 3118:1993 and TCVN 10303:2014 TCVN 6355-2:2009 TCVN 6355-3:2009 TCVN 4313:1995 TCVN 6016:2011 TCVN 3121:2003		CLO2 CLO4 CLO5 CLO6
3	**<u>Phần III</u> : Electives** Lesson 1: Bricks (continues) 1/ Appraisal of appearance 2/ Compressive strength of bricks. (Measurement, checking sample size, destructive compression of samples).	Teaching: the form of both teaching and practice Instructions for preparing the lesson: read the material in advance + Instructions for the experiment of Construction materials of the	A1.1 A1.2	CLO2 CLO4 CLO5 CLO6

	3/ Brick flexural strength. (Measurement, check sample size, destructive bending of samples). 4 / Water absorption of bricks 5/ Volumetric mass 6/ Porosity due to shaping Lesson 2: Roof tiles 1/ Appraisal of appearance 2/Bending load (Measurement, sample size check, sample destructive bending) 3/ Time through water Lesson 3: Cement mortar (optional 3) 1/ The fluidity of the mortar mixture 2/ How to determine the compressive strength of Mortar Lesson 4: BITUM (Asphalt) (optional 4) 1/ Consistency (Needle Settlement) 2/ Length 3/ Softening temperature. *** Discussion groups** *** Submit test report**	department of Construction materials, standards: TCVN 3118:1993 and TCVN 10303:2014 TCVN 6355-2:2009 TCVN 6355-3:2009 TCVN 4313:1995 TCVN 6016:2011 TCVN 3121:2003 TCVN 7493:2005 TCVN 7494:2005 TCVN 7495:2005 TCVN 7496:2005 TCVN 7497:2000	A2.1 A2.2	

15. Materials

15.1. Textbooks:

[1] Phung Van Lu, Pham Duy Huu, Phan Khac Tri, *Construction Materials*, Education Publisher, Hanoi, 2001 (in Vietnamese).

[2] Huynh Phuong Nam, Nguyen Thi Tuyet An, Do Thi Phuong, *General Construction Materials*, Construction Publisher, Hanoi, 2016 (in Vietnamese).

15.2. References:

[1] Pham Duy Huu, Ngo Xuan Quang, *Construction Materials*, Transportation Publisher, Hanoi, 2004 (in Vietnamese).

[2] Ministry of Construction, *Instructions of concrete mix proportions design*, Construction Publisher, Hanoi, 2000 (in Vietnamese).

[3] Vietnamese Standards and Other Standards.

16. Scientific code of ethics:

- Plagiarism is prohibited
- References including textbooks, notes are prohibited in the mid-term examination
- Electronic devices are prohibited during mid-term and final examinations

17. **Approved date: / 07 /2021**

18. **Approved by:**

Dean of Faculty	Program chair	Lecturer in charge
Cao Van Lam, PhD.	**Vo Duy Hung, PhD.**	**Nguyen Thi Tuyet An, M.Sc.**

28. Scientific socialism

THE UNIVERSITY OF DANANG
UNIVERSITY OF SCIENCE AND TECHNOLOGY
Faculty of Road and Bridge Engineering

SOCIALIST REPUBLIC OF VIETNAM
Independence - Freedom - Happiness

UNDERGRADUATE PROGRAM

Awarded degree: Undergraduate/Bachelor

Name of the study program: Construction Materials Engineering and Technology Program Code: 7510105

SYLLABUS

Course name (Vietnamese): Chủ nghĩa xã hội khoa học
English name: Scientific socialism

1. Course code:	2090160
2. Course abbreviation:	Scientific socialism
3. Credits: **ECTS credits (*):**	02 credits (30 periods) 2,83
4. Time distribution	
- Lecture:	02 Credits (30 Periods)
- Exercise:	
- Self-study/Assignment:	60 Periods
5. Lecturers in charge	
- Faculty/Division in charge:	Department of Political Theory, University of Economics, University of Danang
- Course coordinator:	Associate Prof. PhD. Le Huu Ai
- Other lecturers:	1. PhD. Senior lecturer. Trinh Son Hoan, 2. Ms. Senior lecturer. Le Duc Tam, 3. PhD. Senior lecturer Tran Hong Luu, 4. Ms. Senior lecturer Luu Thi Mai Thanh, 5. PhD. Le Van Thao, 6. PhD. Senior lecturer. Pham Huy Thanh
6. Required and recommended prerequisites for joining the course:	
- Required prerequisite:	Not required
- Recommended prerequisite:	Marxist-Leninist political economy
- Corequisite:	Not required
7. Course type:	☒ Compulsory Selected elective Free elective
8. Knowledge clusters:	Math and natural science ☒ General knowledge

	Core engineering fundamental knowledge Disciplinary knowledge Supportive knowledge Project/ Internship/ Graduate thesis

9. Course description

The course is comprised of two main parts:

- The first part studies the core issues of Scientific Socialism, one of the three components of Marxism-Leninism.
- The second part studies Vietnam's socio-political issues related to socialism and the path to socialism in Vietnam.

10. Course Learning Outcomes (CLOs)

After completing the course, students will be able to:

No	Course Learning Outcomes (CLOs)	Knowledge	Skills	Attiude	Performance indicators (belongs to PLOs)
1	Understand the birth process of the Party, the way of struggle for power, national liberation, and national reunification	A2. Understand	A2. Understand	A2. Understand	1.5.2. 3.2. 4.1.
2	Clarifying the meaning of the birth of the Party, the process of implementing the line of struggle for power and the line of national liberation and unification of the mangroves.	A3. Determined	A3. Determined	A3. Determined	1.5.2. 3.2. 4.1.
3	Analyze the guidelines on industrialization, building a socialist-oriented market economy and international economic integration; build a new political system and culture.	A4. Analysis	A4. Analysis	A4. Analysis	1.5.2. 3.2. 4.1.
4	Clarifying the results, meanings and causes of the process of implementing the renovation policy on industrialization, building a market economy, and integrating into the international economy; build a new political system and culture.	A3. Determined	A3. Determined	A3. Determined	1.5.2. 3.2. 4.1.
5	Train learners in theoretical thinking style, research ability, lifelong learning, presentation, communication, teamwork; abide by the Party's guidelines, the State's laws and the sense	B4. Team work C3. Theoretical thinking	B4. Team work C3. Theoretical thinking	B4. Team work C3. Theoretical thinking	1.5.2. 3.2. 4.1. 5.1.

	of civic responsibility before society.				

11. The relationship between course learning outcomes(CLOs) and program learning outcomes (PLOs)

PLO	PLO1	PLO2	PLO3	PLO4	PLO5	PLO6	PLO7	PLO8
Contribution of the course	I		I	T	I			
CLO 1	X		X	X				
CLO 2	X		X	X				
CLO 3	X		X	X				
CLO 4	X		X	X				
CLO 5	X		X	X	X			

12. Student responsibilities

Students must do the following tasks:
- Attend at least 80% of the lessons of the course;
- Do homework assigned in each chaper of the course;
- Self-study the problems assigned by the lecturer (outside of class time);
- Take the mid-term and final exams;
- Fully attend and complete the content of practices

13. Course assessments

The results of the course evaluation are based on the assessment of the student's activities during the course of study, the mid-term exam and the final exam expressed through the assessment; the course output standards are assessed; criteria, standards and weights of the assessments.

Type of assessment	**Performance assessment**	**Assessment methods**	**Rubric**	**Weighting percentage (%)**	**CLOs**
A1. Ongoing assessment	A1.1 Class Attendance	CLO1-4	Go to school fully. Do not miss more than 20% of the class.		10%
	A1.2 Exercises /homeworks	CLO3-5	Do the correct answer		10%
A2. Mid-term Assessment	A2.1 Mid-term exam	CLO1-2	Meet the requirements of the answer	10	20%
A3. Final Assessment	A3.1 Final exam	CLO1-5	Meet the requirements of the answer	10	60%

14. Teaching and learning plan

Week	Contents	Teaching and learning activities	Performance assessment	Course learning outcomes (CLOs)
1 (Theory)	Course Introduction Introduction: Objects, content, research methods, study History of the Communist Party of Vietnam. I. STUDY OBJECTS 1.1. History of the Communist Party of Vietnam is a branch of historical science 1.2. Objects of study in the subject History of the Communist Party of Vietnam II. MANDATES 2.1. Functions of Party History Science 2.2. Mission III. RESEARCH METHODS, LEARNING HISTORY OF THE Communist Party of Vietnam 3.1. Theoretical foundations and methodologies 3.2. Research and study methods	Teach: - Lecturers introduce to students the subject objectives; the position and role of the subject in the training program of the industry; subject output standards, assessment forms and weights of assessments, course content according to chapters... - Teaching method: TLM1, TLM2 Learn in class: - Listen to lectures - Answer the teacher's questions. - Ask questions of concerns. Study at home: - Review the theory - Read the next post		
6 (Theory + Discussion)	Chapter 1: The Communist Party of Vietnam was born and led the revolutionary cause of national liberation (1930-1945). I. THE VIETNAM COMMUNITY PARTY IS BEING AND THE FIRST POLITICAL LARGENCY OF THE PARTY 1.1. Historical context and role of Nguyen Ai Quoc in the process of campaigning for the establishment of the Party 1.2. The Party's Founding Conference and the Party's First Political Platform II. THE LEADING PARTY of the National Liberation Revolution (1930-1945)	Teach: - Teaching methods: TLM1, TLM2, TML 6, TML13 Learn in class: - Listen to lectures - Answer the teacher's questions. - Ask questions of concerns. Study at home: - Review the theory - Read the next post.	A1.1, A2.1, A3.1	CLO1-5

	2.1. Policy of the Party and revolutionary movement 1930-1931 2.2. The Party led the restoration of the organizational system and the people's revolutionary movement in the period 1932-1935 2.3. The Party led the movement for people's livelihood and democracy in the period 1936-1939 2.4. Party leading the national liberation movement and the August Revolution (from September 1939 to August 1945). 2.5. Historical significance and lessons learned of the August Revolution in 1945			
7 (Theory + Discussion)	Chapter 2: The Party led two resistance wars against the French colonialists and the American imperialists (1945-1975) I. WAR AGAINST FRANCE 1945-1954 1.1. Historical background 1.2. The line of resistance against the French colonialists (1945-1954) 1.3. The leading party conducts resistance 1.4. Evaluate the process of the Party leading the resistance war II. THE LEADING PARTY OF THE RESISTANCE AGAINST US, SAVE THE COUNTRY (1954-1975) 2.1. Historical background 2.2. The Party's line in the resistance war against the US, saving the country 2.3. The Party Leading the Resistance 2.4. Evaluate the process of the Party leading the resistance war	Teach: - Teaching methods: TLM1, TLM2, TML 6, TML13 Learn in class: - Listen to lectures - Answer the teacher's questions. - Ask questions of concerns. Study at home: - Review the theory - Read the next post.	A1.1, A2.1, A3.1	CLO1-5
4 (Theory + Discussion)	Chapter 3: The party leading the country to transition to socialism (1954-1986) I. THE LEADING PARTY OF THE NORTH TO SOCIALIST (1954-1975) 1.1. Socialist revolutionary line in the North and the implementation direction of the Party from 1954 to 1965	Teach: - Teaching methods: TLM1, TLM2, TML 6, TML13 Learn in class: - Listen to lectures - Answer the teacher's questions. - Ask questions of concerns.	A1.1, A1.2, A2.1, A3.1	CLO1-5

	1.2. The Party led the construction of socialism in the North from 1965 to 1975 1.3. Achievements, limitations and experiences (1954-1975) II. THE LEADING PARTY TRANSLATE THE COUNTRY TO SOCIALism FROM 1975 TO 1986 2.1. Leader in building and defending the unified Fatherland from 1975 to 1981 2.2. Leadership to overcome economic and social crisis from 1982 to 1986 2.3. Achievements, limitations and experiences of the period 1976-1986	Study at home: - Review the theory - Read the next post.		
10(Theory + Discussion)	Chapter 4: The Party leads the renewal process along the socialist path (1986-2018). I. INNOVATION WAY AND IMPLEMENTATION OF THE FIRST ROAD (1986-1996) 1.1. Initiating and implementing the renovation policy (1986 - 1991) 1.2. Implement the reform policy for the period 1991 - 1996 II. PROCESSING INDUSTRIALIZATION, MODERNIZATION AND INTERNATIONAL IMPORTANCE (1996 - 2016) 2.1. Industrialization and modernization in the period 1996 - 2001 2.2. Industrialization and modernization in the period 2001 - 2006 2.3. Accelerating industrialization and modernization in the period 2006 - 2011 2.4. Accelerating industrialization and modernization in the period 2011 - 2016 2.5. Accelerating industrialization and modernization in the 2016-2017 period	Teach: - Teaching methods: TLM1, TLM2, TML 6, TML13 Learn in class: - Listen to lectures - Answer the teacher's questions. - Ask questions of concerns. Study at home: - Review the theory - Read the next post.	A1.1, A1.2, A2.1, A3.1	CLO1-5
2 (Theory + Discussion)	Chapter 5: Some key lessons in the Party's leadership I. HOLDING THE FLAG OF NATIONAL INDEPENDENCE AND SOCIALism	Teach: - Teaching methods: TLM1, TLM2, TML 6, TML13 Learn in class:	A1.1, A1.2, A2.1, A3.1	CLO1-5

	1.1. Some concepts 1.2. National independence associated with socialism is an objective choice of Vietnamese history 1.3. National independence associated with socialism is the source of strength of the Vietnamese revolution II. REVOLUTION IS THE CAREER OF THE PEOPLE, BY THE PEOPLE AND FOR THE PEOPLE III. CONTINUOUSLY CONTINUOUSLY, STRENGTHENCE IN PARTY UNION, ALL PEOPLE'S UNITY, Ethnic Solidarity, INTERNATIONAL UNITY 3.1. Scientific basis of the lesson 3.2. lesson content IV. COMBINING THE POWER OF COUNTRY, COUNTRY WITH POWER OF TIME, INTERNATION 4.1. Purpose of request 4.2. Content 4.3. Meaning of the lesson. V. THE RIGHT LEADERSHIP OF THE VIETNAMESE COMMERCIAL PARTY IS THE LEADING FACTOR OF ASSURING THE WINNERS OF THE VIETNAM REVOLUTION 5.1. The Party's perception and policy on the Party's leadership role 5.2. Practice has proven that the correct leadership of the Communist Party of Vietnam is the leading factor to ensure the victory of the Vietnamese revolution. 5.3. Current situation, revolutionary tasks and leadership role of the Communist Party of Vietnam	- Listen to lectures - Answer the teacher's questions. - Ask questions of concerns. Study at home: - Review the theory - Read the next post.		

15. Materials

15.1. Books, lectures, main textbooks

[1].Ministry of Education and Training, History of the Communist Party of Vietnam, National Political Publishing House 2019.

15.2. Books and references:

[1]. Research Committee on History of the Central Party, History of the Communist Party of Vietnam, volume I (1920-1954), Truth Publishing House, 1981. pp.1-105.
[2]. Communist Party of Vietnam, Complete Party Document, Volume 1, National Program Publishing House, Hanoi, 1998, p. 614.

[3]. Communist Party of Vietnam, Complete Party Document - Brief Constitution of the Party, Brief Strategy of the Party, Summary Program of the Party, Brief Statute of the Communist Party of Vietnam; Conference summary report; The appeal, National Program Publishing House, H, 1998, volume 2, pp. 2-19.
[4]. Communist Party of Vietnam, Complete Party Document, National Program Publishing House, H, 2000, T.7, p.118
[5]. Communist Party of Vietnam, Complete Party Document, National Program Publishing House, H, 2002, T. 21, pp. 904

15. Scientific code of ethics:

Students must respect the lecturer and other students.
Students must comply with the University's academic integrity policy.
Students must obey the rules and regulations of the university.

16. Approved date:

17. Approved by:

Dean of Faculty	Program chair	Lecturer in charge
Cao Van Lam, PhD.	**Vo Duy Hung, PhD.**	

29. Background and Foundation

THE UNIVERSITY OF DANANG
UNIVERSITY OF SCIENCE AND TECHNOLOGY
Faculty of Road and Bridge Engineering

SOCIALIST REPUBLIC OF VIETNAM
Independence - Freedom - Happiness

UNDERGRADUATE PROGRAM

Awarded degree: Undergraduate/Bachelor

Name of the study program: Construction Materials Engineering and Technology Program Code: 7510105

SYLLABUS
Course name (Vietnamese): Nền và Móng
English name: Background and Foundation

1. Code:	1090990
2. Course abbreviation:	Background and Foundation
3. Credits: **ECTS credits (*):**	02 2,83
4. Study workload:	
- Lecture:	24 teaching hours.
- Exercise:	06 teaching hours
- Self-study/Assignment:	60 study hours
5. Lecturers:	
- Faculty/Division in charge:	
- Course coordinator:	Dr. Do Huu Dao
- Other lecturers:	MsC. Nguyen Thu Ha MsC. Pham Van Ngoc
6. Required and recommended prerequisites for joining the course:	
- Required prerequisite:	None
- Recommended prerequisite:	Construction Materials, Soil Mechanics
- Corequisite:	Concrete structure
7. Course type:	☒ Compulsory Selected elective Free elective
8. Knowledge clusters:	Math and natural science General knowledge ☒ Core engineering fundamental knowledge Disciplinary knowledge Supportive knowledge Project/ Internship/ Graduate thesis

9. COURSE DESCRIPTION

Foundations is one of the important specialized subjects for all civil engineering students. This course provides the concepts, background and principle in designing and building the foundations of the constructions. Therefore, it helps students to be able to recognize, distinguish, select, analyze and evaluate the foundation solutions (shallow foundation and deep foundation) as well as soil improvement methods when building the construction on soft soil ground. This module equippes an important knowledge about foundations so that students can apply and connect their knowledge with other subjects in the civil engineering program.

10. COURSE OBJECTIVES

After completing the course, students have ability to:

No.	Course Learning Outcomes (CLOs) (1)	Knowledge (2)	Skill (3)	Attitude (4)	PLOs Syllabus (5)
1	Differentiate and compare the advantages and disadvantages, the scope of application of deep foundation and foundation.	Understand			1.2.13
2	Calculate and design shallow foundation on the natural ground, low embedment pile foundation and high embedment pile foundation		Apply		8.2.2
3	Analyze of the factors influencing and forecast-ing the bearing capacity of reinforced concrete piles and bored piles according to the updatest standards	Analyze			1.2.13
4	Analyze and propose solutions when building construction on soft ground; Apply specialized software in design pile foundation and soft soil improvement.	Analyze	Apply		1.2.13 8.2.2
5	Plan and complete tasks on schedule, Team work skills: cooperate, share work, listen to other people's ideas, participate actively ...		Fluent	Seriously	8.1.4 5.1.2

11. CLOs AND PLOs MAPPING:

PLO	PLO1	PLO2	PLO3	PLO4	PLO5	PLO6	PLO7	PLO8
Contribution of the Course (6)	TU				T			I
CLO 1	X							
CLO 2								X
CLO 3	X							
CLO 4	X							X
CLO 5					X			X

12. Student responsibilities:

Students must perform the following tasks:

- Attend classes at least 80% class hours of the module;

- Make and submite individual / group assignments in accordance with the module;
- Self-study at home or library;
- Focus group discussions;
- Do the midterm and final examinations.

13. COURSE LEARNING OUTCOMES (CLOs)

Course assessment is conducted due to student's activities, mid-term exam and final exam, as follows:

Component	Assessment style	Assessment methods	Criteria	Weight		CLOs
A1. Progress assessment	A1.1. Diligence	P1.1. Take attendance	Rubric 1.1	W1.1. 5%	W1 20%	CLO 5
	A1.2. Short assignments	P1.2. Presentation in class / Quiz	Rubric 1.2	W1.2. 5%		CLO 1,2, 3,4
	A1.3. Personal/ Group homeworks/	P1.3. Workbook report and class presentation	Rubric 1.2	W1.3. 10%		CLO 1,2, 3,4,5
A2. Mid-term assessment	A2. Mid-term test	P2. Essay test	Rubric 2	W2. 20%	W2 20%	CLO 1,2
A3. Final assessment	A3. Final test	P3. Essay test	Rubric 3	W3. 60%	W3 60%	CLO 1,2,3,4

14. Teaching and learning plan

Week (3h/w)	Content	Teaching and Learning Activities	Assessment	CLOs
1.	**Course Introduction:** - Subject Objectives - Subject meaning in the program - related subjects - document resource - Study mode - Examination and evaluation forms **Chapter 1: Fundamentals of Foundation Design** 1.1. General concept 1.1.1. General concept of foundation 1.1.1.1. General concept of foundation 1.1.1.2. General concept of background 1.1.1.3. Meaning of foundation design 1.1.2. The concept of limited design 1.1.2.1. Calculate the foundation by the first limit state	Teaching method - Lecturer introduces students to the subject; the position and role of the course in the curriculum; the subject of the course, the forms of examination and assessment of the scale of the assessment, the content of the module according to the chapter ... - Lecture in combination of slides - Ask students to think and answer Classroom study: - Listening - Answer the questions of the teacher - Ask questions of concern	A1.1; A1.2,	CLO5; CLO1;

	1.1.2.2. Calculate the background by the second limit state 1.1.3. Load and load combination effects on the foundation 1.1.3.1. Load on the foundation 1.1.3.2. Combinations of load acting on the foundation 1.1.3.3. Coefficients in foundation design	Study at home: - Review the theory - Pre-reading Foundations, Le Xuan Mai, Do Huu Dao (chapter 1, sections 1.2, 1.3, 1.4, pages 15-36)		
2.	**Chapter 1 (continued):** 1.2. Construction problems caused by the foundation 1.2.1. Deformation of the structure when the foundation is submerged 1.2.2. The causes of differential settlement 1.2.3. Struture amaged when the ground is damaged. 1.3. Construction geology for the design of foundations 1.3.1. The purpose and tasks of geological survey work 1.3.2. Selection of borehole network, number and depth of borehole 1.3.3. Drilling and testing 1.4. Materials needed to design the Foundation 1.4.1. Location and characteristics of the construction site 1.4.2. Documentation on design 1.4.3. Construction materials and machinery.	Teaching method - Lecture in combination of slides - Ask students to think and answer - Ask students to solve class assignments related to the content of the unit. **Classroom study:** - Listening - Thinking, discussing and answering the questions of the lecturer - Ask questions of concern regarding the content of the unit Study at home: - Review the theory - Pre-reading Foundations, Le Xuan Mai, Do Huu Dao (chapter 1, sections 1.2, 1.3, 1.4, pages 15-36)	A1.1; A1.2;	CLO5; CLO1;
3.	**Chapter 2: Shallow Foundation on natural ground** 2.1. General concept 2.1.1. Some general concepts of shallow foundation 2.1.2. The concept of stress distribution at the bottom of the foundation 2.2. Classification, composition and application of shallow foundation 2.2.1. Single foundation 2.2.2. Strap footing 2.2.3. Raft foundation 2.3. Calculation and design of shallow foundation 2.3.1. Select foundation material 2.3.2. Select depth of foundation 2.3.3. Determination of foundation bottom size	Teaching method - Lecture in combination of slides - Ask students to think and answer - Ask students to solve class assignments related to the content of the unit. **Classroom study:** - Listening - Thinking, discussing and answering the questions of the lecturer - Ask questions of concern regarding the content of the unit - doing homework **Study at home:**	A1.1; A1.2;	CLO5; CLO2;

	2.3.3.1. Determination of foundation bottom size under standard ground pressure conditions 2.3.3.2. Determination of foundation bottom according to ground strength	- Review the theory - Do homework - Pre-reading Foundations, Le Xuan Mai, Do Huu Dao (chapter 2, sections, pages 64-72)		
4.	**Chapter 2 (continued)** 2.3.4. Check foundation bed size according to deformation condition 2.3.5. Check foundation size under strength and stability 2.3.6. Calculation of the foundation according to the limiting state of intensity 2.3.6.1. Calculating 2.3.6.2. Determine the height of the foundation 2.3.6.3. Strength of reinforced concrete foundation	Teaching method - Lecture in combination of slides - Ask students to think and answer - Ask students to solve class assignments related to the content of the unit. **Classroom study:** - Listening - Thinking, discussing and answering the questions of the lecturer - Ask questions of concern regarding the content of the unit - doing homework Study at home: - Review the theory - Do homework - Pre-reading Foundations, Le Xuan Mai, Do Huu Dao (chapter 2, section 2.4, pages 73-91).	A1.1; A1.2;	CLO5; CLO2;
5.	**Chapter 2 (continued)** 2.4. Calculate and design plexible foundation 2.4.1. The concept of soft foundation and the background model Determine the size of the bottom of the foundation 2.4.3. Method of determining the coefficient of foundation 2.4.4. Calculation of soft foundation by the base factor method 2.4.4.1. Basic equations 2.4.4.2. In the case of infinitely long beams, the load is concentrated vertically at one point 2.4.4.3. Extremely long beams are torque concentrated at one point 2.4.4.4. Beams are also subject to multiple loads	Teaching method - Lecture in combination of slides - Ask students to think and answer - Ask students to solve class assignments related to the content of the unit **Classroom study:** - Listening - Thinking, discussing and answering the questions of the lecturer - Ask questions of concern regarding the content of the unit Study at home: - Review theories and exercises	A1.1; A1.2;	CLO5; CLO2;

	2.4.4.5. Semi-infinite girder on elastic base bearing Po and torque Mo 2.4.4.6. Load bearing beams near the ends - Method of load compensation 2.4.5. Hetenyi's formula 2.4.6. Calculation of the foundation using the method of B.N. Yemoskin 2.4.6.1. Facility, calculation diagram 2.4.6.2. The sequence of calculation steps 2.4.7. Design and design of raft foundation 2.4.7.1. Calculation method is absolutely hard 2.4.7.2. Calculation method for foundation as the plate on the elastic foundation			
6.	Middle exam		A2.1	CLO1; CLO2;
7.	**Chapter 3: Pile foundation** 3.1. General concept 3.2. Classification of pile and pile structure 3.2.1. Prepared piles 3.2.1.1. Wood piles 3.2.1.2. Reinforced concrete piles 3.2.1.3. Reinforced BT pile 3.2.1.4. Steel pile 3.2.1.5. Twisted pile 3.2.1.6. Piles in place 3.3. Structure of the pile 3.4. Overview of the axial load bearing capacity of the pile 3.4.1. General formula determines the axial load capacity of the pile by the soil 3.4.1.1. Extremely hardened by side friction (Qf) 3.4.1.2. Extreme load bearing capacity due to toe pile (Qp) 3.4.2. Negative friction 3.4.3. Group effects 3.4.5. Methods of pile design	Teaching method - Lecture in combination of slides - Ask students to think and answer - Ask students to solve class assignments related to the content of the unit. Classroom study: - Listening - Thinking, discussing and answering the questions of the lecturer - Ask questions of concern regarding the content of the unit Study at home: - Review the theory - Pre-reading Foundations, Le Xuan Mai, Do Huu Dao (chapter 3, sections 3.5, 3.6, pages 109-164).	A1.1; A1.2;	CLO5; CLO3;
8.	**Chapter 3 (continued)** 3.5. Predict the load bearing capacity of single piles 3.5.1. Forecast of bearing capacity of pile in axial direction	Teaching method - Lecture in combination to slides - Ask students to think and answer	A1.1; A1.2;	CLO5; CLO2; CLO3;

	3.5.1.1. Determine the bearing capacity of the pile according to the material strength 3.5.1.2. Forecast of load bearing capacity of piles by soil 3.6. Low pile foundation design and calculation 3.6.1. Choose piling materials and piles 3.6.2. Select the pile size 3.6.3. Select the depth of foundation 3.6.4. Select the pile size 3.6.5. Determination of loading capacity of single piles 3.6.6. Determine the number of piles in the foundation 3.6.7. Calculate and test pile foundation 3.6.7.1. Check load acting on pile 3.6.7.2. Checking the ground strength under pile foundation 3.6.7.3. Check the pile foundation settlement 3.6.7.4. Calculate and test the pile	- Ask students to solve class assignments related to the content of the unit. Classroom study: - Listening - Thinking, discussing and answering the questions of the lecturer - Ask questions of concern regarding the content of the unit - doing homework Study at home: - Review the theory - Do homework - Pre-reading Foundations, Le Xuan Mai, Do Huu Dao (chapter 3, section 3.7, pp. 164-176).		
9.	**Chapter 3 (continued)** 3.7. High pile foundation design and calculation 3.7.1. Characteristics and scope of use 3.7.2. Assumptions 3.7.3. Method and calculation scheme 3.7.3.1. Calculating the internal force of a pile due to the generalized displacement of the pile head 3.7.3.2. Calculating the internal force of a pile due to the displacement of the pile Top 3.7.3.3. Internal strength in the piles 3.7.3.4. Calculates the unitary forces in the bonds 3.7.3.5. Calculate the radix displacements 3.7.3.6. Internal force computation in piles 3.7.3.7. In case of high pile foundation, only vertical piles	Teaching method - Lecture in combination to slides - Ask students to think and answer - Manual simulation software - Ask students to solve class assignments related to the content of the unit. Classroom study: - Listening - Thinking, discussing and answering the questions of the lecturer - Ask questions of concern regarding the content of the unit Study at home: - Review the theory - doing homework (group exercise) - Pre-reading Foundations, Le Xuan Mai, Do Huu Dao (chapter 4, section 4.1- 4.4 pp. 177-185)	A1.1; A1.2;	CLO5; CLO2; CLO3;

10.	**Chapter 4. Construction on weak ground** 4.1. Concept 4.2. Measures to handle the structure 4.2.1. Use lightweight materials and lightweight construction 4.2.2. Increase the softness of the structure 4.2.3. Increasing the intensity of the structure 4.3. Foundation treatment measures 4.3.1. Change the foundation depth 4.3.2. Resize the bottom of the foundation 4.3.3. Change the foundation type and foundation hardness 4.4. Soil remediation measures 4.4.1. Sanding method 4.4.1.1. Determining the size of the sand mattress 4.4.1.2. Check the sinking of the substrate after cushioning 4.4.1.3. Construction and testing of sand bedding	Teaching method - Lecture in combination to slides - Ask students to think and answer - Ask students to solve class assignments related to the content of the unit. Classroom study: - Listening - Thinking, discussing and answering the questions of the lecturer - Ask questions of concern regarding the content of the unit Study at home: - Review the theory - Pre-reading Foundations, Le Xuan Mai, Do Huu Dao (chapter 4, sections 4.4.2-4.4.4, pages 186-212).	A1.1; A1.2;	CLO5; CLO4;
11.	**Chapter 4 (continued)** 4.4.2. Compaction method of surface layer 4.4.3. Sand pile method 4.4.3.1. Calculation and design of sand piles 4.4.3.2. Construction and ground check after treatment 4.4.4. The method of treating the ground by piles, soil-cement piles 4.4.4. The pre-load method combines PVD absorbent wick 4.4.4.1. Pre-compression method does not use drainage well 4.4.4.2. The pre-compression method has PVD vertical permeability	Teaching method - Lecture in combination slides - Ask students to think and answer - Manual simulation software Teaching method - Listening - Thinking, discussing and answering the questions of the lecturer - Ask questions of concern regarding the content of the unit Study at home: - Theories and exercises - doing homework (group exercise)	A1.1; A1.2; A1.3;	CLO5; CLO4; CLO 1,2,3,4,5
12.	Final exam		A3.1	CLO1, 2, 3, 4

15. Materials:

15.1. Textbooks:

[1]. **Le Xuan Mai, et.al**, *Foundations,* Construction Publisher, Ha Noi, 2010 (Vietnamese)

15.2 References:

[1]. **Vu Cong Ngu**, *Design and calculate shadow foundations*, Construction Publisher, Ha Noi, 1998.

[2]. **Le Duc Thang**, *Design and calculate deep foundations*, Construction Publisher, Ha Noi, 1998.

[3]. **Le Duc Thang, et.al**, *Foundations,* Education Publisher, Hanoi, 1998.

[4]. **Vu Cong Ngu, Nguyen Thai,** *Deep Foundations: Analysis and design.* Construction Publisher, Ha Noi, 1998.

15.3. Software

[1]. Plaxis

[2]. Geoslope

16.Scientific code of ethics:

- Plagiarism is prohibited
- References including textbooks, notes are prohibited in the mid-term examination
- Electronic devices are prohibited during mid-term and final examinations

17.Approved date: / /

18. Approved by:

Dean of Faculty	Program chair	Lecturer in charge
Cao Van Lam, PhD.	**Vo Duy Hung, PhD.**	**Nguyen Thu Ha, M.Sc.**

30. PBL1 - Foundations Project

THE UNIVERSITY OF DANANG
UNIVERSITY OF SCIENCE AND TECHNOLOGY
Faculty of Road and Bridge Engineering

SOCIALIST REPUBLIC OF VIETNAM
Independence - Freedom - Happiness

UNDERGRADUATE PROGRAM

Awarded degree: Undergraduate/Bachelor

Name of the study program: Construction Materials Engineering and Technology Program Code: 7510105

SYLLABUS
Course name (Vietnamese): PBL1 – Nền và Móng
English name: PBL1 - Foundations Project

1. Course code:	1092890
2. Course abbreviation:	Foundations Project
3. Credits: **ECTS credits (*):**	01 credits (30 Periods) 1,67
4. Study workload:	
- Lecture:	
- Exercise:	
- Practice/ Laboratory:	
- Self-study/Assignment:	60 hours
5. Responsible persons:	
- Faculty/Division in charge:	Geotechnical Engineering Division/Faculty of Road & Bridge Engineering
- Course coordinator:	Assoc. Prof. Do Huu Dao
- Other lecturers:	MSc. Nguyen Thu Ha Dr. Pham Van Ngoc
6. Required and recommended prerequisites for joining the course:	
- Required prerequisite:	Soil Mechanics**,** Foundations
- Recommended prerequisite:	Construction Materials, Engineering Geology, Reinforced Concrete Structure
- Corequisite:	No
7. Course type:	☒ Compulsory Selected elective Free elective
8. Knowledge clusters:	Math and natural science General knowledge ☒ Core engineering fundamental knowledge Disciplinary knowledge

	Supportive knowledge Project/ Internship/ Graduate thesis

9. Brief description of the course:

Module PBL1 - Foundations Project will system input data on Engineering Geology, load to design foundation for a construction project. Students collect data from the problem or from the actual work, evaluate the geotechnical conditions of the project and propose the design of the foundations. Calculation and design for shallow foundation and pile foundation options are required. The product is a description of design calculations and a set of drawings showing the results of PBL1 foundations in accordance with current standards and actual works. This is part of the core content for students to do Graduation Project related to calculation of foundation structure.

10. Output standards of the course:

After completing the course, students will be able to:

No	Course Learning Outcomes (CLO) (1)	Bloom Taxanomy (2)	Skill (3)	Attitude (4)	CDIO Syllabus (PLO) (5)
1	Gather geological survey data, construction load, read and understand input data for foundations design.	a2 Understand			1
2	Analyze and evaluate geological data, load to select and propose foundation and foundation options for the project.	a5 Evaluate	b4 Competently		1
3	Calculate and design foundation and foundation plans for construction works according to current standards and presenting the results by product descriptions and drawings.		b2 Manipulate		1 3
4	Organize work in groups to implement projects and present project results with a full range of products as required.			c4 Organization	3 5

11. CLOs and PLOs mapping:

PLO	PLO1	PLO2	PLO3	PLO4	PLO5	PLO6	PLO7	PLO8
Contribution of the Course	TU		T		U		U	
CLO 1	X							
CLO 2			X		X			
CLO 3			X				X	
CLO 4	X							

12. Student responsibilities:

- Students must perform the following tasks:

- Attend classes at least 80% class hours of the module;
- Make and submite individual / group assignments in accordance with the module;
- Listen to the use of laboratory equipment;
- Group exercises are assigned
- Submit individual reports as required by the module;
- Discuss and answer some problems raised by the lecturer;
- Complete a final examination.

13. Assessment

Component	Assessment style	Assessment methods	Criteria	Weight	Weight	CLOs
A1. Evaluation of the process (QT)	A1.1 Short exercises in class	P1.1. Class exercises/ Essay	R1.1	W1.1. 10%	W1 40%	CLO 1,2,3
	A1.2 Descriptive report of group exercise	P1.2. Class report and presentation	R1.2	W1.2. 20%		CLO 1, 2,3
	A1.3 Thematic reports	P1.3. Class report and presentation	R1.3	W1.3. 10%		CLO 3, 4
A2. End of term assessment (CK)	A2. Kiểm tra cuối kỳ	P2. Questions and Answers	R2.	W2. 60%	W2 60%	CLO 2,3,4

14. Teaching and learning plan

Week / Study session	Course Content	CLOs	Teaching and Learning Activities	Assessment
1(1 class hour)	Introduction to PBL1 – Foundations 1. Outline introduction 2. Overview of PBL1 3. Establishment of a PBL group 4. Introduce the preparation content to do PBL.	Teaching: - Present of the detailed course outline - Activities to familiarize yourself with the class - An overview of PBL1 – Foundations Project Studying in class: Students listen to the lecturer's presentation, discussion, grouping, taking notes and preparing documents. Studying at home: Prepare documents, read the PBL1's manuals	A1.1, A1.2	CLO 1, 2
2(2 class hours)	Data for PBL1 includes: 1. Site plan of the work. 2. Data on construction load. 3. Column size data. 4. Geotechnical survey dossier of the project 5. Data of soil test results.	Teaching - Assign data to the groups - Instructions for reading data from the topic, analyzing data for design. - Guide to analyze, calculate and evaluate geological features. Studying in class:	A1.1, A1.2	CLO 1, 2

	6. PBL1 implementation sequence instructions. Chapter 1: Evaluating the geological situation and proposing the foundation option. 1. Evaluation of the physico-mechanical properties of the ground. 2. Comment and evaluate the construction features of the ground. 3. Proposal of Foundation design options.	- Teams deploy data collection of topics. - Calculation and assessment of the condition of the soil according to the standard. - Propose and evaluate foundation options. Studying at home: - Prepare documents, read PBL1 manuals of the Department. Textbook: Foundations and Foundations – Chapter 1 and Chapter 2. - Perform calculation contents according to tasks and Outline.		
3(2 class hours)	Chapter 2: Design and Calculation of shallow Foundation 2.1. Design and calculation of shallow foundation (middle column and side column) 2.1.1. Choose material. 2.1.2. Choose the depth of foundation 2.1.3. Preliminary determination of foundation size according to standard pressure conditions. 2.1.4. Check the background under standard pressure conditions. 2.1.5. Check settlement of foundation according to TTGH2.	Teaching: - Guide in order to calculate shallow foundation design. - Answer students' questions. - Check the results of the groups. Studying in class: - Deployment groups perform calculation and design exercises according to items. - Discuss the results and select the optimal results. - Draw a picture to show the results. Studying at home: Prepare documents, read the PBL1 manual of the Department. Textbook: Foundations – Chapter 1 and Chapter 2. - Perform calculation contents according to tasks and Outline.	A1.1, A1.2	CLO 3, 4
4(2 class hours)	Chapter 2: Design and calculation of shallow Foundation (cont'd) 2.1.6. Background check according to TTGH1 a. Check the load capacity of the foundation (if necessary) b. Check overturn stability. c. Check lateral stability. 2.1.7. Calculating foundation height: h=h0+c 2.1.8. Calculation and arrangement of reinforcement for the foundation	Teaching: - Guide in order to calculate shallow foundation design. - Answer students' questions. - Check the results of the groups. Studying in class: - Deployment groups perform calculation and design exercises according to items. - Discuss the results and select the optimal results. - Draw a picture to show the results. Studying at home: - Prepare documents, read PBL1 manuals of the Department.	A1.1, A1.2	CLO 3, 4

	a. Calculate moments at the calculated sections. b. Calculate the required amount of steel reinforcement. c. Select the diameter and calculate the number of bearing steel bars. d. Draw the layout and statistics of steel reinforcement in the foundation.	Textbook: Foundations – Chapter 1 and Chapter 2. - Perform calculation contents according to tasks and Outline.		
5(2 class hours)	**Chapter 2: Design and calculation of Shallow Foundation** **Complete the report and drawings of chapter 2.**	Teaching: - Check the group's chapter 2 explanation - Check the A3 drawings showing the results of chapter 2 of the groups. - Answer students' questions. Studying in class: - Teams develop and present the results with explanations and drawings. - Discuss the results and edit the notes and drawings - Make notes of edits to edit at home. Studying at home: Prepare documents, read the PBL1 manual of the Department. Textbook: Foundations – Chapter 1 and Chapter 2.	A1.1, A1.2	CLO 3, 4
6(2 class hours)	Chapter 3. Design and calculation of pile foundation 3.1. Pile foundation design and calculation (middle column and side column) 3.1.1. Select materials for piles and pile caps. 3.1.2.Select pile size and pile cap 3.1.3. Choose the depth of the pile cap 3.1.4. Calculation of bearing capacity of single pile a. Calculate the bearing capacity of the pile according to the pile material. b. Calculating the bearing capacity of piles according	**Teaching:** - Guide according to the order of calculation of pile foundation design. - Answer students' questions. - Check the results of the groups. Studying in class: - The groups implement the exercise and present the results by explanations and drawings. - Discuss the results and edit the notes and drawings - Make notes of edits to edit at home. Studying at home: Prepare documents, read the PBL1 manual of the Department. Textbook: Foundations – Chapter 3. Pile Foundations	A1.1, A1.2	CLO 3, 4

	to the ground soil according to TCVN 10304:2014. 3.1.5. Determine the number of piles and arrange piles in the foundation.			
7(2 class hours)	Chapter 3. Design and calculation of pile foundation (cont.) 3.1.6. Check the vertical load acting on the pile. 3.1.7. Check the horizontal load acting on the pile. 3.1.8. Check the strength of the ground at the pile tip plane. 3.1.9. Calculate the settlement of the pile foundation. 3.1.10. Calculation of piles. a. Calculate the height of the pile cap. b. Calculation and arrangement of reinforcement in the pile cap. 3.1.11. Check the piles when transporting, hoisting and hanging the hammer.	Teaching: - Guide according to the order of calculation of pile foundation design. - Answer students' questions. - Check the results of the groups. Studying in class: - The groups implement the exercise and present the results by explanations and drawings. - Discuss the results and edit the notes and drawings - Make notes of edits to edit at home. Studying at home: Prepare documents, read the PBL1 manual of the Department. Textbook: Foundations – Chapter 3. Pile Foundations	A1.1, A1.2	CLO 3, 4
8(2 class hours)	Chapter 3. Design and calculation of pile foundation (cont.) Complete the report and drawings of chapter 3. A full evaluation of PBL implementation results includes a full set of report (A4) and a full set of drawings showing design results (A3).	Teaching: - Check the group's chapter 3 explanation - Check the A3 drawings showing the results of chapter 3 of the groups. - Answer students' questions. Studying in class: - Teams develop and present the results with explanations and drawings. - Discuss the results and edit the notes and drawings - Make notes of edits to edit at home. Studying at home: Prepare documents, read the PBL1 manual of the Department. Textbook: Foundations – Chapter 3. Pile Foundations	A1.3	CLO 3, 4
9	Final exam: Defending PBL1 - Q&A	Products: Written report A4 and drawing set A3	A3	CLO3,4

15. Materials:

15.1. Books, lectures, main textbooks

[1]. Department of Civil Engineering Foundations – Lecture PBL1 – Foundations, University of Science and Technology, University of Danang.
[2]. Le Xuan Mai (editor) - Do Huu Dao - Nguyen Tin - Doan Viet Le, Foundations, Construction Publishing House, Hanoi, 2010.3

15.2. References:

[1]. Vu Cong Ngu, *Design and calculate shadow foundations*, Construction Publisher, Ha Noi, 1998.
[2]. Le Duc Thang, *Design and calculate deep foundations*, Construction Publisher, Ha Noi, 1998.
[3]. Le Duc Thang, et.al, *Foundations*, Education Publisher, Hanoi, 1998.
[4]. Vu Cong Ngu, Nguyen Thai, *Deep Foundations: Analysis and design.* Construction Publisher, Ha Noi, 1998.

16. Scientific code of ethics:

Honesty, responsibility, respect and cooperation in science.

17. Approval date:

18. Approved by:

Dean of Faculty	Program chair	Lecturer in charge
Cao Van Lam, PhD.	**Vo Duy Hung, PhD.**	**Do Huu Dao, PhD.**

31. Basic Reinforced Concrete Elements

THE UNIVERSITY OF DANANG
UNIVERSITY OF SCIENCE AND TECHNOLOGY
Faculty of Road and Bridge Engineering

SOCIALIST REPUBLIC OF VIETNAM
Independence - Freedom - Happiness

UNDERGRADUATE PROGRAM

Awarded degree: Undergraduate/Bachelor

Name of the study program: Construction Materials Engineering and Technology Program Code: 7510105

SYLLABUS

Course name (Vietnamese): Kết cấu bê tông cốt thép – Phần cơ bản
English name: Basic Reinforced Concrete Elements

1. Course code:	1102900
2. Course abbreviation:	Basic Reinforced Concrete Elements
3. Credits: **ECTS credits (*):**	03 4,25
4. Lecture plan:	
- Lecture:	45 hours
- Exercise:	
- Self-study/Assignment:	90 hours
5. Lecturers:	
- Faculty/Division in charge:	Divison of Structural Engineering/ Faculty of Civil Engineering
- Course coordinator:	Dr Nguyen Van Chinh
- Other lecturers:	Dr Tran Anh Thien, Trinh Quang Thinh, Vuong Le Thang, Dr Nguyen Quang Tung, Pham Ngoc Vinh
6. Conditions for attendance:	
- Required prerequisite:	None
- Recommended prerequisite:	Strength of materials, Mechanical structures, Construction materials
- Corequisite:	Project based learning in Basic Reinforced concrete elements
7. Course type:	☒ Compulsory Selected elective Free elective
8. Knowledge clusters:	Math and natural science General knowledge ☒ Core engineering fundamental knowledge Disciplinary knowledge

	Supportive knowledge Project/ Internship/ Graduate thesis

9. Course description

This subject consists of 7 chapters. Chapter 1 helps students to understand an overview of reinforced concrete materials. Chapter 2 presents the physical and mechanical properties of concrete steel and properties of reinforced concrete elements. Chapter 3 introduces the principles of calculation, design and perform the draws of reinforced concrete structure. Chapters 4, 5, 6, 7 analyze, calculation and design of basic reinforced concrete elements.

10. Course learning outcomes (CLOs)

After finish the course, the students will be able to:

No	Course learning outcomes (CLO)	Awareness	Skill	The level of autonomy and responsibility	Programme learning outcomes (PLO)
1	Have good character, professional ethics, and social responsibility	Understand			1,8
2	Remember the pros and cons, application of reinforced concrete structures		Remenber	Receive	4
3	Remember the mechanical, physical properties of concrete, steel, and reinforced concrete		Remenber	Receive	2
4	Analyse, design, calculation of the basic reinforced concrete elements		Analyse	Meet the requirements	4
5	Analyse the damage of reinforced concrete structures		Analyse	Meet the requirements	6
6	Ability to work in a team efficiently		Apply	Receive	8

11. Mapping CLOs onto PLOs

PLOs	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
CLO1	H							H
CLO2				M				
CLO3		M						
CLO4				H				
CLO5						M		
CLO6								

12. Student responsibilities:

Students need to perform the following tasks:

- Attending at least 80% of classes;
- Complete assignments and homework as required by the instructor;
- Attending midterm and final examinations
- Policies of class behaviours according to current regulations of the University.

13. Course assessment

Assessment component	Assessment form (Ax.x)	Assessment methods	Assessment criteria (Rubric)	Grading	Percentage (%)	Course ELO
A1. Process	A1.1. Attendance	Attendance	R1.1 Attend classes not lower than 80% of the class hours	10	20	1
	A1.2. Excercises	Essay	R1.2 Submit full assignments	10		1,2,4
A2. Midterm examination	A2.1. Midterm test	Essay	R2.1 Meet the requirements of the answer	10	20	1,2,4
A3. Final examination	A3.1. Final exam test	Essay	R3.1 Meet the requirements of the answer	10	60	3,4,5

Within one week of receiving the results of the assessment, the students have rights to ask for reviewing their test results.

15. Teaching and Learning plan

Week/ Periods	Content	CLOs	Teaching and learning activities	Assessment form
1	***Introduction module*** ***Chapter 1. General introduction*** 1.1. Introduction, classification of reinforced concrete structures 1.2. Pros and Cons of reinforced concrete structures 1.3. History of reinforced concrete structures	2	**Lecture:** - Introduce the general information relating to the course such as: course objectives, course learning outcomes, course assessment, text book and references. -Lecture -Questionnaires **Self-study:** -Review the general introduction of reinforced concrete structures - Read the Chapter 2	A1.1, A1.2.
2	***Chapter 2. Mechanical, physical properties of materials*** 2.1. General introduction 2.2. Mechnical, physical properties of concrete 2.3. Mechnical, physical properties of steel	3	**Lecture:** - Introduce the Mechnical, physical properties of concrete, Mechnical, physical properties of steel, Refiroced concrete. -Lecture -Questionnaires	A1.1, A1.2.

Week/ Periods	Content	CLOs	Teaching and learning activities	Assess-ment form
	2.4. Refiroced concrete.		**Self-study:** -Review the theory in Chapter 2 -Read the Chapter 3	
3	***Chapter 3 Calculation, Design of Reinforced concrete structures*** 3.1. General introduction 3.2. Principles of calculation 3.3. Principles of design	3,4	**Lecture:** - Lecture - Introduce the principles of calculation, design of reinforced concrete structure **Self-study:** -Review theory of the principles of calculation, design of reinforced concrete structure - Read the Chapter 4	A1.1, A1.2.
4	***Chapter 4. Flexural analysis of reinforced concrete elements*** 4.1 Characteristics of reinforced concrete elements in flexure 4.2 Reinforced concrete beam be-haviour 4.3 Stress- strain relationship of rectangular section reinforce con-crete beams	3,4,5,6 ,7	**Lecture:** - Lecture - Guide some exercises **Self-study:** -Review section 4.1, 4.2, 4.3 - Do exercises -Read section 4.4 in chapter 4	A1.1, A1.2
5	***Chapter 4. Flexural analysis of reinforced concrete elements (cont)*** 4.4. Design the rectangular section flexural reinforced concrete ele-ments in strength limit state	3,4,5,6 ,7	- Lecture - Guide some exercises **Self-study:** -Review section 4.4, 45 - Do exercises -Read section 4.5 in chapter 4	A1.1, A1.2.
6	***Chapter 4. Flexural analysis of reinforced concrete elements (cont)*** 4.5. Design the T section flexural reinforced concrete elements in strength limit state	3,4,5,6 ,7	- Lecture - Guide some exercises **Self-study:** -Review section 4.4, 45 - Do exercises -Read section 4.6 in chapter 4	A1.1, A1.2.
7	***Mid-term exam***	3,4,5,6 ,7		A2.1
8	***Chapter 4. Flexural analysis of reinforced concrete elements (cont)*** 4.6. Shear analysis of reinforced concrete elements	3,4,5,6 ,7	Lecture - Guide some exercises **Self-study:** -Review section 4.5 - Do exercises	A1.1, A1.2.
9	***Chapter 4. Flexural analysis of reinforced concrete elements (cont)***	3,4,5,6 ,7	-Lecture - Guide some exercises **Self-study:**	A1.1, A1.2.

Week/ Periods	Content	CLOs	Teaching and learning activities	Assess-ment form
	4.6. Shear analysis of reinforced concrete elements		-Review section 4.6 -Do exercises	
10	**Chapter 5. Reinforced concrete slab (cont)** 5.1. General introduction 5.2. Design of reinforced concrete slab (cont)	3,4,5,6,7	-Lecture - Guide some exercises **Self-study:** -Review section 5.1, 5.2 -Do exercises	A1.1, A1.2.
11	**Chapter 5. Reinforced concrete slab (cont)** 5.2. Design of reinforced concrete slab (cont)	3,4,5,6,7	-Lecture - Guide some exercises **Self-study:** -Review section 5.2 -Do exercises	A1.1, A1.2.
12	**Chapter 5. Reinforced concrete slab (cont)** 5.2. Design of reinforced concrete slab (cont)	3,4,5,6,7	-Lecture - Guide some exercises **Self-study:** -Review section 5.2 -Do exercises	A1.1, A1.2.
13	**Chapter 6: Reinforced concrete elements under axial compression** 6.1 Characteristics 6.2 Design the reinforced concrete elements under central axial compression	3,4,5,6,7	-Lecture - Guide some exercises **Self-study:** -Review section 6.1, 6.2 -Do exercises	A1.1, A1.2.
14	**Chapter 6: Reinforced concrete elements under axial compression (cont)** 6.3 Definition of reinforced concrete elements under eccentric axial compression	3,4,5,6,7	-Lecture - Guide some exercises **Self-study:** -Review section 6.3 -Do exercises	
15	**Chapter 6: Reinforced concrete elements under axial compression (cont)** 6.4 Design of reinforced concrete elements under eccentric axial compression	3,4,5,6,7	-Lecture - Guide some exercises **Self-study:** -Review section 6.4 -Do exercises	A1.1, A1.2.
16	**Chapter 7: Reinforced concrete elements under axial tension (cont)** 7.1 Definition 7.2 Design of reinforced concrete elements under central axial tension	3,4,5,6,7	-Lecture - Guide some exercises **Self-study:** -Review section 7.1, 7.2, 7.3 -Do exercises	A1.1, A1.2.

Week/ Periods	Content	CLOs	Teaching and learning activities	Assess-ment form
	7.3 Design of reinforced concrete elements under eccentric axial tension			
17	***Final exam***	3,4,5,6,7		A3.1

15. Material sources

15.1. Text book

[1] Tran Anh Thien, Bui Thien Lam, Trinh Quang Thinh, Vyong Le Thang, Nguyen Quang Tung - Reinforced Concrete Structures- Principles of design of the basic reinforced concrete elements. DaNang Publisher, 2017

[2] Devision of Structural Engineering, Faculty of Civil Engineering, DUT. Design of the basic reinforced concrete elements.

15.2. References

[1] Ngo The Phong, Nguyen Dinh Cong, Trinh Kim Dam, Nguyen Xuan Lien, Nguyen Phan Tan. Reinforced Concrete Structures- the basic reinforced concrete elements. Science and Technics Publishing House, Hanoi, 2005

[2] Phan Quang Minh, Ngo The Phong, Nguyen Dinh Cong. Reinforced Concrete Structures- the basic reinforced concrete elements. Science and Technics Publishing House, Hanoi, 2008

[3] Vietnamese Standards TCVN 5574-2012

16. Scientific code of ethics:

- Comply with the copyright laws.
- The course is conducted on the principle of respect for learners and lecturers. All acts that interfere with the teaching and learning are strictly prohibited.
- Students must attend the lecture on time. Students are late of more than 5 minutes after the start of the lecture will not be able to attend the class.
- Students are not allowed to eat, drink, or use phones, music players during class.

17. Approved date:

18. Approved by:

Dean of Faculty	Program chair	Lecturer in charge
Cao Van Lam, PhD.	**Vo Duy Hung, PhD.**	**Nguyen Van Chinh, PhD.**

32. PBL2: Reinforced Concrete Structural Elements

THE UNIVERSITY OF DANANG
UNIVERSITY OF SCIENCE AND TECHNOLOGY
Faculty of Road and Bridge Engineering

SOCIALIST REPUBLIC OF VIETNAM
Independence - Freedom - Happiness

UNDERGRADUATE PROGRAM

Awarded degree: Undergraduate/Bachelor

Name of the study program: Construction Materials Engineering and Technology Program Code: 7510105

SYLLABUS

Course name (Vietnamese): PBL2: Kết cấu bê tông cốt thép
English name: PBL2: Reinforced Concrete Structural Elements

1. Course code:	1103030
2. Course abbreviation:	PBL2: Reinforced Concrete Structural Elements
3. Credits: **ECTS credits (*):**	02 3,33
4. Lecture plan	
- Lecture:	0 hours
- Exercise:	90 hours
- Practice/ Laboratory:	0 hours
- Self-study/Assignment:	180 hours
5. Lecturers	
- Faculty/Division in charge:	Dr Tran Anh Thien
- Course coordinator:	Dr Nguyen Van Chinh, MSc Trinh Quang Thinh, MSc Vuong Le Thang, Dr Nguyen Quang Tung, Dr Pham Ngoc Vinh
- Other lecturers:	Division of Structural Engineering, Faculty of Civil Engineering
6. Conditions for attendance:	
- Required prerequisite:	None
- Recommended prerequisite:	Structural Analysis 2
- Corequisite:	Basic Reinforced Concrete Elements, Building Materials
7. Course type:	☒ Compulsory Selected elective Free elective
8. Knowledge clusters:	Math and natural science General knowledge ☒ Core engineering fundamental knowledge Disciplinary knowledge Supportive knowledge

	Project/ Internship/ Graduate thesis

9. Course description

In this course, students will work in groups to perform analysis and design of reinforced concrete slabs and beams. Project tasks include selecting appropriate structural plan for the reinforced concrete slab system, calculating dead and live loads, determining internal forces using both hand calculations and structural analysis softwares, calculating main and other reinforcement for slabs and beams. All design results are presented in the project report and technical drawings. Students defend their project at the end of the course.

10. Course learning outcomes (CLOs)

After finishing the course, students will be able to:

No	Course learning outcomes (CLO)	Awareness	Skills	Level of autonomy and responsibility	Programme learning outcomes (PLO)
1	Select appropriate structural plan for the reinforced concrete slab system	Analyze		H	1,5
2	Analyze and design appropriately basic cast-in-place reinforced concrete slabs and beams.	Apply		H	1,7
3	Apply structural analysis softwares into analyzing and design of structural elements	Apply		M	3
4	Coopperate to complete assigned team workload efficiently		Cooperate	M	9
5	Have good writing and presentation skills		Cooperate	H	8,9

11. Mapping CLOs onto PLOs

	PLO1	PLO2	PLO3	PLO4	PLO5	PLO6	PLO7	PLO8
CLO 1	H				M			
CLO 2	H						H	
CLO 3			M					
CLO 4								M
CLO 5								

(L) Low response; (M) Medium response; (H) High response

12. Student responsibilities:

Students need to perform the following tasks:

- Attending at least 80% of classes;
- Completing assigned team workload according to the schedule;
- Completing all required course assessment;
- Following policies of class behaviors according to current regulations of the University.

13. Course assessment

Final Grade = A3*(A1+A2)

Assessm-ent compon-ent	**Assessment form (Ax.x)**	**Assessment methods**	**Assessment criteria (Rubric)**	**Gra-ding**	**Percen -tage (%)**	**CLOs**
A1. Process assessment	A1.1 Project report No.1	Report and presentation	R1.1	10	50	1,2,4, 5
	A1.2 Project report No.2	Report and presentation	R1.1	10		2,4,5
	A1.3. Project report No.3	Report and presentation	R1.1	10		2,4,5
	A1.4. Project report No.4	Report and presentation	R1.1	10		1,2,3, 4,5
	A1.7. Attendance	Attendance	R1.2	10		
A2. Final assessment	A2.1. Project Defense	Presentation	R2.1	30	50	1,2,3, 4,5
	A2.2 Report	Report in A_4 form	R2.2	10		2,3,4, 5
	A2.3 Drawings	Drawings in A_2 form	R2.3	10		2,4,5
A3. Cross-assessment in each group	A3.1 Cross-assessment	Level of contribution of each member to the group project, decided by the whole group	R3: Level 0: 0.0 Level 1: 0.3 Level 2: 0.6 Level 3: 0.8 Level 4: 0.9 Level 5: 1.0			

Within one week of receiving the results of the assessment, the students have rights to ask for reviewing their test results

14. Teaching and learning plan

Week (3 hours/ week**)**	**Content**	**Teaching and learning activities**	**Assessment form**	**CLOs**
1	Introduction to the course	**Instructor:** -Lecturing	A1.5	1

Week (3 hours/ week**)**	**Content**	**Teaching and learning activities**	**Assessment form**	**CLOs**
	- Course objectives - Course learning outcomes - Assessment method - References Project statement - Explaining project statement - Grouping students - Assigning tasks for group members - Requirements of the project - Study schedule	-Questions and discussion **Students:** - Organizing team workload - Doing research relating to the project		
2	K1. Analysis and design of slabs K1.1 Selection of element dimensions K1.2 Structural diagram K1.3 Loads K1.4 Internal forces	**Instructor:** - Listening to students' presentations and making interactive questions. - Answering questions online and/or at office. **Students:** - Presenting and answering questions from the instructors and/or other groups' members. - Organizing team workload - Doing research relating to the project	A1.5	1,2,4,5
3	K1. Analysis and design of slabs K1.5 Main reinforcement K1.6 Distribution reinforcement	**Instructor:** - Listening to students' presentations and making interactive questions. - Answering questions online and/or at office. **Students:** - Presenting and answering questions from the instructors and/or other groups' members. - Organizing team workload - Doing research relating to the project	A1.5	2,4,5
4	K2. Completing the project report and drawings – Version 1	**Instructor:** - Listening to students' presentations and making interactive questions. - Answering questions online and/or at office. **Students:** - Presenting and answering questions from the instructors and/or other groups' members.	A1.1 A1.5	2,4,5

Week (3 hours/ week**)**	**Content**	**Teaching and learning activities**	**Assessment form**	**CLOs**
		- Organizing team workload - Doing research relating to the project		
5	K3. Analysis and design of secondary beams K3.1 Structural diagram K3.2 Loads K3.3 Internal forces	**Instructor:** - Listening to students' presentations and making interactive questions. - Answering questions online and/or at office. **Students:** - Presenting and answering questions from the instructors and/or other groups' members. - Organizing team workload - Doing research relating to the project	A1.5	2,4,5
6	K3. Analysis and design of secondary beams K3.4 Longitudinal reinforcement K3.5 Stirrups	**Instructor:** - Listening to students' presentations and making interactive questions. - Answering questions online and/or at office. **Students:** - Presenting and answering questions from the instructors and/or other groups' members. - Organizing team workload - Doing research relating to the project	A1.5	2,4,5
7	K4. Completing the project report and drawings – Version 2	**Instructor:** - Listening to students' presentations and making interactive questions. - Answering questions online and/or at office. **Students:** - Presenting and answering questions from the instructors and/or other groups' members. - Organizing team workload - Doing research relating to the project	A1.2 A1.5	2,4,5
8	*Period of midterm examination*	*No activities*		
9	K5. Analysis and design of primary beams K5.1 Structural diagram K5.2 Loads K5.3 Internal forces	**Instructor:** - Listening to students' presentations and making interactive questions. - Answering questions online and/or at office. **Students:**	A1.5	2,4,5

Week (3 hours/ week**)**	**Content**	**Teaching and learning activities**	**Assessment form**	**CLOs**
		- Presenting and answering questions from the instructors and/or other groups' members. - Organizing team workload - Doing research relating to the project		
10	K5. Analysis and design of primary beams K5.4 Longitudinal reinforcement K5.5 Stirrups and diagonal reinforcement	**Instructor:** - Listening to students' presentations and making interactive questions. - Answering questions online and/or at office. **Students:** - Presenting and answering questions from the instructors and/or other groups' members. - Organizing team workload - Doing research relating to the project	A1.5	2,4,5
11	K6. Completing the project report and drawings – Version 3	**Instructor:** - Listening to students' presentations and making interactive questions. - Answering questions online and/or at office. **Students:** - Presenting and answering questions from the instructors and/or other groups' members. - Organizing team workload - Doing research relating to the project	A1.3 A1.5	2,4,5
12	K7. Analysis and design of the secondary beam in structural plan #2 K7.1 Structural diagram K7.2 Loads	**Instructor:** - Listening to students' presentations and making interactive questions. - Answering questions online and/or at office. **Students:** - Presenting and answering questions from the instructors and/or other groups' members. - Organizing team workload - Doing research relating to the project	A1.5	1,2,4,5
13	K7. Analysis and design of the secondary beam in structural plan #2 K7.3 Internal forces *(Students calculates internal*	**Instructor:** - Listening to students' presentations and making interactive questions. - Answering questions online and/or at office. **Students:**	A1.5	2,3,4,5

Week (3 hours/ week**)**	**Content**	**Teaching and learning activities**	**Assessment form**	**CLOs**
	forces using structural analysis softwares)	- Presenting and answering questions from the instructors and/or other groups' members. - Organizing team workload - Doing research relating to the project		
14	K7. Analysis and design of the secondary beam in structural plan #2 K7.4 Longitudinal reinforcement K7.5 Stirrups	**Instructor:** - Listening to students' presentations and making interactive questions. - Answering questions online and/or at office. **Students:** - Presenting and answering questions from the instructors and/or other groups' members. - Organizing team workload - Doing research relating to the project	A1.5	2,4,5
15	K8. Completing the project report and drawings – Version 4	**Instructor:** - Listening to students' presentations and making interactive questions. - Answering questions online and/or at office. **Students:** - Presenting and answering questions from the instructors and/or other groups' members. - Organizing team workload - Doing research relating to the project	A1.4 A1.5	2,4,5
16	Complete and submit the project	**Students:** - Submitting soft copies of project report, drawings and presentation slides - Submitting hard copies of project report and drawings		1,2,3,4,5
	Project defense	**Instructor:** - Evaluating students according to Rubrics **Students:** - Presenting and defending the project	A2.1 A2.2 A2.3 A3.1	1,2,3,4,5

15.Material sources

15.1. Textbook

[1] Tran Anh Thien, Bui Thien Lam, Trinh Quang Thinh, Vuong Le Thang, Nguyen Quang Tung, "Reinforced Concrete Structures – Design Principles of Basic Elements," Danang Publishing House, 2016.

[2] Nguyen Dinh Cong, “Cast-in-place Concrete Slabs,” Construction Publishing House, 2008.
[3] Nguyen Dinh Cong, Nguyen Duy Ban, Nguyen Thi Thu Huong, “Cast-in-place Reinforced Concrete Slabs,” Science and Technics Publishing House, 2013.

15.2. References

[4] Vietnamese Standards TCVN 2737-1995 “Loads and Actions”
[5] Vietnamese Standards TCVN 5574-2012 “Concrete and Reinforced Concrete Structures”
[6] Phan Quang Minh, Ngo The Phong, Nguyen Dinh Cong, “Reinforced Concrete Structures – Basic Elements,” Science and Technics Publishing House, 2008.
[7] Nguyen Dinh Cong, “Practical Design of Reinforced Concrete Elements,” Construction Publishing House, 2009.

16. Scientific code of ethics:

- Complying with copyright laws.
- The course is conducted on the principle of respect for learners and lecturers. All acts that interfere with the teaching and learning are strictly prohibited.
- Students must attend the lecture on time. Students are late of more than 5 minutes after the start of the lecture will not be able to attend the class.
- Students are not allowed to eat, drink, or use phones, music players during class.

17. Approved date: Aug 01, 2020

18. Approved by:

Dean of Faculty	Program chair	Lecturer in charge
Cao Van Lam, PhD.	**Vo Duy Hung, PhD.**	**Tran Anh Thien, PhD.**

33. Industrial Architecture

THE UNIVERSITY OF DANANG
UNIVERSITY OF SCIENCE AND TECHNOLOGY
Faculty of Road and Bridge Engineering

SOCIALIST REPUBLIC OF VIETNAM
Independence - Freedom - Happiness

UNDERGRADUATE PROGRAM

Awarded degree: Undergraduate/Bachelor

Name of the study program: Construction Materials Engineering and Technology

Program Code: 7510105

SYLLABUS
Course name (Vietnamese): Kiến trúc công nghiệp
English name: Industrial Architecture

1. Course code:	1211310
2. Course abbreviation:	Industrial Architecture
3. Credits: **ECTS credits (*):**	02 2,83
4. Study workload:	*Total workload: 90 hours*
- Lecture:	20 hours
- Exercise:	10 hours
- Self-study/Assignment:	60 hours
5. Responsible persons	
- Faculty/Division in charge:	
- Course coordinator:	Assoc. Prof. PhD. Truong Hoai Chinh
- Other lecturers:	MSc. Đoan Tran Hiep
6. Required and recommended prerequisites for joining the course:	
- Required prerequisite:	None
- Recommended prerequisite:	Graphical drawing - Engineering drawing, Mechanical theory
- Corequisite:	None
7. Course type:	☒ Compulsory Selected elective Free elective
8. Knowledge clusters:	Math and natural science General knowledge ☒ Core engineering fundamental knowledge Disciplinary knowledge Supportive knowledge Project/ Internship/ Graduate thesis

9. Course description:

This is a technical foundation subject of architecture to provide students with content related to the introduction of industrial architectural design principles, serving the technical design of industrial works later. . The learning contents include: industrial zone planning, design and architectural structure of industrial houses.

10. Course learning outcomes (CLOs):

At the end of this course, students will be able to:

No	CLOs (1)	Knowledge (2)	Skills (3)	Attitudes (4)	Performance Indicators (PI)
1	Explain the principles of planning design, design and structure of various types of industrial architectural works.	Understanding	Copy	Responding	1.2.8
2	Synthesize and propose design solutions for an industrial project in practical conditions	Understanding	Competently	Valuing	1.2.8
3	Self-selecting and drawing solutions and architectural forms for industrial works.	Remember		Incorporate	1.2.8
4	Form in learners a spirit of cooperation and a market-oriented approach to solving design problems in industry through solution-oriented design.		Exactly	Valuing	8.2.1 8.2.2

11. Mapping of CLOs and Program learning outcomes (PLOs):

PLOs	PLO1	PLO2	PLO3	PLO4	PLO5	PLO6	PLO7	PLO8
Course distribution	T	T						TU
CLO 1	X							
CLO 2	X							
CLO 3		X						
CLO 4								X

12. Student responsibilities:

Student must perform the following tasks:

- Attend classes not less than 80% of the prescribed class hours of the course;
- Participating in group work activities according to the regulations of the class;
- Self-study the problems assigned by the lecturer to do outside of class time;
- Complete all course assessments..

13. Course assessment:

Assessment components	Assessment types	Assessment methods	Rubric	Weights of assessment types (%)	Weights of assessment components (%)	CLOs
A1. Formative assessment	A1.1. Attendance	P1.1. Check attendance	R1.1	W1.1. 25%	W1. 20%	CLO 1
	A1.2. Short exercise/ answer questions	P1.2. According to the answer/ dot scale	R1.2.	W1.2. 25%		CLO 1, 2

	A1.3. Individual/ group homework	P1.3. According to rubric	R1.3.	W1.3. 50%		CLO 2, 3
A2. Mid-term exam	A2.1. Mid-term exam work	P2.1. Written exam	R2.1.	W2. 100%	W2. 20%	CLO 1,2
A3. Final exam	A3.1 Final exam work	P3.1. Written exam	R3.1.	W3.1. 100%	W3.1 60%	CLO 1,2,3,4

14. Teaching and Learning plan

Week	Contents	Teaching and Learning activities	Assessment types	CLOs
1, 2	Course Introduction PART 1. PLANNING BASIS OF INDUSTRIAL FACILITIES CHAPTER 1. INDUSTRIAL PARK PLANNING 1.1 Industrial zone planning 1.2 Arrangement of industrial enterprises in the city	**Teach:** - Lecturers introduce to students the subject objectives; the position and role of the subject in the training program of the industry; subject output standards, assessment forms and weights of assessments, course content according to chapters... - Lectures combined with lecture slides - Ask questions for students to read the textbook and answer **Learning in class:** - Listen to lectures - Answer questions given by the teacher - Ask questions about matters of interest **Study at home:** - Review the theory in class - Read and study new content (chapter 2, sections 2.1, 2.2, and 2.3)	A1.1, A1.2	CLO 1, 2
3, 4	CHAPTER 2. GENERAL FADE DESIGN INDUSTRIAL FACTORY 2.1 General facilities and design requirements 2.2 Principles of general ground planning 2.3 Solutions for common ground planning 2.4 Organization of the area in front of the factory - Main roads 2.5 Expansion and renovation of the old factory	**Teach:** - Lectures combined with lecture slides - Ask questions for students to read the textbook and answer - Instructions for performing exercises at the end of chapter 2 and exercises of chapter 1 **Learning in class:** - Listen to lectures + do the exercises assigned by the teacher - Answer questions given by the teacher - Ask questions about matters of interest **Study at home:** - Review the theory in class - Continue to do exercise chapter 1 - After the 2nd session: Read and study new content (chapter 3, sections 3.1 and 3.2) - After the 3rd session: Read and study new content (chapter 3, sections 3.3 and 3.4)	A1.1, A1.2, A1.3	CLO 1, 2,3
5	PART II. DESIGN PRINCIPLES- ARCHITECTURE Structural	**Teach:** - Lectures combined with lecture slides - Ask questions for students to read the textbook and answer	A1.1, A1.2	CLO 3

	INDUSTRIAL HOUSES CHAPTER 1. GENERAL ISSUES OF WORKFACE DESIGN 1.1 Basic characteristics of industrial architecture 1.2 Initial principles and research methods 1.3 Classification of industrial buildings 1.4 Research and design facilities for manufacturers 1.5 Unification - Characterization of the house and its parts	**Learning in class:** - Listen to lectures + do the exercises assigned by the teacher - Answer questions given by the teacher - Ask questions about matters of interest **Study at home:** - Do homework - After the 4th session: Read and study new content (chapter 2, section 2.2) - After the 5th session: Read and study new content (chapter 2, section 2.3)		
4	Mid-term test	Essay test – no material Time to do the test 60 minutes - Teaching teachers prepare exam questions, answers, test bags - Students prepare paper and test materials	A2.1	CLO 1, 2, 3, 4
5	CHAPTER 2. Structural Design of a WOODEN STORY PRODUCER 2.1 Classification of single-tier manufacturers 2.2 Design of production workshop 2.2.1 Tasks and content of site layout 2.2.2 Relationship between technology and layout of premises 2.2.3 Forms of industrial buildings 2.2.4 Select column grid 2.2.5 Organize the way inside the workshop and escape people 2.3 Design of a single-storey manufacturer cross-section 2.3.1 Determining the height 2.3.2 Choosing the roof form 2.3.3 Roof slope	**Teach:** - Lectures combined with lecture slides - Ask questions for students to read the textbook and answer - Instructions for performing exercises chapter 1 **Learning in class:** - Listen to lectures + do the exercises assigned by the teacher - Answer questions given by the teacher - Ask questions about matters of interest **Study at home:** - Review the theory in class - Do exercise chapter 2	A1.1, A1.2, A1.3	CLO 1,2

	2.3.4 Organization of natural ventilation and lighting 2.3.5 Structural form and building materials 2.4. Structural design of parts of a single-storey industrial house 2.4.1. Main bearing parts 2.4.2. Auxiliary load-bearing parts			
6	CHAPTER 3: Structural Design of a Multi-storey WOOD PRODUCER 3.1 Classification and application scope of multi-storey industrial buildings 3.2 Design of multi-storey factory floor plan 3.3 Cross-section design of multi-storey manufacturer 3.4. Structural design of parts of multi-storey industrial buildings 2.4.1. Main bearing parts 2.4.2. Auxiliary load-bearing parts	**Teach:** - Lectures combined with lecture slides - Ask questions for students to read the textbook and answer **Learning in class:** - Listen to lectures - Answer questions given by the teacher - Ask questions about matters of interest **Study at home:** - Review all theory in class	A1.1, A1.2, A1.3	CLO 2,4
7	Final exam	Essay test – no material Time to do the test 60 minutes - Teaching teachers prepare exam questions, answers, test bags - Students prepare paper and test materials	A3	CLO 1,2,3,4

(Depending on the number of weeks of teaching, it is possible to adjust the teaching content for the weeks to suit the time)

15. Course materials:

15.1. Main textbooks, course books:

[1] Department of Architecture, Industrial Architecture, Internal Textbook, 2015 (available at the library - GVHD provides it to 100% of learners). (available at the library - GVHD provides for 100% of learners).

[2] Truong Hoai Chinh, Industrial factory design basis, Da Nang Publishing House, Da Nang, 2013.

15.2. References:

[1]. Hoang Huy Thang, Principles of industrial house architectural design, Education Publishing House, 1995.

[2] Trinh Kim Dam - Ngo The Phong, Design of a one-story industrial house, Science and Technology Publishing House, 1993.
[3] Architects' data, translated into English - New York, Emst Neufert, Science and Technology Publishing House, 1993. Education Publishing House, 1999 (provided by GVHD).

16. Scientific code of ethics:

- Students must respect faculty and other students.
- Students must comply with the University's academic integrity policy.
- Students must abide by the rules and regulations of the School.

17. Approved date: / 07 /2021

18. Approved by:

Dean of Faculty	Program chair	Lecturer in charge
Cao Van Lam, PhD.	**Vo Duy Hung, PhD.**	**Doan Tran Hiep, MSC**

34. Applied chemistry Engineering 1

THE UNIVERSITY OF DANANG
UNIVERSITY OF SCIENCE AND TECHNOLOGY
Faculty of Road and Bridge Engineering

SOCIALIST REPUBLIC OF VIETNAM
Independence - Freedom - Happiness

UNDERGRADUATE PROGRAM

Awarded degree: Undergraduate/Bachelor

Name of the study program: Construction Materials Engineering and Technology Program Code: 7510105

SYLLABUS
Course name (Vietnamese): Hóa ứng dụng kỹ thuật 1
English name: Applied chemistry Engineering 1

1. Course code:	1092720
2. Course abbreviation:	Applied chemistry Engineering 1
3. Credits: **ECTS credits (*):**	2 credits 2,83
4. Time distribution	
- Lecture:	30 Periods
- Exercise:	
- Practice/ Laboratory:	
- Self-study/Assignment:	60 Periods
5. Lecturers in charge	
- Faculty/Division in charge:	Construction materials division/ Faculty of Road and Bridge Engineering
- Course coordinator:	Do Thi Phuong, Ph.D.
- Other lecturers:	Nguyen Van Quang, Ph.D.
6. Required and recommended prerequisites for joining the course:	
- Required prerequisite:	None
- Recommended prerequisite:	Construction materials
- Corequisite:	None
7. Course type:	☒ Compulsory Selected elective Free elective
8. Knowledge clusters:	Math and natural science General knowledge ☒ Core engineering fundamental knowledge Disciplinary knowledge Supportive knowledge Project/ Internship/ Graduate thesis

9. Course description

The course introduces basic knowledge about the crystalline structure of materials in general and the structure of silicates, polymers; characteristic parameters of thermodynamics; phase diagram of the system of one, two and three components; colloidal state of silicates, physicochemical processes occurring in the manufacture and application of building materials. Knowledge is the basis to explain production technology, to propose solutions in production, application and research of materials. The course provides basic knowledge for next subjects such as Applied Chemistry 2, Production Techniques for inorganic binder, Technology of Concrete, Technology of building ceramics, and Smart Building Materials.

10. Course Learning Outcomes (CLOs)

After completing the course, students will be able to:

No	Course Learning Outcomes (CLOs)	Knowledge	Skills	Attitude	Performance indicators (PLOs)
1	Explain the physico-chemical nature that occurs during the production and application of materials.	a2.Understand			1.3.1
2	Distinguish among silicate crystal structures and minerals related to their respective crystal structures.	a2.Understand			1.3.1
3	Compare three basic colloidal systems in the field of building materials.	a2.Understand			1.3.1
4	Use phase diagrams and calculate phase components of a given system.	a3. Apply	b2.Manipulate		1.3.1, 8.5.1

11. The relationship between course learning outcomes (CLOs) and program learning outcomes (PLOs)

PLOs	PLO1	PLO2	PLO3	PLO4	PLO5	PLO6	PLO7	PLO8
Contribution of the course	IT							IT
CLO 1	X							
CLO 2	X							
CLO 3	X							
CLO 4	X							X

12. Student responsibilities:

Students must do the following tasks:

- Attend at least 80% of the lessons of the course;
- Join group in work activities according to the regulations of the class;
- Self-study the problems assigned by the lecturer (outside of class time);
- Complete all course assessments.

13. Course assessments

Type of assessment	Performance assessment	Assessment methods	Rubric	Weighting percentage (%)		CLOs
A1. Ongoing assessment	A1.1 Exercises /homeworks (Assignments)	P1.1. Do at class/Homeworks	R1.2	10	20	CLO 1, 2, 4, 5
	A1.2 Class Attendance	P1.3. Diligence	R1.1	10		
A2. Mid-term Assessment	A2. Mid-term exam	P2. Written exam	R2.1	20	20	CLO 1, 2, 3
A3. Final Assessment	A3. Final exam	P3. Written exam	R3.1	60	60	CLO 1, 2, 3, 4, 5

Rubric 1.1: Diligence (Individual)

Assessment Criteria	Levels of achievement					Weighting percentage
	F level (0-3.9)	D level (4.0-5.4)	C level (5.5-6.9)	B level (7.0-8.4)	A level (8.5-10)	
Diligence	< 30%	<50%	<70%	<90%	100%	**100%**

Rubric 1.2: Work Assignment (Individual)

Assessment Criteria	Levels of achievement					Weighting percentage
	F level (0-3.9)	D level (4.0-5.4)	C level (5.5-6.9)	B level (7.0-8.4)	A level (8.5-10)	
Submit assignments	Do not submit assignments	Submit 70% assignment. Incorrect time.	Submit full assignment (100% of the assignment). Some assignments are not in time.	Submit full assignment (100% of the assignment). Most assignments are submitted on time.	Submission of full assignments (100% of the assignment). At regulation time.	**20%**
Presentation of assignments	Do not do assignments	Messy display, not in accordance with presentation requirements	The assignments meet the requirements. Some mistakes in calculation	The presentation is beautiful, and meets the requirements. Assignments are clear and appropriate, full explanation, reasonable.	The presentation is beautiful and meets the requirements. The calculation is logical, detailed, clear and appropriate; full explanation, reasonable.	**30%**
Content of assignment	Do not do assignments	Inadequate content, some incor-	The content of the assignments is adequate, meets	The content of the assignments is ade-	The content of the assignments is ade-	**50%**

		rect according to task requirements.	the requirements of the task but not reasonable. There are some errors in the calculation.	quate, reasonable, and meets the requirements of the task. Correct calculation.	quate, reasonable, and meets the requirements of the task. perfectly calculation.	

14. Teaching and Learning plan

15.

Week	Contents	Teaching and learning activities	Performance assessment	Course learning outcomes (CLOs)
1+2+3	Course introduction: - Objectives of the course. - Overview about content of the entire course - Books, ebooks, and related materials for the study - Organizational form of teaching, tasks of students in each form of teaching. - Assessment methods and weighting percentage (%) for each assessment types. **Chapter 1. Electrochemical Corrosion process** 1.1. Kinetics of electrochemical reactions 1.11. Reactions at Cathode and Anode 1.1.2 Rate of Electrochemical reaction 1.2. Metal corrosion and metal protection 1.2.1. Electrochemical corrosion reactions 1.2.1. Protection mechanism from corrosion *Exercises and Homeworks*	- Teaching activities: + Give a lecture + Guide the students to prepare a lesson at home including: * Reading the course syllbi * Building up study plan * Prepare materials for study at class - Learning activities in class: +Listen to the lecture +Answer the questions given by the lecturer + Ask questions about issues of interest (Students) + Discussion and conclusion (Students-Students, Students-the Lecturer) - Learning at home (Students): Review the lessons, do exercises - Read the materials at home: + Nguyen Huu Phu, Physical Chemistry & Colloidal Chemistry, Science and Technology Publisher, 2006. (p.401– 435). + O.V. Roussak, H.D Gesser, *Applied chemistry- A textbook for Engineers and Technologis*t, Second edidtion, 2012- Chapter 10. *+ Reinforcement corrosion in concrete structures, its monitoring and service life prediction – a review*, Cement & Concrete Composites 25 (2003) 459–471.	A1.1, A1.2	CLO 1
4+5	**Chapter 2**. **Polymers and physicochemical properties**	Teaching activities: + Give a lecture	A1.1	CLO1

	2.1. Concepts and definitions. 2.1.1 Basic definition and classification 2.1.2. Polymer chain 2.1.3. Copolymer 2.1.2. Properties of polymer 2.2. Some others polymers 2.2.1. Epoxy polymers 2.2.2. Inorganic polymers 2.2.3. Organometallic 2.2.4. Paints and coatings 2.2.5. Special polymers	- Learning activities in class: +Listen to the lecture +Answer the questions given by the lecturer + Ask questions about issues of interest (Students) + Discussion and conclusion (Students-Students, Students-the Lecturer) - Learning activities at home (Students): Review the lessons, do exercises - Read more the materials at home: + Hoang Ngoc Cuong, General Polymer, Ho Chi Minh City National University Publisher, 2010. + O.V. Roussak, H.D Gesser, Applied chemistry- A textbook for Engineers and Technologist, Second ediдtion, 2012-Chapter 13. + Pijush Samui, Dookie Kim, Nagesh Iyer, Sandeep Chaudhary, New Materials in Civil Engineering, 1st Edition, Butterworth-Heinemann, 2020-Chapter 8.		
6+7	**Chapter 3. Crystals and crystal structure of silicates** 3.1. Crystallography 3.1.1 Definitions + Crystal Lattice + Unit cell +Coordination numbers (CN) + Ionic radius + Lattice points, directions, and planes + Defects in the crystal 3.1.2 Crystal system and Bravais lattice 3.1.3. Pauling's principle of crystal structure 3.2. The crystal structures of silicates + Nesosilicate or “Island” silicate + Sorosilicates + Ring Silicate + Single chain inosilicates	Teaching activities: + Give a lecture - Learning activities in class: +Listen to the lecture +Answer the questions given by the lecturer + Ask questions about issues of interest (Students) + Do exercises at class - Learning activities at home (Students): Review the lessons, do exercises - Read more the materials at home: + C. Barry Caster, M. Grant Norton, *Ceramic materials*, Science and Engineering, 2007-Chapter 5+ Chapter 7. + Lesley E. Smart, Elaine A. Moore, *Solid state Chemistry-An Introduction, Fourth edition*, Taylor & Francis Group, 2012-Chapter 1+2.	A1.1, A1.2	CLO 2

	+ Double chain inosilicates + Sheets Silicate (Phyllosilicates) + Framework Silicate Exercises and Homeworks	+ Bleam, W. (2017). *Clay Mineralogy and Chemistry*. Soil and Environmental Chemistry, 87–146. doi:10.1016/b978-0-12-804178-9.00003-3.		
8	Mid-term exam	Written exam	A2	CLO 1, 2, 3
9+10	**Chapter 4. Colloidal states of silicates** 4.1. Basics of colloidal chemistry 4.1.1. Concepts 4.1.2. Dispered system and classification 4.2. Some properties of colloidal solutions 4.2.1. Optical properties 4.2.2. Kinetic-molecular properties 4.2.3. Absorption 4.2.4. Electrical properties 4.2.5. Durability and agglomeration 4.2.6. Mechanical properties 4.3. Typical colloidal systems 4.3.1. Clay-water system 4.3.2. Cement-water system 4.3.3. Bitumen emulsion system	- Teaching activities: + Give a lecture - Learning activities in class: +Listen to the lecture +Answer the questions given by the lecturer + Ask questions about issues of interest (Students) - Learning activities at home (Students): Review the lessons. - Read more the materials at home + Nguyen Sinh Hoa, colloidal chemistry, Construction Publisher, 1998. (p.5 – 113). + Bui Van Boi, Bui Danh Dai, Hoang Thuy Si, Silicate Physical Chemistry, University of Civil Engineering, 1991. (pp.29-36). + Bui Van Chen, Silicate Physical Chemistry, Hanoi University of Science and Technology, 1979. (p.56 – 66).	A1.2	CLO 3
11+12 + 13	**Chapter 5. Phase Equilibrium** 5.1. Gibbs phase rule 5.1.1. Concepts and definitions 5.1.2. Phase Equilibrium Conditions - Gibbs Phase Rule 5.2. One-component system + Phase diagram of H_2O + Phase diagram of CO_2 5.3.Two-component system 5.4.Three-component system 5.5 Introduction to CALPHAD-FactSage (Calculation of Phase Diagrams) software Exercises and Homeworks.	- Teaching activities: + Give a lecture - Learning activities in class: +Listen to the lecture +Answer the questions given by the lecturer + Ask questions about issues of interest (Students) + Do exercises - Learning activities at home (Students): Review the lessons and do homeworks - Read the materials at home + Nguyen Huu Phu, Physical Chemistry & Colloidal Chemistry, Science and Technology Publisher, 2006. (P.99–134).	A1.1, A1.2	CLO 5

		++ C. Barry Caster, M. Grant Norton, Ceramic materials, Science and Engineering, 2007- Chapter 8.		
14	**Final exam**	Written exam	A3	CLO 1, 2, 3, 4, 5

16. Materials:

15.1. Books, lectures, main textbooks

[1] Nguyen Huu Phu, Physical Chemistry & Colloidal Chemistry, Science and Technology Publisher, 2006.

[2] Nguyen Sinh Hoa, colloidal chemistry, Construction Publisher, 1998.

[3] Bui Van Boi, Bui Danh Dai, Hoang Thuy Si, Silicate Physical Chemistry, University of Civil Engineering, 1991.

[4] Bui Van Chen, Silicate Physical Chemistry, Hanoi University of Science and Technology, 1979.

[5] Hoang Ngoc Cuong, General Polymer, Ho Chi Minh City National University Publisher, 2010.

[6] Lesley E. Smart, Elaine A. Moore, Solid state Chemistry- An Introduction, Fourth edition, Taylor & Francis Group, 2012.

15.2. Reference materials

[1] O.V. Roussak, H.D Gesser, Applied chemistry- A textbook for Engineers and Technologist, Second ediditon, Springer, 2012.

[2] C. Barry Caster, M. Grant Norton, Ceramic materials, Science and Engineering, Springer 2007.

17. Scientific code of ethics:

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- Students must comply with the University's academic integrity policy.
- Students must obey the rules and regulations of the university.

18. Approved date:

19. Approved by:

Dean of Faculty	Program chair	Lecturer in charge
Cao Van Lam, PhD.	**Vo Duy Hung, PhD.**	**Nguyen Van Quang, PhD.**

35. Occupational safety in construction materials production

THE UNIVERSITY OF DANANG
UNIVERSITY OF SCIENCE AND TECHNOLOGY
Faculty of Road and Bridge Engineering

SOCIALIST REPUBLIC OF VIETNAM
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UNDERGRADUATE PROGRAM

Awarded degree: Undergraduate/Bachelor

Name of the study program: Construction Materials Engineering and Technology

Program Code: 7510105

SYLLABUS

Course name (Vietnamese): An toàn lao động

English name: Occupational safety in construction materials production

1. Course Code:	1093040
2. Course symbols	Occupational safety in construction materials production
3. Credits: **ECTS credits (*):**	02 credits (30 Periods) 2,83
4. Study workload:	
- Theory	30 Periods
- Assignments/Discussions	
- Practice/Experiment	
- Self-study	60 Periods
5. Responsible persons:	
- Faculty/Division in charge:	Construction materials Division/ Faculty of Road and Bridge Engineering
- Course coordinator:	PhD. Vo Duy Hung
- Other lecturers:	PhD. Nguyen Van My, Ms. PhD student Nguyen Hoang Vinh
6. Required and recommended prerequisites for joining the course:	
- Required prerequisite:	None
- Recommended prerequisite:	Construction Materials
- Corequisite:	None
7. Type course:	☒ Compulsory Selected elective Free elective
8. Knowledge clusters:	Math and natural science General knowledge ☒ Core engineering fundamental knowledge Disciplinary knowledge Supportive knowledge

	Project/ Internship/ Graduate thesis

9. Course description

The module introduces scientific and technical measures, economic and social organization to limit and eliminate dangerous and toxic factors, create favorable working conditions for employees, to prevent occupational accidents protect health, contribute to the protection and development of the production force, and increase labor productivity. At the end of the course, students gain an overview of occupational safety, principles and methods of calculating safety in the process of designing, constructing and manufacturing building materials.

10. Course Learning Outcomes

After completing the course, students will be able to

NO	Course Learning Outcomes(CLO)	Knowledge	Skills	Attiude	Performance indicators (belongs to PLOs)
1	Present the general issues of occupational safety in the design, construction and production of building materials	a2. Understand			1.3.10
2	Calculating the problem of ensuring safety in design and construction, production of building materials	a2. Understand	b2. Application		1.3.10 8.2.1
3	Apply safe techniques when using construction machinery, construction soil and working on scaffolding in the production of building materials.	a4. Analysis			1.3.10
4	Remember electrical safety techniques, fire prevention in the production of building materials			c4. Organization	3.1.1 4.1.1

11. The relationship between course learning outcomes(CLOs) and program learning outcomes (PLOs)

PLO	PLO1	PLO2	PLO3	PLO4	PLO5	PLO6	PLO7	PLO8
Contribution of the course	TU		T					IT
CLO 1	X							
CLO 2	X							
CLO 3	X							
CLO 4			X					X

12. Student responsibilities:

Students must perform the following tasks:

- Attend at least 80% of the lessons of the part class;
- Participating in group work activities according to the regulations of the class;
- Self-study the problems assigned by the lecturer to do outside of class time;
- Complete all Performance assessment of the module.

13. Course assessments

Type of assessement	Performance assessment	Assessment methods	Rubric	Weighting percentage (%)		Course learning outcomes (CLOs)
A1. Ongoing assessment	A1.1. Diligence	P1.1. Take attendance to monitor learning attitude	R1	50	20	CLO 1,2,3,4
	A1.2. Small exercise	P1.2. Class test	R3	50		CLO 1,2,3,4
A2. Mid-term Assessment	A2. Mid-term test	P2. Written exam	R2.1	100	20	CLO 1,2
A3. Final Assessment	A3. Final exam	P3. Written exam	R3.1	100	60	CLO 2,3,4

14. Teaching and learning plan

Weeks/Periods	Detailed contents of the course	Teaching and learning activities	Performance assessment	Course learning outcomes (CLOs)
1+2	General Introduction - Subject goals - Preliminary content of the entire program of the module and study materials - Organizational forms of teaching, tasks of students in each form of teaching - Evaluation forms and rates Chapter 1: General issues on occupational safety (2/5 periods) 1.1 General concepts 1.2 Contents of labor protection and viewpoints in labor protection work 1.3 Legal system and regulations on labor protection 1.4 State management of labor protection 1.5 Exploiting, examining and assessing the situation of occupational accidents	Teaching: - Lecturers introduce to target students, position and role of course content. - Lectures combined with lecture slides. - Guide students to find relevant documents. Learning in class: - Listen to the lecture and answer the teacher's questions. - Ask questions of concerns. Self-learning: - Read lectures on Occupational Safety. - Reference materials provided by the instructor	A1.1, A1.2	CLO 1
3+4	Chapter 2: Occupational hygiene in production (3/6 periods) 2.1 Introduction 2.2 Effects of fatigue and working posture	Teaching: - Lecturers introduce to target students, position and role of course content. - Lectures combined with lecture slides.	A1.1, A1.2	CLO 1

	2.3 Effects of climatic conditions on the body 2.4 Dust in production 2.5 Noise and vibration in production 2.6 Lighting in production	- Guide students to find relevant documents. Learning in class: - Listen to the lecture and answer the teacher's questions. - Ask questions of concerns. Self-learning: - Read lectures on Occupational Safety. - Reference materials provided by the instructor		
5	Chapter 3: Safety techniques in design and construction (3 periods) 3.1 Opening 3.2 Main contents of the design of technical safety measures 3.3 Safety when making construction schedule 3.4 Safety when setting construction level	Teaching: - Lecturers introduce to target students, position and role of course content. - Lectures combined with lecture slides. - Guide students to find relevant documents. Learning in class: - Listen to the lecture and answer the teacher's questions. - Ask questions of concerns. Self-learning: - Read lectures on Occupational Safety. - Reference materials provided by the instructor	A1.1, A1.2	CLO 2
6	Midterm exam	Exam forms: Written exam	A2	CLO 1, 2
7	Chapter 4: Safety techniques when using construction machinery (3 periods) 4.1 Opening 4.2 Main causes of incidents and accidents at work 4.3 Safety techniques when using construction machinery 4.4 Safety techniques when using lifting equipment	Teaching: - Lecturers introduce to target students, position and role of course content. - Lectures combined with lecture slides. - Guide students to find relevant documents. Learning in class: - Listen to the lecture and answer the teacher's questions. - Ask questions of concerns. Self-learning: - Read lectures on Occupational Safety.	A1.1, A1.2	CLO2, CLO3

		- Reference materials provided by the instructor		
8+9	Chapter 5: Safety techniques when digging soil and working on scaffolding (3/6 periods) 5.1 Analysis of causes of injuries when digging soil and rock and deep holes (1 period). 5.2 Measures to prevent injury when digging deep holes and trenches (1 period). 5.3 Scaffolding and causes of injury when working at height (1 period). 5.4 Ensure safety when using scaffolding (1 period).	Teaching: - Lecturers introduce to target students, position and role of course content. - Lectures combined with lecture slides. - Guide students to find relevant documents. Learning in class: - Listen to the lecture and answer the teacher's questions. - Ask questions of concerns. Self-learning: - Read lectures on Occupational Safety. - Reference materials provided by the instructor	A1.1, A1.3	CLO 1, 2, 3
10	Chapter 6: Electrical safety techniques (3 periods) 6.1 Causes and harms of electrical accidents (1 period). 6.2 General electrical safety measures (1 period). 6.3 First aid to victims (1 period). 6.4 Protection against lightning (1 period).	Teaching: - Lecturers introduce to target students, position and role of course content. - Lectures combined with lecture slides. - Guide students to find relevant documents. Learning in class: - Listen to the lecture and answer the teacher's questions. - Ask questions of concerns. Self-learning: - Read lectures on Occupational Safety. - Reference materials provided by the instructor	A1.1, A1.2	CLO 4
11	Chapter 7: Fire prevention and fighting techniques (3 periods) 7.1 The concept of fire and explosion (1 period). 7.2 Causes of fire and preventive measures (1 period). 7.3 Causes of fire and preventive measures (1 period).	Teaching: - Lecturers introduce to target students, position and role of course content. - Lectures combined with lecture slides. - Guide students to find relevant documents. Learning in class: - Listen to the lecture and answer the teacher's questions.	A1.1, A1.2	CLO 4

		- Ask questions of concerns. Self-learning: - Read lectures on Occupational Safety. - Reference materials provided by the instructor		
15	Final exam	Written exam	A3	CLO 2, 3, 4

15. Materials:

15.1. Books, lectures, main textbooks

[1] Department of Bridges and Underground Works. Lecture: Occupational safety in the production of building materials. Documents for internal circulation, (provided by the teacher).

15.2. Reference materials

[1]. Nguyen Ba Dung, Nguyen Dinh Tham, Le Van Tin. Occupational safety and hygiene techniques in construction. Science and Technology Publishing House. Hanoi 2002.

[2]. Nguyen Ba Dung. Technical solutions for safety in construction. Publishing House Construction. Hanoi 2002.

[3]. Nguyen Ba Dung. Occupational safety manual for construction workers. Science and Technology Publishing House. Hanoi 2000.

[4]. Mai Tay Lo. Safety techniques in construction. Technical Workers Publishing House. Hanoi 1978.

16. Scientific code of ethics:

- Students must respect a lecturer and other students.
- Students must comply with the University's academic integrity policy.
- Students must obey the rules and regulations of the university.

17. Approved date:

18. Approved by:

Dean of Faculty	Program chair	Lecturer in charge
Cao Van Lam, PhD.	**Vo Duy Hung, PhD.**	**Vo Duy Hung, PhD.**

36. Worker Practice

THE UNIVERSITY OF DANANG
UNIVERSITY OF SCIENCE AND TECHNOLOGY
Faculty of Road and Bridge Engineering

SOCIALIST REPUBLIC OF VIETNAM
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UNDERGRADUATE PROGRAM

Awarded degree: Undergraduate/Bachelor

Name of the study program: Construction Materials Engineering and Technology Program Code: 7510105

SYLLABUS
Course name (Vietnamese): Thực tập công nhân
English name: Worker Practice

1. Course code:	1092730
2. Course abbreviation:	Worker Practice
3. Credits: **ECTS credits (*):**	1 1,67
4. Study workload:	
- Lecture:	0
- Exercise:	0
- Practice/ Laboratory:	30
- Self-study/Assignment:	60
5. Lecturers:	
- Faculty/Division in charge:	Construction materials division
- Course coordinator:	Lecturers in Construction materials division
- Other lecturers:	Staff in internship agency or company
6. Required and recommended prerequisites for joining the course:	
- Required prerequisite:	None
- Recommended prerequisite:	Construction materials
- Corequisite:	Reinforced concrete structures, Construction materials
7. Type course:	☒ Compulsory Selected elective Free elective
8. Knowledge clusters:	Math and natural science General knowledge ☒ Core engineering fundamental knowledge Disciplinary knowledge Supportive knowledge Project/ Internship/ Graduate thesis

9. COURSE DESCRITION

This course purposes are helping students involve construction work on the site, understand structure and order of construction items, and important points during construction processes to achieve the highest quality. Students will have an opportunity to combine between theorical issues and practical works, as well as having professional training for ethics and responsibilities on the construction site.

10. COURSE LEARNING OUTCOMES (CLOs)

After completing the course, students have ability to:

No	Course Learning Outcomes (CLOs)	Knowledge	Skills	Attitude	Performance indicators (PLOs)
1	Present structures of construction items, construction technologies (methods, orders, materials) at the practical sites.	a2. Understand			8.1.2
2	Capable of using a number of equipment for surveying and constructing in construction sites, and performable some works on the site such as steelwork, concrete work, etc.	a3. Apply	b4 Articulation		1.4.9;8.4.2
3	Combine between theorical learning and political issues	a4. Analyze		Organization	3.1.3
4	Working group and team communication skills		b4 Articulation		5.1.2
5	Working with reports and drawings		b4 Articulation		5.2.3
6	Presentation skills and defend skills		b4 Articulation		5.2.6
7	Ethical and professional responsibility.			Valuing	3.2.2;4.1.1

11. CLOs AND PLOs MAPPING:

PLO	PLO1	PLO2	PLO3	PLO4	PLO5	PLO6	PLO7	PLO8
Contribution of the course	T		T	T	T			TU
CLO 1								x
CLO 2	x							x
CLO 3			x					
CLO 4					x			
CLO 5					x			
CLO 6					x			
CLO 7			x	x				

12. Student responsibilities:

Students must do the following tasks:

- Student must have permission papers from office of Academic affair, office of Finance and planning of The University of Science and Technology

- Strictly follow the rules and regulations of the company where students work.
- Report daily working diary
- The practical report is written in A4 size paper in groups, including a decision and a syllabus for internships and an evaluation report by the instructor of the company

13. ASSESSMENT

Assessment results are based on student activities during the internship and final exam. How to assess according to the instructions in the following rubric:

13.1. General assessment table:

Component	Assessment style	CLOs	Assessment Methods (AM)	Criteria	Weight
A1. Evaluation of firm instructor	A1.1 **Written Report**	CLO1,3,4,5,6,7	PPĐG 7 (Written Report)	Rubric 6 (Application)	30%
	A1.2 **Teamwork**	CLO2, 8	PPĐG 9	Rubric 7	20%
A2. Final evaluation of lecturers	A2.1 **Oral Presentation**	CLO1,2,3,4,5,6,7,9	PPĐG 3	Rubric 4	20%
	A2.2 **Oral Exam**	CLO1,2,3,4,6,7,9	PPĐG 6	Rubric 5	30%

13.2. **Assessment report by firm instructor base on working period of students and their report:**

A1.1 – Rubric 6 – Written Report

Assessment Criteria	Levels of achievement					Weight
	Level F (0-3.9)	**Level D (4.0-5.4)**	**Level C (5.5-6.9)**	**Level B (7.0-8.4)**	**Level A (8.5-10)**	
Contents	No content of the irrelevant content	The report is fully represented as requirement. Still, the calculation is wrong or not specific as the requirement	The report is fully represented as requirement. Still, the calculation is not reasonable.	The report is fully represented as requirement. The calculation is correct and exact. Still there is not specific and reasonable explanation for the results	An exemplary report with complete, accurate and relevant content. Discussion and recommendations are outstanding, creative and realistic.	**60%**
Organization, format, language	A poorly edited report with grammatical and spelling errors.	Report format lacks consistency. Weak command of the language	The order of the report follows the requirement. There are several mistakes in grammar and spelling. There is not adequate note	Format and contents flow smoothly building on one idea to another. Uses language and conventions appropriate for report writing.	A well-organized report that displays an excellent command of the language. The overall appearance is neat and professional	**20%**
Drawings	No drawing or irrelevant drawings	The quantity of drawings is adequate. The dimension and note are not clear. The drawings are	The quantity of drawings is adequate. The dimension and note are clear. There are some mistakes in drawings	The quantity of drawings is adequate. The dimension and note are clear. There are no	Same as level B. Students can use the computer fluently as a drawing tool. The	**20%**

		lack of some important parts		mistakes in drawings. The arrangement of the drawings is reasonable	drawings can be used in practical cases.	

A1.2 – Rubric 7 - Peer Assessment

Assessment Criteria	Levels of achievement					Weight
	Level F (0-3.9)	**Level D (4.0-5.4)**	**Level C (5.5-6.9)**	**Level B (7.0-8.4)**	**Level A (8.5-10)**	
Group organization	There is no teamwork	The responsibilities and tasks of the team members are not specifically assigned.	Each member has his or her own job duties but is unclear and does not fit the abilities of the team members.	Job assignments are clear and relevant to the abilities of each team member.	The task of each member is clear, specific, and appropriate. Promote the strength of the team members. Interaction, good coordination between members.	**30%**
Diligence	< 30%	<50%	<70%	<90%	100% (Participate in full meetings, groups discussion)	**30%**
Discussion	Never participate in group discussions.	Rarely participated in group discussions and comments.	Occasionally participate in group discussions and comments.	Have a good group discussion and good comments.	Always participate in group discussions and contribute good ideas for group activities.	**20%**
Group Co-ordination	Never coordinate, cooperate with groups.	Rarely collaborated, teamwork.	Collaborate, collaborate with the team. Occasionally respect and share experiences from other members of the group.	Collaborate, collaborate with the team. Respect and share experiences from other members of the group.	Collaborate with the team. Always respect and share experiences for other members of the group.	**20%**

13.3. **Assessment final exam by lecturers**

A2.1. Rubric 4: Oral Presentation

Assessment Criteria	Levels of achievement					Weight
	Level F (0-3.9)	**Level D (4.0-5.4)**	**Level C (5.5-6.9)**	**Level B (7.0-8.4)**	**Level A (8.5-10)**	

Content of presentation	No content or content is inappropriate for the request.	Content matching requirements, images and explanations are not clear	Content meets requirements. Use simple and easy to understand terminology. The picture is clear and beautiful	Content meets requirements. Use simple and easy to understand terminology. Pictures are clear, and beautiful. Used video	Content meets requirements. Use simple and easy to understand terminology. Pictures are clear and beautiful. Use video and explain specific insights on video.	**50%**
Slide presentation	Slide presentation is too sketchy, not enough quantity as prescribed	Slides are presented in appropriate quantities, using the word and picture clearly	Slides are presented with a clear, layout (introduction, body and conclusion)	Slides are presented with clear, logical layout, consists of 3 parts, demonstrating proficiency in presentation.	Slides are presented with clear, logical layout, consists of 3 parts. The term is simple to understand, demonstrating proficiency in presentation and language.	**25%**
Presentation	The presentation is not logical, beyond the specified time, uses of incorrect terminology, unclear pronunciation, and low voice. Listeners do not understand.	The presentation is full, but the voice is low, pronouns some words unclear, uses complex terminology, do not contact with the listener when presented.	The presentation has a clear three-part layout. The voice is reasonable, clear, easy to listen, time is properly presented, sometimes interact with the listener. Listeners can understand and keep track of the content presented.	The presentation is brief, easy to understand, uses simple and easy-to-understand terms. Clear layout. The voice is clear and fluent. Time to present correctly. Good interaction with the listener. Listeners can understand the content.	The presentation is brief with clear layout. The voice is clear and fluent. Attract the attention of the listener, interact well with the listener. Listeners can understand and keep up with all the content presented. Time to present correctly.	**25%**

A2.2 – Rubric 5 - Oral Exam

Assessment Criteria	**Levels of achievement**					**Weight**
	Level F (0-3.9)	**Level D (4.0-5.4)**	**Level C (5.5-6.9)**	**Level B (7.0-8.4)**	**Level A (8.5-10)**	
Answering Attitude	Communicating and answering attitude is rude, not cooperated, lack of respect in communication. Use inappropriate terms. Voice is hard to listen.	Attitude is quite polite. Use complex terms, confusing answers, hard to understand. Small voice, lack of confidence.	Communicative attitude is, gentle. The voice is clear, easy to hear. The term used in the answer is appropriated, easy to understand.	Attitude in the answer is confident, calm, and gentle. Use simple terms, easy to understand. Clear voice fluently speak.	Attitude is very confident. Voice is clear, fluent and attractive, well interact with the listener.	**30%**

Answer questions	The answers are completely unrelated to questions.	Answers are not clear, almost unconnected, not focus on the question.	Answers focus on questions. The lack of confidence in the answers.	The answers are concise, clear, completed, and relevant to the question asked. Attitude in answering is confident, calm, gentle, and calm.	Answer shortly, clearly, completely, directly related to the question asked, explain convincely. Attitude in answering is confident, calm, and persuasive.	**70%**

14.Teaching and learning plan

Week	Content	CLOs	Teaching and Learning Activities	Assessment
0-1/2	Lecture on schedule	CLO4, CLO7	**Teaching:** - Student groups, industrial firms, assign practical tasks - Instruct overall contents of works **Activities in class:** - Register groups, industrial firms - Listen the lectures - Write a daily report **Activities at home:** - Prepare materials (permission papers, notebooks, contact information,…) - Investigate information of firms where students will work in practical period. - Schedule for a trip to construction sites **Strategy and teaching and learning methods:** Lecture, Explicit Teaching, Independent learning, Pear Learning, Discussion.	A1.2
1/2-5	Arrive to construction sites and perform working tasks	CLO1, CLO2, CLO4, CLO7	**Instruction:** - Instructors will introduces company, divisions, and on-going projects - Instructors will introduce works and assign working tasks to students **Activities at industrial firms:** - Follow instructions, report daily working activities - Perform working tasks - Investigate al materials (documents, drawings,…) related to working projects - Daily working diary - Assign sup-working tasks for team members in details - Perform all construction works as site workers - Propose suitable techniques, solutions for improving working productivities and quality. Discuss to the instructors at the firm. **Activities at home:** - Investigate more materials related to on-going projects - Investigate other ongoing projects at the company **Strategy and teaching and learning methods:** Lecture, Explicit Teaching, Independent learning, Pear Learning, Field Trip	A1.1; A1.2
6	End of labor internship period, working report and final oral presentation	CLO1, CLO2, CLO3, CLO4, CLO5 CLO6 CLO7	**Instruction:** - Instructor gives evaluation reports for students - Instruct requirements and process for final paperworks **Activities at industrial firms:** - Understand instructions - Final report - Perform paperworks for final report at the company **Activities at home:** - Working report (follow instruction from company instructors) - Making presentation slides (follow instruction from lecturer).	A1.1; A2.1; A2.2

			Activities in class: - Students give presentations - Answers and discuss to lecturers **Strategy and teaching and learning methods:** Independent learning, Pear Learning, Field Trip; Problem Solving	

15. MATERIALS:

15.1.Text books:

[1] Huynh Phuong Nam, Nguyen Thi Tuyet An, Do Thi Phuong, General Construction Materials, Construction Publisher, Hanoi, 2016 (in Vietnamese).

15.2. References:

[1] Pham Duy Huu, Ngo Xuan Quang. Construction materials. Transportation Publisher, Hanoi, 2004 (in Vietnamese).

[2] Le Xuan Mai - Do Huu Dao. Soil mechanics. Construction Publisher, Hanoi, 2005 (in Vietnamese).

[3] Phan Quang Minh, Ngo The Phong, Nguyen Đinh Cong. Reinforced concrete structure - Basic components, Publisher Science and Technology, Hanoi, 2010.

[4] Le Van Dinh, Pham Van Mang. Geodetics. The University of Danang - University of Science and Technology, 1992.

15. Scientific code of ethics:

- Students are responsible for attending the practice sessions, project guides. In case of absentee due to unavoidable reasons, there must be sufficient and reasonable proof.
- Strictly follow the rules and regulations of the company where students work.
- Other issues follow the current training regulations of the University.

16. Approved date:

17. Approved by:

Dean of Faculty	Program chair	Lecturer in charge
Cao Van Lam, PhD.	**Vo Duy Hung, PhD.**	**Nguyen Tien Dung, M.Sc.**

37. Ho Chi Minh's ideology

THE UNIVERSITY OF DANANG
UNIVERSITY OF SCIENCE AND TECHNOLOGY
Faculty of Road and Bridge Engineering

SOCIALIST REPUBLIC OF VIETNAM
Independence - Freedom - Happiness

UNDERGRADUATE PROGRAM

Awarded degree: Undergraduate/Bachelor

Name of the study program: Construction Materials Engineering and Technology Program Code: 7510105

SYLLABUS
Course name (Vietnamese): Tư tưởng Hồ Chí Minh
English name: Ho Chi Minh's ideology

1. Course code:	2090101
2. Course abbreviation:	Ho Chi Minh's ideology
3. Credits: **ECTS credits (*):**	02 Credits (30 Periods) 2,83
4. Time distribution:	
- Lecture:	02 credits (30 Periods)
- Exercise:	
- Self-study/Assignment:	60 Periods
5. Lecturers in charge:	
- Faculty/Division in charge:	Department of Political Theory, University of Economics, University of Danang
- Course coordinator:	MSc. Le Minh Tho
- Other lecturers:	1. Associate Prof.. Tran Ngoc Anh, 2. PhD. Duong Anh Hoang; 3. Msc. Nguyen Phi Le, 4. Msc.Le Thi Ngoc Hoa, 5. Msc. Le Son
6. Required and recommended prerequisites for joining the course:	
- Required prerequisite:	Not required
- Recommended prerequisite:	Philosophy of Marxism and Leninism
- Corequisite:	Not required
7. Type course:	☒ Compulsory Selected elective Free elective
8. Knowledge clusters:	Math and natural science General knowledge ☒ Core engineering fundamental knowledge Disciplinary knowledge Supportive knowledge Project/ Internship/ Graduate thesis

9. Course description

Ho Chi Minh ideology is a science that provides basic knowledge of President Ho Chi Minh's ideology with the meaning of creative application of Marxist-Leninist theory to specific conditions in Vietnam. It has also been the direct theoretical basis in planning the direction of the Vietnamese revolutionary from 1930 to the present. This course helps students understand in a relatively complete and systematic way the historical - social context, the basis of formation and development of Ho Chi Minh ideology; The primary contents of Ho Chi Minh ideology on National issues and national liberation revolution; on socialism; …. On that basis, it contributes to helping students establish a scientific and revolutionary viewpoint, steadfastly following the path chosen by President Ho Chi Minh and our Party.

10. Course Learning Outcomes (CLOs)

After completing the course, students will be able to:

No	Course Learning Outcomes (CLOs)	Knowledge	Skills	Attiude	Performance indicators (belongs to PLOs)
1	Be aware of the basic knowledge of Ho Chi Minh's ideology and morality as well as identify wrong views on Ho Chi Minh's ideology	A2.Understand	A2.Understand	A2.Understand	1.5.2. 3.2. 4.1.
2	Present some primary contents about Ho Chi Minh's ideology and morality.	A3. Determined	A3. Determined	A3. Determined	1.5.2. 5.2.
3	Apply some primary contents of Ho Chi Minh's ideology and morality in studying, working and self-training.	A2.Understand	A2.Understand	A2.Understand	1.5.2. 3.2. 4.1.
4	Analyze some primary contents about Ho Chi Minh's ideology and morality, especially his creations in theory and practical direction of the Vietnamese revolution.	A3. Determined	A3. Determined	A3. Determined	1.5.2. 3.2. 4.1.

11. The relationship between course learning outcomes(CLOs) and program learning outcomes (PLOs)

PLO	PLO1	PLO2	PLO3	PLO4	PLO5	PLO6	PLO7	PLO8
Contribution of the course	I		IT	I	I			
CLO 1	X		X	X				
CLO 2	X				X			
CLO 3	X		X	X				
CLO 4	X		X	X				

12. Student responsibilities:

Students must do the following tasks:
- Attend at least 80% of the lessons of the course;
- Do homework assigned in each chaper of the course;
- Self-study the problems assigned by the lecturer (outside of class time);
- Take the mid-term and final exams;
- Fully attend and complete the content of practices

13. Course assessments

The results of the course evaluation are based on the assessment of the student's activities during the course of study, the mid-term exam and the final exam expressed through the assessment; the course output standards are assessed; criteria, standards and weights of the assessments.

Type of assessment	Performance assessment	Assessment methods	Rubric	Weighting percentage (%)	CLOs
A1. Ongoing assessment	A1.1 Class Attendance	CLO1-4	Go to school fully. Do not miss more than 20% of the class.		10%
	A1.2 Exercises /homeworks	CLO2, CLO4	Do the correct answer		10%
A2. Mid-term Assessment	A2.1 Mid-term exam	CLO2, CLO4	Meet the requirements of the answer	10	20%
A3. Final Assessment	A3.1 Final exam	CLO1, CLO4	Meet the requirements of the answer	10	60%

14. Teaching and learning plan

Week	Contents	Teaching and learning activities	Performance assessment	Course learning outcomes (CLOs)
2 (Theory)	Course Introduction Introduction: Objects, research methods and meaning of studying Ho Chi Minh's thought	Teach: - Lecturers introduce to students the subject objectives; the position and role of the subject in the training program of the industry; subject output standards, assessment forms and weights of assessments, course content according to chapters... - Teaching method: TLM1, TLM2 Learning in class: - Listen to lectures - Answer the teacher's questions. - Ask questions of concerns. Study at home: - Review the theory - Read the next post	A1.1, A2.1, A3.1	CLO1-4

4 (Theory)	Chapter 1: Origin, process of formation and development of Ho Chi Minh thought	Teach: - Teaching methods: TLM1, TLM2, TLM11, TLM16 Learning in class: - Listen to lectures - Answer the teacher's questions. - Ask questions of concerns. Study at home: - Review the theory - Read the next post	A1.1, A2.1, A3.1	CLO1-4
5 (Theory + Discussion)	Chapter 2: Ho Chi Minh's thought on national issues and national liberation revolution	Teach: - Teaching methods: TLM1, TLM2, TLM3, TLM11, TLM16 Learning in class: - Listen to lectures - Answer the teacher's questions. - Ask questions of concerns. Study at home: - Review the theory - Read the next post	A1.1, A1.2, A1.3, A2.1, A3.1	CLO1-4
5 (Theory + Discussion)	Chapter 3: Ho Chi Minh's thought on socialism and the transitional path to socialism in Vietnam	Teach: - Teaching methods: TLM1, TLM2, TLM3, TLM11, TLM16 Learning in class: - Listen to lectures - Answer the teacher's questions. - Ask questions of concerns. Study at home: - Review the theory - Read the next post	A1.1, A1.2, A1.3, A3.1	CLO1-4
3 (Theory)	Chapter 4: Ho Chi Minh Thought on the Communist Party of Vietnam	Teach: - Teaching methods: TLM1, TLM2, TLM3, TLM11, TLM16 Learning in class: - Listen to lectures - Answer the teacher's questions. - Ask questions of concerns. Study at home: - Review the theory - Read the next post	A1.1, A3.1	CLO1-4
4(Theory + Discussion)	Chapter 5: Ho Chi Minh Thought on the Great Union, combining national strength with the strength of the times	Teach: - Teaching methods: TLM1, TLM2, TLM3, TLM11, TLM16 Learning in class: - Listen to lectures - Answer the teacher's questions. - Ask questions of concerns. Study at home: - Review the theory - Read the next post	A1.1, A1.2, A1.3, A3.1	CLO1-4
3 (Theory)	Chapter 6: Ho Chi Minh's thought on democracy and	Teach: - Teaching methods: TLM1, TLM2, TLM3, TLM11, TLM16	A1.1, A3.1	CLO1-4

	building a state of the people, by the people, for the people	Learning in class: - Listen to lectures - Answer the teacher's questions. - Ask questions of concerns. Study at home: - Review the theory - Read the next post		
4 (Theory + Discussion)	Chapter 7: Ho Chi Minh's thought on culture, morality and building a new man	DTeach: - Teaching methods: TLM1, TLM2, TLM3, TLM11, TLM16 Learning in class: - Listen to lectures - Answer the teacher's questions. - Ask questions of concerns. Study at home: - Review the theory - Read the next post	A1.1, A1.2, A1.3, A3.1	CLO1-4

15. Materials

15.1. Books, lectures, main textbooks

[1]. Ministry of Education and Training, Ho Chi Minh Thought Textbook, Publishing House. National politics, 2010 - 2015.

[2]. Central Theoretical Council, Ho Chi Minh Thought Textbook, Publishing House. National politics 2004.

15.2. Books and references:

[1]. Ho Chi Minh, Complete Volume, 15 volumes, National Political Publishing House, Hanoi, 2010;

[2]. CDROM HCM;

[3]. Vo Nguyen Giap, Ho Chi Minh Thought and Vietnam's revolutionary path, National Political Publishing House, Hanoi, 1997.

[4]. Tran Van Giau, The Basic Formation of Ho Chi Minh Thought, National Political Publishing House, Hanoi, 1991.

[5]. Documents of the Communist Party of Vietnam, vol.

16. Scientific code of ethics:

Students must respect a lecturer and other students.

Students must comply with the University's academic integrity policy.

Students must obey the rules and regulations of the university.

17. Approved date:

18. Approved by:

Dean of Faculty	Program chair	Lecturer in charge
Cao Van Lam, PhD.	**Vo Duy Hung, PhD.**	**MSc. Le Minh Tho**

38. Thermal equipment in the production of construction materials

THE UNIVERSITY OF DANANG
UNIVERSITY OF SCIENCE AND TECHNOLOGY
Faculty of Road and Bridge Engineering

SOCIALIST REPUBLIC OF VIETNAM
Independence - Freedom - Happiness

UNDERGRADUATE PROGRAM

Awarded degree: Undergraduate/Bachelor

Name of the study program: Construction Materials Engineering and Technology

Program Code: 7510105

SYLLABUS

Course name (Vietnamese): Thiết bị nhiệt sản xuất VLXD
English name: Thermal equipment in the production of construction materials

1. Course Code:	1092740
2. Course abbreviation:	Thermal equipment in the production of construction materials
3. Credits: **ECTS credits (*):**	2 Credits 2,83
4. Study workload:	
- Lecture:	2,0 Credits – 30 periods
- Exercise:	
- Self-study/Assignment:	
- Lecture:	60 periods
5. Responsible persons:	
- Faculty/Division in charge:	Construction materials Division/ Faculty of Road and Bridge Engineering
- Course coordinator:	Ms. Nguyen Thi Tuyet An
- Other lecturers:	PhD. Nguyen Van Quang
6. Required and recommended prerequisites for joining the course:	
- Required prerequisite:	None
- Recommended prerequisite:	Thermal Engineering; Construction materials
- Corequisite:	None
7. Course type:	☒ Compulsory Selected elective Free elective
8. Knowledge clusters:	Math and natural science General knowledge ☒ Core engineering fundamental knowledge Disciplinary knowledge Supportive knowledge Project/ Internship/ Graduate thesis

9. Corse description

The course introduces basic knowledge about the types of thermal equipment mainly used in the industry of manufacturing the building materials. The course provides students knowledge about technological processes using heat energy such as drying, heating, curing, melting processes; Principle of heat calculation for thermal equipments; feature of equipment, operating principles, purposes of using thermal equipment with different types of products; Calculation method to design the thermal equipment, selection of thermal equipments and supporting equipment.

This is the basis for courses belonging to specialized module such as production technique for inorganic binder, Technology of building ceramics, Technology of Concrete...

10. Course Learning Outcomes

After completing the course, students will be able to

NO	Course Learning Outcomes (CLOs)	Knowledge (Bloom Taxonomy)	Skills	Attitude	Performance indicators (belongs to PLOs)
1	**Present and explain**: - Theoretical basis of drying, calcinating and curing processes - The principle of motion of the heat carriers in the thermal equipment - The principle of heat calculation in thermal equipment	a2. Understand		c1.Reception c2.Feedback	1.3.3 8.2.3
2	**Present and explain** the feature of equipment, operating principles, their installation in process line, select suitable equipment for each technology of building materials production.	a2. Understand		c1.Reception c2.Feedback c3. Attitude	1.2.1 8.2.1 8.4.1 4.1.1
3	**Analyze** the factors affecting the efficiency of the use of thermal equipment	a4. Analyze		c3.Attitude	1.3.1
4	**Calculate** problems about: - Fuel combustion, mixing of heat carriers - Material balance and heat balance - Furnace shell design	a3.Apply	b2.Apply	c2.Feedback c3. Attitude	1.3.2 4.1.2

11. The relationship between course learning outcomes(CLOs) and program learning outcomes (PLOs)

PLO	PLO1	PLO2	PLO3	PLO4	PLO5	PLO6	PLO7	PLO8
Contribution of the course	TU			I				T
CLO1	X							X
CLO2	X			X				X
CLO3								X
CLO4	X							X

12. Student responsibilities:

Students must perform the following tasks:

- Attend at least 80% of the lessons of the theory class,
- Attend 100% of guide sessions; Prepare assignments as assigned
- Participating in group work activities following the regulations of the class
- Self-study the problems assigned by the lecturer (do out of the class time)
- Complete all course assessments

13. Course assessments

Type of assessment	Performance assessment	Assessment methods	Rubric	Weighting percentage (%)		CLOs
A1. Ongoing assessment - Theory	A1.1. Diligence	Attendance checking	R1.1	W1.1100%	W1. 10%	CLO1,CLO2,CLO3,CLO4
A2. Mid-term Assessment - Theory	A2.1. Mid-term exam	Multiple-choice exam	Following the answers and grading scale	W2.1100%	W2. 20%	CLO1, CLO3
A3. Final Assessments-Theory	A3.1. Final exam	Written exam	Following the answers and grading scale	W3.1100%	W3. 50%	CLO1, CLO2, CLO3
A4. Final Assessment - assignments	A4.1 Diligence	Attendance checking	Full attendance	W4.110%	W4. 20%	CLO4
	A4.2 Submit assignments	Assignments	R1.2	W4.290%		CLO4

Rubric 1.1: Diligence (Individual)

Assessment Criteria	Levels of achievement					Weighting percentage
	F level (0-3.9)	D level (4.0-5.4)	C level (5.5-6.9)	B level (7.0-8.4)	A level (8.5-10)	
Diligence	< 30%	<50%	<70%	<90%	100%	**100%**

Rubric 1.2: Work Assignment (Individual)

Assessment Criteria	Levels of achievement					Weighting percentage
	F level (0-3.9)	D level (4.0-5.4)	C level (5.5-6.9)	B level (7.0-8.4)	A level (8.5-10)	
Submit assignments	Do not submit assignments	Submit 70% assignment. Incorrect time.	Submit full assignment (100% of the assignment). Some assignments are not in time.	Submit full assignment (100% of the assignment). Most assignments are submitted on time.	Submission of full assignments (100% of the assignment). At regulation time.	**30%**
Presentation of assignments	Do not do assignments	Messy display, not in accordance with presentation requirements	The assignments meet the requirements. Some mistakes in calculation	The presentation is beautiful, and meets the requirements. Assignments are clear and appropriate, full	The presentation is beautiful and meets the requirements. The calculation is logical, detailed, clear and appropriate,	**70%**

Assessment Criteria	Levels of achievement					Weighting percentage
	F level (0-3.9)	D level (4.0-5.4)	C level (5.5-6.9)	B level (7.0-8.4)	A level (8.5-10)	
				explanation, reasonable.	full explanation, reasonable.	

14. Teaching and learning plan

Periods	Contents	Teaching and learning activities	Performance assessment	Course learning outcomes
1	Course introduction: - Objectives of the course. - Overview about content of the entire course - Books, ebooks, and related materials for the study - Teaching activities - Tasks of students - Assessment methods and weighting percentage (%) for each assessment types **Chapter 1.** General concepts of thermal equipment in the production of building materials 1.1 . The definition of thermal equipment 1.2 .Classification of thermal equipment	- Teaching activities: + Give a lecture + Guide the students to prepare a lesson at home including: * Reading the course syllabi * Building up study plan * Prepare materials for study at class * Grouping and give assignments - Read the materials at home: + Book: "Thermal equipment in the production of construction materials", Bach Dinh Thien, page. 1-6 + Lecture on Thermal equipment in the production of construction materials, Nguyen Van Quang (page .1-2)	A1.1	CLO1
2	**Chapter 1**. (Continue) 1.3. Heat transfer methods 1.4. Main criteria and main characteristics of thermal equipment	- Teaching activities: + Give a lecture + Guide the students to prepare a lesson at home and read materials: + Thermal equipment in the production of construction materials, Bach Dinh Thien, page. 7-12 + Lecture on Thermal equipment in the production of construction materials, Nguyen Van Quang (page .2-5)	A1.1 A2.1	CLO1
3	Chapter 2. Heat sources and heat carriers	Teaching activities: + Give a lecture	A1.1 A2.1	CLO1

	2.1. Types of fuels used in thermal equipment; heat carriers 2.1.1. Fuels: solid, liquid, gas 2.1.2. Heat carriers	+ Guide the students to read materials: + Thermal equipment in the production of construction materials, Bach Dinh Thien, page. 14-22 + Lecture on Thermal equipment in the production of construction materials, Nguyen Van Quang (page .2-11)		
4	Chapter 2. (continue) 2.2. Fuel composition 2.3. Fuel properties	Teaching activities: + Give a lecture + Guide the students to read materials: + Thermal equipment in the production of construction materials, Bach Dinh Thien, page. 14-22 + Lecture on Thermal equipment in the production of construction materials, Nguyen Van Quang (page .12-15)	A1.1	CLO1
5	Chapter 2. (Continue) 2.4. Calculation of fuel combustion 2.4.1. Calculate the theoretical amount of air for combustion 2.4.2 Calculate the actual amount of air for combustion 2.4.3. Calculation of the quantity and composition of combustion products 2.4.4. Theoretical and actual temperature of flue gas	Teaching activities: + Give a lecture + Guide the students to read materials: + Thermal equipment in the production of construction materials, Bach Dinh Thien, page. 22-30 + Lecture on Thermal equipment in the production of construction materials, Nguyen Van Quang (page 15-23) *** Assignment 1: Fuel combustion problems**	A1.1 A2.1	CLO1 CLO3 CLO4
6	Chapter 2. (continue) 2.5 Fuel combustion methods and combustion equipment	Teaching activities: + Give a lecture + Guide the students to read materials: + Thermal equipment in the production of construction materials, Bach Dinh Thien, page. 36-47 + Lecture on Thermal equipment in the production of construction materials, Nguyen Van Quang (page 23-28)	A1.1 A2.1	CLO1

	Assignment 1: **Problems: Fuel combustion calculation**	Tutorials and discussions	A4.1	CLO4
7	Chapter 3. Movement of gas flow in thermal equipment 3.1. Basic equations of physical properties and movement of gas flows in thermal equipment 3.2. Resistance in the movement of gas flow 3.3.Grum-Grimailo principle for selecting the moving direction of gas flow	Teaching activities: + Give a lecture + Guide the students to read materials: + Thermal equipment in the production of construction materials, Bach Dinh Thien, page.48-57 + Lecture on Thermal equipment in the production of construction materials, Nguyen Van Quang (page 29-34)	A1.1 A2.1	CLO1
8	Chapter 3. (continue) 3.4. Movement of the gas flow in thermal equipment 3.4.1 Movement of the gas flow in the horizontal kiln 3.4.2. Movement of the gas flow in the vertical kiln 3.4.3. Movement of the water vapor in curing equipment	Teaching activities: + Give a lecture + Guide the students to read materials: + Thermal equipment in the production of construction materials, Bach Dinh Thien, page 58-62 + Lecture on Thermal equipment in the production of construction materials, Nguyen Van Quang (Page 35-37)	A1.1 A2.1	CLO1 CLO3
9	Chapter 3. (continue) 3.5 Equipment to maintain the movement of gas flow (fans, chimneys)	Teaching activities: + Give a lecture + Guide the students to read materials: + Thermal equipment in the production of construction materials, Bach Dinh Thien, page.63-72 + Lecture on Thermal equipment in the production of construction materials, Nguyen Van Quang (page 38-42)	A1.1 A2.1	CLO1 CLO2 CLO3
10	Chapter 4. The principles of Heat calculation for thermal equipment 4.1 Material balance, heat balance	Teaching activities: + Give a lecture + Guide the students to read materials: + Thermal equipment in the production of construction materials, Bach Dinh Thien, page.73-76 + Lecture on Thermal equipment in the production of construction	A1.1 A2.1	CLO1 CLO4

		materials, Nguyen Van Quang (page 43-46)		
11	Chapter 4. (Continue) 4.2 Selecting the structure of the furnace shell and how to calculate the heat energy transferring to the surrounding 4.2.1 Selecting materials to build kiln	Teaching activities: + Give a lecture + Guide the students to read materials: + Thermal equipment in the production of construction materials, Bach Dinh Thien, page.77-82 + Lecture on Thermal equipment in the production of construction materials, Nguyen Van Quang (page 47-48) TCVN 6530:1999; TCVN 5441: 2004; TCVN 7637: 2007; TCVN 7453: 2004	A1.1 A1.2	CLO2 CLO3
12	Chapter 4. (continue) 4.2.2 Calculate the heat energy transferring to the surroundings 4.2.3 Smith method used to calculate the heat energy accumulated into the furnace shell and transferring to the surroundings	Teaching activities: + Give a lecture + Guide the students to read materials: + Thermal equipment in the production of construction materials, Bach Dinh Thien, page.83-89 + Lecture on Thermal equipment in the production of construction materials, Nguyen Van Quang (page 49-56)+ TCVN 3118:2011	A1.1 A2.1	CLO2 CLO4
	Assignment 2: **Problems: Calculation of heat transfer of walls**	Tutorials and discussions	A4.1	CLO4
13	Chapter 5. Drying process and drying equipment 5.1. Drying process 5.1.1 The concept of drying process 5.1.2 Water and moisture in materials	Teaching activities: + Give a lecture + Guide the students to read materials: * Thermal equipment in the production of construction materials, Bach Dinh Thien, page 97-106 * Lecture on Thermal equipment in the production of construction materials, Nguyen Van Quang, page 57-60	A1.1 A3.1	CLO1 CLO3
14	Chapter 5. (continue) 5.1.3. Properties of drying agents 5.1.4 Kinetic characteristics of the drying process of shaped products	Teaching activities: + Give a lecture + Guide the students to read materials: * Thermal equipment in the production of construction materials, Bach Dinh Thien, page 107-118.	A1.1 page A3.1	CLO1 CLO3

		* Lecture on Thermal equipment in the production of construction materials, Nguyen Van Quang, page 60-67.		
15	Chapter 5. (continue) 5.1.5 Material balance, heat balance of drying process 5.1.6. Types of drying processes	Teaching activities: + Give a lecture + Guide the students to read materials: * Thermal equipment in the production of construction materials, Bach Dinh Thien, page 118-126 * Lecture on Thermal equipment in the production of construction materials, Nguyen Van Quang, 67-71	A1.1	CLO1 CLO4
	Assignment 3: **Problems: Calculation of heat transfer of flat and curved walls**	Tutorials and discussions	A4.1	CLO4
16	Chapter 5. (continue) 5.2. Drying equipment 5..2.1. Drying equipment – Paste form. – Spray driers 5.2.2. Drying equipment - Rotary drum driers	Teaching activities: + Give a lecture + Guide the students to read materials: * Thermal equipment in the production of construction materials, Bach Dinh Thien, page 127-150 * Lecture on Thermal equipment in the production of construction materials, Nguyen Van Quang, page 72-75	A1.1 A3.1	CLO2 CLO3
17	Chapter 5. (continue) 5.2.3. . Drier for brick products + Tunnel driers	Teaching activities: + Give a lecture + Guide the students to read materials: * Thermal equipment in the production of construction materials, Bach Dinh Thien, page 152-160 * Lecture on Thermal equipment in the production of construction materials, Nguyen Van Quang, page 72-81	A1.1 A3.1	CLO2 CLO3
18	Chapter 5. (Continue) 5.2.3. Drier for plate-like building ceramic products (Ex.Tiles) + Roller drier	Teaching activities: + Give a lecture + Guide the students to read materials: * Thermal equipment in the production of construction materials, Bach Dinh Thien, page 162	A1.1 A3.1	CLO2 CLO3

		* Lecture on Thermal equipment in the production of construction materials, Nguyen Van Quang, page 82-83		
	Assignment 4: **Problems:** Calculation of material balance and heat balance for drying equipment and select equipment	Tutorials, discussions	A4.1	CLO4
19	Chapter 6. Firing process and equipment 6.1. The firing process and equipment for firing the building ceramics 6.1.1 Firing process of Building ceramic	Teaching activities: + Give a lecture + Guide the students to read materials: * Thermal equipment in the production of construction materials, Bach Dinh Thien, page 216-218 * Lecture on Thermal equipment in the production of construction materials, Nguyen Van Quang, page 102-104	A1.1 A3.1	CLO1 CLO3
20	Chapter 6. (continue) 6.1.2 Kilns for building ceramics - Traditional ceramic kilns	Teaching activities: + Give a lecture + Guide the students to read materials: * Thermal equipment in the production of construction materials, Bach Dinh Thien, page 220-232 * Lecture on Thermal equipment in the production of construction materials, Nguyen Van Quang, page 105-107	A1.1 A3.1	CLO2 CLO3
21	Chapter 6 (Continue) 6.1.2 Kilns for building ceramics - Tunnel kiln	Teaching activities: + Give a lecture + Guide the students to read materials: * Thermal equipment in the production of construction materials, Bach Dinh Thien, page 244-268 * Lecture on Thermal equipment in the production of construction materials, Nguyen Van Quang, page 107-110	A1.1 A3.1	CLO2 CLO3
22	Chapter 6. (continue) 6.1.2 Kilns for building ceramics - Roller kiln	Teaching activities: + Give a lecture + Guide the students to read materials:	A1.1 A3.1	CLO2 CLO3

		* Thermal equipment in the production of construction materials, Bach Dinh Thien, page 268-288 * Lecture on Thermal equipment in the production of construction materials, Nguyen Van Quang, page 110-112		
	Assignment 5: **Problems: Calculation of material balance and heat balance for kiln and select equipment**	Tutorials, discussions	A4.1	CLO4
23	Chapter 6. (continue) 6. 2. Calcination process and equipment for binder production 6.2.1 Calcination process of the binder	Teaching activities: + Give a lecture + Guide the students to read materials: * Thermal equipment in the production of construction materials, Bach Dinh Thien, page 166-176 * Lecture on Thermal equipment in the production of construction materials, Nguyen Van Quang, page 112-113	A1.1 A3.1	CLO1 CLO3
24	Chapter 6. (continue) 6.2.2 Kilns for binder production - Vertical kiln for lime and cement clinker	Teaching activities: + Give a lecture + Guide the students to read materials: * Thermal equipment in the production of construction materials, Bach Dinh Thien, page 177-189 * Lecture on Thermal equipment in the production of construction materials, Nguyen Van Quang, page 117-122	A1.1 A3.1	CLO2 CLO3
25	Chapter 6. (Continue) 6.2.2 Kilns for binder production - Rotary kiln (Wet process)	Teaching activities: + Give a lecture + Guide the students to read materials: * Thermal equipment in the production of construction materials, Bach Dinh Thien, page 190-288	A1.1 A3.1	CLO2 CLO3
26	Chapter 6. (Continue) 6.2.2 Kilns for binder production	Teaching activities: + Give a lecture + Guide the students to read materials:	A1.1 A3.1	CLO2 CLO3

	- Rotary kiln (Dry process)	* Thermal equipment in the production of construction materials, Bach Dinh Thien, page 196-216 * Lecture on Thermal equipment in the production of construction materials, Nguyen Van Quang, page 114-117		
	Assignment 6: Problems: Calculation of material balance and heat balance for kiln (cement) and select equipment	Tutorials, discussions	A4.1	CLO4
27	Chapter 7. The curing process of concrete and curing equipment 7.1. Theoretical basis for curing process of the concrete	Teaching activities: + Give a lecture + Guide the students to read materials: * Thermal equipment in the production of construction materials, Bach Dinh Thien, page 291-293 * Lecture on Thermal equipment in the production of construction materials, Nguyen Van Quang, page 84-91	A1.1 A3.1	CLO1 CLO2
28	Chapter 7. (continue) 7.2. The concrete curing equipment 7.2.1. The normal curing equipment (in atmospheric pressure)	Teaching activities: + Give a lecture + Guide the students to read materials: * Thermal equipment in the production of construction materials, Bach Dinh Thien, page 196-210 * Lecture on Thermal equipment in the production of construction materials, Nguyen Van Quang, page 92-95	A1.1 A3.1	CLO2 CLO3
29	Chapter 7. (Continue) 7.2.2.The autoclave curing equipment	Teaching activities: + Give a lecture	A1.1 A3.1	CLO2 CLO3

		+ Guide the students to read materials: * Thermal equipment in the production of construction materials, Bach Dinh Thien, page 211-216 * Lecture on Thermal equipment in the production of construction materials, Nguyen Van Quang, page 95-100		
	Assignment 7: Problems: Calculation of material balance and heat balance for curing equipment and select equipment	Tutorials, discussions	A1.1 A3.1	CLO4
30	Review lessons	Tutorials, discussions Submit the assignments	A1.1 A4.2	

15. Reference materials

15.1. Books, lectures, main textbooks

[1]. Bach Dinh Thien, Nguyen Kim Huan,"Thermal equipment in the production of construction materials, Bach Dinh Thien, Science and Technology Publisher, Ha Noi, 1996.

[2]A Lecture: Nguyen Van Quang, Thermal equipment in the production of construction materials

15.2. Reference materials

[1]. Vu Dinh Dau, Technology and equipment for manufacturing Portland cement, construction publisher, HaNoi, 2009

[2]. .IU.M Bazenov, Bach Dinh Thien, Tran Ngoc Tinh, "Technology of the Concrete". construction Publisher, 2004.

[3] Vo Dinh Luong, Chemistry and Technology of cement production, Science and Technology Publisher, 2008.

[7] TCVN, standards for refractory materials, heat-resistant materials, insulation materials

16. Scientific code of ethics:

- Students are not allowed to copy each other's assignments
- Students are not allowed to use the materials during the midterm exam
- Students are not allowed to use audio-visual equipment in the exam room

17. Approved date:

18. Approved by:

Dean of Faculty	Program chair	Lecturer in charge
Cao Van Lam, PhD.	**Vo Duy Hung, PhD.**	**Nguyen Van Quang, PhD.**

39. Machinery for Production of Building Materials

THE UNIVERSITY OF DANANG
UNIVERSITY OF SCIENCE AND TECHNOLOGY
Faculty of Road and Bridge Engineering

SOCIALIST REPUBLIC OF VIETNAM
Independence - Freedom - Happiness

UNDERGRADUATE PROGRAM

Awarded degree: Undergraduate/Bachelor

Name of the study program: Construction Materials Engineering and Technology

Program Code: 7510105

SYLLABUS

Course name (Vietnamese): Máy và thiết bị sản xuất Vật liệu Xây dựng

English name: Machinery for Production of Building Materials

1. Course Code:	1091220
2. Course abbreviation:	Machinery for Production of Building Materials
3. Credits: **ECTS credits (*):**	02 Credits (30 Periods) 2,83
4. Study workload:	
- Lecture:	30 Periods
- Exercise:	
- Practice/ Laboratory:	
- Self-study/Assignment:	60 Periods
5. Responsible persons:	
- Faculty/Division in charge:	Construction materials Division/ Faculty of Road and Bridge Engineering
- Course coordinator:	PhD Student. Nguyen Tien Dung
- Other lecturers:	PhD Nguyen Van Dong
6. Required and recommended prerequisites for joining the course:	
- Required prerequisite:	None
- Recommended prerequisite:	Construction Materials,Construction Machines
- Corequisite:	None
7. Type course:	☒ Compulsory Selected elective Free elective
8. Knowledge clusters:	Math and natural science General knowledge ☒ Core engineering fundamental knowledge Disciplinary knowledge Supportive knowledge Project/ Internship/ Graduate thesis

9. Course description

The course Machinery for Production of Building Materials provides students with fundamental knowledge (application, kinematic diagrams, structure and operating principles, advantages and disadvantages, scope of use) of machines and equipment. The equipment is used to carry out the main processes in the production of building materials (threshing, crushing, sieving, sorting, cleaning, dosing, feeding, mixing, shaping, ...). The general formulas about the working basis features of equipment, calculating the main parameters to choose the right equipment in the line.

10. Course Learning Outcomes

After completing the course, students will be able to

NO	Course Learning Outcomes(CLO)	Knowledge	Skills	Attiude	Performance indicators (PLOs)
1	Present the structure, operating principle of the machine and equipment	a2 Understand			8.1.2;
2	Classify, name and list types of construction machines and equipment	a1 Remember			8.2.1
3	Compare machines with the same construction function, compare machines in the same machine group	a4 Analysis		c3 Attitude	3.1.1;8.2.2;
4	Calculate and evaluate the basic parameters of the machine and equipment	a3 Application	b2 Application		1.3.2;8.2.3;8.2.4

11. The relationship between course learning outcomes(CLOs) and program learning outcomes (PLOs)

PLO	PLO1	PLO2	PLO3	PLO4	PLO5	PLO6	PLO7	PLO8
Contribution of the course	TU		T					T
CLO 1								x
CLO 2								x
CLO 3			x					x
CLO 4	x							x

12. Student responsibilities:

Students must perform the following tasks:

- Attend at least 80% of the lessons of the part class.
- Participating in group work activities according to the regulations of the class.
- Self-study the problems assigned by the lecturer to do outside of class time.
- Complete all course assessments.

13. Course assessments

Type of assessment	Performance assessment	Assessment methods	Rubric	Review percentage (%)	Weighting percentage (%)	Course learning outcomes (CLOs)
A1. Ongoing assessment	A1.1 Diligence	P1.1. Attendance	R1.1	50	20	

	A1.2 Short Exercises	P1.2. Exercise	R1.2	50		CLO 1, 2,
A2. Mid-term Assessment	A2. Mid-term examination	P2. Essay	R2.	100	20	CLO 1,2,3
A3. Final Assessment	A3. Final examination	P3. Essay	R3.	100	60	CLO 1,2,3,4

14.Teaching and learning plan

Week/Period (2 hours)	Detailed Content	Teaching and Learning Activities	Assessment	Course learning outcomes
1	Chapter 1: GENERAL CONCEPT OF GRILLING MATERIALS AND CRUSHING MACHINE 1.1. General concept of material crushing process 1.2. Crushing methods and types of material crushers 1.2.1. Basic grinding methods; 1.2.2. Machines for crushing building materials; 1.3. Cheek Crusher 1.3.1. Uses and classifications 1.3.2. Structure, kinematic diagram and working principle of machine crusher 1.3.3. Calculation and determination of the basic parameters of the machine mill	Teach: - Lectures combined with lecture slides - Ask questions for students to think and answer and discuss -Apply to choose the right machine and equipment Learning in class: Course content by chapter - Listen to lectures, take notes - Answer questions given by the teacher - Ask questions about issues of interest, discuss Study at home: - Read the content of the chapters studied - Answer short questions	A1.2 ;A2	CLO 1, 2,3,4
2	1.4. Cone Crusher 1.4.1. Uses and classifications 1.4.2. Structure, kinematic diagram, and working principle of cone crusher 1.4.3. Calculation and determination of basic parameters of cone crusher 1.5. Shaft Crusher 1.5.1. Uses and classifications 1.5.2. Structure, kinematic diagram and working principle of shaft crusher 1.5.3. Calculation and determination of the basic parameters of the shaft mill 1.6. Impact Crusher	Teach: - Lectures combined with lecture slides - Ask questions for students to think and answer and discuss -Apply to choose the right machine and equipment Learning in class: Course content by chapter - Listen to lectures, take notes - Answer questions given by the teacher - Ask questions about issues of interest, discuss Study at home: - Read the content of the chapters studied - Answer short questions	A1.2 ;A2	CLO 1, 2,3,4

	1.6.1. Uses and classifications 1.6.2. Structure, kinematic diagram and working principle of impact crusher 1.6.3. Calculation and determination of basic parameters of impact crusher			
3	1.7. Roller Crusher 1.7.1. Uses and classifications 1.7.2. Structure, kinematic diagram and working principle of roller mill 1.7.3. Calculation and determination of basic parameters of roller mill 1.8. Ball mill 1.8.1. Uses and classifications 1.8.2. Structure, kinematic diagram and operating principle of different types of ball mills 1.8.3. Calculation and determination of basic parameters of ball mill 1.9. Super fine powder mill 1.9.1. Uses and classifications 1.9.2. Structure, kinematic diagram and operating principle of fine mills 1.9.3. Calculation and determination of the basic parameters of the fine mill	Teach: - Lectures combined with lecture slides - Ask questions for students to think and answer and discuss -Apply to choose the right machine and equipment Learning in class: Course content by chapter - Listen to lectures, take notes - Answer questions given by the teacher - Ask questions about issues of interest, discuss Study at home: - Read the content of the chapters studied - Answer short questions	A1.2 ;A2	CLO 1, 2,3,4
4	Chapter 2: MATERIAL CLASSIFICATION MACHINE AND EQUIPMENT 2.1. General concept of material classification process 2.2. Sorting methods and machines for sorting materials 2.3. Criteria to evaluate the grading process	Teach: - Lectures combined with lecture slides - Ask questions for students to think and answer and discuss -Apply to choose the right machine and equipment Learning in class: Course content by chapter - Listen to lectures, take notes - Answer questions given by the teacher - Ask questions about issues of interest, discuss Study at home: - Read the content of the chapters studied	A1.2 ;A2	CLO 1, 2,3,4

		- Answer short questions		
5	2.4. Flat Screening Machine 2.4.1. Uses and classifications 2.4.2. Structure, kinematic diagram and operating principle of flat sieving machines 2.4.3. Calculation and determination of basic parameters of flat screen machine 2.5. Tube Screening Machine 2.5.1. Uses and classifications 2.5.2. Structure, kinematic diagram and operating principle of various types of tube screeners 2.5.3. Calculation and determination of the basic parameters of the tube sieving machine 2.6. Air-flow material sorting machines and equipment 2.6.1. General introduction to the classification of materials by gas flow 2.6.2. Structure, kinetic diagram and operating principle of gas-flow material sorting machines 2.6.3. Calculation and determination of basic parameters of material sorter by gas flow 2.6.4. Air purifiers and dust collectors	Teach: - Lectures combined with lecture slides - Ask questions for students to think and answer and discuss -Apply to choose the right machine and equipment Learning in class: Course content by chapter - Listen to lectures, take notes - Answer questions given by the teacher - Ask questions about issues of interest, discuss Study at home: - Read the content of the chapters studied - Answer short questions	A1.2 ;A2	CLO 1, 2,3,4
6	2.7. Magnetic Material Sorting Machine 2.7.1. General introduction to magnetic material classification 2.7.2. Structure, kinetic diagram and working principle of magnetic material sorting machine 2.8. Stone, sand and gravel washing machine 2.8.1. General introduction to the classification of	Teach: - Lectures combined with lecture slides - Ask questions for students to think and answer and discuss -Apply to choose the right machine and equipment Learning in class: Course content by chapter - Listen to lectures, take notes - Answer questions given by the teacher	A1.2 ;A2	CLO 1, 2,3,4

	materials by washing method 2.8.2. Structure, kinematic diagram and operating principle of washing machines 2.8.3. Calculation and determination of basic parameters of material sorting machine by washing method 2.9. Combined crushing and screening station 2.9.1. General concept of crushing and screening station 2.9.2. Basic technological diagrams of crushing and screening plants (stations) 2.9.3. Mobile material crushing and screening station	- Ask questions about issues of interest, discuss Study at home: - Read the content of the chapters studied - Answer short questions		
7	Chapter 3: TYPES OF MATERIAL MIXING MACHINE (3 periods) 3.1. General introduction and classification of material mixers 3.2. Mixing machines for suspensions and emulsions 3.2.1. Mud water mixer in cement production 3.2.2. Material mixers in ceramic production	Teach: - Lectures combined with lecture slides - Ask questions for students to think and answer and discuss -Apply to choose the right machine and equipment Learning in class: Course content by chapter - Listen to lectures, take notes - Answer questions given by the teacher - Ask questions about issues of interest, discuss Study at home: - Read the content of the chapters studied - Answer short questions	A1.2 ;A2	CLO 1, 2,3,4
8	3.3. Mixer for dry and sticky dough 3.3.1. Mixers with horizontal mixing shaft 3.3.2. Roller mixer 3.4. Concrete mixer and construction mortar 3.4.1. Uses and classifications 3.4.2. Structure, kinematic diagram and operating principle of cement and mortar concrete mixers	Teach: - Lectures combined with lecture slides - Ask questions for students to think and answer and discuss -Apply to choose the right machine and equipment Learning in class: Course content by chapter - Listen to lectures, take notes - Answer questions given by the teacher	A1.2 ;A2;A 3	CLO 1, 2,3,4

	3.4.3. Calculation and determination of basic parameters of concrete and mortar mixers	- Ask questions about issues of interest, discuss Study at home: - Read the content of the chapters studied - Answer short questions		
9	3.5. Concrete batching plant. 3.6. Transport truck and concrete pump.	Teach: - Lectures combined with lecture slides - Ask questions for students to think and answer and discuss -Apply to choose the right machine and equipment Learning in class: Course content by chapter - Listen to lectures, take notes - Answer questions given by the teacher - Ask questions about issues of interest, discuss Study at home: - Read the content of the chapters studied - Answer short questions	A1.2 ;A2;A 3	CLO 1, 2,3,4
10	Chapter 4. CONTRACTORS, DISPOSAL DOORS, FEEDING PARTS AND MATERIAL WEATHER (4 periods) 4.1. General concept of other equipment in the sxvl . technology line 4.2. Feeding device 4.2.1. Uses and classifications 4.2.2. Structure, kinematic diagram and operating principle of feeders 4.2.3. Calculation to determine the basic parameters of the feeding device	Teach: - Lectures combined with lecture slides - Ask questions for students to think and answer and discuss -Apply to choose the right machine and equipment Learning in class: Course content by chapter - Listen to lectures, take notes - Answer questions given by the teacher - Ask questions about issues of interest, discuss Study at home: - Read the content of the chapters studied - Answer short questions	A1.2 ;A2;A 3	CLO 1, 2,3,4
11	4.3. Containers and containers for discharge 4.3.1. Uses and classifications 4.3.2. Structure, kinematic diagram and operating principle of various types of containers and discharge doors	Teach: - Lectures combined with lecture slides - Ask questions for students to think and answer and discuss -Apply to choose the right machine and equipment Learning in class: Course content by chapter - Listen to lectures, take notes	A1.2 ;A2;A 3	CLO 1, 2,3,4

	4.3.3. Calculation and determination of the basic parameters of the tank and the discharge port	- Answer questions given by the teacher - Ask questions about issues of interest, discuss Study at home: - Read the content of the chapters studied - Answer short questions		
12	4.4. Dosing device 4.3.1. Uses and classifications 4.3.2. Structure, kinematic diagram and working principle of quantitative devices 4.3.3. Calculation and determination of the basic parameters of the dosing device	Teach: - Lectures combined with lecture slides - Ask questions for students to think and answer and discuss -Apply to choose the right machine and equipment Learning in class: Course content by chapter - Listen to lectures, take notes - Answer questions given by the teacher - Ask questions about issues of interest, discuss Study at home: - Read the content of the chapters studied - Answer short questions	A1.2 ;A2;A 3	CLO 1, 2,3,4
13	Chapter 5. EQUIPMENT LINES AND TECHNOLOGY IN THE PRODUCTION OF CONSTRUCTION MATERIALS (8 periods) 5.1. Equipment lines in cement production	Teach: - Lectures combined with lecture slides - Ask questions for students to think and answer and discuss -Apply to choose the right machine and equipment Learning in class: Course content by chapter - Listen to lectures, take notes - Answer questions given by the teacher - Ask questions about issues of interest, discuss Study at home: - Read the content of the chapters studied - Answer short questions	A1.2 ;A2;A 3	CLO 1, 2,3,4
14	5.2. Equipment lines used in the production of precast reinforced concrete structures 5.2.1. Technological diagram in the production of precast reinforced concrete 5.2.2. Structure, kinematic diagram of machine and	Teach: - Lectures combined with lecture slides - Ask questions for students to think and answer and discuss -Apply to choose the right machine and equipment Learning in class: Course content by chapter	A1.2 ;A2;A 3	CLO 1, 2,3,4

	equipment for reinforcement processing 5.2.3. Structure, kinematic diagram of concrete mix feeder and spreader 5.2.4. Structure, kinematic diagram of the machine and equipment for compaction of concrete structures 5.2.5. Reinforced concrete pipe forming equipment	- Listen to lectures, take notes - Answer questions given by the teacher - Ask questions about issues of interest, discuss Study at home: - Read the content of the chapters studied - Answer short questions		
15	5.3. Equipment line in the production technology of construction ceramics 5.3.1. Technological diagram in the production of construction ceramics 5.3.2. Machines and equipment used in the production of building ceramics	Teach: - Lectures combined with lecture slides - Ask questions for students to think and answer and discuss -Apply to choose the right machine and equipment Learning in class: Course content by chapter - Listen to lectures, take notes - Answer questions given by the teacher - Ask questions about issues of interest, discuss Study at home: - Read the content of the chapters studied - Answer short questions	A1.2 ;A2;A 3	CLO 1, 2,3,4
16	Final Examination		A3	CLO1,2

15.Materials

15.1. Books, lectures, main textbooks

[1]. Machines for producing construction materials and components - Doan Tai Ngo, Nguyen Thieu Xuan - Construction Publisher, Ha Noi - 2000;

[2]. Machines and equipment for the production of building materials - Tran Quang Quy, Nguyen Van Vinh, Nguyen Binh - Transportation Publisher, Ha Noi - 2001;

[3]. Machines for producing construction materials and components - Nguyen Hong Ngan - National University Publisher, Ho Chi Minh City – 2001

15.2. Reference materials

[1] Technology and equipment for Portland cement production - Vu Dinh Dau - Construction Publisher, 2009

[2]. http://www.joyalcrusher.com

16. Scientific code of ethics:

- Students must respect a lecturer and other students.
- Students must comply with the University's academic integrity policy.
- Students must obey the rules and regulations of the university.

17. Approved date:

18. Approved by:

Dean of Faculty	Program chair	Lecturer in charge

Cao Van Lam, PhD.	**Vo Duy Hung, PhD.**	**Nguyen Tien Dung, M.Sc.**

40. Production Technique for Inorganic Binders 1

THE UNIVERSITY OF DANANG
UNIVERSITY OF SCIENCE AND TECHNOLOGY
Faculty of Road and Bridge Engineering

SOCIALIST REPUBLIC OF VIETNAM
Independence - Freedom - Happiness

UNDERGRADUATE PROGRAM

Awarded degree: Undergraduate/Bachelor

Name of the study program: Construction Materials Engineering and Technology

Program Code: 7510105

SYLLABUS

Course name (Vietnamese): Kỹ thuật sản xuất Chất kết dính vô cơ 1
English name: Production Technique for Inorganic Binders 1

1. Course code:	1092750
2. Course abbreviation:	Production Technique for Inorganic Binders 1
3. Credits: **ECTS credits (*):**	02 credits (30 periods) 2,83
4. Study workload:	
- Lecture:	30 periods
- Exercise:	
- Practice/ Laboratory:	
- Self-study/Assignment:	60 periods
5. Responsible persons	
- Faculty/Division in charge:	Construction Materials Division/Faculty of Road and Bridge Engineering
- Course coordinator:	Nguyen Thi Tuyet An, M.Eng.
- Other lecturers:	Lecturers of Construction Materials Division
6. Required and recommended prerequisites for joining the course:	
- Required prerequisite:	None
- Recommended prerequisite:	Applied Chemistry Engineering 1
- Corequisite:	None
7. Type course:	☒ Compulsory Selected elective Free elective
8. Knowledge clusters:	Math and natural science General knowledge ☒ Core engineering fundamental knowledge Disciplinary knowledge Supportive knowledge Project/ Internship/ Graduate thesis

9. Course description

The Production Technique for Inorganic Binders 1 Course introduces in-depth knowledge on the fundamental types of inorganic binders used in construction, the most important of which is cement. This course provides knowledge on the composition, structures, physico-mechanical properties, technical requirements and scope of use of various types of inorganic binders; raw materials and production techniques of gypsum binders, lime binders; as well as raw materials and production techniques of several types of cement from clinker.

This course sets the foundation for subjects in the Professional Engineering Module such as PBL3, Production Technique for Inorganic Binders 2, Concrete Technology, Reinforcement Materials for Inorganic Binders,…

10. Course Learning Outcomes (CLOs)

After completing the course, students will be able to:

No.	Course Learning Outcomes (CLOs)	Knowledge	Skills	Attitude	Performance indicators PI (PLOs)
1	**Present** and **explain**: - The composition, structures, physico-mechanical properties, technical requirements and scope of use of various types of inorganic binders (gypsum binders, lime binders, cement)	a2. Understand		c1. Receive c2. Reply	1.2.8;8.1.1
2	**Present** and **explain**: - The quality assessment method of different types of inorganic binders, the selection methods of inorganic binders in accordance with the requirements of the construction works	a2. Understand		c1. Receive c2. Reply	1.2.8;8.1.1
3	**Present** and **explain**: - The composition and production techniques of gypsum binders and lime binders - The composition and production techniques of cement from cement clinker	a2. Understand		c1. Receive c2. Reply	1.3.4;
4	**Analyze** the technological factors affecting the quality of inorganic binders	a4. Analyze		c3. Attitude	1.2.9
5	**Establish** the production lines for gypsum binders, lime binders, and cement grinding plants	a3. Manipulate	b2.Manipulate	c3. Attitude c4. Organize	8.2.1;1.3.4

11. The relationship between course learning outcomes (CLOs) and program learning outcomes (PLOs)

PLOs	PLO1	PLO2	PLO3	PLO4	PLO5	PLO6	PLO7	PLO8
Contribution of the course	TU							T
CLO 1	X							X
CLO 2	X							X
CLO 3	X							
CLO 4	X							
CLO 5	X							X

12. Student responsibilities:

Students must perform the following tasks:

- Attend at least 80% of the lessons of the theoretical course;
- Participate in group work activities according to the regulations of the course;
- Prepare and participate in thematic reports on assigned topics;
- Self-study the problems assigned by the lecturer to solve outside of class time;
- Complete all performance assessment of the module.

13. Course assessments

The results of course assessments are based on the assessment of students' activities during the course of study, the mid-term exams and final exams as shown via the Performance Assessment; the evaluated Course Learning Outcomes; the rubrics, standards and weights of the assessments.

Students must participate in all lab sessions, one session of absence equals a 0 in the Lab Final Assessment (A4). Students who fail to achieve the lab score (less than 4.0 on a scale of 10) are not allowed to take the final theoretical exam and their final grade is entered as 0.

Type of Assessment	Performance Assessment (Ax.x)	Assessment Methods	Rubric	Assessment Weighting Percentage (%)	Component Weighting Percentage (%)	CLOs
A1. Ongoing Assessment	A1.1 Class Attendance	Diligence	Rubric 1.1	W1.1 50%	W1. 20%	CLO 1, 2, 3, 4, 5
	A1.2 Individual thematic report	Presentation	Rubric R1.2	W1.2 50%		CLO3
A2. Mid-term Assessment	A2.1 Mid-term exam	Multiple choice exam	According to the answer key and grading scale	W2.1 100%	W2. 20%	CLO 1, 2, 3
A3. Final Assessment	A3.1 Final exam	Written exam	According to the answer key and grading scale	W3.1 100%	W3. 60%	CLO 3, 4, 5

Rubric 1.1: Theoretical class attendance (Individual)

Rubric	Specified levels of standard					Weight
	F (0-3.9)	D (4.0-5.4)	C (5.5-6.9)	B (7.0-8.4)	A (8.5-10)	
Class Attendence	Student doesn't attend classes (< 30%).	Student rarely attends classes (<50%).	Student occasionally attends classes (<70%).	Student frequently attends classes (<90%).	Student always attends classes (100%).	**100%**

Rubric 1.2: Short Thematic Report (Individual)

Rubric	Specified levels of standard					Weight
	F (0-3.9)	D (4.0-5.4)	C (5.5-6.9)	B (7.0-8.4)	A (8.5-10)	

Content of Report	Student doesn't turn in the report	Content of report is incomplete or does not meet requirements	Content of report is complete, meets requirements, lacks problem assessment	Content of report is complete, meets requirements, includes problem assessment	Content of report is complete, meets requirements, includes problem assessment, includes new proposals	**50%**
Presentation of Report	Student presents content which does not meet requirements, speaks too quietly or too ambiguously	Student presents content which meets requirements, speaks too quietly, has no interaction with the audience	Student presents content which meets requirements, speaks clearly, has no interaction with the audience	Student presents content which meets requirements, speaks clearly, has occasional interaction with the audience	Student presents content which meets requirements, speaks clearly, has good interaction with the audience	**50%**

14. Teaching and Learning plan

Week/ Lesson	Contents	Teaching and learning activities	Performance Assessment	Course Learning Outcomes (CLOs)
1	**Course introduction:** - Course objectives. - Overview of course program and learning materials. - Organizational formats of teaching & learning, tasks of students corresponding to each form. - Assessment methods and weighting percentage (%).	Teaching activities: in lecture format Guide the students to prepare a lesson at home including: - Reading the course syllabus - Building a study plan - Prepare learning materials for classes	A1.1	
2	Introduction. **Introduction of Inorganic Binders** 1. Inorganic Binders - Concept 2. Inorganic Binders - Classification 3. Admixtures used in Inorganic Binders Production	Teaching activities: in lecture format - Prepare learning materials; government decrees and circulars related to demand, production capacity, and future planning of binders	A1.1 A2.1	CLO1
3	Chapter 1. **Gypsum Binders** 1.1. Concept 1.2. Raw materials in Gypsum Binder Production 1.3. The change of materials under the effect of temperature 1.4. Gypsum Binder Products: building gypsum, gypsum boards, anhydride gypsum	Teaching activities: in lecture format Lesson preparation guide: reading the learning materials in advance + Vu Dinh Dau, Bui Danh Dai, *Inorganic Binders*, Construction Publishing House, 2006 **(pg. 10-13)**.	A1.1 A2.1	CLO2
4	Chapter 1. **Cont.** 1.5. Production Technique of Gypsum Binders	Teaching activities: in lecture format	A1.1 A2.1	CLO3 CLO4 CLO5

	1.5.1 Drying-Grinding-Calcination Method 1.5.2. Concurrent Drying-Grinding-Calcination Method 1.5.3. Gypsum Raw Material Lump Calcination Method 1.5.4. Fluidized Bed Method 1.5.5. Dust Collection System in Gypsum Binder Production	Lesson preparation guide: reading the learning materials in advance + Vu Dinh Dau, Bui Danh Dai, *Inorganic Binders*, Construction Publishing House, 2006 **(pg. 14-25)**.		
5	Chapter 1. **Cont.** 1.6. Setting & Hardening Process 1.7. Physico-mechanical Properties & Scope of Use	Teaching activities: in lecture format Lesson preparation guide: reading the learning materials in advance + Vu Dinh Dau, Bui Danh Dai, *Inorganic Binders*, Construction Publishing House, 2006 **(pg. 26-36)**. **TCVN 8654 : 2011;** **TCVN 8256:2009.**	A1.1 A2.1	CLO2
6	Topic discussion on Gypsum Binders	Presenting reports, exchanging views	A.1.2	CLO1, CLO2
7	Chapter 2. **Lime Binders** 2.1. Classification 2.2. Raw materials in Lime Binder Production	Teaching activities: in lecture format Lesson preparation guide: reading the learning materials in advance + Vu Dinh Dau, Bui Danh Dai, *Inorganic Binders*, Construction Publishing House, 2006 **(pg. 37-59)**. **TCVN 2119: 1991;** **TCVN 9191: 2012.**	A1.1 A2.1	CLO2
8, 9	Chapter 2. **Cont.** 2.3. Production Techniques and Products 2.3.1. Quicklime 2.3.2. Hydrated Lime, Slaked Lime and Lime Slurry 2.3.3. Quicklime Powder and Calcium Carbonate	Teaching activities: in lecture format Lesson preparation guide: reading the learning materials in advance + Vu Dinh Dau, Bui Danh Dai, *Inorganic Binders*, Construction Publishing House, 2006 **(pg. 37-59)**. **TCVN 2119: 1991;** **TCVN 9191: 2012.**	A1.1 A2.1	CLO3 CLO4 CLO5
10	Chapter 2. **Cont.** 2.4. Setting & Hardening Process 2.5 Properties & Scope of Use of Air-Hardening Lime	Teaching activities: in lecture format Lesson preparation guide: reading the learning materials in advance + Vu Dinh Dau, Bui Danh Dai, *Inorganic Binders*, Construction Publishing House, 2006 **(pg. 60-65)**.	A1.1 A2.1	CLO1 CLO2

		TCVN 2231:2016.		
11	Topic discussion on Lime Binders	Presenting reports, exchanging views	A.1.2	CLO1, CLO2
12, 13	Chapter 3. **Portland Cement** 3.1. Cement Clinker - Concept & Classification 3.1.1. Concept 3.1.2 Mineral Composition of Cement Clinker 3.1.3. Chemical Composition of Cement Clinker 3.1.4. Classification of Cement Clinker	Teaching activities: in lecture format Lesson preparation guide: reading the learning materials in advance + Vu Dinh Dau, Bui Danh Dai, *Inorganic Binders*, Construction Publishing House, 2006 **(pg. 66-72).** + Vu Dinh Dau, *Technology and Equipment in Cement Production*, Construction Publishing House, 2009 **(pg. 5-15).** **TCVN 7024 : 2013.**	A1.1 A2.1	CLO1
14	Chapter 3. **Cont.** 3.2. Cement - Concept & Classification 3.2.1. Concept 3.2.2. Classification	Teaching activities: in lecture format Lesson preparation guide: reading the learning materials in advance + Vu Dinh Dau, Bui Danh Dai, *Inorganic Binders*, Construction Publishing House, 2006 **(pg. 66-72).** + Vu Dinh Dau, *Technology and Equipment in Cement Production*, Construction Publishing House, 2009 **(pg. 5-15).** **TCVN 5439:2004.**	A1.1 A2.1	CLO1
15	Chapter 3. **Cont.** 3.3. Cement Production Techniques using Clinker 3.3.1. Raw Materials Preparation 3.3.1.1. Purposes, Requirements, Meanings 3.3.1.2. Types of Admixtures mixed into Cement and Technological Admixtures	Teaching activities: in lecture format Lesson preparation guide: reading the learning materials in advance + Vu Dinh Dau, Bui Danh Dai, *Inorganic Binders*, Construction Publishing House, 2006 **(pg. 8-9).** + Vu Dinh Dau, *Technology and Equipment in Cement Production*, Construction Publishing House, 2009 **(pg. 6-18).** **TCVN 6682:2016.**	A1.1 A3.1	CLO3 CLO4 CLO5
16, 17	Chapter 3. **Cont.** 3.3.1.3. Raw Materials Preparation Stages + Quarrying & transportation + Preliminary processing + Preliminary homogenization + Storage & preservation of raw materials	Teaching activities: in lecture format Lesson preparation guide: reading the learning materials in advance	A1.1 A3.1	CLO3 CLO4 CLO5

		+ Vu Dinh Dau, Bui Danh Dai, *Inorganic Binders*, Construction Publishing House, 2006 **(pg. 104-115).** **+** Vu Dinh Dau, *Technology and Equipment in Cement Production*, Construction Publishing House, 2009 **(pg. 42-44 + pg.112-115).**		
18	Chapter 3. **Cont.** 3.3.2. Cement – Crushing & Grinding 3.3.2.1. Concept 3.3.2.2 Effect of Fineness on Properties of Cement	Teaching activities: in lecture format Lesson preparation guide: reading the learning materials in advance + Vu Dinh Dau, Bui Danh Dai, *Inorganic Binders*, Construction Publishing House, 2006 **(pg. 182-184).** **+** Vu Dinh Dau, *Technology and Equipment in Cement Production*, Construction Publishing House, 2009 **(pg. 244-257).**	A1.1 A3.1	CLO3 CLO4
19	Chapter 3. **Cont.** 3.3.2.3. Theoretical Basis of the Grinding Process	Teaching activities: in lecture format Lesson preparation guide: reading the learning materials in advance + Vu Dinh Dau, Bui Danh Dai, *Inorganic Binders*, Construction Publishing House, 2006 **(pg. 182-184).** **+** Vu Dinh Dau, *Technology and Equipment in Cement Production*, Construction Publishing House, 2009 **(pg. 244-257).**	A1.1 A3.1	CLO3 CLO4
20, 21, 22	Chapter 3. **Cont.** 3.3.2.4. Grinding Equipment & Procedure	Teaching activities: in lecture format Lesson preparation guide: reading the learning materials in advance + Vu Dinh Dau, Bui Danh Dai, *Inorganic Binders*, Construction Publishing House, 2006 **(pg. 185-190).** **+** Vu Dinh Dau, *Technology and Equipment in Cement Production*, Construction Publishing House, 2009 **(pg. 244-257).**	A1.1 A3.1	CLO3 CLO4 CLO5
23, 24	Chapter 3. **Cont.** 3.4. Auxiliary Equipment 3.4.1. Transportation Equipment 3.4.2. Dust Collection Equipment 3.4.3. Sorting Equipment	Teaching activities: in lecture format Lesson preparation guide: reading the learning materials in advance	A1.1 A3.1	CLO3 CLO4 CLO5

		+ Vu Dinh Dau, *Technology and Equipment in Cement Production*, Construction Publishing House, 2009 **(pg. 264-293).**		
25	Topic discussion on Auxiliary Equipment	Presenting reports, exchanging views	A.1.2	CLO4, CLO5
26, 27	Chapter 3. **Cont.** 3.5. Preservation and Packaging 3.5.1. Purposes, Requirements 3.5.2. Cement Silos 3.5.3. Packing Procedure	Teaching activities: in lecture format Lesson preparation guide: reading the learning materials in advance + Vu Dinh Dau, Bui Danh Dai, *Inorganic Binders*, Construction Publishing House, 2006 **(pg. 291-293).** + Vu Dinh Dau, *Technology and Equipment in Cement Production*, Construction Publishing House, 2009 **(pg. 257-260).**	A1.1 A3.1	CLO3 CLO4 CLO5
28, 29	Chapter 3. **Cont.** 3.3. Types of Cement (composition, production method, technical requirements, scope of use) 3.3.1. PC 3.3.2. PCB 3.3.3. PC_{puz} 3.3.4. PCB_{BFS} 3.3.5. PC_{SR} 3.3.6. Multi-component Cement 3.3.7. High-Strength Cement 3.3.8. White & Colored Cement 3.3.9. Expansive Cement 3.3.10. Anti-radiation Cement 3.3.11. Cement for Pavements & Airports 3.3.12. Alumina Cement	Teaching activities: in lecture format Lesson preparation guide: reading the learning materials in advance + Assoc. Prof. Dr. Hoang Van Phong, *20 Types of Cement and Production Technology*, Science and Technics Publishing House, 2006 + TCVN on technical requirements and test methods for physico-mechanical properties of cement	A1.1 A3.1	CLO1 CLO2 CLO3
30	**Revision**			

15. Learning Materials:

15.1. Books, lectures, main textbooks:

[1] Vu Dinh Dau, Bui Danh Dai, *Inorganic Binders*, Construction Publishing House, Hanoi, 2006

[2] Vu Dinh Dau, *Technology and Equipment in Cement Production*, Construction Publishing House, Hanoi, 2009

15.2. Reference materials:

[3] Bui Van Boi, Bui Danh Dai, Hoang Thuy Sy, *Silicate Physical Chemistry*, University of Civil Engineering, 1991

[4] Bui Van Chen, *Binder Technology*, Construction Publishing House, 1987

[5] Nguyen Kim Huan, Bach Dinh Thien, *Thermal Equipment in Construction Material Production*, Science and Technics Publishing House, Hanoi, 1996

[6] Doan Tai Ngo, Nguyen Thieu Xuan, Tran Van Tuan, Nguyen Thi Thanh Mai, Nguyen Kiem Anh, *Equipment in Construction Materials & Components Production*, Construction Publishing House, 2000
[7] Hoang Van Phong, *20 Types of Cement and Production Technology*
[8] *http://*www.tcxdvn.xaydung.gov.vn
[9] TCVN, Construction Materials Standards

16. Scientific code of ethics:

- Students are not allowed to copy each other's assignments verbatim.
- Students must not use reference materials in mid-term exams.
- Students must not use audio-visual equipment in the examination room.

17. Approved date: xx/xxx/2022

18. Approved by:

Dean of Faculty	Program chair	Lecturer in charge
Cao Van Lam, PhD.	**Vo Duy Hung, PhD.**	**Nguyen Thi Tuyet An, M.Sc.**

41. PBL3 - Production Technique for Inorganic Binders 1

THE UNIVERSITY OF DANANG
UNIVERSITY OF SCIENCE AND TECHNOLOGY
Faculty of Road and Bridge Engineering

SOCIALIST REPUBLIC OF VIETNAM
Independence - Freedom - Happiness

UNDERGRADUATE PROGRAM

Awarded degree: Undergraduate/Bachelor

Name of the study program: Construction Materials Engineering and Technology Program Code: 7510105

SYLLABUS

Course name (Vietnamese): PBL3 - Kỹ thuật sản xuất Chất kết dính vô cơ 1
English name: PBL3 - Production Technique for Inorganic Binders 1

1. Course code:	1092760
2. Course abbreviation:	PBL3 - Production Technique for Inorganic Binders 1
3. Credits: **ECTS credits (*):**	1.,5 credits (45 periods) 2,50
4. Study workload:	
- Lecture:	30 periods
- Exercise:	
- Practice/ Laboratory:	15 periods
- Self-study/Assignment:	45 periods
5. Lecturers in charge	
- Faculty/Division in charge:	Construction Materials Division/Faculty of Road and Bridge Engineering
- Course coordinator:	Nguyen Thi Tuyet An, M.Eng.
- Other lecturers:	Lecturers of Construction Materials Division
6. Required and recommended prerequisites for joining the course:	
- Required prerequisite:	None
- Recommended prerequisite:	Construction Materials; Industrial Architecture
- Corequisite:	Production Technique for Inorganic Binders 1
7. Type of course	☒ Compulsory Selected elective Free elective
8. Knowledge clusters:	Math and natural science General knowledge ☒ Core engineering fundamental knowledge Disciplinary knowledge

	Supportive knowledge Project/ Internship/ Graduate thesis

9. Course description:

Project of Production Technique for Inorganic Binders 1, which is an interdisciplinary course combining 03 modules: Production Technique for Inorganic Binders 1, Construction Materials, and Industrial Architecture, is organizationally placed in the 6th semester.

The content of this course is to synthesize the fundamental engineering knowledge and professional engineering knowledge students have acquired in order for them to create an engineering design of a production plant/workshop for gypsum binders, lime binders, or cement from cement clinker, which shall include 02 parts:

Part 1: Production Plant/Workshop Design

- Select raw materials & production methods
- Establishing a production line
- Calculate mass balance
- Calculate and select equipment for the production line
- Create production plant/workshop layout

Part 2: Choose 01 of the following experimental directions

- Experiment with product manufacturing and product quality control for gypsum binders and lime binders
- Experiment to determine the mixing ratio of admixtures and perform cement quality control according to that ratio
- Experiment to determine the type of admixtures and perform cement quality control according to that ratio
- Experiment with assessment of the effect of the fineness of grinding on cement quality

The module provides the students with analytical reasoning and problem solving skills, communication skills, and teamwork skills, as well as an improvement in critical thinking, self-awareness, and knowledge integration skills.

10. Course Learning Outcomes (CLOs):

After completing the course, students will be able to:

No.	Course Learning Outcomes (CLOs)	Knowledge	Skills	Attitude	Performance indicators PI (PLOs)
1	**Apply** fundamental engineering knowledge and professional engineering knowledge to design production plant/workshop for gypsum binders, lime binders, or cement from cement clinker (Part 1)	a3.Manipulate		c4. Organize	1.4.3; 3.1.1; 4.1.1; 7.1.2; 8.1.2
2	**Analyze, select and propose** an effective production plan	a4.Analyze		c5. Personalize	1.4.3; 3.1.2; 4.2.1; 8.1.1
3	**Perform** binder quality control according to the chosen experimental direction (Part 2)	a3.Manipulate	b2.Manipulate	c4. Organize	2.1.1; 5.1.3
4	**Present** the results of the group's PBL implementation: project description, drawings, reports		b4. Competency	c3. Attitude	1.4.3; 8.1.1

5	**Organize** effective small group work		b4. Compe-tency	c4. Organ-ize	5.1.2

11. The relationship between course learning outcomes (CLOs) and program learning outcomes (PLOs):

PLOs	PLO1	PLO2	PLO3	PLO4	PLO5	PLO6	PLO7	PLO8
Contribution of the course	U	T	T	T	U		U	TU
CLO 1	X		X	X			X	X
CLO 2	X		X	X				X
CLO 3		X			X			
CLO 4	X							X
CLO 5					X			

12. Student responsibilities:

Students must perform the following tasks:

- Attend at least 80% of the lessons of the theorical course,
- Attend 100% of the lab sessions of the course, more than 01 lab session of absence (without the lecturer's permission) or a Lab Final Assessment (A2) result of < 5 points (on scale of 10) equals denial from sitting the final theoretical exam.
- Participate in group work activities according to the regulations of the course;
- Self-study the problems assigned by the lecturer to solve outside of class time;
- Comply with the rules and regulations of lecturers and instructors;
- Implement and present the contents of the project in accordance with the assigned tasks
- Engage in topic/content group discussion in the tutorial sessions;
- Attend the periodic project quality inspection and evaluation organized by lecturers and instructors.
- Attend the project defense in accordance with the regulations of the Division and the Faculty.

13. Course assessments

The results of course assessments are based on the assessment of students' activities during the course of study, the mid-term exams and final exams as shown via the Performance Assessment; the evaluated Course Learning Outcomes; the rubric, standards and weights of the assessments.

Type of Assessment	**Performance Assessment (Ax.x)**	**Assessment Methods**	**Rubric**	**Assessment Weighting Percentage (%)**	**Component Weighting Percentage (%)**	**CLOs**
A1. Ongoing Assessment	A1.1 Project guide participation	Diligence, discussion	Rubric 1.1	W1.1 50%	W1. 30%	CLO1
	A1.2 Group lab work participation	Diligence, lab experiment data report	Rubric R1.2	W1.2 50%		CLO3 CLO5
A2. Project Implementation	A2.1 Project description	Project description	Rubric R2.1	W2.1 70%	W2. 20%	CLO1 CLO3

Type of Assessment	Performance Assessment (Ax.x)	Assessment Methods	Rubric	Assessment Weighting Percentage (%)	Component Weighting Percentage (%)	CLOs
Results Assessment						CLO4
	A2.2 Drawings	Drawings	Rubric R2.2	W2.2 30%		CLO5
A3. Final Assessment	A3.1 Presentation of project contents	Oral report, presentation	Rubric R3.1	W3.1 30%	W3. 50%	CLO1 CLO3 CLO4
	A3.2 Answer questions related to the project	Presentation on Defense Day	Rubric R3.2	W3.2 70%		CLO1 CLO2 CLO3 CLO4

Rubric 1.1: Project guide participation

Rubric	Specified levels of standard					Weight
	F (0-3.9)	D (4.0-5.4)	C (5.5-6.9)	B (7.0-8.4)	A (8.5-10)	
Attendence	< 30%	<50%	<70%	<90%	100%	**50%**
Discussion	Student never engages in class discussions	Student rarely engages in class discussions by offering ideas	Student occasionally engages in class discussions by offering ideas during class hour	Student frequently engages in class discussions by offering ideas during class hour	Student always engages in class discussions by offering ideas effective for class activities	**50%**

Rubric 1.2: Group lab work participation

Rubric	Specified levels of standard					Weight
	F (0-3.9)	D (4.0-5.4)	C (5.5-6.9)	B (7.0-8.4)	A (8.5-10)	
Attendance	< 30%	<50%	<70%	<90%	100%	**50%**
Lab experiment	Student attends lab session but doesn't participate in any experiments	Student attends lab session & participates in a few experiments	Student attends lab session & participates in most experiments	Student attends lab session & participates in all experiments. Student engages in discussions to offer ideas for the group	Student attends lab session & participates in all experiments. Student frequently engages in discussions to offer effective ideas for the group	**50%**

Rubric 2.1: Project implementation result assessment via project description

Rubric	Specified levels of standard					Weight
	F (0-3.9)	**D (4.0-5.4)**	**C (5.5-6.9)**	**B (7.0-8.4)**	**A (8.5-10)**	
Content of Report/ Project	Content is incomplete or doesn't meet requirements.	Content is complete and meet requirements. Several calculation errors remain, some sections are illogical.	Content is complete and meet requirements. A few calculation errors remain, some sections are illogical.	Content is complete and meet requirements, calculation is logical in sequence and accurate in results. Content is not convincing due to lack of specific analysis & explanation.	Content is complete and meet requirements, calculation is specific, unambiguous, logical in sequence and accurate in results. Content is convincing thanks to specific analysis & explanation.	**80%**
Presentation of Report/ Project Description	Description is incomplete or doesn't meet requirements.	Order of description is incorrect. Content meets requirements. Figures and tables still contradict the content.	Content & order of description meet requirements. Some spelling errors remain, dimensions & notes are incomplete.	Content meets requirements, sequence & structure are logical. Figures & tables are unambigious & logical with applicable notes. Description presentation shows limited editorial skills.	Content meets requirements, sequence & structure are logical. Figures & tables are unambigious & logical with applicable notes. Description presentation shows good editorial & calculation skills.	**20%**

Rubric 2.2: Drawings

Rubric	Specified levels of standard					Weight
	F (0-3.9)	**D (4.0-5.4)**	**C (5.5-6.9)**	**B (7.0-8.4)**	**A (8.5-10)**	
Technical Drawings & Figures	There are no drawings or an insufficient number of drawings or content of drawings	There is a sufficient number of drawings/figures with content meeting requirements. Dimensions & notes are not	There is a sufficient number of drawings with content meeting requirements. Dimensions & notes are	There is a sufficient number of drawings (03 drawings) with content meeting requirements. Components	There is a sufficient number of drawings (03 drawings) with content meeting requirements. Components	**100%**

Rubric	Specified levels of standard					Weight
	F (0-3.9)	**D (4.0-5.4)**	**C (5.5-6.9)**	**B (7.0-8.4)**	**A (8.5-10)**	
	does not meet requirements.	shown or are not clearly shown or missing some parts on the drawings	clearly shown. Some presentation errors remain (spelling, lines)	are properly organized. Dimensions & notes are complete & clearly shown.	are properly organized. Dimensions & notes are complete & clearly shown. Drawings show proficiency with drawing tools on computers, which can be applied in practical construction works	

Rubric 3.1: Presentation

Rubric	Specified levels of standard					Weight
	F (0-3.9)	**D (4.0-5.4)**	**C (5.5-6.9)**	**B (7.0-8.4)**	**A (8.5-10)**	
Content	Content does not meet requirements.	Content meets requirements but contains multiple errors.	Content meets requirements. The terms in use are obscure & ambiguous.	Content meets requirements. The terms in use are simple & easy to understand.	Content meets requirements. The terms in use are simple & easy to understand. Content order is logical.	**70%**
Presentation	Presentation lacks logic or exceeds beyond allotted time, terms in use are incorrect, pronuciation is unclear, speaking voice is low, audience doesn't understand.	Presentation is complete, speaking voice is low, pronunciation of certain words is unclear, terms in use are overly complicated, no interactions with audience.	Presentation has a clear 3-part outline (introduction, body & conclusion), speaking voice is clear & easy to listen to, presentation doesn't exceed allotted time, occasional interaction with audience, audience can	Presentaion is concise & easy to understand, terms in use are simple & unambiguous, has a clear 3-part outline (introduction, body & conclusion), speaking voice is clear with a fluent delivery, presentation doesn't exceed	Presentaion is brief & has a clear 3-part outline (introduction, body & conclusion), speaking voice is clear & engaging with a fluent delivery, presentation doesn't exceed allotted time, effective interaction with	**30%**

Rubric	Specified levels of standard					Weight
	F (0-3.9)	**D (4.0-5.4)**	**C (5.5-6.9)**	**B (7.0-8.4)**	**A (8.5-10)**	
			understand & follow the presentation.	allotted time, effective interaction with audience, audience can understand & follow the presentation.	audience, audience can understand & follow the entire presentation.	

Rubric 3.2: Answering questions

Rubric	Specified levels of standard					Weight
	F (0-3.9)	**D (4.0-5.4)**	**C (5.5-6.9)**	**B (7.0-8.4)**	**A (8.5-10)**	
Attitude when answering	Student displays rude, uncooperative, disrespectful attitude when communicating & answering questions, uses inappropriate terms, slurred voice.	Student displays civil attitude when communicating & answering questions, uses overly complicated & obscure terms, speaking voice is low, shows lack of confidence.	Student displays gentle & pleasant attitude when communicating & answering questions, speaking voice is clear & easy to listen to, uses appropriate & simple terms.	Student displays confident, gentle & calm attitude when communicating & answering questions, speaking voice is clear with fluent delivery, uses appropriate & simple terms.	Student displays highly confident attitude when communicating & answering questions, speaking voice is clear with fluent & engaging delivery, effective interaction with audience.	**20%**
Content of answer	The answers are completely unrelated to the questions.	The answers are unclear, almost unrelated to the question, do not focus on the point of the question.	The answers are focus on the point of the question & related to the question but student lacks confidence.	The answers are concise, clear, complete & related to the question, student shows confidence & knowledge in their answers, arguments & explanations are not convincing.	The answers are concise, clear, complete & related to the question, student shows confidence in their answers, arguments & explanations are completely convincing.	**80%**

14. Teaching and learning plan

Week/ Lesson (3 periods)	Contents	Teaching and learning activities	Performance Assessment	Course Learning Outcomes (CLOs)
1, 2	**Course Introduction** - Course objectives. - Overview of course program and learning materials. - Organizational formats of teaching & learning, tasks of students corresponding to each format. - Assessment methods and weighting percentage. **Project Task Assignments** Chapter 1: **General Product Introduction**	**Teaching activities and experiment plan development guideline:** - Instruct students to form project groups, publish project guideline and general requirements on the implementation of project for student groups. - Approve the project groups and assign project data including the assignment sheet, monitoring sheet, and project guideline. - Instruct students on how to collect materials **In-class learning activities:** - Follow the instructor's guide - Raise questions or propose ideas **Self-learning activities:** - Gather required materials and research related materials - Write a report on the implementation results of Chapter 1	A1.1	CLO2
3, 4	Chapter 2: **Production Material Selection** **Experiments:** - Objectives of experiments - Overview of experiments - Organizational formats of teaching and learning, tasks of students corresponding to each format. - Assessment methods and weighting percentage. **Raw Material Inputs** 1/ Absolute density 2/ Plasticity	**Teaching activities:** - Instruct and answer students' questions. **In-class learning activities:** - Follow the instructor's guide - Raise questions or propose ideas - Present the implementation results of Chapter 1 in groups. - Conduct experiments according to instructions & record data. **Self-learning activities:**	A1.1	CLO1 CLO2 CLO4 CLO5 CLO6

Week/ Lesson (3 periods)	Contents	Teaching and learning activities	Performance Assessment	Course Learning Outcomes (CLOs)
	3/ Setting time 4/ Strength 5/ Fineness 6/ Activity ... Other properties	- Gather required materials and research related materials - Write a report on the implementation results of Chapter 2 - Read the standards relevant to the assigned products in advance - Write a report on the experiment results of Lab Session 1.		
5, 6	Chapter 3: **Production Technology Selection** **Product or test sample manufacturing** 1/ Calculate material inputs 2/ Manufacture products according to standards or group proposals 3/ Cure products or test samples	**Teaching activities:** - Instruct and answer students' questions. **In-class learning activities:** - Follow the instructor's guide - Raise questions or propose ideas - Present the implementation results of Chapter 2 in groups. **Self-learning activities:** - Gather required materials and research related materials - Write a report on the implementation results of Chapter 3 - Write a report on the experiment results of Lab Session 2.	A1.1	CLO1 CLO2 CLO4 CLO5 CLO6
7, 8	Chapter 4: **Experiment Results** **Product Quality Control** 1/ Conduct tests to check the physico-mechanical properties of products or test samples 2/ Compare results with technical requirements or group objectives 3/ Propose solutions to improve product quality	**Teaching activities:** - Instruct students on how to develop experiment plan, process data, and report experiment results - Answer students' questions. **In-class learning activities:** - Follow the instructor's guide - Develop experiment plan	A1.1	CLO2 CLO4 CLO5 CLO6

Week/ Lesson (3 periods)	Contents	Teaching and learning activities	Performance Assessment	Course Learning Outcomes (CLOs)
		- Present the implementation results of Chapter 3 in groups. **Self-learning activities:** - Gather required materials and research related materials - Write a report on the implementation results of Chapter 4.		
9, 10	Chapter 5. **Mass balance calculation**	**Teaching activities:** - Instruct and answer students' questions. **In-class learning activities:** - Follow the instructor's guide - Raise questions or propose ideas - Present the implementation results of Chapter 1 in groups. **Self-learning activities:** - Gather required materials and research related materials - Write a report on the implementation results of Chapter 5.	A1.1	CLO1 CLO2 CLO3 CLO4
11, 12	Chapter 6. **Equipment Calculation and Selection**	**Teaching activities:** - Instruct and answer students' questions. **In-class learning activities:** - Follow the instructor's guide - Raise questions or propose ideas - Present the implementation results of Chapter 4 in groups. **Self-learning activities:** - Gather required materials and research related materials - Write a report on the implementation results of Chapter 5.	A1.1	CLO1 CLO2 CLO3 CLO4

Week/ Lesson (3 periods)	Contents	Teaching and learning activities	Performance Assessment	Course Learning Outcomes (CLOs)
13, 14, 15	Chapter 7. **Conclusion & Recommendations**	**Teaching activities:** - Instruct and answer students' questions. **In-class learning activities:** - Follow the instructor's guide - Raise questions or propose ideas - Present the implementation results of Chapter 5 in groups. **Self-learning activities:** - Gather required materials and research related materials - Write a report on the implementation results of Chapter 2.	A1.1	CLO3

15. Learning Materials:

15.1. Books, lectures, main textbooks:

[1] Huynh Phuong Nam, Nguyen Thi Tuyet An, Do Thi Phuong, *Construction Materials*, Construction Publishing House, Hanoi, 2016.

[2] Construction Materials Division, *Construction Materials Laboratory Manual* (for internal use only)

15.2. Reference materials:

[1] Phung Van Lu, Pham Duy Huu, Phan Khac Tri, *Construction Materials*, Vietnam Education Publishing House, Hanoi, 2001.

[2] Pham Duy Huu, Ngo Xuan Quang, *Construction Materials*, Transport Publishing House, Hanoi, 2004.

[3] Ministry of Construction, *Technical Manual for Concrete Composition Selection*, Construction Publishing House, Hanoi, 2000.

[4] TCVN, Construction Materials Standards

16. Scientific code of ethics:

- Students are not allowed to copy each other's assignments verbatim.
- Students must not use reference materials in mid-term exams.
- Students must not use audio-visual equipment in the examination room.

17. Approved date: xx/xxx/2022

18. Approved by:

Dean of Faculty	Program chair	Lecturer in charge
Cao Van Lam, PhD.	**Vo Duy Hung, PhD.**	**Nguyen Thi Tuyet An, M.Sc.**

42. Experimental Planning

THE UNIVERSITY OF DANANG
UNIVERSITY OF SCIENCE AND TECHNOLOGY
Faculty of Road and Bridge Engineering

SOCIALIST REPUBLIC OF VIETNAM
Independence - Freedom - Happiness

UNDERGRADUATE PROGRAM

Awarded degree: Undergraduate/Bachelor

Name of the study program: Construction Materials Engineering and Technology Program Code: 7510105

SYLLABUS
Course name (Vietnamese): Quy hoạch thực nghiệm
English name: Experimental Planning

1. Course Code:	1093060
2. Course Abbreviation	Experimental Planning
3. Credits: **ECTS credits (*):**	03 credits (45 Periods) 4,25
4. Study workload:	
- Lecture:	30 Periods
- Exercise:	15 Periods
- Practice/ Laboratory:	0
- Self-study/Assignment:	90 Periods
5. Responsible persons	
- Faculty/Division in charge:	Construction materials Division/ Faculty of Road and Bridge Engineering
- Course coordinator:	PhD. Huynh Phuong Nam
- Other lecturers:	PhD. Nguyen Van Quang
6. Required and recommended prerequisites for joining the course:	
- Required prerequisite:	None
- Recommended prerequisite:	Probability and Statistics, Linear Algebra, Construction Materials
- Corequisite:	None
7. Type course:	☒ Compulsory Selected elective Free elective
8. Knowledge clusters:	Math and natural science General knowledge ☒ Core engineering fundamental knowledge Disciplinary knowledge Supportive knowledge Project/ Internship/ Graduate thesis

9. Course description

The course equips students with the ability to apply mathematical methods to find out the relationship rules between factors affecting the research process and optimize experimental processes. The course introduces some parameters of random quantities, methods of building regression models, experimental planning methods of level 1, level 2, and some optimization methods. Besides, the module introduces some application software for calculation and describes the process of experimental planning.

10. Course Learning Outcomes

After completing the course, students will be able to

NO	Course Learning Outcomes (CLOs)	Knowledge	Skills	Attitude	Performance indicators (belongs to PLOs)
1	**Presenting** and **explaining** the meaning of statistical terms	a2. Understanding			1.1.3
2	**Calculating** the model representing the relationship between the dependent variable according to the independent variables from the experimental data table	a3. Applying	b2. Applying		2.2.4 7.1.4
3	**Analyzing** the influence of the independent variable on the dependent variable	a4. Analyzing			1.1.8
4	**Designing** an orthogonal first-order experimental design, and quadratic rotation-orthogonal composite experimental design.	a3. Applying		c3. Reacting	1.1.1 1.1.3
5	**Designing** an experimental plan to find extremes	a3. Applying			1.1.1 1.1.3

11. The relationship between course learning outcomes (CLOs) and program learning outcomes (PLOs)

PLO	PLO1	PLO2	PLO3	PLO4	PLO5	PLO6	PLO7	PLO8
Contribution of the course	T	T					T	
CLO 1	X							
CLO 2		X					X	
CLO 3	X							
CLO 4	X							
CLO5	X							

12. Student responsibilities

Students must perform the following tasks:

- Attending at least 80% of the lessons of the course;
- Participating in teamwork activities according to the regulations of the class;
- Self-studying the problems assigned by the lecturer to do outside of class hours;
- Completing all course assessments.

13. Course assessments

Type of assessment	Performance assessment	Assessment methods	Rubric	Weighting percentage (%)		Course learning outcomes (CLOs)
A1. Ongoing assessment	A1.1. Class Attendance	Attendance check	Rubric 1	50	20	
	A1.2. Group Assessment	Group homework	Rubric 2	50		CLO2, CLO3, CLO4
A2. Mid-term Assessment	A2.1. Mid-term exam	Multiple-choice	According to the answer and grading scale	100	20	CLO1
A3. Final Assessment	A3.1. Group presentation	Oral presentation in class	Rubric 3	30	60	CLO1, CLO2 CLO3, CLO4
	A3.2. Final exam	P3. Written exam	According to the answer and grading scale	70		CLO1, CLO2,

14. Teaching and learning plan

Weeks/ Periods (4 Periods/ session)	Detailed contents of the course	Teaching and learning activities	Performance assessment	Course learning outcomes (CLOs)
1	**Course introduction.** - Course objectives. - Preliminary content of the entire course program and study materials. - Organizational forms of teaching, tasks of students in each form of teaching. - Evaluation forms and rates. **Chapter 1. General introduction to Experimental Planning** ***1.1 Experimental parameters*** 1.1.1. Random quantity 1.1 2. Measurement error 1.1 3. Appreciable error 1.1.4. Systematic error 1.1.5. Random error ***1.2 Numerical characteristics of random quantities*** 1.2.1. Populations and samples 1.2.2. Average value 1.2.3. Median 1.2.4. Variance 1.2.5. Standard deviation 1.2.6. Standard error	Teaching: lecture form + quick Q&A Instructions for preparing homework before going to class: - Read the course outline - Develop a study plan - Prepare study materials. - Pre-read the document: + Experimental planning (Nguyen Minh Tuyen) + Lecture on Experimental Planning	A1.1 A1.2	CLO1

	1.2.7. Meaning of variance, standard deviation, standard error 1.2.8. Measurement accuracy and reliability ***1.3 Experimental planning*** 1.3.1. Research subjects 1.3.2. Basic principles 1.3.3. Classification of experimental planning 1.3.4. The steps of experimental planning 1.3.5. The main methods of developing experimental plans			
2	**Chapter 2. Methods of regression analysis** ***2.1 Overview*** 2.2.1. Question 2.2.2. Independent variable and dependent variable ***2.2 Univariate linear regression*** 2.2.1. Univariate linear regression model 2.2.2. Estimation of regression coefficients 2.2.3. Example (exercise) 2.2.4 Calculation of univariate regression by Excel and R software	Teaching: lecture form + quick Q&A + class exercises + homework correction Instructions for preparing the lesson: read the material + Experimental planning (Nguyen Minh Tuyen) + Lecture on Experimental Planning	A1.1 A1.2	CLO1 CLO2
3	**Chapter 2. continued** ***2.3 Multivariable linear regression*** 2.3.1. Multivariable linear regression model 2.3.2. Estimation of regression coefficients 2.3.3. Example (exercise) 2.3.4 Multivariable regression calculation using Excel and R software	Teaching: lecture form + quick Q&A + class exercises + homework correction Instructions for preparing the lesson: read the material + Experimental planning (Nguyen Minh Tuyen) + Lecture on Experimental Planning	A1.1 A1.2	CLO1 CLO2
4	**Chapter 2. continued** ***2.4 Reliability of regression model*** 2.4.1. Normal distribution 2.4.2. Hypothesis testing in statistics 2.4.3. T-test 2.4.4. Checking the reliability of the regression model 2.4.5. Example (exercise)	Teaching: lecture form + quick Q&A + class exercises Instructions for preparing the lesson: read the material + Experimental planning (Nguyen Minh Tuyen) + Lecture on Experimental Planning	A1.1 A1.2	CLO1 CLO2

	Chapter 3. Method of selecting influencing factors ***3.1 Selection of input factors*** 3.1.1. Requirements for variables 3.1.2. Bases for selecting input factors ***3.2 Screening experiments according to the saturation scheme*** ***3.3 Grouping of inputs and selecting evaluation objectives*** ***3.4 The influence of axioms in regression analysis on the choice of independent factors***			
5	**Chapter 3. Continued** ***3.5 Exercises*** ***3.6 Correction of homework***	Teaching: classwork + homework correction Lesson preparation guide: review the lesson of week 4	A1.1 A1.2	CLO1 CLO3
6	**Chapter 4. Linear regression plan with 2 optimal levels** ***4.1 Concepts*** 4.1.1. Experimental plan 4.1.2. Factor levels 4.1.3. Encoding value (encoding variable) 4.1.4. Experimental Plan Matrix 4.1.5. Level of the plan ***4.2 Fully linear regression plan with 2 optimal levels*** 4.2.1. How to organize an experiment? 4.2.2. Some forms of the first order regression equation 4.2.3. Calculate the coefficients b in the regression equation 4.2.4. Check the significance of the coefficients b 4.2.5. Check the compatibility of the regression equation	Teaching: lecture form Instructions for preparing the lesson: read the material + Experimental planning (Nguyen Minh Tuyen) + Lecture on Experimental Planning	A1.1 A1.2	CLO1 CLO2 CLO3 CLO4
7	**Chapter 4. Continued** ***4.2 Fully linear regression plan with 2 optimal levels (cont.)*** 4.2.1. Exercise 4.2.2 Correction of exercises	Teaching: classwork + homework correction Lesson preparation guide: review lesson week 6	A1.1 A1.2	CLO2 CLO3 CLO4
8	**Chapter 4. Continued** ***4.3 Partly linear regression plan with 2 optimal levels*** 4.3.1. Purpose	Teaching: lecture format + class work + homework correction Instructions for preparing	A1.1 A1.2	CLO1 CLO2 CLO4

	4.3.2. How to organize an experiment? 4.3.3. Example (exercise) **Chapter 5. Non-linear regression plan** ***5.1. Preamble*** ***5.2. Perpendicularly mutual non-linear regression plan*** 5.2.1. Regression equation form 5.2.2. Number of experiments 5.2.3. Determine the swing arm a 5.2.4. Transformation to form an orthogonal matrix 5.2.5. Calculation of coefficients b	the lesson: read the material + Experimental planning (Nguyen Minh Tuyen) + Lecture on Experimental Planning		
9	**Chapter 5. Continued** ***5.2. Perpendicularly mutual non-linear regression plan (cont.)*** 5.2.6. Check the significance of the coefficients b 5.2.7. Check the compatibility of the regression equation 5.2.8. Example (exercise)	Teaching: lecture format + class work + homework correction Instructions for preparing the lesson: read the material + Experimental planning (Nguyen Minh Tuyen) + Lecture on Experimental Planning	A1.1 A1.2	CLO1 CLO3 CLO4
10	**Chapter 5. Continued** ***5.3. Central-rotation mutual non-linear regression plan*** 5.3.1. Number of experiments 5.3.2. Determine the swing arm a 5.3.3. Number of experiments at center 5.3.4. Experimental planning 5.3.5. Calculation of coefficients b 5.3.6. Check the significance of the coefficients b 5.3.7. Check the compatibility 5.3.8. Example (exercise)	Teaching: form of lecture Instructions for preparing the lesson: read the material + Experimental planning (Nguyen Minh Tuyen) + Lecture on Experimental Planning	A1.1 A1.2	CLO1 CLO2 CLO4
11	**Chapter 6.** Experimental planning to find extremes ***6.1. Set math problem*** ***6.2. The Box-Wilson climb method*** 6.2.1. Sequence of planning 6.2.2. Example (exercise)	Teaching: lecture form + quick Q&A + exercises Instructions for preparing the lesson: read the material + Experimental planning (Nguyen Minh Tuyen) + Lecture on Experimental Planning	A1.1 A1.2	CLO1 CLO5
12	**Review all the lessons**	Teaching: summarizing + Q&A	A1.1 A1.2	CLO1 CLO3

		Lesson preparation guide: review the entire program + prepare questions		CLO4

15. Materials

15.1. Books, lectures, main textbooks

[1]. Nguyen Minh Tuyen, *Experimental Planning*, Construction Publishing House, Ha Noi, 2012.

[2]. Bui Minh Tri, *Statistical Probability and Experimental Planning*, Natural Sciences Publishing House, Ha Noi, 2010.

[3]. Lecture on Experimental Planning of the Construction materials Division.

15.2. Reference materials

[1]. Douglass C. Montgomery, *Design and Analysis of Experiments*, Pearson, 2001.

[2]. Nguyen Van Tuan, *Data Analysis with R Programming*, Labor and Social Publishing House, Ho Chi Minh City, 2016.

16. Scientific code of ethics:

- Students must respect a lecturer and other students.
- Students must comply with the University's academic integrity policy.
- Students must obey the rules and regulations of the university.

17. Approved date:

18. Approval by:

Dean of Faculty	Program chair	Lecturer in charge
Cao Van Lam, PhD.	**Vo Duy Hung, PhD.**	**Huynh Phuong Nam, PhD.**

43. English for Construction Materials Engineering

THE UNIVERSITY OF DANANG
UNIVERSITY OF SCIENCE AND TECHNOLOGY
Faculty of Road and Bridge Engineering

SOCIALIST REPUBLIC OF VIETNAM
Independence - Freedom - Happiness

UNDERGRADUATE PROGRAM

Awarded degree: Undergraduate/Bachelor

Name of the study program: Construction Materials Engineering and Technology

Program Code: 7510105

SYLLABUS
Course name (Vietnamese): Anh văn chuyên ngành
English name: English for Construction Materials Engineering

1. Course code:	1092810
2. Course abbreviation:	English for Construction Materials Engineering
3. Credits: **ECTS credits (*):**	02 credits (30 Periods) 2,83
4. Study workload:	
- Lecture:	20 Periods
- Exercise:	10 Periods
- Practice/ Laboratory:	0
- Self-study/Assignment:	60 Periods
5. Responsible persons:	
- Faculty/Division in charge:	Construction materials Division/ Faculty of Road and Bridge Engineering
- Course coordinator:	PhD. Huynh Phuong Nam
- Other lecturers:	PhD. Nguyen Van Quang PhD. Nguyen Minh Hai
6. Required and recommended prerequisites for joining the course:	
- Required prerequisite:	None
- Recommended prerequisite:	English A2.2, Construction Materials
- Corequisite:	None
7. Type course:	☒ Compulsory Selected elective Free elective
8. Knowledge clusters:	Math and natural science General knowledge ☒ Core engineering fundamental knowledge Disciplinary knowledge Supportive knowledge Project/ Internship/ Graduate thesis

9. Course description

The course provides students with basic knowledge of English in the field of Construction Materials Engineering and Technology. Therefore, students can become familiar with specialized terms in English, and find and read specialized documents in English by themselves. In addition, the course also provides students with practical specialized knowledge through documents and videos that teachers provide during the learning process.

10. Course Learning Outcomes

After completing the course, students will be able to

NO	Course Learning Outcomes(CLO)	Knowledge	Skills	Attitude	Performance indicators (belongs to PLOs)
1	Read and understand specialized documents in English	a2. Understanding			6.1.1
2	Apply technical terms in English to present simple reports.	a3. Applying			6.1.1 7.1.5
3	Presenting a simple specialized report in English		b2 Applying		5.2.6 6.1.1
4	Adhere to the principles of teamwork and support group work			c4. Organizing	5.1.1, 5.1.2, 5.1.5

11. The relationship between course learning outcomes (CLOs) and program learning outcomes (PLOs)

PLO	PLO1	PLO2	PLO3	PLO4	PLO5	PLO6	PLO7	PLO8
Contribution of the course					U	T	U	
CLO 1						X		
CLO 2						X	X	
CLO 3					X	X		
CLO 4					X			

12. Student responsibilities

Students must perform the following tasks:

- Attending at least 80% of the lessons of the course;
- Participating in teamwork activities according to the regulations of the class;
- Self-studying the problems assigned by the lecturer to do outside of class hours;
- Completing all course assessments.

13. Course assessments

Type of assessment	Performance assessment	Assessment methods	Rubric	Weighting percentage (%)		Course learning outcomes (CLOs)
A1. Ongoing assessment	A1.1. Class Attendance	Attendance check	Rubric 1	50	20	
	A1.2. Group Assessment	Group homework	Rubric 2	50		CLO2, CLO3, CLO4
A2. Mid-term Assessment	A2.1. Mid-term exam	Multiple-choice	According to the answer and grading scale	100	20	CLO 1, 2
A3. Final Assessment	A3.1. Group presentation	Oral presentation in class	Rubric 3	30	60	CLO 1, 2, 3

	A3.2. Final exam	P3. Written exam	According to the answer and grading scale	70		CLO 1, 2, 3

Rubric 1: Class Attendance

Evaluation Criteria	The level of meeting the specified standards					Weight
	LEVEL F (0-3.9)	**LEVEL D (4.0-5.4)**	**LEVEL C (5.5-6.9)**	**LEVEL B (7.0-8.4)**	**LEVEL A (8.5-10)**	
Class Attendance	Attendance <30%	30% ≤ Attendance < 50%	50% ≤ Attendance < 70%	70% ≤ Attendance < 90%	90% ≤ Attendance < 100%	**100%**

Rubric 2: Group Assignment

Evaluation Criteria	The level of meeting the specified standards					Weight
	LEVEL F (0-3.9)	**LEVEL D (4.0-5.4)**	**LEVEL C (5.5-6.9)**	**LEVEL B (7.0-8.4)**	**LEVEL A (8.5-10)**	
Submit assignment	Do not submit assignments	Submit incomplete assignments and not on time.	Submit the full assignment (100% of the assigned amount) but not on time.	Submit assignments in full (100% of the assigned amount), on time, but with modification later.	Submit assignments in full (100% of the assigned amount), on time and without modification.	**20%**
Assignment content	No assignment	The content of the assignment is not complete, some are not according to the required tasks.	The content of the assignment is complete, and follows the required task, but not reasonable. There are still some errors.	The content of the assignment is complete, reasonable, and follows the required task.	The content of the assignment is complete, reasonable, and follows the required task.	**50%**
Presentation of assignment	No assignment	The presentation of the assignment is messy and does not follow the requirements for the presentation. Do not use support tools.	The assignments are presented correctly (font, font size, contrast), using supporting tools. The presenter spoke quite clearly and fluently.	The assignments are presented correctly (font, font size, contrast), using supporting tools. The presenter spoke quite clearly, fluently, use partial English during the presentation	The assignments are presented correctly (font, font size, contrast), using supporting tools. The presenter spoke quite clearly and fluently, fully use English during the presentation	**30%**

Rubric 3: Presentation

Evaluation Criteria	The level of meeting the specified standards					Weight
	LEVEL F (0-3.9)	**LEVEL D (4.0-5.4)**	**LEVEL C (5.5-6.9)**	**LEVEL B (7.0-8.4)**	**LEVEL A (8.5-10)**	

Presentation structure	Unstructured, completely illogical and overtime. The audience cannot follow the presentation	The structure is not good, unclear and overtime. It is difficult for the audience to follow the presentation	The presentation is structured (3 parts but not clear) and on time. It was difficult for the audience to follow the presentation	Well structured (introduction, body, conclusion) and on time. The presentation is logical, smooth and easy to follow	Very well structured (introduction, body, conclusion) and on time. The presentation is very logical, smooth and attractive to the audience	**30%**
Smoothness and clarity	The voice is very low, the pronunciation is not clear. The presenter used the wrong terminology and did not use the aids. The audience cannot understand the content of the presentation	The voice is very low, the pronunciation is not clear. Presenters use complex, confusing terminology. Using ineffective support tools.	Moderate voice, pretty clear pronunciation, use support tools	Clear loud voice, clear pronunciation, good use of body language and support tools. The presenter is confident but lacks interaction with the audience. There is more than 1 presenter.	Very clear voice, very clear pronunciation, good use of body language and support tools. The speaker speaks fluently and attractively, making it easy for listeners to follow; use body language and aids effectively; confidently and regularly interact with the audience. All members of the group participated in the presentation.	**30%**
Form	Do not use any support tools	Use support tools (like PowerPoint) but very simple	Using support tools, images or videos to illustrate the content of the presentation.	Effectively use support tools, images or videos to illustrate presentation content.	Very effective use of support tools, beautiful images or videos to clearly illustrate presentation content, use effects in slides.	**30%**
Answer the question	The answer is not related to the question or does not answer	The answer is unknown and unrelated to the question	- Answer the question correctly - Unconfident	- Answer short and clear, correct content of the question. - Calm.	- Answer short and very clearly, focusing directly on the content of the question. - Confident and persuasive.	**10%**

14. Teaching and learning plan

Weeks/Periods (2 Periods)	Detailed contents of the course	Teaching and learning activities	Performance assessment	Course learning outcomes (CLOs)
1	**Course introduction.**	**<u>Activities in class:</u>** ***Lecturer's activities**:*	A1.1	

	- Course objectives. - Preliminary content of the entire course program and learning materials. - Organizational forms of teaching, tasks of students in each form of teaching. - Evaluation forms and rates. - Group study guide - Instructions for preparing group exercises and presentation of group exercise reports - Guide the task of the exercise groups **Self-introduction**	- Announcement of detailed course outline - Introduction to the subject - Instructions for setting up study groups: Depending on the number of students in the class to group, each group should not exceed 6 people. - Self-introduction guide - Instructions to prepare lessons at home before going to class ***Student's activities**:* - Forming a group - Introduce yourself, get to know the team members - Reporter of the group briefly introduces the teacher about the members of the group		
2	Lesson 1. **What do civil Engineer do? (2 periods)** Activity 1: Listening Activity 2: Reading	**<u>Prepare lesson before class</u>:**Students and student groups must prepare the following contents: - Prepare the vocabulary of lesson 1, prepare the translation (reading) - Prepare learning materials, read lecture materials, content related to the lecture. **<u>Class activities</u>**: ***Lecturer's activities**:* - Guide students to work in groups in class according to the lesson content - Explain the terms, sentence structure, paragraph structure related to the topic of the lesson content ***Student's activities*** - Groups of students present group exercises and discuss and exchange according to the prepared content - Students work in groups by themselves under the guidance of the teacher	A1.1 A1.2	CLO2 CLO3 CLO4
3	Lesson 1. **Continued (2 periods)**	**<u>Prepare lesson before class</u>:** Students and student groups must prepare the following contents: - Prepare the words of the reading passage	A1.1 A1.2	CLO2 CLO3 CLO4

	Activity 3: Grammar Activity 4: Reading	- The groups assign people to report reading lesson 1 - Prepare lesson 1 readings prepared by the teacher and additional readings with the same topic provided by the teacher **Class activities**: ***Lecturer's activities*** - Guide students to work in groups in class according to the lesson content - Explain the terms, sentence structure, paragraph structure related to the topic of the lesson content ***Student's activities:*** - Groups of students present group exercises and exchange discussions - Students work in groups by themselves under the guidance of the teacher - Read and understand and answer questions related to the topic of the lesson		
4	Lesson 2: **Construction Equipments (2 periods)** Activity 1: Listening Activity 2: Vocabulary Activity 3: Grammar.	**Prepare lesson before class:** Students and student groups must prepare the following contents: - Prepare the vocabulary of lesson 2 - Read the material in advance: Lesson 2 lesson prepared by the teacher and additional reading with the same topic provided by the teacher **Class activities**: ***Lecturer's activities*** - Guide students to work in groups in class according to the lesson content - Explain the terms, sentence structure, paragraph structure related to the topic of the lesson content ***Student's activities*** - Groups of students present group exercises and discuss with prepared content - Students work in groups by themselves under the guidance of the teacher - Read and understand and answer questions related to the topic of the lesson	A1.1 A1.2	CLO2 CLO3 CLO4
5	Lesson 2: **Continued (2 periods)** Activity 4: Reading	**Prepare lesson before class:** Students and student groups must prepare the following contents: - Prepare the words of the reading passage - The groups assign people to report exercise 2 - Prepare lesson 2 readings prepared by the teacher and additional readings with the same topic provided by the teacher **Class activities**: ***Lecturer's activities*** - Guide students to work in groups in class according to the lesson content - Explain the terms, sentence structure, paragraph structure related to the topic of the lesson content ***Student's activities*** - Groups of students present group exercises and exchange discussions	A1.1 A1.2	CLO2 CLO3 CLO4

		- Students work in groups by themselves under the guidance of the teacher - Read and understand and answer questions related to the topic of the lesson		
6	Lesson 3: **Surveying and Mapping** Activity 1: Listening Activity 2: Vocabulary Activity 3: Grammar.	**<u>Prepare lesson before class</u>:**Students and student groups must prepare the following contents: - Prepare vocabulary (vocabulary) lesson 3 - Prepare study materials. - Read the material in advance: Lesson 3 lesson prepared by the teacher and additional reading with the same topic provided by the teacher **<u>Class activities</u>**: ***Lecturer's activities*** - Guide students to work in groups in class according to the lesson content - Explain the terms, sentence structure, paragraph structure related to the topic of the lesson content ***Student's activities*** - Groups of students present group exercises and exchange discussions - Students work in groups by themselves under the guidance of the teacher - Read and understand and answer questions related to the topic of the lesson	A1.1 A1.2	CLO2 CLO3 CLO4
7	Lesson 3: **Continued (2 periods)** Activity 4: Reading	**<u>Prepare lesson before class</u>:**Students and student groups must prepare the following contents: - Prepare the words of the reading passage - The groups assign people to report the readings of lesson 3 - Prepare lesson 3 readings prepared by the teacher and additional readings with the same topic provided by the teacher **<u>Class activities</u>**: ***Lecturer's activities*** - Guide students to work in groups in class according to the lesson content - Explain the terms, sentence structure, paragraph structure related to the topic of the lesson content ***Student's activities*** - Groups of students present group exercises and exchange discussions - Students work in groups by themselves under the guidance of the teacher - Read and understand and answer questions related to the topic of the lesson	A1.1 A1.2	CLO2 CLO3 CLO4
8	Lesson 4: **Construction Materials (2 periods)** Activity 1: Vocabulary Activity 2: Introduction	**<u>Prepare lesson before class</u>:**Students and student groups must prepare the following contents: - Learn from the previous lesson, prepare from lesson 4 - Prepare study materials. - Read the material in advance: Lesson 4 lesson prepared by the teacher and additional reading with the	A1.1 A1.2	CLO2 CLO3 CLO4

		same topic provided by the teacher **<u>Class activities</u>**: ***Lecturer's activities*** - Guide students to work in groups in class according to the lesson content - Explain the terms, sentence structure, paragraph structure related to the topic of the lesson content ***Student's activities*** - Groups of students present group exercises and discuss and exchange according to the prepared content - Students work in groups by themselves under the guidance of the teacher - Read and understand and answer questions related to the topic of the lesson		
9	Lesson 4: **Continued (2 periods)** Activity 3: Grammar Activity 4: Reading	**<u>Prepare lesson before class</u>:**Students and student groups must prepare the following contents: - Learn from the previous lesson, prepare to translate lesson 4 (reading) - Prepare study materials. - Read the material in advance: Lesson 4 lesson prepared by the teacher and additional reading with the same topic provided by the teacher **<u>Class activities</u>**: ***Lecturer's activities*** - Guide students to work in groups in class according to the lesson content - Explain the terms, sentence structure, paragraph structure related to the topic of the lesson content ***Student's activities*** - Groups of students present group exercises and exchange discussions - Students work in groups by themselves under the guidance of the teacher - Read and understand and answer questions related to the topic of the lesson	A1.1 A1.2	CLO2 CLO3 CLO4
10	Lesson 5: **Foundation (2 periods)** Activity 1: Vocabulary Activity 2: Reading	**<u>Prepare lesson before class</u>:**Students and student groups must prepare the following contents: - Learn from the previous lesson, prepare from lesson 5, translate the reading - Prepare study materials. - Read the material in advance: Lesson 5 lesson prepared by the teacher and additional reading with the same topic provided by the teacher **<u>Class activities</u>**: ***Lecturer's activities*** - Guide students to work in groups in class according to the lesson content - Explain the terms, sentence structure, paragraph structure related to the topic of the lesson content ***Student's activities*** - Groups of students present group exercises and discuss prepared content	A1.1 A1.2	CLO2 CLO3 CLO4

		- Students work in groups by themselves under the guidance of the teacher - Read and understand and answer questions related to the topic of the lesson		
11	Lesson 5: **Continued (2 periods)** Activity 3: Listening Activity 4: Reading	**<u>Prepare lesson before class</u>:**Students and student groups must prepare the following contents: - Learn from the previous lesson, prepare to translate lesson 5 (reading) - Prepare study materials. - Read the material in advance: Lesson 5 lesson prepared by the teacher and additional reading with the same topic provided by the teacher **<u>Class activities</u>**: ***Lecturer's activities*** - Guide students to work in groups in class according to the lesson content - Explain the terms, sentence structure, paragraph structure related to the topic of the lesson content ***Student's activities*** - Groups of students present group exercises and exchange discussions - Students work in groups by themselves under the guidance of the teacher - Read and understand and answer questions related to the topic of the lesson	A1.1 A1.2	CLO2 CLO3 CLO4
12	Lesson 6: **Properties of Concrete (2 periods)** Activity 1: Vocabulary Activity 2: Workability of concrete Activity 3: Strength of concrete	**<u>Prepare lesson before class</u>:**Students and student groups must prepare the following contents: - Learn from the previous lesson, prepare from lesson 6 - Prepare study materials. - Read the material in advance: Lesson 6 lesson prepared by the teacher and additional reading with the same topic provided by the teacher **<u>Class activities</u>**: ***Lecturer's activities*** - Guide students to work in groups in class according to the lesson content - Explain the terms, sentence structure, paragraph structure related to the topic of the lesson content ***Student's activities*** - Groups of students present group exercises and exchange discussions - Students work in groups by themselves under the guidance of the teacher - Read and understand and answer questions related to the topic of the lesson	A1.1 A1.2	CLO2 CLO3 CLO4
13	Lesson 6: **Continued (2 periods)** Activity 4: Listening Activity 5: Reading	**<u>Prepare lesson before class</u>:**Students and student groups must prepare the following contents: - Learn from the previous lesson, prepare to translate lesson 6 (reading) - Prepare study materials. - Read the material in advance: Lesson 6 lesson prepared by the teacher and additional reading with the	A1.1 A1.2	CLO2 CLO3 CLO4

		same topic provided by the teacher **Class activities**: ***Lecturer's activities*** - Guide students to work in groups in class according to the lesson content - Explain the terms, sentence structure, paragraph structure related to the topic of the lesson content ***Student's activities*** - Groups of students present group exercises and exchange discussions - Students work in groups by themselves under the guidance of the teacher - Read and understand and answer questions related to the topic of the lesson		
14	Thực hành: **Báo cáo thuyết trình nhóm (2 periods)**	**Prepare lesson before class:**Students and student groups must prepare the following contents: - Prepare group presentations - Assigning presentation presentations **Class activities**: ***Lecturer's activities*** - Guide groups to present and control activities in class of students ***Student's activities*** - Groups of students present group exercises and exchange discussions - Participate in the evaluation of other groups under the guidance of the teacher	A1.1 A3.1	CLO1 CLO2 CLO3 CLO4
15	Thực hành **Báo cáo thuyết trình nhóm (tt)** Ôn tập	**Prepare lesson before class:**Students and student groups must prepare the following contents: - Prepare group presentations - Assigning presentation presentations - Prepare a slide report on a building material or a new building material production machine/technology **Class activities**: ***Lecturer's activities*** - Guide groups to present and control activities in class of students - Study guide ***Student's activities*** - Student groups present prepared content - Participate in the evaluation of other groups, discussions.	A1.1 A3.1	CLO1 CLO2 CLO3 CLO4

15. Materials

15.1. Books, lectures, main textbooks

[1] Specialized English lectures compiled by English for Construction Materials Engineering lecturers in the Construction Materials Division.

15.2. Reference materials

[1]. Ministry of Construction, *English textbook for construction technical workers*. Construction Publisher, 2012.
[2]. Raymond Murphy, *English Grammar in Use*. Cambridge, 2004.

[3]. General English dictionaries and construction English.

16. Scientific code of ethics:

- Students must respect a lecturer and other students.
- Students must comply with the University's academic integrity policy.
- Students must obey the rules and regulations of the university.

17. Approved date:

18. Approved by:

Dean of Faculty	Program chair	Lecturer in charge
Cao Van Lam, PhD.	**Vo Duy Hung, PhD.**	**Huynh Phuong Nam, PhD.**

44. Technology business Start-up

THE UNIVERSITY OF DANANG
UNIVERSITY OF SCIENCE AND TECHNOLOGY
Faculty of Road and Bridge Engineering

SOCIALIST REPUBLIC OF VIETNAM
Independence - Freedom - Happiness

UNDERGRADUATE PROGRAM

Awarded degree: Undergraduate/Bachelor

Name of the study program: Construction Materials Engineering and Technology

Program Code: 7510105

SYLLABUS

Course name (Vietnamese): Khởi tạo doanh nghiệp công nghệ
English name: Technology business Start-up

1. Course code:	1183030
2. Course abbreviation:	Technology business Start-up
3. Credits: **ECTS credits (*):**	2 credits (30 periods) 2,83
4. Time distribution	
- Lecture:	30 Periods
- Exercise:	
- Practice/ Laboratory:	
- Self-study/Assignment:	60 Periods
5. Responsible persons:	
- Faculty/Division in charge:	
- Course coordinator:	Nguyen Hong Nguyen
- Other lecturers:	
6. Required and recommended prerequisites for joining the course:	
- Required prerequisite:	None
- Recommended prerequisite:	
- Corequisite:	None
7. Type course:	☒ Compulsory Selected elective Free elective
8. Knowledge clusters:	Math and natural science General knowledge Core engineering fundamental knowledge Disciplinary knowledge ☒ Supportive knowledge Project/ Internship/ Graduate thesis

9. Course description

The course introduces the basic contents of the process of starting a modern business or a creative and innovative startup, including the following sections:

- Thinking in creative and innovative start-ups
- Tools and actions in entrepreneurship and innovation
- Meet potential investors and partners
- Introduction to the startup ecosystem

10. Course Learning Outcomes (CLOs)

After completing the course, students will be able to:

No	Course Learning Outcomes (CLOs)	Knowledge	Skills	Attitude	Performance indicators (belongs to PLOs)
1	Understanding the essence of innovative start-ups in the context of Industry 4.0	Understand	Self learning	Self learning	7.2.1
2	Understand the Design Thinking process to deploy products and services that meet the needs of target customers	Understand	Working group	Working group	4.2.1 6.2.1 7.2.1
3	Analyze the next direction of products and services using the business model tool Canvas	Model can be built	Working group,	Working group,	7.2.1 4.2.1
4	Understand the tools to call for investment capital, analyze the market, and start-up ecosystem of Vietnam	Understand	Develop effective presentation and communication skills	Develop effective presentation and communication skills	7.2.1 7.2.2

11.The relationship between course learning outcomes(CLOs) and program learning outcomes (PLOs)

PLOs	PLO 1	PLO 2	PLO 3	PLO 4	PLO 5	PLO 6	PLO 7	PLO 8
Contribution of the course (6)				U		U	IT	
CLO 1							X	
CLO 2				X		X	X	
CLO 3				X			X	
CLO 4							X	

12. Student responsibilities

Students must do the following tasks:

- Attend at least 80% of the lessons of the course;
- Join group in work activities according to the regulations of the class;
- Self-study the problems assigned by the lecturer (outside of class time);

- Complete all course assessments.

13. Course assessments

Type of assessment	Performance assessment	Assessment methods	Rubric	Weighting percentage (%)	CLOs	Type of assessment
A1. Ongoing assessment	A1.1 Exercises /homeworks	Attend class not less than 80% of the prescribed class time		5%	20%	CLO 1
	A1.2 Exercises /homeworks	Homework	Answer	15%		CLO 1, 2
A2. Mid-term Assessment	A2. Mid-term exam	P2. Report	Answer	20%	20%	CLO 1, 2, 3
A3. Final Assessment	A3. Final exam	P3. Report	Answer	60%	60%	CLO 1, 2, 3, 4

14.Teaching and learning plan

Week	Contents	Teaching and learning activities	Performa-nce assessment	Course learning outcomes (CLOs)
4	Chapter 1: Thinking in entrepreneurship and innovation 1.1. Some ways of thinking in business and starting a business 1.2. The development stages of a startup project 1.3. Some approaches and methods to start a business 1.4. Ideas and problems, learn from failure	Teach: - Lecturers introduce to students the subject objectives; the position and role of the subject in the training program of the industry; subject output standards, assessment forms and weights of assessments, course content by chapter - Lectures combined with lecture slides. - Ask questions for students to think and discuss. Learning in class: - Listen to lectures. - Answer questions posed by the teacher. - Ask questions of concerns. Study at home: - Review the theory - Read more content related to chapter 1 in the book - Read and study new content: Chapter 2 – Design Thinking	A1.1, A1.2	CLO 1
8	CHAPTER 2: DESIGN THINKING 2.1. overview 2.2. Step 1: Experi-ence/Empathize 2.3. Step 2: Identify the problem (Define)	Teach: - Discussing Assignment 1 - Lectures combined with lecture slides - Ask questions for students to think and answer	A1.1, A1.2	CLO 1, 2, 3

	2.4. Step 3: Search for ideas 2.5. Step 4: Model/Prototyping 2.6. Step 5: Test/Finish, get feedback from customers (Test)	- Do class exercises on the content of the lesson Learning in class: - Listen to lectures - Think, discuss and answer questions raised by the lecturer. - Ask questions of interest related to the lesson content. - Do homework in class Study at home: - Review the theory of each lesson. - Do homework. - Read and research new content: Chapter 3 – Business model and building a sales roadmap		
8	CHAPTER 3: BUSINESS MODELS AND BUILDING A SALES ROAD 3.1. Set the order of priority 3.2. Understanding the opportunity and business model 3.3. Understanding the market 3.4. Understanding customers and their problems 3.5. Value statement and experimental design 3.6. Measure, statistics and build sales roadmap	Teach: - Discussion about Assignment 2 - Lectures combined with lecture slides - Ask questions for students to think and answer - Do class exercises on the content of the lesson Learning in class: - Listen to lectures - Think, discuss and answer questions raised by the lecturer. - Ask questions of interest related to the lesson content. - Do homework in class Study at home: - Review the theory of each lesson. - Do homework. Preparing for midterm exam	A1.1, A1.2	CLO 1, 2, 3
	MID-TERM TEST		A2	CLO 1, 2, 3
7	CHAPTER 4: MEETING POTENTIAL INVESTORS AND PARTNER (FUNDING) 4.1. Funding needs of a startup project 4.2. Types of potential investors 4.3. Pitching skill	Teach: - Lectures combined with lecture slides - Ask questions for students to think and answer - Do homework in class Learning in class: - Listen to lectures - Think, discuss and answer questions raised by the lecturer. - Ask questions of interest related to the lesson content. - Do homework in class Study at home: - Review the theory of each lesson. - Do homework.	A1.1, A1.2	CLO 1, 2, 3

		- Read and research new content: Chapter 5 – Startup Ecosystem		
3	CHAPTER 5: START-UP ECOSYSTEM 5.1. Components of the startup ecosystem 5.2. Distinguish some roles in the startup ecosystem	Teach: - Discussion about Assignment 4 - Lectures combined with lecture slides - Ask questions for students to think and answer - Do homework in class Learning in class: - Listen to lectures - Think, discuss and answer questions raised by the lecturer. - Ask questions of interest related to the lesson content. - Do homework in class Study at home: - Review the theory of each lesson. - Do homework. - Review for the final exam	A1.1, A1.2	CLO 1, 2, 3, 4
	FINAL TESTING		A3	CLO 1, 2, 3, 4

15. Materials

15.1. Books, lectures, main textbooks

[1] Nguyen Dang Tuan Minh, Innovation Startup: Thinking and Tools, Women Publishing House, 2017.

15.2 Books and references:

[1] Eric Ries, The Lean Startup: How today's entrepreuneurs use contiuous innovation to create radically successful businesses, Penguin Books Ltd, 2011.

[2] Alexander Osterwalder, Yves Pigneur, Greg Bernarda, Alan Smith, Value Proposition Design, Wiley, 2014.

[3] Alexander Osterwalder, Yves Pigneur, Business Model Generation, John Wiley & Sons, Inc., 2010.

16. Scientific code of ethics:

- Students must respect a lecturer and other students.
- Students must comply with the University's academic integrity policy.
- Students must obey the rules and regulations of the university.

17. Approved date:

18. Approved by:

Dean of Faculty	Program chair	Lecturer in charge
Cao Van Lam, PhD.	**Vo Duy Hung, PhD.**	**Nguyen Hong Nguyen**

45. Economics and Management for Industrial Enterprise

THE UNIVERSITY OF DANANG
UNIVERSITY OF SCIENCE AND TECHNOLOGY
Faculty of Road and Bridge Engineering

SOCIALIST REPUBLIC OF VIETNAM
Independence - Freedom - Happiness

UNDERGRADUATE PROGRAM

Awarded degree: Undergraduate/Bachelor

Name of the study program: Construction Materials Engineering and Technology

Program Code: 7510105

SYLLABUS

Course name (Vietnamese): Kinh tế và quản lý doanh nghiệp
English name: Economics and Management for Industrial Enterprise

1. Course code:	1182550
2. Course abbreviation:	Economics and Management for Industrial Enterprise
3. Credits: **ECTS credits (*):**	2 2,83
4. Study workload:	
- Lecture:	30 periods
- Exercise:	
- Practice/ Laboratory:	
- Self-study/Assignment:	60 periods
5. Responsible persons:	
- Faculty/Division in charge:	Industrial Management Division
- Course coordinator:	**Assoc.Prof. Le Thi Kim Oanh** MSc. Nguyen Thi Thu Thuy Dr. Huynh Nhat To
- Other lecturers:	Assoc.Prof. Le Thi Kim Oanh MSc. Nguyen Thi Thu Thuy Dr. Huynh Nhat To MSc. Hồ Dương Đông, MSc.Nguyen Hong Nguyen
6. Required and recommended prerequisites for joining the course:	
- Required prerequisite:	
- Recommended prerequisite:	
- Corequisite:	

7. Course type:	☒ Compulsory Selected elective Free elective
8. Knowledge clusters:	Math and natural science General knowledge ☒ Core engineering fundamental knowledge Disciplinary knowledge Supportive knowledge Project/ Internship/ Graduate thesis

9. Course description:

The course provides engineering students with basic knowledge related to economic and management in industrial enterprises, including basic knowledge of business organization, production management, financial management, efficient assessment and investment projects management, and develop plans to meet market demands. Through this course, students are able to identify, analyze, and solve relevant problems in production, operation, and production management as well as business activities in industrial fields effectively.

10. Course learning outcomes:

At the end of this course, students are able to:

No	Course learning outcomes (CLO) (6)	Bloom scale	Skills	Level of autonomy & responsibility	PI
1	Understanding the basic issues of the form of establishment and organizational structure of the enterprise.	*Understand*		*Analyze*	1.3.8
2	Applying knowledge to plan and organize the production process for enterprises	*Apply*	*Apply*		8.1.1
3	Applying knowledge of financial management in business	*Apply*	*Apply*		8.2.1
4	Evaluating the effectiveness of investment projects and use tools in project management	*Apply*	*Apply*		3.2.1

11. Mapping of course learning outcomes (CLOs) and program learning outcomes

PLOs	PLO1	PLO2	PLO3	PLO4	PLO5	PLO6	PLO7	PLO8
Level	IT		I					T
CLO 1	x							
CLO 2								x
CLO 3								x
CLO 4			x					

12. Student responsibilities:

Students must:

- Attend at least 80% of the course to be eligible for the final examination
- Engage in class discussion with respect and attention

- Self-study, direct their own studying—outside the classroom
- Complete all homework and assignments in a timely manner

13. Course Assessment:

Student's results are assessed by the following components: process assessment, mid-term assessment, final assessment, and other evaluation activities.

Component of assessmnt	Assessment forms	Assessment method	Assessment criteria rubric	Weighting (%)	Weighting of component (%)	Course learning outcomes
A1. Process	A1.1 Attendance	P1.1 Check attendance		10	20	CLO 1,2,3,4
	A1.2 Presentation	P1.2 Presentation		10		
A2. Mid-term	A2.1 Mid-term exam	P2.1 Written test	R2.1 According to the answer and the grading Scale	20	20	CLO 1, 2
A3. Final Assessment	A3.1 Final exam	P3.1 Written test	R3.1 According to the answer and the grading Scale	60	60	CLO 1,2,3,4

14. Teaching and learning plan

Week	Contents	Teaching and learning	Assessment	CLOs
1	***Chapter 1***: OVERVIEW OF THE BUSINESS ESTABLISHMENT FORMS AND ENVIRONMENT OF BUSINESS OPERATION 1.1. DEFINITIONS - Business activities - Enterprise 1.2. FORMS OF BUSINESS ESTABLISHMENT 1.3. ENTERPRISE AND OPERATION ENVIRONMENT OF ENTERPRISES 1.4. BUSINESS ETHIC AND SOCIAL RESPONSIBILITY	**Learning in class time:** - Listen to the lecture - Discussion and Q&A **Learning outside class time:** Review types of enterprises and main characteristics in the operation of each type of enterprise.	A1.1, A1.2, A2	CLO1,3
2	***Chapter 2:*** ORGANIZING AND MANAGEMENT IN A BUSSINESS ORGANIZATION 2.1. BUSINESS ORGANIZATION 2.1.1. Organizational structure concept 2.1.2. Types of organizational structures 2.1.3. Factors affecting organizational structure evolution 2.2. BUSINESS MANAGEMENT	**Learning in class time:** - Listen to the lecture - Discussion and Q&A **Learning outside class time:** Review organizational structure of the enterprise.	A1.1, A1.2, A2	CLO1,3
3	***Chapter 3***: PRODUCTION AND OPERATION MANAGEMENT 3.1. OBJECTIVES OF PRODUCTION MANAGEMENT - Integrating production planning - The importance of resource planning	**Learning in class time:** - Listen to the lecture - Discussion and Q&A **Learning outside class time:**	A1.1, A1.2, A2	CLO 2

	3.2. BASIC STRATEGIES - Out-of-hours production strategy - Subcontracting production strategy - Partial hiring strategy - Strategies to increase and decrease labor according to demand - Strategies to increase and decrease prices according to the increase and decrease of demand - Contracting strategy - Strategies to organize the production of rival products	Undestand production strategies applied in practice.		
4	3.3. RESOURCES MANAGEMENT AND WORKING PROGRESS 3.3.1. Intuitive method 3.3.2. Graph and figure method 3.3.3 Transport problem method 3.4. ORDER IN PRODUCTION, SERVICES 3.4.1. Principles of prioritization for to-dos first 3.4.2. Assess the reasonableness of the arrangement of jobs 3.4.3. Johnson's Principle 3.4.4. General: Programming for work on machines	**Learning in class time:** - Listen to the lecture - Discussion and Q&A **Learning outside class time:** Review learnt contents.	A1.1, A1.2, A2	CLO2
5	3.5. JOB DISTRIBUTION METHODS 3.5.1. Minimum problem 3.5.2. Maximum problems 3.5.3. Time control problem 3.6. STORE AND SUPPLY MANAGEMENT 3.6.1. CONCEPT OF INVENTORY - What is inventory? - Inventory management function - Types of demands - Using A B C analysis techniques to classify inventory - Inventory costs 3.6.2. INDEPENDENT DEMAND-DEMAND STOCK MODELS - The most economical order quantity model (EOQ model) - Quantity Discounts Model - Model of supply according to production demand (POQ model) - The inventory model with the volume of goods left at the supplier - Probabilistic model with constant supply time	**Learning in class time:** - Listen to the lecture - Discussion and Q&A **Learning outside class time:** Practice assignment problems; inventory models.	A1.1, A1.2, A2	CLO 2,3
6	Mid-term test	Written test	A2.1	CLO1,2

7	***Chapter 4:*** FINANCIAL MANAGEMENT 4.1. OVERVIEW OF CORPORATE FINANCIAL ACTIVITIES 4.2. CAPITAL MANAGEMENT IN THE BUSINESS 4.2.1. DEFINITIONS AND CLASSIFICATIONS OF CAPITAL 4.2.2. FIXED ASSETS OF THE COMPANY 4.2.3. WORKING CAPITAL OF THE COMPANY 4.3. FINACIAL MARKETS AND CAPITAL SOURCES - Financial market - Financial institutions - Sources of capital formation for businesses	**Learning in class time:** - Listen to the lecture - Discussion and Q&A **Learning outside classroom time:** Review fixed asset depreciation methods.	A1.1, A1.2, A3	CLO 3
8	***Chapter 5:*** FINANCIAL ASSESSMENT AND INVESTMENT PROJECT MANAGEMENT 5.1. TIME VALUE OF MONEY 5.2.1. Interest calculation 5.2.2. Money flow chart 5.2.3. Equivalence formulas for simple and evenly distributed cash flows 5.2.4. How to understand about interest 5.2.5. Real interest rate calculation 5.2. INVESTMENT ACTIVITIES AND INVESTMENT PROJECTS	**Learning in class time:** - Listen to the lecture - Discussion and Q&A **Learning outside class time:** Practice applying equivalence formulas in calculating the time value of money.	A1.1, A1.2, A3	CLO3,4
9	5.3. PROJECT CYCLE AND PROJECT DRAFT CONTENTS 5.4. FINANCIAL EFFICIENCY ASSESSMENT OF INVESTMENT PROJECTS 5.4.1. Financial performance using the non-discount method analysis 5.4.2. Financial performance using the discount method evaluation	**Learning in class time:** - Listen to the lecture - Discussion and Q&A **Learning outside class time:** Learn state documents related to the project formulation process; Practice calculating the financial indicators of the project.	A1.1, A1.2, A3	CLO 3,4
10	5.5. TIME MANAGEMENT AND PROJECT IMPLEMENTATION PROGRESS 5.4.1. Planning and scheduling tools 5.4.2. Gantt model 5.4.3. CPM method 5.4.4. PERT method 5.4.5. Project progress adjustment 5.4.6. Resource conditioning 5.5. PROJECT COSTS CONTROL	**Learning in class time:** - Listen to the lecture - Discussion and Q&A **Learning outside class time:** Practice making progress diagrams.	A1.1, A1.2, A3	CLO 3,4
	Chapter 6: MARKETING ACTIVITIES IN THE BUSINESS	**Learning in class time:** - Listen to the lecture	A1.1, A1.2, A3	CLO 2,3,4

11	6.1. THE ROLE OF MARKETING IN THE BUSINESS 6.2. MARKETING MANAGEMENT 6.2.1. What is Marketing Management? 6.2.2. Marketing management perspectives 6.2.3. Marketing Process Management 6.2.4. The process of forming a marketing strategy in the business 6.3. BUSINESS TARGET MARKET 6.3.1. Market definition 6.3.2. Market Segmentation 6.3.3. Target market of the business 6.4. BASIC FEATURES OF A MARKETING PROGRAM 6.4.1. Products 6.4.2. Price policy 6.4.3. Distribution 6.4.4. Communication and sales promotion	- Discussion and Q&A **Learning outside class time:** Find out the marketing activities being carried out by businesses in reality; Learn modern forms of communication to increase the effectiveness of marketing activities.		
12	Final assessment	Final exam	A3.1	CLO 1,2, 3,4

15. Course materials:

15.1. Main Textbooks:

[1]. Associate Professor, PhD. Le Thi Kim Oanh, MSc. Nguyen Thi Thu Thuy, MSc. Ho Duong Dong (2019); Textbook of Business Economics, Da Nang Publishing House, 2019..

15.2. References:

[2]. Ngo Tran Anh, Economics and Business Management, Statistics Publishing House, 2003.

[3]. Dang Minh Trang, Production and operations management, Education Publishing House, 2002.

[4]. Associate Professor, PhD. Nguyen Bach Nguyet, Associate Professor. Dr. Tu Quang Phuong, Investment Economics, National Economics University Publishing House, 2002.

16. Scientific code of ethics:

- Students must respect their lecturers and other students.
- Students must comply with the university's academic integrity.
- Students must strictly follow the rules and regulations of the university.

17. Approval date:

18. Approved by:

Dean of Faculty	Program chair	Lecturer in charge
Cao Van Lam, PhD.	**Vo Duy Hung, PhD.**	**Assoc. Prof. Le Thi Kim Oanh**

46. Construction materials fieldtrip

THE UNIVERSITY OF DANANG
UNIVERSITY OF SCIENCE AND TECHNOLOGY
Faculty of Road and Bridge Engineering

SOCIALIST REPUBLIC OF VIETNAM
Independence - Freedom - Happiness

UNDERGRADUATE PROGRAM

Awarded degree: Undergraduate/Bachelor

Name of the study program: Construction Materials Engineering and Technology Program Code: 7510105

SYLLABUS
Course name (Vietnamese): Kiến tập vật liệu xây dựng
English name: Construction materials fieldtrip

1. Code:	1092770
2. Course abbreviation:	Construction materials fieldtrip
3. Credits: **ECTS credits (*):**	1 1,67
4. Study workload:	
- Lecture:	0
- Exercise:	0
- - Practice/ Laboratory:	30
- Self-study/Assignment:	60
5. Responsible persons:	
- Faculty/Division in charge:	Construction materials division
- Course coordinator:	Lecturers in Construction materials division
- Other lecturers:	Lecturers in Construction materials division
6. Required and recommended pre-requisites for joining the course:	
- Required prerequisite:	None
- Recommended prerequisite:	Construction materials
- Corequisite:	Thermal equipment for production of construction materials; Machines and equipment for the production of construction materials
7. Type course	☒ Compulsory Selected elective Free elective
8. Knowledge clusterss:	Math and natural science General knowledge ☒ Core engineering fundamental knowledge Disciplinary knowledge Supportive knowledge Project/ Internship/ Graduate thesis

9. COURSE DESCRIPTION

The course provides students with the awareness and the development orientation of the training major. Visiting production facilities, construction sites, making students understand the process of production and use of materials at the agency receiving the internship. The course also adds practical knowledge to the content already in university.

10. COURSE LEARNING OUTCOMES (CLOs)

After completing the course, students have ability to:

No	Course Learning Outcomes (CLOs)	Knowledge	Skills	Attitude	Performance indicators (PLOs)
1	Describe the basic technological line, production scale of a factory or production facility of construction materials.	a2. Understand			8.1.2
2	Compare the production and use of materials in practice with theoretical knowledge learned.	a3. Apply			1.4.9;8.4.2
3	Realize reality for career orientation.	A1. Remember			3.1.3
4	Organize group activities and increase communication skills.			C4. Organization	5.1.2
5	Show discipline and professional ethics.			C1. Receiving	3.2.2;4.1.1

11. CLOs AND PLOs MAPPING:

PLO	PLO1	PLO2	PLO3	PLO4	PLO5	PLO6	PLO7	PLO8
Contribution of the course			T	T	U		U	T
CLO 1				x			x	x
CLO 2			x	x			x	x
CLO 3			x	x				
CLO 4					x			
CLO 5			x	x				

12. Student responsibilities:

Students must do the following tasks:

- Student must have permission papers from office of Academic affair, office of Finance and planning of The University of Science and Technology
- Strictly follow the rules and regulations of the company where students work.
- Report daily working diary
- The practical report is written in A4 size paper in groups, including a decision and a syllabus for internships and an evaluation report by the instructor of the company

13. ASSESSMENT

Assessment results are based on student activities during the internship and final exam. How to assess according to the instructions in the following rubric:

13.1. General assessment table:

Component	Assessment style	CLOs	Assessment Methods (AM)	Criteria	Weight
A1. Evaluation of firm instructor	A1.1 **Written Report**	CLO1,3,4,5,6,7	PPĐG 7 (Written Report)	Rubric 6 (Application)	30%
	A1.2 **Teamwork**	CLO2, 8	PPĐG 9	Rubric 7	20%
A2. Final evaluation of lecturers	A2.1 **Oral Presentation**	CLO1,2,3,4,5,6,7,9	PPĐG 3	Rubric 4	20%
	A2.2 **Oral Exam**	CLO1,2,3,4,6,7,9	PPĐG 6	Rubric 5	30%

13.2. Assessment report by firm instructor base on working period of students and their report:

A1.1 – Rubric 6 – Written Report

Assessment Criteria	Levels of achievement					Weight
	Level F (0-3.9)	**Level D (4.0-5.4)**	**Level C (5.5-6.9)**	**Level B (7.0-8.4)**	**Level A (8.5-10)**	
Contents	No content of the irrelevant content	The report is fully represented as requirement. Still, the calculation is wrong or not specific as the requirement	The report is fully represented as requirement. Still, the calculation is not reasonable.	The report is fully represented as requirement. The calculation is correct and exact. Still there is not specific and reasonable explanation for the results	An exemplary report with complete, accurate and relevant content. Discussion and recommendations are outstanding, creative and realistic.	**60%**
Organization, format, language	A poorly edited report with grammatical and spelling errors.	Report format lacks consistency. Weak command of the language	The order of the report follows the requirement. There are several mistakes in grammar and spelling. There is not adequate note	Format and contents flow smoothly building on one idea to another. Uses language and conventions appropriate for report writing.	A well-organized report that displays an excellent command of the language. The overall appearance is neat and professional	**20%**
Drawings	No drawing or irrelevant drawings	The quantity of drawings is adequate. The dimension and note are not	The quantity of drawings is adequate. The dimension and note are	The quantity of drawings is adequate. The dimension and note are	Same as level B. Students can use the computer fluently as a	**20%**

Assessment Criteria	Levels of achievement					Weight
	Level F (0-3.9)	**Level D (4.0-5.4)**	**Level C (5.5-6.9)**	**Level B (7.0-8.4)**	**Level A (8.5-10)**	
		clear. The drawings are lack of some important parts	clear. There are some mistakes in drawings	clear. There are no mistakes in drawings. The arrangement of the drawings is reasonable	drawing tool. The drawings can be used in practical cases.	

13.3. **Assessment final exam by lecturers**

A2.1. Rubric 4: Oral Presentation

Assessment Criteria	Levels of achievement					Weight
	Level F (0-3.9)	**Level D (4.0-5.4)**	**Level C (5.5-6.9)**	**Level B (7.0-8.4)**	**Level A (8.5-10)**	
Content of presentation	No content or content is inappropriate for the request.	Content matching requirements, images and explanations are not clear	Content meets requirements. Use simple and easy to understand terminology. The picture is clear and beautiful	Content meets requirements. Use simple and easy to understand terminology. Pictures are clear, and beautiful. Used video	Content meets requirements. Use simple and easy to understand terminology. Pictures are clear and beautiful. Use video and explain specific insights on video.	**50%**
Slide presentation	Slide presentation is too sketchy, not enough quantity as prescribed	Slides are presented in appropriate quantities, using the word and picture clearly	Slides are presented with a clear, layout (introduction, body and conclusion)	Slides are presented with clear, logical layout, consists of 3 parts, demonstrating proficiency in presentation.	Slides are presented with clear, logical layout, consists of 3 parts. The term is simple to understand, demonstrating proficiency in presentation and language.	**25%**
Presentation	The presentation is not logical, beyond the specified time, uses of	The presentation is full, but the voice is low, pronouns some	The presentation has a clear three-part layout. The voice is reasonable,	The presentation is brief, easy to understand, uses simple and easy-to-	The presentation is brief with clear layout. The voice is clear and	**25%**

	incorrect terminology, unclear pronunciation, and low voice. Listeners do not understand.	words unclear, uses complex terminology, do not contact with the listener when presented.	clear, easy to listen, time is properly presented, sometimes interact with the listener. Listeners can understand and keep track of the content presented.	understand terms. Clear layout. The voice is clear and fluent. Time to present correctly. Good interaction with the listener. Listeners can understand the content.	fluent. Attract the attention of the listener, interact well with the listener. Listeners can understand and keep up with all the content presented. Time to present correctly.	

A2.2 – Rubric 5 - Oral Exam

Assessment Criteria	**Levels of achievement**					**Weight**
	Level F (0-3.9)	**Level D (4.0-5.4)**	**Level C (5.5-6.9)**	**Level B (7.0-8.4)**	**Level A (8.5-10)**	
Answering Attitude	Communicating and answering attitude is rude, not cooperated, lack of respect in communication. Use inappropriate terms. Voice is hard to listen.	Attitude is quite polite. Use complex terms, confusing answers, hard to understand. Small voice, lack of confidence.	Communicative attitude is, gentle. The voice is clear, easy to hear. The term used in the answer is appropriated, easy to understand.	Attitude in the answer is confident, calm, and gentle. Use simple terms, easy to understand. Clear voice fluently speak.	Attitude is very confident. Voice is clear, fluent and attractive, well interact with the listener.	**30%**
Answer questions	The answers are completely unrelated to questions.	Answers are not clear, almost unconnected, not focus on the question.	Answers focus on questions. The lack of confidence in the answers.	The answers are concise, clear, completed, and relevant to the question asked. Attitude in answering is confident, calm, gentle, and calm.	Answer shortly, clearly, completely, directly related to the question asked, explain convincely. Attitude in answering is confident, calm, and persuasive.	**70%**

14. Teaching and learning plan

Week	Content	CLOs	Teaching and Learning Activities	Assessment
0-1/2	Lecture on schedule	CLO4, CLO7	**Teaching:** - Student groups, industrial firms, assign practical tasks - Instruct overall contents of works **Activities in class:** - Register groups, industrial firms - Listen the lectures - Write a daily report **Activities at home:** - Prepare materials (permission papers, notebooks, contact information,…) - Investigate information of firms where students will work in practical period. - Schedule for a trip to construction sites **Strategy and teaching and learning methods:** Lecture, Explicit Teaching, Independent learning, Pear Learning, Discussion.	A1.2
2	Field trip on binder production	CLO1, CLO2, CLO4, CLO7	**Guide:** - The instructor introduces the company, unit, and technological line of the factory or enterprise **Study at the internship location**: - Learning the rules and labor safety at the factory - Listen and record content related to roles, responsibilities and jobs. - Record diary. - Allocate specific work to the members of the internship group. - Think of possible solutions to improve the quality and efficiency of work and discuss with the instructor at the internship unit. **Study at home:** - Research more documents related to factories and enterprises to study.	A1.1; A1.2
3	Field trip on ceramic production	CLO1, CLO2, CLO4, CLO7	**Guide:** - The instructor introduces the company, unit, and technological line of the factory or enterprise **Study at the internship location**: - Learning the rules and labor safety at the factory - Listen and record content related to roles, responsibilities and jobs. - Record diary. - Allocate specific work to the members of the internship group.	A1.1; A1.2

Week	Content	CLOs	Teaching and Learning Activities	Assessment
			- Think of possible solutions to improve the quality and efficiency of work and discuss with the instructor at the internship unit. **Study at home:** - Research more documents related to factories and enterprises to study.	
3-4	Field trip on Cement and Asphalt Concrete production	CLO1, CLO2, CLO4, CLO7	**Guide:** - The instructor introduces the company, unit, and technological line of the factory or enterprise **Study at the internship location**: - Learning the rules and labor safety at the factory - Listen and record content related to roles, responsibilities and jobs. - Record diary. - Allocate specific work to the members of the internship group. - Think of possible solutions to improve the quality and efficiency of work and discuss with the instructor at the internship unit. **Study at home:** - Research more documents related to factories and enterprises to study.	A1.1; A1.2
5	Field trip on precast concrete production	CLO1, CLO2, CLO4, CLO7	**Guide:** - The instructor introduces the company, unit, and technological line of the factory or enterprise **Study at the internship location**: - Learning the rules and labor safety at the factory - Listen and record content related to roles, responsibilities and jobs. - Record diary. - Allocate specific work to the members of the internship group. - Think of possible solutions to improve the quality and efficiency of work and discuss with the instructor at the internship unit. **Study at home:** - Research more documents related to factories and enterprises to study.	A1.1; A1.2
6	Field trip on construction site using construction materials and components	CLO1, CLO2, CLO4, CLO7	**Guide:** - The instructor introduces the company, unit, and technological line of the factory or enterprise **Study at the internship location**: - Learning the rules and labor safety at the factory	A1.1; A1.2

Week	Content	CLOs	Teaching and Learning Activities	Assessment
			- Listen and record content related to roles, responsibilities and jobs. - Record diary. - Allocate specific work to the members of the internship group. - Think of possible solutions to improve the quality and efficiency of work and discuss with the instructor at the internship unit. **Study at home:** - Research more documents related to factories and enterprises to study.	
6	Report and presentation for field trips	CLO1, CLO2, CLO3, CLO4, CLO5 CLO6 CLO7	**Study at home:** - Writing internship report (with separate regulations) - Making report slides (with separate regulations). **Study at class** - Presentation of internship report - Answer the teacher's questions.	A1.1; A2.1; A2.2

15. MATERIALS:

15.1 Textbooks:

[1] Huynh Phuong Nam, Nguyen Thi Tuyet An, Do Thi Phuong, General Construction Materials, Construction Publisher, Hanoi, 2016 (in Vietnamese).

15.2. References:

[1] Pham Duy Huu, Ngo Xuan Quang. Construction materials. Transportation Publisher, Hanoi, 2004 (in Vietnamese).

[2] Le Xuan Mai - Do Huu Dao. Soil mechanics. Construction Publisher, Hanoi, 2005 (in Vietnamese).

[3] Phan Quang Minh, Ngo The Phong, Nguyen Đinh Cong. Reinforced concrete structure - Basic components, Publisher Science and Technology, Hanoi, 2010.

[4] Le Van Dinh, Pham Van Mang. Geodetics. The University of Danang - University of Science and Technology, 1992.

15. Scientific code of ethics:

- Students are responsible for attending the practice sessions, project guides. In case of absentee due to unavoidable reasons, there must be sufficient and reasonable proof.
- Strictly follow the rules and regulations of the company where students work.
- Other issues follow the current training regulations of the University.

16. Approved date: / 07 /2021

17. Approved by:

Dean of Faculty	Program chair	Lecturer in charge

Cao Van Lam, PhD.	**Vo Duy Hung, PhD.**	**Nguyen Tien Dung, MSC**

47. Technology of building ceramics 1

THE UNIVERSITY OF DANANG
UNIVERSITY OF SCIENCE AND TECHNOLOGY
Faculty of Road and Bridge Engineering

SOCIALIST REPUBLIC OF VIETNAM
Independence - Freedom - Happiness

UNDERGRADUATE PROGRAM

Awarded degree: Undergraduate/Bachelor

Name of the study program: Construction Materials Engineering and Technology Program Code: 7510105

SYLLABUS

Course name (Vietnamese): Công nghệ sản xuất gốm xây dựng 1
English name: Technology of building ceramics 1

1. Code:	1092780
2. Course abbreviation:	Technology of building ceramics 1
3. Credits: **ECTS credits (*):**	2 2,83
4. Study workload:	
- Lecture:	30
- Exercise:	0
- - Practice/ Laboratory:	00
- Self-study/Assignment:	60
5. Responsible persons:	
- Faculty/Division in charge:	Construction materials Division/ Faculty of Road and Bridge Engineering
- Course coordinator:	Do Thi Phuong, Msc
- Other lecturers:	Nguyen Van Quang, Ph.D
6. Required and recommended pre-requisites for joining the course:	
- Required prerequisite:	None
- Recommended prerequisite:	Applied chemistry Engineering 1; Machinery for the production of construction materials; Thermal equipments in the production of construction materials
- Corequisite:	None
7. Type course	☒ Compulsory Selected elective Free elective
8. Knowledge clusterss:	Math and natural science General knowledge ☒ Core engineering fundamental knowledge Disciplinary knowledge Supportive knowledge Project/ Internship/ Graduate thesis

9. Course description

The course introduces the knowledge about ceramic materials used mainly in construction such as: properties, structure, raw materials, distribution and production methods. The module will provide knowledge for the PBL4, Graduation Project and server sections for bachelors working in field studies, design, production and testing.

10. Course Learning Outcomes

After completing the course, students will be able to

NO	Course Learning Outcomes(CLOs)	Knowledge	Skills	Attitude	Performance indicators (belongs to PLOs)
1	**Present** the properties, structure and application of building ceramics, products, stages of building ceramics production.	A2. Understand	B2. Manipulate	C1. Receive	1.3.5. 8.1.1
2	**Analyze** and evaluate the quality of raw materials and ingredients	A4. Evaluate	B4. Complete	C3. Express attitude	1.3.5. 8.1.1 2.2.1
3	**Calculation** and selection of ingredients for materials	A3. Apply	A3. Accuracy	C3. Express attitude	1.3.5. 3.1.2 8.2.1
4	**Evaluation** and selection of production methods	A4. Evaluate	B4. Complete	C4. Opinion	1.3.5. 3.1.4 8.2.1
5	**Design** a technology line diagram	A5. Creation	A5. Creation	C4. Opinion	1.3.5 3.1.3 8.2.2

11. The relationship between course learning outcomes(CLOs) and program learning outcomes (PLOs)

PLOs	PLO1	PLO2	PLO3	PLO4	PLO5	PLO6	PLO7	PLO8
Contribution of the course	TU	TU	T					TU
CLO 1	X							X
CLO 2	X	X						X
CLO 3	X		X					
CLO 4	X		X					X
CLO5	X		X					X

12. Student responsibilities

Students must peform the following tasks:

- Attend at least 80% of the lessons of the class time;
- Self-study the problems assigned by the lecturer
- Complete all course assessments.

13. Course assessments

Type of assessement	Performance assessment	Assessment methods	Rubric	Weighting percentage (%)		Course learning outcomes (CLOs)
A1. Ongoing assessment	A1.1 Diligence	P1.1. Attendance		50	20	
	A1.2 Assignments / homeworks	P1.2. Exercises/Homeworks	Rubric 1	50		CLO 3
A2. Mid-term Assessment	A2. Mid-term exam	P2. Written exam	3-4 questions / 10 points correct according to the answer	100	20	CLO 1, 2, 3, 4
A3. Final Assessment	A3. Final exam	P3. Written exam	3-4 questions / 10 points correct according to the answer	100	60	CLO 1, 2, 3, 4, 5

14. Teaching and learning plan

Weeks/ 2 periods	Contents	Teaching and learning activities	Performance assessment	Course learning outcomes (CLOs)
1	- Course objectives - Overview about the content of the course - Reference materials. - Teaching and learning activities - Tasks of students - Assessment methods **Introduction:** Introduction to ceramic materials, building ceramics; the development of technology for the production of building ceramics; production and consumption of building ceramics. **Chapter 1. Structure and properties of buidling ceramics**	**- Teaching activities:** + Lecture, explicit teaching, independent learning + Introduce course syllabus, teaching schedule - Learning activities in class: +Listen to the lecture +Answer the questions given by the lecturer + Ask questions about issues of interest (Students) + Discussion and conclusion - Learning at home + Read course syllabus + Review the lessons + Prepare books, reference materials	A1.1	CLO1

Weeks/ 2 periods	Contents	Teaching and learning activities	Performance assessment	Course learning outcomes (CLOs)
	1.1 Physicochemical properties 1.1.1. Structure and texture 1.1.2. Contact layer structure 1.1.3. Coating layer structure			
2	**Chapter 1. Structure and properties of buidling ceramics (next)** 1.2. Physical properties 1.2.1. Material structure 1.2.2. Water environment 1.2.3. Thermal environment	**- Teaching activities:** + Lecture, explicit teaching, independent learning - Learning activities in class: +Listen to the lecture +Answer the questions given by the lecturer + Ask questions about issues of interest (Students) + Discussion and conclusion - Learning at home + Read course syllabus + Review the lessons + Prepare books, reference materials	A1.1	CLO1
3	**Chapter 1. Structure and properties of buidling ceramics (next)** 1.3. Mechanical properties 1.4. Electrophysical properties 1.5. Reliability 1.6. Aesthetic properties 1.7. Use-consumption properties	**- Teaching activities:** + Lecture, explicit teaching, independent learning - Learning activities in class (Students): +Listen to the lecture +Answer the questions given by the lecturer + Ask questions about issues of interest (Students) + Discussion and conclusion - Learning at home + Read course syllabus + Review the lessons + Prepare books, reference materials		
4	**Chapter 2. Materials and technology for the production of buildig ceramics** 2.1. Materials 2.1.1.Clay material 2.1.1.1. Chemical composition	**- Teaching activities:** + Lecture, explicit teaching, independent learning - Learning activities in class: +Listen to the lecture +Answer the questions given by the lecturer + Ask questions about issues of interest (Students)	A1.1, A2.1	CLO2, CLO3

Weeks/ 2 periods	Contents	Teaching and learning activities	Performance assessment	Course learning outcomes (CLOs)
	2.1.1.2. Mineral composition 2.1.1.3. Impurities 2.1.1.4. Particle size distribution 2.1.2. Non-plastic material 2.1.2.1. Skinny additive 2.1.2.2. Fire additives 2.1.2.3. Melting additives	+ Discussion and conclusion - Learning at home + Read course syllabus + Review the lessons + Prepare books, reference materials + Homeworks		
5	**Chapter 2. Materials and technology for the production of buildig ceramics** 2.2. Technology 2.2.1. Processing of raw materials and preparation of materials	**- Teaching activities:** + Lecture, explicit teaching, independent learning - Learning activities in class: +Listen to the lecture +Answer the questions given by the lecturer + Ask questions about issues of interest (Students) + Discussion and conclusion - Learning at home + Read course syllabus + Review the lessons + Prepare books, reference materials	A1.1, A1.3	CLO 1, 2, 3
6	**Chapter 2. Materials and technology for the production of buildig ceramics** 2.2.2. Product forming process	**- Teaching activities:** + Lecture, explicit teaching, independent learning - Learning activities in class: +Listen to the lecture +Answer the questions given by the lecturer + Ask questions about issues of interest (Students) + Discussion and conclusion - Learning at home + Read course syllabus + Review the lessons + Prepare books, reference materials	A1.1	CLO1, CLO4
7	**Chapter 2. Materials and technology for the production of buildig ceramics** 2.2.3. Drying process	**- Teaching activities:** + Lecture, explicit teaching, independent learning - Learning activities in class: +Listen to the lecture +Answer the questions given by the lecturer + Ask questions about issues of interest (Students) + Discussion and conclusion	A1.1	CLO1, CLO4

Weeks/ 2 periods	Contents	Teaching and learning activities	Performance assessment	Course learning outcomes (CLOs)
		- Learning at home + Read course syllabus + Review the lessons + Prepare books, reference materials		
8	**Chapter 2. Materials and technology for the production of buildig ceramics** 2.2.4. Heating process	**- Teaching activities:** + Lecture, explicit teaching, independent learning - Learning activities in class: +Listen to the lecture +Answer the questions given by the lecturer + Ask questions about issues of interest (Students) + Discussion and conclusion - Learning at home + Read course syllabus + Review the lessons + Prepare books, reference materials	A1.1	CLO1, CLO4
Mid-term exam		Written exam	A1.1, A2	CLO 1, 2
9	**Chapter 3. Brick** 3.1. Product types and technical requirements 3.2. Raw merarials 3.3. Technological process 3.3.1. Preparation of materials, shaping 3.3.2. Drying process 3.3.3. Heating process 3.3.4. Product quality testing	**- Teaching activities:** + Lecture, explicit teaching, independent learning - Learning activities in class: +Listen to the lecture +Answer the questions given by the lecturer + Ask questions about issues of interest (Students) + Discussion and conclusion - Learning at home + Read course syllabus + Review the lessons + Prepare books, reference materials	A1.1	CLO 1, 2, 3, 4, 5
10	**Chapter 4. Tiles** 4.1. Product types and technical requirements 4.2. Raw merarials 4.3. Technological process 4.3.1. Preparation of materials, shaping 4.3.2. Drying process 4.3.3. Glazing pocess 4.3.4. Heating process 4.3.5. Product quality testing	**- Teaching activities:** + Lecture, explicit teaching, independent learning - Learning activities in class: +Listen to the lecture +Answer the questions given by the lecturer + Ask questions about issues of interest (Students) + Discussion and conclusion - Learning at home + Read course syllabus + Review the lessons	A1.1	CLO 1, 2, 3, 4, 5

Weeks/ 2 periods	Contents	Teaching and learning activities	Performance assessment	Course learning outcomes (CLOs)
		+ Prepare books, reference materials		
11	**Chapter 5. Wall tiles and floor tiles** 5.1. Ceramic 5.1.1. Product types and technical requirements 5.1.2. Materials for making ceramic bones 5.1.3. Composition of glaze	**- Teaching activities:** + Lecture, explicit teaching, independent learning - Learning activities in class: +Listen to the lecture +Answer the questions given by the lecturer + Ask questions about issues of interest (Students) + Discussion and conclusion - Learning at home + Read course syllabus + Review the lessons + Prepare books, reference materials + Homeworks	A1.1, A1.2	CLO 1, 2, 3, 4, 5
12	**Chapter 5. Wall tiles and floor tiles (next)** 5.1.4. Technological process 5.1.4.1. Preparation of materials 5.1.4.2. Prepare glaze	**- Teaching activities:** + Lecture, explicit teaching, independent learning - Learning activities in class: +Listen to the lecture +Answer the questions given by the lecturer + Ask questions about issues of interest (Students) + Discussion and conclusion - Learning at home + Read course syllabus + Review the lessons + Prepare books, reference materials	A1.1	CLO 1, 2, 3, 4, 5
13	**Chapter 5. Wall tiles and floor tiles (next)** 5.2. Technological process (next) 5.1.4.3. Product shaping 5.1.4.4. Drying process 5.1.4.5. Glazing pocess 5.1.4.6. Heating process 5.1.4.7. Product quality testing	**- Teaching activities:** + Lecture, explicit teaching, independent learning - Learning activities in class: +Listen to the lecture +Answer the questions given by the lecturer + Ask questions about issues of interest (Students) + Discussion and conclusion - Learning at home + Read course syllabus + Review the lessons + Prepare books, reference materials	A1.1	CLO 1, 2, 3, 4, 5
14	**Chapter 5. Wall tiles and floor tiles (next)**	**- Teaching activities:**	A1.1	CLO 1, 2, 3, 4, 5

Weeks/ 2 periods	Contents	Teaching and learning activities	Performance assessment	Course learning outcomes (CLOs)
	5.2. Granite 5.2.1. Product types and technical requirements 5.2.2. Raw materials 5.2.3. Technological process	+ Lecture, explicit teaching, independent learning - Learning activities in class: +Listen to the lecture +Answer the questions given by the lecturer + Ask questions about issues of interest (Students) + Discussion and conclusion - Learning at home + Read course syllabus + Review the lessons + Prepare books, reference materials		
15	**Chapter 6. Ceramic sanitary wares** 6.1. Product types and technical requirements 6.2. Raw materials 6.4. Technological process	**- Teaching activities:** + Lecture, explicit teaching, independent learning - Learning activities in class: +Listen to the lecture +Answer the questions given by the lecturer + Ask questions about issues of interest (Students) + Discussion and conclusion - Learning at home + Read course syllabus + Review the lessons + Prepare books, reference materials	A1.1	CLO 1, 2, 3, 4, 5
Final exam		Written exam	A1.1, A3	CLO 1, 2, 3, 4, 5

15. Materials

15.1. Books, lectures, main textbooks

[1] Vu Minh Duc, *Technology of Building Ceramics*, Construction Publisher, 1999.

15.2. Reference materials

[1] Nguyen Van Dung, *Technology of Ceramics, Da nang university, 2005*

[2] Do Minh Dao, *Technical manual for the production of ceramic tiles,* Vietnam Ceramics Association

[3] Vietnam standards- Ministry of science and technology and Other Standards.

16. Scientific code of ethics:

- Students must respect a lecturer and other students.
- Students must comply with the University's academic integrity policy.
- Students must obey the rules and regulations of the university.

17. Approved date:

18. Approved by:

Dean of Faculty	Program chair	Lecturer in charge

Cao Van Lam, PhD.	**Vo Duy Hung, PhD.**	**Do Thi Phong, M.Sc.**

48. PBL4 – Technology of building ceramics 1

THE UNIVERSITY OF DANANG
UNIVERSITY OF SCIENCE AND TECHNOLOGY
Faculty of Road and Bridge Engineering

SOCIALIST REPUBLIC OF VIETNAM
Independence - Freedom - Happiness

UNDERGRADUATE PROGRAM

Awarded degree: Undergraduate/Bachelor

Name of the study program: Construction Materials Engineering and Technology

Program Code: 7510105

SYLLABUS
Course name (Vietnamese): PBL4_Công nghệ gốm xây dựng 1
English name: PBL4 – Technology of building ceramics 1

1. Course code:	1092790
2. Course abbreviation:	PBL4 – Technology of building ceramics 1
3. Credits **ECTS credits (*):**	2 credits 3,33
4. Study workload:	
- Lecture:	45 periods
- Exercise:	
- Practice/ Laboratory:	15 periods
- Self-study/Assignment:	60 periods
5. Responsible persons	
- Faculty/Division in charge:	Construction Materials Division/Faculty of Road and Bridge Engineering
- Course coordinator:	Do Thi Phuong, MSc
- Other lecturers:	Nguyen Van Quang, PhD Nguyen Tien Dung, Student PhD Vu Hoang Tri, MSc
6. Required and recommended prerequisites for joining the course:	
- Required prerequisite:	None
- Recommended prerequisite:	Construction Materials; Industrial Architecture; Machinery for the production of construction materials.
- Corequisite:	Technology of building ceramics 1
7. Type course	☒ Compulsory Selected elective Free elective
8. Knowledge clusters:	Math and natural science General knowledge ☒ Core engineering fundamental knowledge Disciplinary knowledge

	Supportive knowledge Project/ Internship/ Graduate thesis

9. Course description

Project of Technology of building ceramics 1, which is an interdisciplinary course combining 03 modules: Technology of building ceramics 1, Construction Materials, and Machinery for the production of construction materials. The module helps students design the production line of basic building ceramic materials as well as the production workshop. With content from raw material selection, mix calculation and experiment; analysis and selection of production methods; technology design and calculation; selection of machines and production equipment. The course will provide knowledge for the Graduation Project and server sections for bachelors working in field studies, design, production and testing.

10. Course Learning Outcomes (CLOs):

After completing the course, students will be able to:

No.	Course Learning Outcomes (CLOs)	Knowledge	Skills	Attitude	Performance indicators PI (belongs to PLOs)
1	**Apply** the method of calculation and selection of components for ceramic materials. Testing the properties of raw materials and mixtures.	a3.Manipulate	b2.Manipulate	c4. Organize	1.4.4.
2	**Analyze, select and propose** an effective production plan	a4.Analyze	b4. Competency	c3. Attitude	2.2. 8.1.
3	**Select** suitable production equipment and machinery	a3.Manipulate	b4. Competently	c4. Organize	3.1. 8.2.
4	**Present** the results of the group's PBL implementation: project description, drawings, reports	A2. Understand	b4. Competently	c3. Attitude	5.2. 7.1. 7.2.1. 8.3.
5	**Organize** effective small group work			c4. Organize	4.1. 5.2.

11. The relationship between course learning outcomes (CLOs) and program learning outcomes (PLOs):

PLOs	PLO1	PLO2	PLO3	PLO4	PLO5	PLO6	PLO7	PLO8
Contribution of the course	U	T	T	T	U		U	TU
CLO 1	X							
CLO 2		X						X
CLO 3			X					X
CLO 4					X		X	X
CLO 5				X	X			

12. Student responsibilities:

Students must perform the following tasks:

- Attend at least 80% of the lessons of the theorical course,

- Attend 100% of the lab sessions of the course, more than 01 lab session of absence (without the lecturer's permission) or a Lab Final Assessment (A2) result of < 5 points (on scale of 10) equals denial from sitting the final theoretical exam.
- Participate in group work activities according to the regulations of the course;
- Self-study the problems assigned by the lecturer to solve outside of class time;
- Comply with the rules and regulations of lecturers and instructors;
- Implement and present the contents of the project in accordance with the assigned tasks
- Engage in topic/content group discussion in the tutorial sessions;
- Attend the periodic project quality inspection and evaluation organized by lecturers and instructors.
- Attend the project defense in accordance with the regulations of the Division and the Faculty.

13. Course assessments

The results of course assessments are based on the assessment of students' activities during the course of study, the mid-term exams and final exams as shown via the Performance Assessment; the evaluated Course Learning Outcomes; the rubric, standards and weights of the assessments.

Type of Assessment	Performance Assessment (Ax.x)	Assessment Methods	Rubric	Assessment Weighting Percentage (%)	Component Weighting Percentage (%)	CLOs
A1. Ongoing Assessment	A1.1 Project guide participation	Diligence, discussion	Rubric 1.1	W1.1 50%	W1. 30%	CLO1, 2,3,4,5
	A1.2 Group lab work participation	Diligence, lab experiment data report	Rubric R1.2	W1.2 50%		CLO1, 5
A2. Project Implementation Results Assessment	A2.1 Project description	Project description	Rubric R2.1	W2.1 70%	W2. 20%	CLO1, 2,3,4
	A2.2 Drawings	Drawings	Rubric R2.2	W2.2 30%		CLO1, 2,3,4
A3. Final Assessment	A3.1 Presentation of project contents	Oral report, presentation	Rubric R3.1	W3.1 30%	W3. 50%	CLO4
	A3.2 Answer questions related to the project	Presentation on Defense Day	Rubric R3.2	W3.2 70%		CLO1, 2, 3

Rubric 1.1: Project guide participation

Rubric	Specified levels of standard					Weight
	F (0-3.9)	D (4.0-5.4)	C (5.5-6.9)	B (7.0-8.4)	A (8.5-10)	
Attendence	< 30%	<50%	<70%	<90%	100%	**50%**
Discussion	Student never engages in class discussions	Student rarely engages in class discussions by offering ideas	Student occasionally engages in class discussions by offering ideas during class hour	Student frequently engages in class discussions by offering ideas during class hour	Student always engages in class discussions by offering ideas effective for class activities	**50%**

Rubric 1.2: Group lab work participation

Rubric	Specified levels of standard	Weight

	F (0-3.9)	D (4.0-5.4)	C (5.5-6.9)	B (7.0-8.4)	A (8.5-10)	
Attendance	< 30%	<50%	<70%	<90%	100%	**50%**
Lab experiment	Student attends lab session but doesn't participate in any experiments	Student attends lab session & participates in a few experiments	Student attends lab session & participates in most experiments	Student attends lab session & participates in all experiments. Student engages in discussions to offer ideas for the group	Student attends lab session & participates in all experiments. Student frequently engages in discussions to offer effective ideas for the group	**50%**

Rubric 2.1: Project implementation result assessment via project description

Rubric	Specified levels of standard					Weight
	F (0-3.9)	D (4.0-5.4)	C (5.5-6.9)	B (7.0-8.4)	A (8.5-10)	
Content of Report/ Project	Content is incomplete or doesn't meet requirements.	Content is complete and meet requirements. Several calculation errors remain, some sections are illogical.	Content is complete and meet requirements. A few calculation errors remain, some sections are illogical.	Content is complete and meet requirements, calculation is logical in sequence and accurate in results. Content is not convincing due to lack of specific analysis & explanation.	Content is complete and meet requirements, calculation is specific, unambiguous, logical in sequence and accurate in results. Content is convincing thanks to specific analysis & explanation.	**80%**
Presentation of Report/ Project Description	Description is incomplete or doesn't meet requirements.	Order of description is incorrect. Content meets requirements. Figures and tables still contradict the content.	Content & order of description meet requirements. Some spelling errors remain, dimensions & notes are incomplete.	Content meets requirements, sequence & structure are logical. Figures & tables are unambigious & logical with applicable notes. Description presentation shows limited editorial skills.	Content meets requirements, sequence & structure are logical. Figures & tables are unambigious & logical with applicable notes. Description presentation shows good editorial & calculation skills.	**20%**

Rubric 2.2: Drawings

Rubric	Specified levels of standard					Weight
	F (0-3.9)	D (4.0-5.4)	C (5.5-6.9)	B (7.0-8.4)	A (8.5-10)	
Technical Drawings & Figures	There are no drawings or an insufficient number of drawings or content	There is a sufficient number of drawings/figures with content meeting requirements. Dimensions & notes are not	There is a sufficient number of drawings with content meeting requirements. Dimensions & notes are clearly shown.	There is a sufficient number of drawings (03 drawings) with content meeting requirements. Components are properly	There is a sufficient number of drawings (03 drawings) with content meeting requirements. Components are properly organized. Dimensions & notes are complete	**100%**

	of drawings does not meet requirements.	shown or are not clearly shown or missing some parts on the drawings	Some presentation errors remain (spelling, lines)	organized. Dimensions & notes are complete & clearly shown.	& clearly shown. Drawings show proficiency with drawing tools on computers, which can be applied in practical construction works	

Rubric 3.1: Presentation

Rubric	Specified levels of standard					Weight
	F (0-3.9)	**D (4.0-5.4)**	**C (5.5-6.9)**	**B (7.0-8.4)**	**A (8.5-10)**	
Content	Content does not meet requirements.	Content meets requirements but contains multiple errors.	Content meets requirements. The terms in use are obscure & ambiguous.	Content meets requirements. The terms in use are simple & easy to understand.	Content meets requirements. The terms in use are simple & easy to understand. Content order is logical.	**70%**
Presentation	Presentation lacks logic or exceeds beyond allotted time, terms in use are incorrect, pronuciation is unclear, speaking voice is low, audience doesn't understand.	Presentation is complete, speaking voice is low, pronunciation of certain words is unclear, terms in use are overly complicated, no interactions with audience.	Presentation has a clear 3-part outline (introduction, body & conclusion), speaking voice is clear & easy to listen to, presentation doesn't exceed allotted time, occasional interaction with audience, audience can understand & follow the presentation.	Presentaion is concise & easy to understand, terms in use are simple & unambiguous, has a clear 3-part outline (introduction, body & conclusion), speaking voice is clear with a fluent delivery, presentation doesn't exceed allotted time, effective interaction with audience, audience can understand & follow the presentation.	Presentaion is brief & has a clear 3-part outline (introduction, body & conclusion), speaking voice is clear & engaging with a fluent delivery, presentation doesn't exceed allotted time, effective interaction with audience, audience can understand & follow the entire presentation.	**30%**

Rubric 3.2: Answering questions

Rubric	Specified levels of standard					Weight
	F (0-3.9)	**D (4.0-5.4)**	**C (5.5-6.9)**	**B (7.0-8.4)**	**A (8.5-10)**	
Attitude when answering	Student displays rude, uncooperative, disrespectful attitude when communicating & answering	Student displays civil attitude when communicating & answering questions, uses overly com-	Student displays gentle & pleasant attitude when communicating & answering questions, speaking voice is	Student displays confident, gentle & calm attitude when communicating & answering questions, speaking voice is clear with fluent	Student displays highly confident attitude when communicating & answering questions, speaking voice is clear with fluent & engaging delivery,	**20%**

	questions, uses inappropriate terms, slurred voice.	plicated & obscure terms, speaking voice is low, shows lack of confidence.	clear & easy to listen to, uses appropriate & simple terms.	delivery, uses appropriate & simple terms.	effective interaction with audience.	
Content of answer	The answers are completely unrelated to the questions.	The answers are unclear, almost unrelated to the question, do not focus on the point of the question.	The answers are focus on the point of the question & related to the question but student lacks confidence.	The answers are concise, clear, complete & related to the question, student shows confidence & knowledge in their answers, arguments & explanations are not convincing.	The answers are concise, clear, complete & related to the question, student shows confidence in their answers, arguments & explanations are completely convincing.	**80%**

14. Teaching and Learning plan

Week/ Lesson	Contents	Teaching and learning activities	Performance Assessment	Course Learning Outcomes (CLOs)
1	**Introduction** - Course objectives. - Overview of course program and learning materials. - Organizational formats of teaching & learning, tasks of students corresponding to each format. - Assessment methods and weighting percentage.	**- Teaching activities:** + Lecture, explicit teaching, independent learning, pear learning, discussion + Introduce course syllabus, teaching schedule **- Learning at home** (Students): + Read course syllabus, review the lessons, prepare books, reference materials + Choose a group of students, and assign preliminary work. + Join the class to discuss on MS Teams	A1.1	CLO5
2	**Chapter 1. Literature review** 1.1. Introduction of product structure and properties. 1.2. Introduction of raw materials and fuel 1.3. Compound calculation	**- Teaching activities:** Lecture, explicit teaching, independent learning, pear learning, discussion **- Learning at home** (Students): - The group completed the explanation of the content of lesson 2 - Read the textbook, reference materials according to the lesson 3	A1.1	CLO1, CLO5
3	**(Experiment)** **Chapter 2. Sample collection and preparation of test materials** 2.1. Mission 2.2. Experimental methods 2.3. Experimental steps	**- Teaching activities:** Lecture, explicit teaching, independent learning, pear learning, discussion **- Learning at home** (Students): + Write a report on the experiment results of Lab Session 1	A1.2	CLO1, CLO5

	2.4. Results and reviews **Chapter 3. Derermination of weight of materials** 3.1. Concepts and meanings 3.2. Laboratory instruments 3.3. Experimental method 3.4. Experimental steps 3.5. Results and reviews	- Read the textbook, reference materials according to the lesson 4		
4	**Chapter 4. Determination of particle size distribution of materials** 4.1. Concepts and meanings 4.2. Laboratory instruments 4.3. Experimental method 4.4. Experimental steps 4.5. Results and reviews **Chapter 5. Determination of plasticity of materials** 5.1. Concepts and meanings 5.2. Laboratory instruments 5.3. Experimental method 5.4. Experimental steps 5.5. Results and reviews	**- Teaching activities:** Lecture, explicit teaching, independent learning, pear learning, discussion **- Learning at home** (Students): + Write a report on the experiment results of Lab Session 2 - Read the textbook, reference materials according to the lesson 5	A1.2	CLO1, CLO5
5	**Chapter 6. Determination of sensitive and shrinkage of materials** 6.1. Concepts and meanings 6.2. Laboratory instruments 6.3. Experimental method 6.4. Experimental steps 6.5. Results and reviews	**- Teaching activities:** Lecture, explicit teaching, independent learning, pear learning, discussion **- Learning at home** (Students): + Write a report on the experiment results of Lab Session 3 - Read the textbook, reference materials according to the lesson 6	A1.2	CLO1, CLO5
6	**Chapter 7. Designing technology line diagram** 7.1. Choose a production plan 7.2. Design a technology line diagram 7.3. Present	**- Teaching activities:** Lecture, explicit teaching, independent learning, pear learning, discussion **- Learning at home** (Students): + The group completed the explanation of the content of lesson 6 - Read the textbook, reference materials according to the lesson 7	A1.1	CLO2, CLO4, CLO5
7	**Chapter 8. Mass balance calculation** 8.1. Setting up the working mode for the workshop 8.2. Material loss of stages 8.3. Material balance calculation	**- Teaching activities:** Lecture, explicit teaching, independent learning, pear learning, discussion **- Learning at home** (Students): + The group completed the explanation of the content of lesson 7 - Read the textbook, reference materials according to the lesson 8	A1.1	CLO3, CLO4, CLO5

8	**Chapter 9. Equipment Calculation and Selection** 9.1. Select equipment 9.2. Performance testing	**- Teaching activities:** Lecture, explicit teaching, independent learning, pear learning, discussion **- Learning at home** (Students): + The group completed the explanation of the content of lesson 8 - Read the textbook, reference materials according to the lesson 9	A1.1	CLO3, CLO4, CLO5
9	**Chapter 10. Architecture and Design drawings** 10.1. Warehouse design 10.2. Layout of production technology premises 10.3. Design drawings	**- Teaching activities:** Lecture, explicit teaching, independent learning, pear learning, discussion **- Learning at home** (Students): The group of students completed the project description and the drawing of the lesson 9	A1.1	CLO4, CLO5
10	**Finalize the project and make a preliminary assessment before defending**	**- Teaching activities:** + Check the content of explanations and drawings after editing. + Discussion + Review and evaluate preliminary test results. **- Learning at home** (Students): Each group of students makes a short presentation of the project description and drawings after editing	A1.1, A2.1, A2.2	CLO1 CLO2, CLO3, CLO4, CLO5
11		- According to the general schedule of the School, Faculty - Requirements: the groups must have full project description and drawings in accordance with regulations.	A1.1 A3.2, A3.3	CLO1, CLO2, CLO3, CLO4, CLO5

15. Materials:

15.1. Books, lectures, main textbooks:

[1] Department of Building Materials Technology – Hanoi University of Civil engineering, *Guide to designing graduation projects for the field of calcined materials technology*, 1985

[2] Vu Minh Duc, *Technology of building ceramics*, Education Publishing House, 1999.

15.2. Reference materials:

[1] Huynh Phuong Nam, Nguyen Thi Tuyet An, Do Thi Phuong, *Construction Materials*, Construction Publishing House, 2016

[2] Doan Tai Ngo, Nguyen Thieu Xuan, Tran Van Tuan, Nguyen Thi Thanh Mai, Nguyen Kiem Anh, *Machines for the production of construction materials and components*, Education Publishing House, 2000.

[3] Bach Dinh Thien, Nguyen Kim Huan, *Thermal equipments in the production of construction materials*, Publishing Scientific and Technical, 1996

[4] Truong Hoai Chinh, *Industrial factory design facility*, Da Nang Publishing House, 2013.

[5] Do Thi Phuong, Vu Hoang Tri, *Building Ceramics Laboratory Manual* (for internal use only)
[6] Vietnam standards- Ministry of science and technology

16. Scientific code of ethics:

- Students must respect the lecturer and other students.
- Students must comply with the University's academic integrity policy.
- Students must obey the rules and regulations of the university.

17. Approved date:

18. Approved by:

Dean of Faculty	Program chair	Lecturer in charge
Cao Van Lam, PhD.	**Vo Duy Hung, PhD.**	**Do Thi Phuong, Msc**

49. Technology of concrete 1

THE UNIVERSITY OF DANANG
UNIVERSITY OF SCIENCE AND TECHNOLOGY
Faculty of Road and Bridge Engineering

SOCIALIST REPUBLIC OF VIETNAM
Independence - Freedom - Happiness

UNDERGRADUATE PROGRAM

Awarded degree: Undergraduate/Bachelor

Name of the study program: Construction Materials Engineering and Technology Program Code: 7510105

SYLLABUS
Course name (Vietnamese): Công nghệ bê tông 1
English name: Technology of concrete 1

1. Course code:	1090593
2. Course abbreviation:	Technology of concrete 1
3. Credits: **ECTS credits (*):**	3 (45 hours) 4,25
4. Study workload:	
- Lecture:	45
- Exercise:	2
- Practice/ Laboratory:	
- Self-study/Assignment:	90
5. Responsible persons	
- Faculty/Division in charge:	Construction materials division
- Course coordinator:	M.Sc. Le Xuan Chuong
- Other lecturers:	M.Sc. Nguyen Tien Dung
6. Required and recommended pre-requisites for joining the course:	
- Required prerequisite:	None
- Recommended prerequisite:	Machines and equipment for the production of building materials; Thermal equipment for production of building materials; Reinforced concrete structure - Basic part; Production technique of inorganic binder 1
- Corequisite:	None
7. Type course	☒ Compulsory Selected elective Free elective
8. Knowledge clusters:	Math and natural science General knowledge ☒ Core engineering fundamental knowledge Disciplinary knowledge Supportive knowledge

	Project/ Internship/ Graduate thesis

9. COURSE DESCRIPTION

This course provides knowledge about the properties and rheological properties of concrete mixes, the solidification process and the formation of structures in concrete. In addition, the course also focuses several topic including the methods of characterization; Measures to improve the performance of ordinary concrete, high strength concrete and other special concrete in ac-cordance with forming technology. Methods of calculating concrete mix, Technology of manu-facturing concrete mixes and production of aggregate concrete building materials.

10. COURSE LEARNING OUTCOMES (CLOs)

After completing the course, students have ability to:

No	Course Learning Outcomes (CLOs)	Knowledge	Skills	Atti-tude	Performance indicators (belongs to PLOs)
1	Explain the knowledge about the properties and rheological characteristics of the con-crete mix as well as the solidification process, the formation of the structure of cement stone in concrete; properties of concrete and con-crete mixtures.	a2. Under-stand			1.3.6
2	Select solutions to improve the technical per-formance of ordinary concrete and high-qual-ity concrete in accordance with the require-ments of structural and structural engineering technology.	a4. Analyze			1.3.6
3	Calculate the reasonable and optimal aggre-gate particle composition; composition of normal concrete and high strength concrete in accordance with the requirements in actual production.	a3. Apply	b4 Artic-ulation		1.3.6
4	Select the suitable technology and equip-ment for the production line of concrete mixes and the aggregate concrete building material factory	a4. Analyze			1.3.6; 8.1.1; 8.2.1; 8.2.2; 8.2.3; 8.2.4

11. CLOs AND PLOs MAPPING:

PLOs	PLO1	PLO2	PLO3	PLO4	PLO5	PLO6	PLO7	PLO8
Contribution of the course	TU							TU
CLO1	x							
CLO2	x							x
CLO3	x							x
CLO4	x							x

12. Student responsibilities:

Students must do the following tasks:

- Attend at least 80% of the lessons of the part class;
- Participating in group work activities according to the regulations of the class;
- Self-study the problems assigned by the lecturer to do outside of class time;
- Complete all course test.

13. ASSESSMENT

The results of the course evaluation are based on the assessment of the student's activities during the course, the mid-term exam and the final exam; the course output standards are assessed; criteria, standards and weights of the assessments.

Type of assessment	**Performance assessment**	**Assessment methods**	**Rubric**	**Weighting percentage (%)**		CLOs
A1. Ongoing assessment	A1.1 Exercises /homeworks	P1.1. Do at class/Homeworks	Rubric R1.1	W1.110%	W1. 20%	
	A1.2 Class Attendance	P1.3. Diligence	Rubric R1.2	W1.210%		CLO 3
A2. Mid-term Assessment	A2. Mid-term exam	P2. Written exam	Answers of test	W2.120%	W2. 20%	CLO 1,2
A3. Final Assessment	A3. Final exam	P3. Written exam	Answers of test	W3.160%	W3. 60%	CLO 1,2,3,4

14. Teaching and learning plan

Week (3 hours per week)	Content	CLOs	Teaching and Learning Activities	Assessment
1	- Introduction of detailed course outline: Summary of content, output standards, assessment methods, learning materials, study plan... - Class contact activities. **Chapter 1**: Classification of concrete and concrete products 1.1, Overview of concrete 1.2, Classification of concrete 1.3, Products of concrete	**Teaching:** - Lectures combined with lecture slides - Ask students questions **Learning in class:** Learning content: according to chapter1 - Listen to lectures, take notes - Answer questions given by the teacher - Ask questions about issues of interest, discuss **Study at home:** - Read the content of chapter 1 learned - Read the content of chapter 2 first - Answer short questions	A1.1, A2	CLO 1
2	**Chapter 2**: Concrete composition 2.1. Mechanical and rheological properties of concrete mix 2.1.1, Basic requirements of concrete hh	**Teaching:** - Lectures combined with lecture slides - Ask students questions **Learning in class:** Learning content: according to chapter1 - Listen to lectures, take notes - Answer questions given by the teacher	A1.1, A2, A3	CLO1

	2.1.2. Composition and internal force of interaction 2.1.3 Formation of structural viscosity and catalytic properties of concrete	- Ask questions about issues of interest, discuss **Study at home:** - Read the content of chapter 1 learned - Read the content of chapter 2 first - Answer short questions		
3	**Chapter 2**: (continued) 2.2. Types of concrete mixes and technological characteristics 2.2.1. Two types of concrete 2.2.2. How to determine workability? 2.3. Factors affecting the properties of concrete 2.3.1. Initial water content 2.3.2. Amount and properties of cement 2.3.3. Amount and properties of aggregates 2.3.4. Surfactant additives 2.3.5. Vibration machining	**Teaching:** - Lectures combined with lecture slides - Ask students questions **Learning in class:** Learning content: according to chapter1 - Listen to lectures, take notes - Answer questions given by the teacher - Ask questions about issues of interest, discuss **Study at home:** - Read the content of chapter 1 learned - Read the content of chapter 2 first - Answer short questions	A1.1, A2, A3	CLO 1,2
4	**Chapter 3**: The solidification process of cement and the formation of cement stone structure. 3.1. Types of water binding 3.1.1. A chemical connection 3.1.2. physicochemical bond 3.1.3. Mechanical link 3.1.4. Unbound water 3.2. The solidity of Portland cement 3.3. Setting time of concrete mix 3.4. Cement stone structure 3.4.1. New hydrates are formed in the form of gels and crystals 3.4.2. Aggregates and micro-aggregates 3.4.3. Types of large and small pores and capillaries 3.5. Hardness of concrete at room temperature	**Teaching:** - Lectures combined with lecture slides - Ask students questions **Learning in class:** Learning content: according to chapter1 - Listen to lectures, take notes - Answer questions given by the teacher - Ask questions about issues of interest, discuss **Study at home:** - Read the content of chapter 1 learned - Read the content of chapter 2 first - Answer short questions	A1.1, A2, A3	CLO 1,2

	3.5.1. Enhance the activity of the binder 3.5.2. Reduce initial water use 3.5.3. Quick solid additive 3.6. Hardness of concrete at high temperature 3.6.1. Solid at temperatures up to 1000C 3.6.2. Solid at high pressure steam saturation 3.7. Volumetric deformation during solidification 3.7.1. Shrinkage 3.7.2. bloom 3.7.3. Heat deformation			
5	**Chapter 4**: Basic properties of concrete 4.1. Structure and structure of concrete 4.2. Physical effects of water on the properties of concrete 4.2.1. Water absorption and water saturation 4.2.2. Water permeability 4.3. Thermophysical properties of concrete 4.3.1. Thermal conductivity 4.3.2. Heat capacity and specific heat 4.3.3. Heat conductivity coefficient 4.4. Mechanical properties of concrete 4.4.1. Compressive strength 4.4.2. Tensile strength 4.4.3. Factors affecting the strength of concrete 4.4.4. Bonding between concrete and rebar 4.4.5. Elasticity - plasticity of concrete 4.5. The sustainability of concrete 4.5.1. Sustainability in aggressive environments 4.5.2. Fire resistance and heat resistance of concrete	**Teaching:** - Lectures combined with lecture slides - Ask students questions **Learning in class:** Learning content: according to chapter1 - Listen to lectures, take notes - Answer questions given by the teacher - Ask questions about issues of interest, discuss **Study at home:** - Read the content of chapter 1 learned - Read the content of chapter 2 first - Answer short questions	A1.1, A2, A3	CLO 1,2

6	**Chapter 5**: Heavy Concrete 5.1. Materials for making heavy concrete 5.1.1. Cement 5.1.2. Aggregates 5.1.3. Country 5.1.4. Additives	**Teaching:** - Lectures combined with lecture slides - Ask students questions **Learning in class:** Learning content: according to chapter1 - Listen to lectures, take notes - Answer questions given by the teacher - Ask questions about issues of interest, discuss **Study at home:** - Read the content of chapter 1 learned - Read the content of chapter 2 first - Answer short questions	A1.1, A1.2, A2, A3	CLO 1,3
7	**Chapter 5**: (continued) 5.2. Choose concrete composition 5.2.1. Concrete composition 5.2.1. Calculation of concrete composition. 5.2.3. Calculate the material dosage for the batch of the mixer	**Teaching:** - Lectures combined with lecture slides - Ask students questions **Learning in class:** Learning content: according to chapter1 - Listen to lectures, take notes - Answer questions given by the teacher - Ask questions about issues of interest, discuss **Study at home:** - Read the content of chapter 1 learned - Read the content of chapter 2 first - Answer short questions	A1.1, A1.2, A2, A3	CLO 3
8	Chapter 6: High-perfomance concrete 6.1. overview 6.1.1. Concept 6.1.2. High-perfomance concrete 6.2. High strength cement concrete 6.2.1. Classification of high strength concrete 6.2.2. The application of CCCC on TG and VN 6.2.3. Measures to increase the strength of the SCC	**Teaching:** - Lectures combined with lecture slides - Ask students questions **Learning in class:** Learning content: according to chapter1 - Listen to lectures, take notes - Answer questions given by the teacher - Ask questions about issues of interest, discuss **Study at home:** - Read the content of chapter 1 learned - Read the content of chapter 2 first - Answer short questions	A1.1, A3	CLO 1,2
9	**Chapter 6**: (continued) 6.2.4, Materials for making concrete 6.2.5, Design of concrete components	**Teaching:** - Lectures combined with lecture slides - Ask students questions **Learning in class:** Learning content: according to chapter1 - Listen to lectures, take notes - Answer questions given by the teacher - Ask questions about issues of interest, discuss	A1.1, A3	CLO 1,2

		Study at home: - Read the content of chapter 1 learned - Read the content of chapter 2 first - Answer short questions		
10	Chapter 6: (continued) 6.3. Rolled concrete 6.3.1. overview 6.3.2. Materials for manufacturing roller compacted concrete 6.3.3. Properties of roller compacted concrete 6.3.4. Compacted concrete production technology 6.3.5. Quality assessment during construction	**Teaching:** - Lectures combined with lecture slides - Ask students questions **Learning in class:** Learning content: according to chapter1 - Listen to lectures, take notes - Answer questions given by the teacher - Ask questions about issues of interest, discuss **Study at home:** - Read the content of chapter 1 learned - Read the content of chapter 2 first - Answer short questions	A1.1, A3	CLO 1,2
11	Chapter 6: (continued) 6.4. Self-compacting concrete 6.4.1. overview 6.4.2. Advantages and disadvantages of self-compacting concrete 6.4.3. Classification of self-compacting concrete 6.4.4. Self-compacting ability	**Teaching:** - Lectures combined with lecture slides - Ask students questions **Learning in class:** Learning content: according to chapter1 - Listen to lectures, take notes - Answer questions given by the teacher - Ask questions about issues of interest, discuss **Study at home:** - Read the content of chapter 1 learned - Read the content of chapter 2 first - Answer short questions	A1.1, A3	CLO 1,2
12	**Chapter 7**: Technology of producing concrete 7.1. Technology selection 7.1.1. Purpose and requirements of the concrete mix production facility 7.1.2. Types of mixing plant technology 7.1.3. Explanation of the diagram of mixing plant technology 7.2. Transport, receive and store materials 7.2.1. Transport, receive and store cement 7.2.2. Transportation, reception, processing and storage of aggregates	**Teaching:** - Lectures combined with lecture slides - Ask students questions **Learning in class:** Learning content: according to chapter1 - Listen to lectures, take notes - Answer questions given by the teacher - Ask questions about issues of interest, discuss **Study at home:** - Read the content of chapter 1 learned - Read the content of chapter 2 first - Answer short questions	A1.1, A3	CLO 4
13	Chapter 7: (continued)	**Teaching:** - Lectures combined with lecture slides	A1.1, A3	CLO 4

	7.3. Selection and calculation of machinery and equipment 7.3.1. Measuring equipment 7.3.2. Mixing equipment 7.3.3. Transportation equipment 7.3.4. Storage and storage equipment 7.4. Quality evalution	- Ask students questions **Learning in class:** Learning content: according to chapter1 - Listen to lectures, take notes - Answer questions given by the teacher - Ask questions about issues of interest, discuss **Study at home:** - Read the content of chapter 1 learned - Read the content of chapter 2 first - Answer short questions		
14	**Chapter 8**: Production technology of aggregate concrete bricks 8.1. Types of aggregate concrete construction materials and technical requirements 8.2. Crafting materials 8.3. Design technology production line of aggregate concrete bricks 8.3.1. Explanation of the technology chain 8.3.2. Production planning and material balance	**Teaching:** - Lectures combined with lecture slides - Ask students questions **Learning in class:** Learning content: according to chapter1 - Listen to lectures, take notes - Answer questions given by the teacher - Ask questions about issues of interest, discuss **Study at home:** - Read the content of chapter 1 learned - Read the content of chapter 2 first - Answer short questions	A1.1, A3	CLO 4
15	**Chapter 8**: (continued) 8.3.3, Selection and calculation of machinery and equipment 8.4, Solutions to improve production efficiency and use of aggregate concrete bricks	**Teaching:** - Lectures combined with lecture slides - Ask students questions **Learning in class:** Learning content: according to chapter1 - Listen to lectures, take notes - Answer questions given by the teacher - Ask questions about issues of interest, discuss **Study at home:** - Read the content of chapter 1 learned - Read the content of chapter 2 first - Answer short questions	A1.1, A3	CLO 4
16	Final exam		A3	CLO 1,2,3,4

15. Materials resources:

15.1. Textbooks:

[1] Concrete technology 1 - Nguyen Tan Quy, Nguyen Thien Rue - Construction publisher, 2000

[2] Textbook of Concrete Technology 1 (Concrete Theory) - Le Xuan Chuong- Department of Building Materials, Danang University of Science and Technology (internal circulation).

15.2. References:

[1] Concrete technology - IU.M Bazenov, Bach Dinh Thien, Tran Ngoc Tinh - Construction Publisher, 2004.
[2] Roller compacted concrete – Pham Huu Hanh – Construction Publisher, 2007
[3] High strength concrete – Pham Duy Huu – Construction Publisher, 2004

16. **Scientific code of ethics:**
- Plagiarism is prohibited
- References including textbooks, notes are prohibited in the mid-term examination
- Electronic devices are prohibited during mid-term and final examinations

17. **Approved date:**

18. **Approved by:**

Dean of Faculty	Program chair	Lecturer in charge
Cao Van Lam, PhD.	**Vo Duy Hung, PhD.**	**Le Xuan Chuong, M.Sc.**

50. PBL5-Technology of concrete 1

THE UNIVERSITY OF DANANG
UNIVERSITY OF SCIENCE AND TECHNOLOGY
Faculty of Road and Bridge Engineering

SOCIALIST REPUBLIC OF VIETNAM
Independence - Freedom - Happiness

UNDERGRADUATE PROGRAM

Awarded degree: Undergraduate/Bachelor

Name of the study program: Construction Materials Engineering and Technology Program Code: 7510105

SYLLABUS

Course name (Vietnamese): PBL5-Công nghệ bê tông 1
English name: PBL5-Technology of concrete 1

1. Course code:	1092800
2. Course abbreviation:	PBL5-Technology of concrete 1
3. Credits: **ECTS credits (*):**	2 3,33
4. Study workload:	
- Lecture:	
- Exercise:	15
- Practice/ Laboratory:	15
- Self-study/Assignment:	60
5. Responsible persons	
- Faculty/Division in charge:	Construction materials division
- Course coordinator:	M.Sc. Le Xuan Chuong
- Other lecturers:	M.Sc. Nguyen Tien Dung
6. Required and recommended pre-requisites for joining the course:	
Required prerequisite:	None
Recommended prerequisite:	Industry Architert, Machines and equipment for the production of building materials; Construction materials
Corequisite:	Technology of Concrete 1
7. Type course:	☒ Compulsory Selected elective Free elective
8. Knowledge clusterss:	Math and natural science General knowledge ☒ Core engineering fundamental knowledge Disciplinary knowledge Supportive knowledge Project/ Internship/ Graduate thesis

9. COURSE DESCRIPTION

PBL5 belongs to the project knowledge module combined with Machines and equipment for the production of construction materials. The course provides practical knowledge to evaluate the quality of concrete materials. Component design of normal concrete and high strength concrete. Determination of properties of concrete and concrete mixtures. Determine the influence of additives, environment and time on the properties of concrete during production. Design technology, machinery and equipment for concrete mix production and aggregate concrete production technology.

10. COURSE LEARNING OUTCOMES (CLOs)

After completing the course, students have ability to:

No	Course Learning Outcomes (CLOs)	Knowledge	Skills	Attitude	Performance indicators (belongs to PLOs)
1	Carry out experiments to determine the optimal particle distribution of aggregates, material properties, properties of concrete mixes and hardened concrete, the influence of additives, environment and time on properties of fresh concrete	a2. Understand	b.3. Precision	c.4. Organization	1.4.5, 2.1.1,2.1.2 5.1.1 5.1.2
2	Apply computational methods combined with experiments to design the composition of ordinary concrete and high-strength concrete	a3. Apply	b4 Articulation	c.4. Organization	1.4.5 2.1.1, 2.1.2 5.1.1 5.1.2
3	Analysis and select the technology and equipment to design a commercial concrete batching plant and production line of aggregate concrete materials	a4. Analyze	b4 Articulation	c.3. Valuing	1.4.5; 3.1.1,3.1.2 7.1.4, 7.2.1 8.1.2, 8.2.4;
4	Present the principle of operation, perform the calculation of basic parameters and show it on the explanations and drawings of some machinery and equipment in the technological line	a2. Understand a3. Apply	b.2. Manipulation	c.3. Valuing	1.4.5; 7.1.4; 7.2.1,8.1.2 8.2.4;

11. CLOs AND PLOs MAPPING:

PLO	PLO1	PLO2	PLO3	PLO4	PLO5	PLO6	PLO7	PLO8
Contribution of the course	U	T	T		U		U	TU
CLO1		x			x			
CLO2	x	x			x			x
CLO3	x		x				x	x
CLO4	x		x				x	x

12. Student responsibilities:

Students must do the following tasks:

- Attend at least 80% of the lessons of the part class;
- Participating in group work activities according to the regulations of the class;
- Self-study the problems assigned by the lecturer to do outside of class time;
- Complete all course test.

13. ASSESSMENT

The results of the course evaluation are based on the assessment of the student's activities during the course, the mid-term exam and the final exam; the course output standards are assessed; criteria, standards and weights of the assessments.

Type of assessment	**Performance assessment**	**Assessment methods**	**Rubric**	**Weighting percentage (%)**		CLOs
A1. Evaluation of the technology design process	A1.1. Class Attendance	P1.3. Diligence	Rubric R1.1	W1.1. 50%	W1. 20%	CLO.3,4
	A1.2. Attitudes, results of each section	Report	Rubric R1.2	W1.2. 50%		CLO.3,4
A2. Evaluation of the experiment process	A2.1 Class Attendance	P1.3. Diligence	Rubric R1.1	W2.1. 0%	W2. 20%	
	A2.2 Group report on the experimental results	Report	Rubric R2.2	W2.2. 30%		CLO.1,2
	A2.3 Personal report on the experimental results	Report	Rubric R2.3	W2.3. 70%		CLO.1,2
A3. PBL Final Assessment	A3.1. Report and Drawing	Report	Rubric R3.1	W3.1. 30%	W3. 60%	CLO 1,2,3,4
	A3.2. PBL result presentation	Presenatation	Rubric R3.2	W3.2. 70%		CLO 1,2,3,4

14. Teaching and learning plan

14.1 Part of theory

Week (2 hours per week)	Content	CLOs	Teaching and Learning Activities	Assessment
1	**1. General introduction** 1.1. Types of product 1.2. Select the location of the production facility: material supply, product consumption, transportation.	**Learning in class:** - Course content introduces the detailed course outline - Organize subgroups - Instructions for making PBL according to the group part and the separate part	A1.1	CLO 2,3

		- Ask questions about issues of interest, discuss **Study at home:** - Read the content of the PBL guideline outline - Make an implementation plan		
2	**1. General introduction (continued)** 1.3. Selection and technical properties of materials 1.4. Calculation of concrete composition types	**Teaching:** - Lectures combined with slides - Ask questions for students to think and answer and discuss **Learning in class:** - Listen to lectures, take notes - Answer questions given by the teacher - Ask questions about issues of interest, discuss **Study at home:** - Read the textbook and references - Implement the requested content	A1.1, A1.2,	CLO 2,3
3	Discuss and evaluate the performance of the lesson	**Learning in class:** - Check the performance of the lesson - Discuss remaining problems when implementing the lesson **Study at home:** - Correcting and completing the content of the lesson - Pre-read new content	A1.1, A1.2,	CLO 2,3
4	**2. Technology Design** 2.1. Select production technology diagram. 2.2. Production plan 2.3. Principle of material balance	**Teaching:** - Lectures combined with slides - Ask questions for students to think and answer and discuss **Learning in class:** - Listen to lectures, take notes - Answer questions given by the teacher - Ask questions about issues of interest, discuss **Study at home:** - Read the textbook and references - Implement the requested content	A1.1, A1.2,	CLO 3
5	Discuss and evaluate the performance of the lesson	**Learning in class:** - Check the performance of the lesson - Discuss remaining problems when implementing the lesson **Study at home:** - Correcting and completing the content of the lesson - Pre-read new content	A1.1, A1.2,	CLO 3

6	3. **Elective**: Each student completes a portion of the following content: 3.1. Technology, equipment for transporting, unloading and preserving cement 3.1.1, Plan to supply all kinds of cement 3.1.2. Explain the technological process of transporting, unloading and preserving cement 3.1.3. Calculation of technology and selection of equipment for transporting, unloading and preserving cement	**Teaching:** - Lectures combined with slides - Ask questions for students to think and answer and discuss **Learning in class:** - Listen to lectures, take notes - Answer questions given by the teacher - Ask questions about issues of interest, discuss **Study at home:** - Read the textbook and references - Implement the requested content	A1.1, A1.2,	CLO 3,4
7	Discuss and evaluate the performance of the lesson	**Learning in class:** - Check the performance of the lesson - Discuss remaining problems when implementing the lesson **Study at home:** - Correcting and completing the content of the lesson - Pre-read new content	A1.1, A1.2,	CLO 3,4
8	3.2. Technology of transporting, unloading, storing and processing aggregates 3.1.1. Plan to provide aggregates 3.1.2. Explain the technological process of transporting, unloading and storing aggregates 3.1.3. Aggregate processing: Stone washing, sand screening... 3.1.4. Calculation of technology and selection of equipment for transporting, unloading and storing aggregates	**Teaching:** - Lectures combined with slides - Ask questions for students to think and answer and discuss **Learning in class:** - Listen to lectures, take notes - Answer questions given by the teacher - Ask questions about issues of interest, discuss **Study at home:** - Read the textbook and references - Implement the requested content	A1.1, A1.2,	CLO 3,4
9	Discuss and evaluate the performance of the lesson	**Learning in class:** - Check the performance of the lesson - Discuss remaining problems when implementing the lesson **Study at home:** - Correcting and completing the content of the lesson - Pre-read new content	A1.1, A1.2,	CLO 3,4
10	3.3. Workshop for manufacturing concrete mix	**Teaching:** - Lectures combined with slides	A1.1, A1.2,	CLO 3,4

	3.3.1. Factory production plan 3.3.2. Explain the technology of making concrete mix 3.3.3. Calculating technology and selecting equipment for mixing workshop 3.3.4. Calculation and selection of equipment to transport concrete to the construction site 3.3.5. Checking the quality of the concrete mix manufacturing stage	- Ask questions for students to think and answer and discuss **Learning in class:** - Listen to lectures, take notes - Answer questions given by the teacher - Ask questions about issues of interest, discuss **Study at home:** - Read the textbook and references - Implement the requested content		
11	Discuss and evaluate the performance of the lesson	**Learning in class:** - Check the performance of the lesson - Discuss remaining problems when implementing the lesson **Study at home:** - Correcting and completing the content of the lesson - Pre-read new content	A1.1, A1.2,	CLO 3,4
12	3.4. Production technology of aggregate concrete bricks 3.4.1. Explanation of production technology 3.4.2. Calculation and selection of equipment and machinery: Material storage, mixing, shaping, product maintenance	**Teaching:** - Lectures combined with slides - Ask questions for students to think and answer and discuss **Learning in class:** - Listen to lectures, take notes - Answer questions given by the teacher - Ask questions about issues of interest, discuss **Study at home:** - Read the textbook and references - Implement the requested content	A1.1, A1.2,	CLO 3,4
13	Discuss and evaluate the performance of the lesson	**Learning in class:** - Check the performance of the lesson - Discuss remaining problems when implementing the lesson **Study at home:** - Correcting and completing the content of the lesson - Pre-read new content	A1.1, A1.2,	CLO 3,4
14	Discuss and evaluate the performance of the lesson	**Learning in class:** - Check the performance of the lesson - Discuss remaining problems when implementing the lesson **Study at home:** - Correcting and completing the content of the lesson	A1.1, A1.2,	CLO 4

		- Pre-read new content		
15	Discuss and evaluate the performance of the technology design part according to the assigned tasks: explanations, complete drawings	**Learning in class:** - Check the performance of the lesson - Discuss remaining problems when implementing the lesson **Study at home:** - Correcting and completing the content of the lesson - Pre-read new content	A1.1, A1.2,	CLO 3,4
16	Final exam		A3	CLO1,2

14.2 Part of experiment

Week (5 hours per week)	Content	CLOs	Teaching and Learning Activities	Assessment
1	**Course introduction**. - Introduce detailed outline of practice, study materials, study plan... - Organize into groups - Class familiarization activities. **Exercise 1**: Testing the basic properties of the materials for the construction of concrete 1.1. Cement 1.2. Sand, crushed stone 1.3. Determining the optimal particle composition of sand, crushed stone	**Instruction method:** both lecture and practice **Instructions for lesson preparation: read the documents in advance:** + Instructions for testing concrete + TCVN on test methods for cement, sand, crushed stone, gravel, water, additives + Practical activities: perform experiments according to the organization of each group + Learning activities at home: Read the material in advance; Calculate and process experimental results according to report forms	A2.1, A2.2	CLO 1
2	**Exercise 2**: Design concrete composition (according to the calculation method combined with experiment) 2.1, Design of normal concrete mix (according to Bolomay – Skramtaep) 2.2, Design of high strength concrete mix (according to TCVN 10306:2014)	**Instruction method**: both lecture and practice **Instructions for lesson preparation: read the documents in advance**: + Instructions for testing concrete + Instructions for designing concrete components of all kinds of the Ministry of Construction in 2000: TCVN 10306:2014. + Practical activities: perform experiments according to the organization of each group + Learning activities at home: Read the material in advance; Calculate and process experimental results	A2.1, A2.2	CLO 2

3	**Exercise 3**: Experiment to evaluate the properties of concrete mixes, hardened concrete 3.1. Determination of workability of concrete mix 3.2. Determine the change in slump of concrete mix with time 3.3. Determination of setting time of concrete mix 3.4. Determination of air bubble content in concrete mix (with high R concrete) 3.5. Determination of concrete strength 3.6. Determination of shrinkage of concrete	**Instruction method**: both lecture and practice **Instructions for lesson preparation: read the documents in advance:** + Instructions for testing concrete + TCVN on methods of testing properties of concrete and concrete mixtures. + Practical activities: perform experiments according to the organization of each group + Learning activities at home: Calculating and processing experimental results in groups, writing individual test results reports	A2.1, A2.2, A2.3	CLO3

15. Materials

15.1. Textbooks:

［1］ Guidelines for PBL-Concrete Technology 1- Le Xuan Chuong, Department of Building Materials, Danang University of Science and Technology (internal circulation)

［2］ Technical instructions for selecting concrete components of all kinds – Construction Ministry – Construction Publisher – Ha Noi 2000

［3］ Vietnam Standard – Cement concrete

15.2 References:

[1] Concrete technology 1 - Nguyen Tan Quy, Nguyen Thien Rue - Construction publisher, 2000

16. Scientific code of ethics:

- Plagiarism is prohibited
- References including textbooks, notes are prohibited in the mid-term examination
- Electronic devices are prohibited during mid-term and final examinations

17. Approved date: / 07 /2021

18. Approved by:

Dean of Faculty	Program chair	Lecturer in charge
Cao Van Lam, PhD.	**Vo Duy Hung, PhD.**	**Le Xuan Chuong, M.Sc.**

51. Construction Materials Testing & Inspections

THE UNIVERSITY OF DANANG
UNIVERSITY OF SCIENCE AND TECHNOLOGY
Faculty of Road and Bridge Engineering

SOCIALIST REPUBLIC OF VIETNAM
Independence - Freedom - Happiness

UNDERGRADUATE PROGRAM

Awarded degree: Undergraduate/Bachelor

Name of the study program: Construction Materials Engineering and Technology

Program Code: 7510105

SYLLABUS

Course name (Vietnamese): Kiểm định và thí nghiệm vật liệu công trình
English name: Construction Materials Testing & Inspections

1. Course Code:	1092820
2. Course abbreviation:	Construction Materials Testing & Inspections
3. Credits: **ECTS credits:**	02 credits 3,25
4. Study workload:	
- Lecture:	15 periods
- Exercise:	
- Practice/ Laboratory:	30 Periods
- Self-study/Assignment:	60 Periods
5. Responsible persons	
- Faculty/Division in charge:	Construction materials division/ Faculty of Road and Bridge Engineering
- Course coordinator:	M.sc. Vu Hoang Tri
- Other lecturers:	Staff of Construction materials division
6. Required and recommended prerequisites for joining the course:	
- Required prerequisite	None
- Recommended prerequisite	Technology of concrete 1
- Corequisite	
7. Course type:	☒ Compulsory Selected elective Free elective
8. Knowledge clusterss:	Math and natural science General knowledge ☒ Core engineering fundamental knowledge Disciplinary knowledge Supportive knowledge Project/ Internship/ Graduate thesis

9. Course description

The course on Construction Materials Testing & Inspections introduces comprehensive knowledge about the quality control of the main materials used in construction work: ceramic construction materials, concrete manufacturing materials, and concrete using inorganic binders, metal materials. The course provide students with knowledge about material inspection; destructive and non-destructive testing methods to evaluate the quality of materials used for construction work.

This course also helps students have practical skills, teamwork skills, communication skills; skills in self-research, analysis data and reporting in material inspection.

10. Course Learning Outcomes

After completing the course, students will be able to

NO	Course Learning Outcomes (CLOs)	Knowledge	Skills	Attitude	Performance indicators (belongs to PLOs)
1	Present and explain the objectives, principles, methods and procedures of material inspection in the works.	a2.Understand		c1. Receive c2.Feedback	1.3.7
2	Analyze and select suitable test methods for testing for each type of materials	a4. Analyze	b2. Manipulate	c1. Receive c2.Feedback	1.3.7
3	Perform experiments on physical and mechanical criteria of materials Calculate and collect experimental data	a3. Apply	b4.	c4. Organize	1.3.7 2.1.1; 2.1.2; 2.2.4
4	Evaluate the quality of materials and analyze the factors affecting the quality of materials used for construction work and construction materials.	a5.Evaluate	b3. Accurate	c2.Feedback c3. Attitude	3.1.1; 3.2.2
5	Comply to principles and support teamwork activities			c4. Organize	5.1.2 5.2.3,5.2.6

11. The relationship between course learning outcomes(CLOs) and program learning outcomes (PLOs) :

PLOs	PLO1	PLO2	PLO3	PLO4	PLO5	PLO6	PLO7	PLO8
Course distribution	IT	T	U		U			
CLO 1	x							
CLO 2	x							
CLO 3	x	x						
CLO 4			x					
CLO 5					x			

12. Student responsibilities

Student must:

- Attend at least 80% of the lessons of the theory class; Attend 100% of the testing experimental in lab. Below this number, student will be banned from taking the final exam.
- Participate in team-work activities following the course's regulations;
- Self-study outside class to solve problems provided by lecturers;
- Complete all types of the course assessment.

13. Course assessments

- Don't attend 100% of the experimental sessions, the test score at the end of the testing experimental (A2) to point "Zero".
- Students who do not achieve the testing experimental score (less than 4.0 points on a scale of 10) will not be allowed to take the final exam.

13.1. General assessment

Assessment Component	Test method	Assessment Methods	Criteria	` Weight (%)		Course learning outcomes (CLOs)
A1. Attendance Check	A1.1 Attend	Attended	Rubric R1.1	W1.1. 50%	W1. 20%	CLO1 CLO2
	A1.2. Exercise	Report	Rubric R1.2	W1.2. 50%		
A2. On-going/Formative Assessment in testing lab	A2.1 Attend	Attended	Full attendance	W2.1 0%	W2. 20%	CLO3 CLO5
	A2.2 Testing report of Team	Report	Rubric R2.2	W2.2 30%		
	A2.3. Report of Personal	Written Report	Rubric R2.3	W2.3 70%		
A3. Summative assessment	A3.1. The report	Synthesis report	Rubric 3.1	W3.1. 30%	W3. 60%	CLO1 CLO2 CLO3 CLO4
	A2.2. Oral Exam	Oral Presentation	Rubric R3.2	W3.2. 70%		

13.2. Progress Assessment from the organizations based on student's practice progress and written report

1. Attendance Check

Rubric 1: Class Attendance

Assessment Criteria	Levels of achievement					Weight
	Level F (0-3.9)	Level D (4.0-5.4)	Level C (5.5-6.9)	Level B (7.0-8.4)	Level A (8.5-10)	
Diligence	< 30%	<50%	<70%	<90%	100%	50%
Class activities	Never participate in any class activity	Rarely participate in any activity. Inefficiently contribution.	Occasionally participate in class activities. Inefficiently discussion.	Regularly discuss and exchange ideas related to the lesson. The contribution to the lesson is effective.	Always participate in class activities: speaking, exchanging ideas related to the lesson. The contributions are very effective.	50%

Rubric 2: Project Attendance

Assessment Criteria	Levels of achievement					Weight
	Level F (0-3.9)	Level D (4.0-5.4)	Level C (5.5-6.9)	Level B (7.0-8.4)	Level A (8.5-10)	
Group organization	Group is completely broken:The responsibilitiesand duties of the team members are not specifically assigned, no association,team coordination.	The responsibilities and tasks of each team member are unclear, not suitable to their abilities. There is no coordination between team members.	Each member has his / her own task but is unclear and incompatible with the member's ability. The teamwork is not good.	The task of each team member is clear and relevant to their abilities. Good coordination of the team.	The duties of the team members are clear and consistent with their abilities, promoting the strength of the members. The teamwork is very good.	20%
Diligence	< 30%	<50%	<70%	<90%	100%	10%
Discussion	Never participate in group discussions	Rarely participated in group discussions and comments	Occasionally participate in Group discussions and comments	Regularly participate in Group discussions and Contribute to discussions among groups.	Always participate in group Discussions and contribute effectively to group activities and groups.	20%
Content is as schedule	No calculated content.	Incomplete calculations (<50%), wrong calculation results, unsuitable calculation sequence.	Calculation content includes enough volume as listed in the schedule (100%). Calculated results are some errors, mistakes.	Calculation content includes enough volume as listed in the schedule (100%). Calculated results are correct, calculation softwares are used but not appropriate.	Calculation content includes enough volume as listed in the schedule (100%). The sequence of calculation steps is reasonable. The results are calculated correctly.	20%
Assessment Criteria	Levels of achievement					Weight
	Level F (0-3.9)	Level D (4.0-5.4)	Level C (5.5-6.9)	Level B (7.0-8.4)	Level A (8.5-10)	

					Calculation softwares are used reasonable	
Format of reports	No report or report are incomplete.	Messy display in report, incorrect order. Drawings, tables and symbols used in the report are inappropriate.	The display of report is appropriate. There are some spelling errors, some confusion about size, notes, explanation parameters, tables.	Content is suitable. Structure of report is clear, logical. Notes,explanations, drawings, tables are suitable. There are few errors.	Contentissuitable. Structure of report is clear, logical.Notes, explanations,drawings, tables are suitable.	15%
Technical drawings	No drawings or drawings lacking parts or images as required. The content is not correct	Drawings are not complete, unclear and lack dimension. Composition details, the content on the drawing is as required but still contain many errors. Notes are not appropriate.	The drawings show the required images, but the layout does not fit, and some minor flaws in presentation. Content on the drawing is as required.	Drawings include full details, clear size. Content is expressed as required. Drawings are Arranged and present reasonable. Notes are clear, detailed.	Drawings include full details, clear size. Content is expressed as required. Drawings are Arranged and present reasonable. Notes are clear, detailed. Drawings can be implemented in reality	15%

2. Work Assignments

Rubric 3: Work Assignment

Assessment Criteria	Levels of achievement					Weight
	Level F (0-3.9)	Level D (4.0-5.4)	Level C (5.5-6.9)	Level B (7.0-8.4)	Level A (8.5-10)	

Submit assignments	Donot submit assignments	Submit70%assignment. Incorrect time.	Submit full assignment (100% of The assignment). Some assignments are not in time.	Submit full assignment (100% of the assignment). Most assignments are submitted on time.	Submission of full assignments (100% of the assignment). At regulation time.	20%
Presentation of assignments	Do not do exercises	Messy display, not in accordance with presentation requirements (font, size, line). Figures and tables used in the exercise do not match.	The exercise meets the requirements (font, size, line). Drawings and tables used in the exercises are clear and appropriate. There are some minor defects in presentation (Misspelling, mistake, size)	The presentation is beautiful, and meets the requirements (font, size, line). Drawings and tables used in the exercises are clear and appropriate. Note, full explanation, reasonable.	The presentation is beautiful and meets the requirements (font, size, stream). Drawings and tables used in the exercises are clear and appropriate. Note, full explanation, reasonable.	30%
Content of the exercise	Do not do exercises	Inadequate content, some incorrect according to task requirements.	The content of the exercise is adequate, meets the requirements of the task but not reasonable. There are some errors in the calculation.	The content of the exercise is adequate, reasonable, and meets the requirements of the task. Correct calculation.	The content of the exercise is adequate, reasonable, and meets the requirements of the task. perfectly calculation.	50%

14. Teaching and Learning plan

14.1 Theory part

Weeks	Contents	Teaching and Learning Activities	Performance assessment	Course learning outcomes (CLOs)

1	**Course introduction.** - Course objectives. - introduce the content of the entire course program and study materials. - Organizational forms of teaching, tasks of students in each form of teaching. - Evaluation forms and rates. **Chapter 1: Overview of construction materials inspection** 1.1 Test concept 1.2 Objectives of testing 1.3 General principles 1.4 Methods of testing	**Teach:** - Preaching, explaining - Introduce detailed course outline, teaching schedule - Activities to familiarize yourself with the class - Develop a study plan - Prepare reference materials and textbooks. **Learning in class:** - Listen to lectures - Think, discuss and answer questions raised by the lecturer - Ask questions about issues of interest related to the lesson content - Set up an experimental team **Study at home:** - Read the course outline - Teaching schedule - Search for documents: standards, regulations, and regulations related to material inspection	A1.1 A2.1 A3.1	CLO1 CLO2
2	**Chapter 1:** Next 1.5.Technical requirements, frequency of material quality inspection 1.6. Method of making outline of material testing.	**Teach:** - Preaching, explaining - Prepare references **Learning in class:** - Listen to lectures - Think, discuss and answer questions raised by the lecturer - Ask questions about issues of interest related to the lesson content **Study at home:** -Search for documents: standards, regulations, regulations related to material inspection - Read in advance the assigned document to prepare	A1.1 A2.1 A3.1	CLO1 CLO2
3	**Chapter 2: Testing with building materials** 2.1, Physical testing methods used for the works 2.2.Methods of material testing in the works	**Teach:** - Preaching, explaining - Prepare references **Learning in class:** - Listen to lectures - Think, discuss and answer questions raised by the lecturer - Ask questions about issues of interest related to the lesson content **Study at home**:	A1.1 A2.1 A3.1	CLO1 CLO2

		- Search for documents: standards, regulations, regulations related to material inspection - Read in advance the assigned document to prepare		
4	**Chapter 3: Testing materials used to manufacture cement concrete and mortar.** 3.1. Adhesives, additives 3.2. Big aggregate, small aggregate	**Teach:** - Preaching, explaining - Prepare references **Learning in class:** - Listen to lectures - Think, discuss and answer questions raised by the lecturer - Ask questions about issues of interest related to the lesson content **Study at home**: - Search for documents: standards, regulations, regulations related to material inspection - Read in advance the assigned document to prepare	A1.1 A2.1 A3.1	CLO2
5	**Chapter 4: Testing ceramic materials in construction** 4.1. Bricks, roofing tiles. 4.2. ceramic tiles	**Teach:** - Preaching, explaining - Prepare references **Learning in class:** - Listen to lectures - Think, discuss and answer questions raised by the lecturer - Ask questions about issues of interest related to the lesson content **Study at home**: - Search for documents: standards, regulations, regulations related to material inspection - Read in advance the assigned document to prepare		
6	**Chapter 5: Testing concrete and steel construction materials** 5.1. Heavy weight concrete - destructive testing method - Determination of compressive strength 5.2. Heavy weight concrete - Non destructive testing method - Determination of compressive strength	**Teach:** - Preaching, explaining - Prepare references **Learning in class:** - Listen to lectures - Think, discuss and answer questions raised by the lecturer - Ask questions about issues of interest related to the lesson content **Study at home**: - Search for documents: standards, regulations, regulations related to material inspection		

		- Read in advance the assigned document to prepare		
7	**Chapter 5:** Next 5.3. Destructive method - check construction steel grade. 5.4. Non-destructive method - check Construction steel grade.	**Teach:** - Preaching, explaining - Prepare references **Learning in class:** - Listen to lectures - Think, discuss and answer questions raised by the lecturer - Ask questions about issues of interest related to the lesson content **Study at home**: - Search for documents: standards, regulations, regulations related to material inspection - Read in advance the assigned document to prepare	A1.1 A2.1 A3.1	CLO1 CLO2 CLO3 CLO4
8	**Practice making procedure of Construction Materials Testing & Inspections**	- Team Working - Exercise report - Discuss and exchange		

14.2. Test part

Weeks	Contents	Teaching and Learning Activities	Performance assessment	Course learning outcomes (CLOs)
Week 1	- Introduce the content of the testing method and study materials. - Organizational forms of teaching, tasks of students in each form of teaching. - Evaluation forms and rates. **Part 1: Practice surveying and taking material samples** 1/ Practice taking material samples at the production site 2/ Practice taking material samples at the construction site	**Teach:** - The form of both teaching and practice - Read the course outline - Develop a study plan - Prepare study materials. **Learning in class:** - Listen to instructions - Think, discuss and answer questions raised by the lecturer - Ask questions about issues of interest related to the lesson content - Conduct experiments according to instructions, record data **Study at home:** - Read the document in advance:	A4.1 A4.2 A4.3	CLO2 CLO4 CLO5 CLO6

		- Guide to Experimenting Building Materials		
Week 2	**Part 2 : Cement concrete** 2.1. Concrete and concrete mixes: 2.1.1.Design of concrete mix 2.1.2. Trialmix of cement concrete to standard curves R-n and R-v. ; Preparation of samples for the construction of standard curves R-n and R-v.	**Teach:** - The form of both teaching and practice - Read the course outline - Develop a study plan - Prepare study materials. **Learning in class:** - Listen to instructions - Think, discuss and answer questions raised by the lecturer - Ask questions about issues of interest related to the lesson content - Conduct experiments according to instructions, record data **Study at home:** - Read the document in advance: - Guide to Experimenting Building Materials - Instruction on design of concrete components of all kinds - Construction contract in 2000	A4.1 A4.2 A4.3	CLO2 CLO4 CLO5 CLO6
Week 3	**Part 2 : Next** 2.2. Heavy weight concrete – Method for determination of compressive strength by rebound hammer (n) 2.3. Heavy weight concrete – Determination of compressive strength by using of ultrasonic equipment (v) 2.4. Create a relationship chart R-n ; R-v 2.5. Heavy weight concrete - Non destructive testing method - Determination of compressive strength by using combination of ultrasonic equipment and rebound hammer 2.6. Heavy weight concrete - destructive testing method - Determination of compressive strength by using Drilling and cutting samples	**Teach:** - The form of both teaching and practice - Read the course outline - Develop a study plan - Prepare study materials. **Learning in class:** - Listen to instructions - Think, discuss and answer questions raised by the lecturer - Ask questions about issues of interest related to the lesson content - Conduct experiments according to instructions, record data **Study at home:** - Read the document in advance: - Guide to Experimenting Building Materials; Relevant test standards		
Week 4	**Part 3: Testing ceramic materials in construction** 3.1. Fired clay bricks and roof tiles	**Teach:** - The form of both teaching and practice - Read the course outline - Develop a study plan	A4.1 A4.2 A4.3	CLO2 CLO4 CLO5 CLO6

	- Experimenting with physical properties 3.2. Ceramic tiles - Sample grouping - Experimenting with physical properties	- Prepare study materials. **Learning in class:** - Listen to instructions - Think, discuss and answer questions raised by the lecturer - Ask questions about issues of interest related to the lesson content - Conduct experiments according to instructions, record data **Study at home:** - Read the document in advance: - Guide to Experimenting Building Materials; Relevant test standards		
Week 5	**Part 4: Testing steel construction materials** 4.1. Destructive method - Testting for check construction steel grade. 4.2. Non-destructive method - Testting for check Construction steel grade.	**Teach:** - The form of both teaching and practice **Learning in class:** - Listen to instructions - Think, discuss in groups and answer questions given by the lecturer - Ask questions about issues of interest related to the lesson content - Conduct experiments according to instructions, record data **Study at home:** - Test report		
Week 6	**Summative assessment**	**Written Report** and **Oral Presentation**		

15. Materials

15.1 Books, lectures, main textbooks

[1] Huynh Phuong Nam, Nguyen Thi Tuyet An, Do Thi Phuong, *General construction materials*, Construction publisher, Hanoi, 2016.
[2] Building materials Division, *Instructions for testing construction materials* (internal circulation)

15.2 Reference materials

[1] Phung Van Lu, Pham Duy Huu, Phan Khac Tri, *Construction materials*, Educational Publisher, Ha Noi, 2001.
[2] Pham Duy Huu, Ngo Xuan Quang, *Construction materials*, Transportation Publisher, Ha Noi, 2004.
[3] Ministry of Construction, *Technical instructions for selecting components in types of concrete*, Construction publisher, Ha Noi, 2000.
[4] TCVN, Standards on Construction materials.

16. Scientific code of ethics:

- Students are not allowed to copy reports of other groups

- Students should conduct the experiments by themselves following the instruction content and honestly record experimental data
- Students must strictly comply with occupational safety regulations and equipment used in the laboratory.

17. Approved date:

18. Approved by:

Dean of Faculty	Program chair	Lecturer in charge
Cao Van Lam, PhD.	**Vo Duy Hung, PhD.**	**Vu Hoang Tri, M.Sc.**

52. Heat insulating Materials

THE UNIVERSITY OF DANANG
UNIVERSITY OF SCIENCE AND TECHNOLOGY
Faculty of Road and Bridge Engineering

SOCIALIST REPUBLIC OF VIETNAM
Independence - Freedom - Happiness

UNDERGRADUATE PROGRAM

Awarded degree: Undergraduate/Bachelor

Name of the study program: Construction Materials Engineering and Technology Program Code: 7510105

SYLLABUS

Course name (Vietnamese): Vật liệu cách nhiệt, chịu nhiệt
English name: Heat insulating Materials

1. Course Code:	1092840
2. Course abbreviation:	Heat insulating Materials
3. Credits: **ECTS credits (*):**	02 Credits (30 Periods) 2,83
4. Study workload:	
- Lecture:	30 Periods
- Exercise:	
- Practice/ Laboratory:	
- Self-study/Assignment:	60 Periods
5. Responsible persons:	
- Faculty/Division in charge:	Construction materials Division/ Faculty of Road and Bridge Engineering
- Course coordinator:	PhD Student. Nguyen Tien Dung
- Other lecturers:	PhD. Do Thi Phuong, PhD. Nguyen Minh Hai
6. Required and recommended pre-requisites for joining the course:	
- Required prerequisite:	None
- Recommended prerequisite:	Construction Materials
- Corequisite:	None
7. Type course:	☒ Compulsory Selected elective Free elective
8. Knowledge clusterss:	Math and natural science General knowledge ☒ Core engineering fundamental knowledge Disciplinary knowledge Supportive knowledge Project/ Internship/ Graduate thesis

9. Course description

The course equips students with basic knowledge, properties of starting materials of each type of insulation and heat-resistant materials, technical properties and methods of evaluating the quality of such products. as well as manufacturing technology process and field of use. For students majoring in building materials, these contents will be developed into in-depth research topics on new materials.

10. Course Learning Outcomes

After completing the course, students will be able to

NO	Course Learning Outcomes(CLO)	Knowledge	Skills	Attiude	Performance indicators (belongs to PLOs)
1	Present the structure, operating principle of the machine and equipment	a2. Understand			1.3.5;
2	Classify, name and list types of construction machines and equipment	a4. Analysis	b2. Application		1.3.5
3	Present groups of methods to fabricate materials with large hollow structures	a2 Understand	b2 Application		3.1.1 4.1.1
4	Organize the content presented, have presentation skills, self-study, synthesize and work in groups through exercises and thematic reports.			C4. Organization	3.1.1 4.1.1

11. The relationship between course learning outcomes(CLOs) and program learning outcomes (PLOs)

PLO	PLO1	PLO2	PLO3	PLO4	PLO5	PLO6	PLO7	PLO8
Contribution of the course	TU		T	T				T
CLO 1	X							
CLO 2	X							X
CLO 3			X	X				
CLO 4			X	X				

12. Student responsibilities

Students must perform the following tasks:

- Attend at least 80% of the lessons of the part class.
- Participating in group work activities according to the regulations of the class.
- Self-study the problems assigned by the lecturer to do outside of class time.
- Complete all course assessments.

13. Course assessments

Type of assessment	Performance assessment	Assessment methods	Rubric	Review percentage (%)	Weighting percentage (%)	Course learning outcomes (CLOs)
A1. Ongoing assessment	A1.1 Exercise	P1.1. Exercise	R1.1	50	20	CLO 1, 2
	A1.2 Thematic reports	P1.2. Class report and presentation	R1.3	50		CLO 1, 2, 3

A2. Mid-term Assessment	A2. Mid-term examination	P2. Essay	R2.1	100	20	CLO 1, 2
A3. Final Assessment	A3. Final examination	P3. Essay	R3.1	100	60	CLO 1, 2, 3

14. Teaching and Learning plan

Week/Period (2 hours)	Detailed Content	Teaching and Learning Activities	Assessment	Course learning outcomes
1+2	Course introduction: - Course objectives. - Preliminary content of the entire course program and study materials. - Organizational form of teaching, tasks of students in each form of teaching. -Assign thematic report groups - Evaluation form and rate. Part 1: Insulation materials Chapter 1. Concepts and classifications 1.1, Concepts. 1.2, Classification. 1.2.1, According to the outer shape 1.2.2, According to the hollow structure 1.2.3, By type of starting material 1.2.4, By volume by mass 1.2.5, According to the hardness 1.2.6, According to thermal conductivity 1.2.7, According to the intended use Homeworks	Teaching: form of lecture Instructions for preparing homework before going to class: - Read the course outline - Develop a study plan - Prepare study materials. - Study in class: +Listen to lectures + Answer the questions asked by the teacher + Thematic report 1 (Group report) + Ask questions related to the topic + Discussion and conclusion -Study at home: Review theory.	A1.1, A1.3	CLO 1, 2, 3
3+4	Chapter 2. Basic properties of VLCN 2.1, Thermo-physical properties of VLCN 2.1.1, Thermal conductivity 2.1.2, Heat capacity 2.1.3, Temperature Conductivity 2.1.4, Critical use temperature 2.1.5, Porosity 2.1.6, Volumetric mass 2.2, Physical and mechanical properties of VLCN 2.2.1, Intensity 2.2.2, Water absorption 2.2.3, Frost Resistance	-Teaching: form of lecture - Study in class: +Listen to lectures + Answer the questions asked by the teacher + Thematic report 2 (Group report) + Ask questions on topics related to the topic + Discussion and conclusion -Study at home: Review theory.	A1.1, A1.3	CLO 1, 2, 3

	2.2.4, Heat resistance 2.2.5, Fire resistance 2.2.6, Fire resistance 2.2.7, Acoustic properties of Homeworks materials			
5+6	Chapter 3: Methods for making materials with large hollow structures 3.1, Inflating method 3.1.1, Gas generation method 3.1.2 Foaming and air-entraining methods 3.1.3 Air entrainment method 3.1.4 Technical foam dry mineralization method 3.2, Method of separation of voiding agent 3.2.1, Method of increasing the amount of kneading water 3.2.2, Hollow-forming combustion additive method 3.2.3, Method of evaporating one of the ingredients 3.3, The method of sorting is not tight 3.4, Contact agglomeration method 3.5, Solid volume agglomeration method 3.6, Method of creating mixed hollow structure	-Teaching: form of lecture - Study in class: +Listen to lectures + Answer the questions asked by the teacher + Thematic report 2 (Group report) + Ask questions on topics related to the topic + Discussion and conclusion -Study at home: Review theory.	A1.1, A1.3	CLO 1, 2, 3
7	Mid-Examination	Essay	A2	CLO 1, 2
8+9	Chapter 4. Insulation products 4.1, Artificial mineral fibers and products from mineral fibers 4.1,1, Mineral Cotton 4.1,2, Glass wool 4.2, Glass honeycomb 4.3, VLCNs from rocks and bulging minerals. 4.3.1, Inflatable pectin and products 4.3.2, Vemiculit swells and products 4.4, Insulation honeycomb concrete 4.5, Ceramic Insulation Material 4.6, Products containing asbestos 4.6.1, Insulation products containing asbestos used in construction	-Teaching: form of lecture - Study in class: +Listen to lectures + Answer the questions asked by the teacher + Thematic report 3 (Group report) + Ask questions related to the topic + Discussion and conclusion -Study at home: Review theory.	A1.3	CLO 1, 2, 3

	4.6.2, Products in the form of fiber-cement sheets that do not contain asbestos 4.7, Wood fiber board 4.8, Fibrolits 4.9, Insulation Plastics Exercises and Homeworks			
10+11	Part 2. Heat-resistant materials Chapter 1. General Introduction 1.1. Concept 1.2. Classify Chapter 2. Crafting Materials 2.1. Adhesives 2.2. Aggregates 2.3. Additives Chapter 3. Nature 3.1. Physical properties 3.2. Mechanical properties 3.3. Thermal properties	-Teaching: form of lecture - Study in class: +Listen to lectures + Answer the questions asked by the teacher + Thematic report 3 (Group report) + Ask questions related to the topic + Discussion and conclusion -Study at home: Review theory.	A1.1, A1.3	CLO 1, 2, 3
12+13+14	Chapter 4. Heat-resistant mortar and concrete 4.1. Base improves heat resistance 4.2. Manufacture technology Chapter 5. Insulation mortar and concrete – heat resistant 5.1. Basis to improve insulation - heat resistance 5.2. Manufacture technology	-Teaching: form of lecture - Study in class: +Listen to lectures + Answer the questions asked by the teacher + Thematic report 3 (Group report) + Ask questions related to the topic + Discussion and conclusion -Study at home: Review theory	A1.1, A1.3	CLO 1, 2, 3
15	Final Examination	Essay	A3	CLO 1, 2, 3

15. Materials

15.1. Books, lectures, main textbooks

[1] Technology of insulation materials, "Nguyen Nhu Quy", Construction Publisher, 2002

[2] Technology of thermal insulation mineral materials - Nguyen Van Phieu, Nguyen Van Chanh, Construction Publisher, 2005

[3] Bazant, Z.P., Kaplan, M.F. (1996). Concrete at high temperatures: Material properties and mathematical models. London: Longman.

15.2. Reference materials

[1] Construction materials and products - Phung Van Lu - Construction Publisher, 2002.

16. Scientific code of ethics:

- Students must respect a lecturer and other students.
- Students must comply with the University's academic integrity policy.
- Students must obey the rules and regulations of the university.

17. Approved date:

18. Approved by:

Dean of Faculty	Program chair	Lecturer in charge
Cao Van Lam, PhD.	**Vo Duy Hung, PhD.**	**Nguyen Tien Dung, MSc**

53. Building Glass

THE UNIVERSITY OF DANANG
UNIVERSITY OF SCIENCE AND TECHNOLOGY
Faculty of Road and Bridge Engineering

SOCIALIST REPUBLIC OF VIETNAM
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UNDERGRADUATE PROGRAM

Awarded degree: Undergraduate/Bachelor

Name of the study program: Construction Materials Engineering and Technology Program Code: 7510105

SYLLABUS
Course name (Vietnamese): Vật liệu thủy tinh xây dựng
English name: Building Glass

1. Course Code:	1090773
2. Course abbreviation:	Building Glass
3. Credits: **ECTS credits (*):**	2 credits 2,83
4. Study workload:	
- Lecture:	30 Periods
- Exercise:	
- Practice/ Laboratory:	
- Self-study/Assignment:	60 Periods
5. Responsible persons:	
- Faculty/Division in charge:	Construction materials Division/ Faculty of Road and Bridge Engineering
- Course coordinator:	Nguyen Van Quang, Ph.D
- Other lecturers:	Do Thi Phuong, Ph.D
6. Required and recommended pre-requisites for joining the course:	
- Required prerequisite:	None
- Recommended prerequisite:	Applied chemistry Engineering 1
- Corequisite:	None
7. Type course:	☒ Compulsory Selected elective Free elective
8. Knowledge clusterss:	Math and natural science General knowledge ☒ Core engineering fundamental knowledge Disciplinary knowledge Supportive knowledge Project/ Internship/ Graduate thesis

9. Course description

The course introduces the knowledge of raw materials and technology to manufacture construction glass products. The main properties and composition of raw materials, products and the selection of glass products for construction works are mentioned.

10. Course Learning Outcomes

After completing the course, students will be able to

NO	Course Learning Outcomes(CLOs)	Knowledge	Skills	Attitude	Performance indicators (belongs to PLOs)
1	Present the properties and roles of building glass products.	a2. Understand			1.3.10
2	Describe production technology and fabrication method of construction glass products; Develop principles of production organization and production technology of products.	a2. Understand	b2. Manipulate		1.3.10 8.2.1
3	Evaluate the quality and use of glass products in construction works	a4. Analyze			1.3.10
4	Organize the content of the report, have oral presentation skill, self-study skill, teamwork skill through exercises and special topics			c4. Organize	3.1.1 4.1.1

11.The relationship between course learning outcomes(CLOs) and program learning outcomes (PLOs)

PLO	PLO1	PLO2	PLO3	PLO4	PLO5	PLO6	PLO7	PLO8
Contribution of the course	TU		T	T				T
CLO 1	X							
CLO 2	X							X
CLO 3	X							
CLO 4			X	X				

12. Student responsibilities

Students must peform the following tasks:

- Attend at least 80% of the lessons of the class time;
- Participating in group-work activities following the regulations of the class
- Self-study the problems assigned by the lecturer
- Complete all course assessments.

13.Course assessments

Type of assessement	Performance assessment	Assessment methods	Rubric	Weighting percentage (%)		Course learning outcomes (CLOs)
A1. Ongoing assessment	A1.1 Assignments / homeworks	P1.1.Exercises/Homeworks	R1.1	50	20	CLO 1, 2

	A1.3 Special topic reports	P1.3. Oral presentation in class	R1.3	50		CLO 1, 2, 3
A2. Mid-term Assessment	A2. Mid-term exam	P2. Written exam	R2.1	100	20	CLO 1, 2
A3. Final Assessment	A3. Final exam	P3. Written exam	R3.1	100	60	CLO 1, 2, 3

14. Teaching and Learning plan

Weeks/ Periods	Contents	Teaching and learning activities	Performance assessment	Course learning outcomes (CLOs)
1+2+3	- Course objectives - Overview about the content of the course - Reference materials. - Teaching and learning activities - Tasks of students - Assign the report groups - Assessment methods **Chapter 1. Classification on fields of use of construction glass. The composition and properties of plate glass.** 1.1 Types of construction glass and usage of construction glass in the world. 1.2Chemical composition, structure and properties of glass. *Homeworks*	Teaching activities: + Give a lecture + Guide the students to prepare a lesson at home including: * Reading the course syllabi * Building up study plan * Prepare materials for study at class - Learning activities in class: +Listen to the lecture + Present Special topic 1 (Group report) +Answer the questions given by the lecturer + Ask questions about issues of interest (Students) + Discussion and conclusion - Learning at home (Students): +Review the lessons, +Read the materials	A1.1, A1.3	CLO 1, 2, 3
4+5+6+7	**Chapter 2. Raw materials, preparation of a mixture of raw materials** 2.1. Main raw material groups 2.2. Groups of additives materials 2.3 Preparing the mixture of raw materials Homeworks	-Teaching activities: + Give a lecture + Answer the questions given by the lecturer - Learning activities in class: +Listen to the lecture + Present Special topic 2 (Group report) + Discussion and conclusion - Learning at home (Students): +Review the lessons, +Read the materials	A1.1, A1.3	CLO 1, 2, 3
8	**Mid-term exam**	Written exam	A2	CLO 1, 2
9+10+11	**Chapter 3. Melting and processing of mixture of raw materials**	- Teaching activities: + Give a lecture + Answer the questions given by the lecturer	A1.3	CLO 1, 2, 3

	3.1 Theoretical basis of the glass melting process 3.2 Types of glass melting furnace	- Learning activities in class: +Listen to the lecture + Present Special topic 3 (Group report) + Discussion and conclusion - Learning at home (Students): +Review the lessons…		
12+13+14	**Chapter 4. Calculation and forming methods of plate glass** 4.1 Methods for designing mixture of raw materials for plate glass 4.2 Methods for forming plate glass. Exercises and Homeworks	- Teaching activities: + Give a lecture + Answer the questions given by the lecturer - Learning activities in class: +Listen to the lecture +Present Special topic 4 (Group report) + Discussion and conclusion - Learning at home (Students): +Review the lessons…	A1.1, A1.3	CLO 1, 2, 3
15	Final exam	Written exam	A3	CLO 1, 2

15. Materials

15.1. Books, lectures, main textbooks

[1] Technology of Building Glass – Bach Dinh Thien – Construction Publisher, 2004.

15.2. Reference materials

[1] Silicate Physical Chemistry – Do Quang Minh – NXB Ho Chi Minh city national university Publiser, 2009.

16. Scientific code of ethics:

- Students must respect a lecturer and other students.
- Students must comply with the University's academic integrity policy.
- Students must obey the rules and regulations of the university.

17. Approved date

18. Approved by:

Dean of Faculty	Program chair	Lecturer in charge
Cao Van Lam, PhD.	**Vo Duy Hung, PhD.**	**Nguyen Van Quang, PhD.**

54. Decorative and Complete Materials

THE UNIVERSITY OF DANANG
UNIVERSITY OF SCIENCE AND TECHNOLOGY
Faculty of Road and Bridge Engineering

SOCIALIST REPUBLIC OF VIETNAM
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UNDERGRADUATE PROGRAM

Awarded degree: Undergraduate/Bachelor

Name of the study program: Construction Materials Engineering and Technology

Program Code: 7510105

SYLLABUS

Course name (Vietnamese): Vật liệu trang trí - Vật liệu hoàn thiện
English name: Decorative and Complete Materials

1. Course Code:	1092850
2. Course symbols:	
3. Credits: **ECTS credits (*):**	2 Credits (30 Periods) 2,83
4. Time distribution:	
- Lecture:	30 Periods
- Exercise:	
- Practice/ Laboratory:	
- Self-study/Assignment:	60 Periods
5. Lecturers in charge:	
- Faculty/Division in charge:	PhD Student. Nguyen Tien Dung
- Course coordinator:	PhD Nguyen Minh Hai
- Other lecturers:	Construction materials Division/ Faculty of Road and Bridge Engineering
6. Required and recommended pre-requisites for joining the course:	
- Required prerequisite:	None
- Recommended prerequisite:	Construction Materials
- Corequisite:	None
7. Type course:	☒ Compulsory ☐ Compulsive Electives ☐ Electives
8. Knowledge clusters:	☐ Maths & Natural Sciences ☐ General Knowledge ☐ Engineering Fundamentals ☒ Professional Engineering ☐ Supporting ☐ Projects, Internships, & Thesis

9. Course description

The course equips students with basic knowledge about decorative materials and interior and exterior finishing of construction works. Specifically, the module introduces the nature of the process of using decorative and finishing products, the properties of the input materials, the manufacturing technology process, the technical properties, the method of use and way of assessing the quality of decorative materials and finishes of a building.

10. Course Learning Outcomes

After completing the course, students will be able to

NO	Course Learning Outcomes (CLO)	Knowledge	Skills	Attitude	Performance indicators (PLOs)
1	Presenting physical and mechanical properties, technical requirements and scope of use as well as production principles, origin, and the role of each material for each type of decorative and finishing materials.	a2. Understand			1.3.6
2	Analysis and selection of materials suitable for the purpose of using the project.	a4. Analysis	b2. Application	c4. Organization	1.3.6 8.2.1
3	Evaluation of the quality of decorative and finishing products	a4. Analysis	b2. Application		
4	Organize the content presented, have presentation skills, self-study, synthesize and work in groups through exercises and thematic reports.			c4. Organization	3.1.1 4.1.1

11. The relationship between course learning outcomes(CLOs) and program learning outcomes (PLOs)

PLO	PLO1	PLO2	PLO3	PLO4	PLO5	PLO6	PLO7	PLO8
Contribution of the course	TU		T	T				T
CLO 1	X							
CLO 2	X							X
CLO 3			X	X				
CLO 4	TU		T	T				T

12. Student responsibilities

Students must perform the following tasks:

- Attend at least 80% of the lessons of the part class.
- Participating in group work activities according to the regulations of the class.
- Self-study the problems assigned by the lecturer to do outside of class time.

- Complete all course assessments.

13. Course assessments

Type of assessment	Performance assessment	Assessment methods	Rubric	Review percentage (%)	Weighting percentage (%)	Course learning outcomes (CLOs)
A1. Ongoing assessment	A1.1 Diligence	P1.1. Attendance	R1.1	50	20	
	A1.2 Short Exercises	P1.2. Exercise	R1.2	50		CLO 1, 2,
A2. Mid-term Assessment	A2. Mid-term examination	P2. Essay	R2.	100	20	CLO 1,2,3
A3. Final Assessment	A3. Final examination	P3. Essay	R3.	100	60	CLO 1,2,3,4

14. Teaching and Learning plan

Week/Period (3 hours)	Detailed Content	Teaching and Learning Activities	Assessment	Course learning outcomes
1	Chapter 1: GENERAL CONCEPT 1.1. General concept 1.2. Requirements for the performance of decorative and finishing materials 1.3. Overview and classification of decorative and finishing materials	Teach: - Lectures combined with lecture slides - Ask questions for students to think and answer, discuss Learning in class: Course content by chapter - Listen to lectures, take notes - Answer questions given by the teacher - Ask questions about issues of interest, discuss Study at home: - Read the content of the chapters studied - Answer short questions	A1.2 ;A2	CLO 1, 2,3,4
2	Chapter 2: King's Order 2.1. Layers of plaster 2.2. Types of plasters 2.3. Plastering mortar distribution 2.4. Decorative mortar	Teach: - Lectures combined with lecture slides - Ask questions for students to think and answer, discuss Learning in class: Course content by chapter - Listen to lectures, take notes - Answer questions given by the teacher - Ask questions about issues of interest, discuss Study at home:	A1.2 ;A2	CLO 1, 2,3,4

		- Read the content of the chapters studied - Answer short questions		
3	Chapter 3: PAINT MATERIAL 3.1. Concept 3.2. Classify 3.3. Paint composition: -Adhesives - Colorants and fillers -Solvent - Drying agent - Diluent 3.4. Types of paints - Oil painting - Paint enamel - Water-based paint and evaporative resin on mineral base 3.5. Varnish 3.6. Auxiliary materials - Matt's face-up - Mounting matt - Primer 3.7. Paint construc-tion	Teach: - Lectures combined with lecture slides - Ask questions for students to think and answer, discuss Learning in class: Course content by chapter - Listen to lectures, take notes - Answer questions given by the teacher - Ask questions about issues of interest, discuss Study at home: - Read the content of the chapters studied - Answer short questions	A1.2 ;A2	CLO 1, 2,3,4
5	Chapter 4: ARTIFICIAL STONE – NATURAL STONE 4.1. Concept 4.2. Classification and structure 4.3. Production process 4.4. Methods used	Teach: - Lectures combined with lecture slides - Ask questions for students to think and answer, discuss Learning in class: Course content by chapter - Listen to lectures, take notes - Answer questions given by the teacher - Ask questions about issues of interest, discuss Study at home: - Read the content of the chapters studied - Answer short questions	A1.2 ;A2	CLO 1, 2,3,4
6	Chapter 5: TILES 5.1 Concepts 5.2 Classification and structure 5.3 Manufacturing Process	Teach: - Lectures combined with lecture slides - Ask questions for students to think and answer, discuss Learning in class: Course content by chapter	A1.2 ;A2	CLO 1, 2,3,4

	5.1 5.4 Method of use	- Listen to lectures, take notes - Answer questions given by the teacher - Ask questions about issues of interest, discuss Study at home: - Read the content of the chapters studied - Answer short questions		
7+8	Chapter 6: WOODEN MATERIALS 6.1. Concept 6.2. Classification and structure 6.3. Production process 6.1.6.4. Methods used	Teach: - Lectures combined with lecture slides - Ask questions for students to think and answer, discuss Learning in class: Course content by chapter - Listen to lectures, take notes - Answer questions given by the teacher - Ask questions about issues of interest, discuss Study at home: - Read the content of the chapters studied - Answer short questions	A1.2 ;A2;A3	CLO 1, 2,3,4
9+10	Chapter 7: OTHER MATERIALS 7.1. Plastic material 7.2. Glass material 7.3. Paper material 7.4. Other advanced materials	Teach: - Lectures combined with lecture slides - Ask questions for students to think and answer, discuss Learning in class: Course content by chapter - Listen to lectures, take notes - Answer questions given by the teacher - Ask questions about issues of interest, discuss Study at home: - Read the content of the chapters studied - Answer short questions	A1.2 ;A2;A3	CLO 1, 2,3,4
11	Final examination		A3	CLO1,2

15. Materials

15.1. Books, lectures, main textbooks

1] Technology of insulation materials, "Nguyen Nhu Quy", Construction Publisher, 2002
[2] Technology of thermal insulation mineral materials - Nguyen Van Phieu, Nguyen Van Chanh, Construction Publisher, 2005
[3] Bazant, Z.P., Kaplan, M.F. (1996). Concrete at high temperatures: Material properties and mathematical models. London: Longman.

15.2. Reference materials

[1] Construction materials and products - Phung Van Lu - Construction Publisher, 2002.

16. Scientific code of ethics:

- Students must respect a lecturer and other students.
- Students must comply with the University's academic integrity policy.
- Students must obey the rules and regulations of the university.

17. Approved date:

18. Approved by:

Dean of Faculty	Program chair	Lecturer in charge
Cao Van Lam, PhD.	**Vo Duy Hung, PhD.**	**Nguyen Tien Dung, M.Sc.**

55. Contruction economics

THE UNIVERSITY OF DANANG
UNIVERSITY OF SCIENCE AND TECHNOLOGY
Faculty of Road and Bridge Engineering

SOCIALIST REPUBLIC OF VIETNAM
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UNDERGRADUATE PROGRAM

Awarded degree: Undergraduate/Bachelor

Name of the study program: Construction Materials Engineering and Technology Program Code: 7510105

SYLLABUS
Course name (Vietnamese): Kinh tế xây dựng
English name: Contruction economics

1. Course Code:	1180853
2. Course symbols:	Contruction economics
3. Credits: **ECTS credits (*):**	2 Credits (30 Periods) 2,83
4. Study workload:	
- Lecture:	30 Periods
- Exercise:	
- Practice/ Laboratory:	
- Self-study/Assignment:	60 Periods
5. Responsible persons:	
- Faculty/Division in charge:	Construction materials Division/ Faculty of Road and Bridge Engineering
- Course coordinator:	PhD. Nguyễn Quang Trung
- Other lecturers:	PhD. Nguyễn Quang Trung, PhD. Trương Quỳnh Châu, MSc. Trương Ngọc Sơn; PhD. Huynh Thi Minh Truc, MSc. Pham Thi Trang
6. Required and recommended prerequisites for joining the course:	
- Required prerequisite:	None
- Recommended prerequisite:	Construction Materials
- Corequisite:	None
7. Type course:	Compulsory ☒ Selected elective Free elective
8. Knowledge clusters:	Math and natural science General knowledge ☒ Core engineering fundamental knowledge Disciplinary knowledge Supportive knowledge Project/ Internship/ Graduate thesis

9. Course description

The Construction Economics module aims to provide students of construction majors with basic knowledge about the contents of the Construction Law and economic issues in project management and construction activities. Students will learn about investment activities and construction investment projects, the process of implementing a project, methods of evaluating the financial effectiveness of a project, methods of product valuation. construction products, procurement and contract management in construction.

10. Course Learning Outcomes (CLOs)

After completing the course, students will be able to:

No	Course Learning Outcomes (CLOs)	Knowledge	Skills	Attitude	Performance indicators (belongs to PLOs)
1	Understand the basics of the contents of the Construction Law	a2.Understand			1.4.5
2	Ability to analyze basic economic knowledge into specialized economic - technical issues;		Analysis		1.3.8;8.3.4
3	Ability to apply knowledge of norms, valuation, construction economics to practice control of work volume;		b2.Application		1.3.8
4	Ability to effectively apply legal documents related to the Construction industry	a2.Understand			3.1.3

11. The relationship between course learning outcomes(CLOs) and program learning outcomes (PLOs)

PLO	PLO1	PLO2	PLO3	PLO4	PLO5	PLO6	PLO7	PLO8
Contribution of the course	TU		T					T
CLO 1	X							
CLO 2	X							X
CLO 3	X							
CLO 4			X					

12. Student responsibilities

Students must do the following tasks:

- Attend at least 80% of the lessons of the course;
- Join group in work activities according to the regulations of the class;
- Self-study the problems assigned by the lecturer (outside of class time);
- Complete all course assessments.

13.Course assessments

The results of the course assessment are based on the assessment of the students' activities during the course of study, the mid-term exam and the final exam expressed through the

assessment; the course output standards are assessed; criteria, standards and weights of the assessments.

Type of assessment	**Performance assessment**	**Assessment methods**	**Rubric**	**Weighting percentage (%)**	**CLOs**	**Type of assessment**
A1. Ongoing assessment	A1.1 Attendance	Attendance	Rubric R1.1	10%	30%	CLO 4
	A1.2 Short class exercises or answering questions from the teacher	Q&A – according to the curriculum content	Rubric R1.1	10%		CLO 1, 2, 4
	A1.3 Individual/group homework	According to the answer and grading scale	Rubric R1.2, R1.3	10%		CLO 2, 3,
A2. Mid-term Assessment	A2.1 Midterm exam	Essay	According to the answer and grading scale	20%	20%	CLO 1, 2, 4
A3. Final Assessment	A3.1 Final exam	Essay	According to the answer and grading scale	50%	50%	CLO 1, 3, 4

14. Teaching and Learning plan

Week	Contents	Teaching and learning activities	Performance assessment	Course learning outcomes (CLOs)
1 (3 Periods)	Chapter 1. 1.1 Construction investment project 1.2 Investment stages of a construction investment project 1.3 Construction project management 1.4 Main functions of construction investment project management 1.5 Forms of construction investment project management	Teach:	A1.1. A2.1	CLO1 CLO2
2.	Chapter 2	- The lecturer uses this detailed outline to introduce students to	A1.1, A1.2, A2.1	CLO1 CLO2

Week	Contents	Teaching and learning activities	Performance assessment	Course learning outcomes (CLOs)
(3 Periods)	2.1 Some basic issues about investment 2.2 Theoretical basis for evaluating investment efficiency	the subject's objectives; the position and role of the subject in the training program of the industry; subject output standards, assessment forms and weights of assessments, course content by chapter, curriculum introduction, etc.		
3 (3 Periods)	Chapter 2 (cont'd) 2.3 Methods of evaluating technical options in terms of economics	Teach: - Lectures combined with lecture slides - Ask questions for students to think and answer - Give class assignments Learning in class: - Listen to lectures - Answer questions given by the teacher - Ask questions about matters of interest - Do homework in class Study at home: - Review the theory - Do homework	A1.1, A1.2, A2.1	CLO1 CLO2
4 (3 Periods)	Chapter 2 (cont'd) 2.4 Evaluating the effectiveness of an investment project in terms of finance 2.5 Evaluate the effectiveness of investment projects in terms of socio-economic aspects	Teach: - Lectures combined with lecture slides - Ask questions for students to think and answer - Give class assignments Learning in class: - Listen to lectures - Answer questions given by the teacher - Ask questions about matters of interest - Do homework in class Study at home: - Review the theory - Do homework	A1.1, A1.2, A2.1	LO2.1
5 (3 Periods)	Chapter 3 3.1. The concept and characteristics of construction product pricing 3.2. Preliminary total investment and total investment	Teach: - Lectures combined with lecture slides - Ask questions for students to think and answer - Give class assignments Learning in class: - Listen to lectures	A1.1, A3.1	CLO2 CLO3 CLO4

Week	Contents	Teaching and learning activities	Performance assessment	Course learning outcomes (CLOs)
	3.3. Norms for construction of works 3.4. Estimated unit price of work construction	- Answer questions given by the teacher - Ask questions about matters of interest - Do homework in class Study at home: - Review the theory - Do homework		
6	Mid-term test			
7 (3 Periods)	Chapter 3 (cont'd) 3.4. Estimated unit price of work construction 3.5. Construction Estimation 3.6. Determining the construction cost estimate in the construction cost estimate 3.7. Cost of general items in the construction cost estimate 3.8. Estimating construction bidding packages	Teach: - Lectures combined with lecture slides - Ask questions for students to think and answer - Give class assignments Learning in class: - Listen to lectures - Answer questions given by the teacher - Ask questions about matters of interest - Do homework in class Study at home: - Review the theory - Do homework	A1.1, A3.1	CLO2 CLO3 CLO4
8 (3 Periods)	Chapter 4 4.1 Role and importance of bidding 4.2 Relevant legal documents 4.3 Some concepts in construction contracts 4.4 Forms of selection of construction contractors 4.5 Method of contractor selection 4.6 Organizing tenders	Teach: - Lectures combined with lecture slides - Set situations for students to discuss in groups Learning in class: - Listen to lectures - Answer questions given by the teacher - Ask questions about matters of interest - Group homework Study at home: - Review the theory - Learn legal documents related to contractor selection	A1.1, A3.1	CLO2 CLO3 CLO4
9 (3 Periods)	Chapter 4 (cont'd) 4.4 Forms of selection of construction contractors 4.5 Method of contractor selection	Teach: - Lectures combined with lecture slides - Set situations for students to discuss in groups Learning in class:	A1.1, A3.1	CLO2 CLO3 CLO4

Week	Contents	Teaching and learning activities	Performance assessment	Course learning outcomes (CLOs)
	4.6 Organizing tenders	- Listen to lectures - Answer questions given by the teacher - Ask questions about matters of interest - Group homework Study at home: - Review the theory - Learn legal documents related to contractor selection		
10 (3 Periods)	Chapter 5 5.1 Role and importance of construction contract 5.2 Relevant legal documents 5.3 Some concepts in 5.4 Classification of contracts in construction 5.5 Principles of signing construction contracts	Teach: - Lectures combined with lecture slides - Set situations for students to discuss in groups Learning in class: - Listen to lectures - Answer questions given by the teacher - Ask questions about matters of interest - Group homework Study at home: - Review the theory - Learn the legal documents related to the contract	A1.1, A3.1	CLO2 CLO3 CLO4
11 (3 Periods))	Chapter 5 5.6 Construction contract price 5.7 Advance, payment and settlement of construction contracts 5.8 Adjustment of construction contract	Teach: - Lectures combined with lecture slides - Set situations for students to discuss in groups Learning in class: - Listen to lectures - Answer questions given by the teacher - Ask questions about matters of interest - Group homework	A1.1, A3.1	CLO2 CLO3 CLO4

15. Study materials:

15.1. Books, lectures, main textbooks:

[1] Pham Anh Duc, Textbook of Construction Economics, Construction Publishing House, Hanoi, 2019.

15.2 Books and references:

[1] Bui Manh Hung, Construction investment project manager, Science and Technology Publishing House, Hanoi, 2006.

[2] Danny Myers, Construction Economics, Routledge, England, 2004

16. Scientific code of ethics:

- Students must respect their lecturers and other students.
- Students must comply with the university's academic integrity.
- Students must strictly follow the rules and regulations of the university.

17. Approval date:

18. Approved by:

Dean of Faculty	Program chair	Lecturer in charge
Cao Van Lam, PhD.	**Vo Duy Hung, PhD.**	**Assoc. Prof. Le Thi Kim Oanh**

56. Graduation Internship

THE UNIVERSITY OF DANANG
UNIVERSITY OF SCIENCE AND TECHNOLOGY
Faculty of Road and Bridge Engineering

SOCIALIST REPUBLIC OF VIETNAM
Independence - Freedom - Happiness

UNDERGRADUATE PROGRAM

Awarded degree: Undergraduate/Bachelor

Name of the study program: Construction Materials Engineering and Technology Program Code: 7510105

SYLLABUS
Course name (Vietnamese): Thực tập Tốt nghiệp
English name: Graduation Internship

1. Course Code:	1091270
2. Course abbreviation:	Graduation Internship
3. Credits: **ECTS credits (*):**	02 credits (120 Periods) 3,33
4. Study workload:	
- Lecture:	
- Exercise:	
- Practice/ Laboratory:	120 periods
- Self-study/Assignment:	
5. Responsible persons:	
- Faculty/Division in charge:	Construction materials division/ Faculty of Road and Bridge Engineering
- Course coordinator:	Staff of Construction materials division
- Other lecturers:	Supervisors from organizations
6. Required and recommended prerequisites for joining the course:	
- Required prerequisite:	
- Recommended prerequisite:	Worker Pratice, Construction materials fieldtrip
- Corequisite:	
7. Type course:	☒ Compulsory Selected elective Free elective
8. Knowledge clusters:	Math and natural science General knowledge Core engineering fundamental knowledge Disciplinary knowledge Supportive knowledge ☒ Project/ Internship/ Graduate thesis

9. Course description

The course offers students opportunities to be familiar with the jobs of a bachelor in Construction Materials Engineering and Technology in areas such as binder manufacturing technology, concrete structure production, building ceramic technology, Construction, Design; materials Research. The students can collect documents and data for graduation projects. Students can apply the knowledge to be able to solve problems in real production, know how to handle situations that occur in the field and factory.

10. Course Learning Outcomes

After completing the course, students will be able to

N^O	Course Learning Outcomes (CLOs)	Knowledge	Skills	Attitude	Performance indicators (belongs to PLOs)
1	Present the production technology diagram of a factory producing building materials and concrete structures	a2.Understand			8.2.2
2	Develop communication skills		b5. Techniq ue		5.2.1
3	Compare between theory in class and actual production	a4. Analyze			8.1.1
4	Apply the theory to each stage in the production and operation of the factory	a3. Apply			8.4.5
5	Use foreign languages, softwares, tools and machines to serve the production process of building materials		b2. Manipu late		1.4.9;6.1.1;7.2.1
6	Analyze the actual situation to propose solutions to improve production technology	a4. Analyze			3.1.3
7	Determine the position and roles of a bachelor for a project or in the manufacturing plant		b3. Accurat e		4.1.1
8	Develop teamwork skills		b5.Tech nique		5.1.5
9	Collect data for professional work			c4. Organize	2.2.2

11. The relationship between course learning outcomes(CLOs) and program learning outcomes (PLOs) :

PLOs	PLO1	PLO2	PLO3	PLO4	PLO5	PLO6	PLO7	PLO8
Contribution of the course	U	U	T	T	U	U	U	TU
CLO 1								x
CLO 2					x			
CLO 3								x
CLO 4								x

PLOs	PLO1	PLO2	PLO3	PLO4	PLO5	PLO6	PLO7	PLO8
Contribution of the course	U	U	T	T	U	U	U	TU
CLO 5	x					x	x	
CLO 6			x					
CLO 7				x				
CLO 8					x			
CLO 9		x						

12. Student responsibilities

- Absolutely comply with the working rules of the unit where the students practice.
- Daily practice diary.
- Practice report written on A4 paper in groups including the decision, the internship outline and the assessment of the head of the organization/units where the students practice.

13. Course assessments

13.1. General assessment

Assessment Component	Performance assessment	Course learning outcomes (CLOs)	Assessment Methods	Criteria	Weight (%)
A1. Assessment from organization	A1.1 Written report	CLO1, 2, 3, 5, 6	PPĐG 7	Rubric 6	30%
	A1.2 Teamworks	CLO4	PPĐG 9	Rubric 7	20%
A2. Assessment from lecturers	A2.1 Written report	CLO1,2,3,4,5,6,7	PPĐG 3	Rubric 4	20%
	A2.2 Oral defense	CLO1,2,3,5, 6, 7	PPĐG 6	Rubric 5	30%

13.2. Progress Assessment from the organizations based on student's practice progress and written report

A1.1 – Rubric 6 – Written Report

Assessment Criteria	Levels of achievement					Weight (%)
	Level F (0-3.9)	Level D (4.0-5.4)	Level C (5.5-6.9)	Level B (7.0-8.4)	Level A (8.5-10)	
Contents	No content of the irrelevant content	The report is fully represented as requirement. Still, the calculation is wrong or not specific as the requirement	The report is fully represented as requirement. Still, the calculation is not reasonable.	The report is fully represented as requirement. The calculation is correct and exact. Still there is not specific and reasonable explanation for the results	An exemplary report with complete, accurate and relevant content. Discussion and recommendations are outstanding, creative and realistic.	**60%**

Assessment Criteria	Levels of achievement					Weight (%)
	Level F (0-3.9)	**Level D (4.0-5.4)**	**Level C (5.5-6.9)**	**Level B (7.0-8.4)**	**Level A (8.5-10)**	
Organization, format, language	A poorly edited report with grammatical and spelling errors.	Report format lacks consistency. Weak command of the language	The order of the report follows the requirement. There are several mistakes in grammar and spelling. There is not adequate note	Format and contents flow smoothly building on one idea to another. Uses language and conventions appropriate for report writing.	A well-organized report that displays an excellent command of the language. The overall appearance is neat and professional	**20%**
Images/Drawings	No images/drawing or irrelevant drawings	The quantity of images/drawings is adequate. The dimension and note are not clear. The images/drawings are lack of some important parts	The quantity of images/drawings is adequate. The dimension and note are clear. There are some mistakes in images/drawings	The quantity of images/drawings is adequate. The dimension and note are clear. There are no mistakes in images/drawings. The arrangement of the images/drawings is reasonable	Same as level B. Students can use the computer fluently as a drawing tool. The drawings can be used in practical cases.	**20%**

A1.2 – Rubric 7 - Peer Assessment

Criteria	Levels of achievement					Weight (%)
	Level F (0-3.9)	**Level D (4.0-5.4)**	**Level C (5.5-6.9)**	**Level B (7.0-8.4)**	**Level A (8.5-10)**	
Group organization	There is no teamwork	The responsibilities and tasks of the team members are not specifically assigned.	Each member has his or her own job duties but is unclear and does not fit the abilities of the team members.	Job assignments are clear and relevant to the abilities of each team member.	The task of each member is clear, specific, appropriate. Promote the strength of the team members. Interaction, good coordination between members.	**30%**
Diligence	< 30%	<50%	<70%	<90%	100% (Participate in full meetings,	**30%**

Criteria	Levels of achievement					Weight (%)
	Level F (0-3.9)	**Level D (4.0-5.4)**	**Level C (5.5-6.9)**	**Level B (7.0-8.4)**	**Level A (8.5-10)**	
					groups discussion)	
Discussion	Never participate in group discussions.	Rarely participated in group discussions and comments.	Occasionally participate in group discussions and comments.	Have a good group discussion and good comments.	Always participate in group discussions and contribute good ideas for group activities.	**20%**
Group Co-ordination	Never coordinate, cooperate with groups.	Rarely collaborated, teamwork.	Collaborate, collaborate with the team. Occasionally respect and share experiences from other members of the group.	Collaborate, collaborate with the team. Respect and share experiences from other members of the group.	Collaborate with the team. Always respect and share experiences for other members of the group.	**20%**

13.3. **Lecturers' assessment based on written report and oral defense**

A2.1 Rubric 4: Oral Presentation

Criteria	Levels of achievement					Weight (%)
	Level F (0-3.9)	**Level D (4.0-5.4)**	**Level C (5.5-6.9)**	**Level B (7.0-8.4)**	**Level A (8.5-10)**	
Content of presentation	No content or content is inappropriate for the request.	Content matching requirements, images and explanations are not clear	Content meets requirements. Use simple and easy to understand terminology. The picture is clear and beautiful	Content meets requirements. Use simple and easy to understand terminology. Pictures are clear, and beautiful. Used video	Content meets requirements. Use simple and easy to understand terminology. Pictures are clear and beautiful. Use video and explain specific insights on video.	**50%**
Slide presentation	Slide presentation is too sketchy, not enough	Slides are presented in appropriate quantities, using the word and	Slides are presented with a clear, layout (introductio	Slides are presented with clear, logical layout, consists of 3	Slides are presented with clear, logical layout, consists of 3	**25%**

	quantity as prescribed	picture clearly	n, body and conclusion)	parts, demonstrating proficiency in presentation.	parts. The term is simple to understand, demonstrating proficiency in presentation and language.	
Presentation	The presentation is not logical, beyond the specified time, uses of incorrect terminology, unclear pronunciation, low voice. Listeners do not understand.	The presentation is full, but the voice is low, pronouns some words unclear, uses complex terminology, do not contact with the listener when presented.	The presentation has a clear three-part layout. The voice is reasonable, clear, easy to listen, time is properly presented, sometimes interact with the listener. Listeners can understand and keep track of the content presented.	The presentation is brief, easy to understand, uses simple and easy-to-understand terms. Clear layout. The voice is clear and fluent. Time to present correctly. Good interaction with the listener. Listeners can understand the content.	The presentation is brief with clear layout. The voice is clear and fluent. Attract the attention of the listener, interact well with the listener. Listeners can understand and keep up with all the content presented. Time to present correctly.	**25%**

A2.2 – Rubric 5 - Oral Exam

Assessment Criteria	**Levels of achievement**					**Weight (%)**
	Level F (0-3.9)	**Level D (4.0-5.4)**	**Level C (5.5-6.9)**	**Level B (7.0-8.4)**	**Level A (8.5-10)**	
Answering Attitude	Communicating and answering attitude is rude, not cooperated, lack of respect in communication. Use inappropriate terms. Voice is hard to listen.	Attitude is quite polite. Use complex terms, confusing answers, hard to understand. Small voice, lack of confidence.	Communicative attitude is, gentle. The voice is clear, easy to hear. The term used in the answer is appropriated, easy to understand.	Attitude in the answer is confident, calm, gentle. Use simple terms, easy to understand. Clear voice	Attitude is very confident. Voice is clear, fluent and attractive, well interact with the listener.	**30%**

				fluently speak.		
Answer questions	The answers are completely unrelated to questions.	Answers are not clear, almost unconnected, not focus on the question.	Answers focus on questions. The lack of confidence in the answers.	The answers are concise, clear, completed, relevant to the question asked. Attitude in answering is confident, calm, gentle, calm.	Answer shortly, clearly, completely, directly related to the question asked, explain convincedly. Attitude in answering is confident, calm, persuasive.	**70%**

14. Teaching and learning plan

Weeks	Contents	Course learning outcomes (CLOs)	Teaching and Learning Activities	Performance assessment
1	The lecturer announce the internship plan at the school	CLO4, CLO7	Teaching Activities: - Divide groups, practice units/organization, assign tasks - Guide the practice content **Learning in class:** - Registration of groups, internship organization/units. - Listen to content instructions. - Write working diary **Study at home:** - Prepare documents - Find out information about the internship unit/organization - Prepare a plan to the internship site. ***Strategies and methods of teaching and learning:*** Lecture, explicit teaching, independent learning, pear learning, discussion.	A1.2
2	Travel to the internship site and listen to the internship	CLO1, CLO2, CLO4, CLO7	- Divide groups, assign tasks - Guide the practice content **Learning in class:** - Listen to content instructions. - Write working diary	A1.1; A1.2

Weeks	Contents	Course learning outcomes (CLOs)	Teaching and Learning Activities	Performance assessment
	instructions of the staff at the internship organization		**Study at home:** - Prepare documents - Find out information about the internship unit - Prepare a plan to go to the internship site ***Strategies and methods of teaching and learning*:** Lecture, explicit teaching, independent learning, pear learning, field trip	
3-11	Implement the assigned work at the internship unit.		- The instructor introduces the company, unit, and ongoing projects - The instructor introduces work, assigns tasks **Study in unit/organization/company:** - Listen and record content related to roles, responsibilities and jobs. - Receive assigned tasks. - Borrow documents, project files. - Write working diary. - Allocate specific work to the members of the internship group. - Implement assigned work - Think of solutions that improve the quality and efficiency of work. - Discuss with the instructor at the internship unit. **Study at home:** - Research more documents related to the ongoing project. - Read more project files if being accepted by the unit. ***Strategies and methods of teaching and learning:*** Lecture, explicit teaching, independent learning, pear learning, field trip	A1.1; A1.2
12	Complete graduation internship, write report and oral defense		- The instructor introduces the company, unit, and ongoing project - The instructor introduces work, assigns tasks **Study in unit/organization/company:** - Listen and record content related to roles, responsibilities and jobs. - Receive assigned tasks. - Borrow documents, project files. - Write working diary. - Allocate specific work to the members of the internship group. - Perform assigned work	A1.1;

Weeks	Contents	Course learning outcomes (CLOs)	Teaching and Learning Activities	Performance assessment
			- Think of solutions that can improve the quality and efficiency of works - Discuss with the instructor at the internship unit. **Study at home:** - Research more documents related to the ongoing project. - Read more project files if it was accepted by the unit. Strategies and methods of teaching and learning: Lecture, explicit teaching, independent learning, pear learning, field trip	
	Final exam: internship report (write report and oral defense)		- The instructor comments and evaluates the tasks done by the students. - State the requirements, the process of applying for internship comments. **Study in unit/organization/company:** - Listen to notes the content requested by the instructor. - Write an internship report, if there is anything unclear, ask the instructor immediately. - Ask for internship comments after completing the internship report. **Study at home:** - Writing internship report (with separate regulations) - Making report slides (with separate regulations). **Study in class:** - Oral Presentation - Answer the teacher's questions Strategies and methods of teaching and learning: Independent learning, pear learning, Field Trip; Problem Solving	A1.2

15. Materials

15.1 Books, lectures, main textbooks

[1] Vu Dinh Dau, Bui Danh Dai, *Inorganic binder*, Construction publisher, Ha Noi, 2006
[2] Vu Minh Duc, *Technology of building ceramics*, Construction publisher, Ha Noi, 1999
[3] Nguyen Tan Quy, Nguyen Thien Rue, *Technology of concrete 1*, Construction publisher 2000

15.2 Reference materials

16. Scientific code of ethics:

- Students must respect a lecturer and other students.
- Students must comply with the University's academic integrity policy.

- Students must obey the rules and regulations of the university.

17. Approved date:

17. Approved by:

Dean of Faculty	Program chair	Lecturer in charge
Cao Van Lam, PhD.	**Vo Duy Hung, PhD.**	**Nguyen Tien Dung, M.Sc.**

57. Graduation Project – Concrete

THE UNIVERSITY OF DANANG
UNIVERSITY OF SCIENCE AND TECHNOLOGY
Faculty of Road and Bridge Engineering

SOCIALIST REPUBLIC OF VIETNAM
Independence - Freedom - Happiness

UNDERGRADUATE PROGRAM

Awarded degree: Undergraduate/Bachelor

Name of the study program: Construction Materials Engineering and Technology

Program Code: 7510105

SYLLABUS
Course name (Vietnamese): Đồ án tốt nghiệp – Bê tông
English name: Graduation Project – Concrete

1. Course code:	1092880
2. Course abbreviation:	Graduation Project – Concrete
3. Credits: **ECTS credits (*):**	6 credits (180 periods) 10,02
4. Study workload:	
- Lecture:	
- Exercise:	
- Practice/ Laboratory:	
- Self-study/Assignment:	180 periods
5. Responsible persons:	
- Faculty/Division in charge:	Lecturer staff of Construction materials division
- Course coordinator:	
- Other lecturers:	Construction materials division/ Faculty of Road and Bridge Engineering
6. Required and recommended prerequisites for joining the course:	
- Required prerequisite:	PBL5. Technology of concrete 1
- Recommended prerequisite:	All courses
- Corequisite:	
7. Type course:	☐ Compulsory ☒ Compulsive Electives ☐ Electives
8. Knowledge clusters:	☐ Maths & Natural Sciences ☐ General Knowledge ☐ Engineering Fundermentals ☐Professional Engineering ☐ Supporting ☒ Projects, Internships, & Thesis

9. Course description

The graduation project in concrete is a compulsory elective course of undergraduate program of Construction Materials Engineering and Technology . Its contents belong to the specialized knowledge module or the professional Engineering module, including cement (binder), construction ceramics, and concrete. The course provides students with skills in the inspection and evaluation in properties of raw materials and concrete products; the skills in designing the engineering technology of a concrete factory or researching and fabricating concrete products used in the construction industry.

10. Course Learning Outcomes

After completing the course, students will be able to

NO	Course Learning Outcomes(CLO)	Knowledge	Skills	Attitude	Performance indicators PLO
1	Selecting the product aims to implement the design (Basic properties of the products and consumption ability; Choosing the types of raw materials, origin, and technical requirements of manufacturing materials).	a.4.Analyze	b.4.Fluent	c.3. Attitude	1.4.9; 3.1.2; 3.1.3; 3.2.1; 8.1.1
2	Evaluating technical factors of raw materials. Carrying out experiments to design and mix concrete types according to the product's aims.	a.5.Evaluate	b.3.Accurate	c.4. Organize	1.4.9;2.1.1; 2.1.2; 2.2.4; 4.1.1;5.1.2; 7.1.4;
3	Analyzing and selecting construction sites, Production planning; Selecting the of technology line diagram and calculating material balance.	a.4.Analyze	b.4. Fluent	c.3. Attitude	1.4.9; 3.1.2; 4.1.1; 8.1.1;
4	Designing the concrete production s: calculating and selecting machinery and equipment; quality control process; architectural design; calculating economic efficiency of investment.	a.3. Apply	b.4. Fluent	c.3. Attitude	1.4.9; 3.1.2;4.1.1; 8.2.4.
5	Report presentation (reports, drawings, slides).		b.4. Fluent	c.1. Reception	5.2.6; 7.1.4; 7.1.5; 7.2.1
6	Oral presentation and defense.			c.3. Attitude	3.1.1

11. The relationship between course learning outcomes(CLOs) and program learning outcomes (PLOs)

PLOs	PLO1	PLO2	PLO3	PLO4	PLO5	PLO6	PLO7	PLO8
Contribution of the course	TU	U	TU	TU	U	U	U	TU
CLO 1	x		x					x
CLO 2	x	x		x	x		x	

CLO 3	x		x	x				x
CLO 4	x		x	x				x
CLO5					x		x	
CLO6			x					

12. Student responsibilities

Students must do the following tasks:

- Attend not less than 80% of the instruction periods in class following the course regulations;
- Do and submit individual/group assignments following the course regulations.
- Self-study the problems assigned by the lecturer;
- Group discussion on the topic assigned by the lecturer;
- Attend the final exam following the time prescribed by the university.

13. Course assessments

Graduation project evaluation follows the current university regulations.

14.Teaching and Learning plan

Weeks	Contents	Teaching and Learning Activities	Perfor-mance assess-ment	Course learning outcomes (CLOs)
1	Grouping, guiding and assigning graduation project tasks	**Teaching activities:** - Lecturers introduce the goals, position, and course content. - Guide students to make a group for projects and announce discipline requirements of students when joining the course. - Assign the project and project tasks for each group of students and each student. - Guide students to find relevant documents. **Learning in class:** - Listen to the lecture and answer the teacher's questions. - Ask questions. **Self-learning:** - Working group - Search and research relevant documents.	A1.1; A1.2	CLO1
2	Setting production objectives: types, physical and mechanical properties, technical requirements, the scope of use, production, and consumption situation in the	**Teaching activities:** - Guiding and answering students' questions; - Summarize and comment on activities of student groups, including participation in discussions between groups, content, and quality of projects. - Guide students to find relevant documents. - Instruct students on the content of lesson 3. **Learning activities:**	A1.1; A1.2;	CLO1

Weeks	Contents	Teaching and Learning Activities	Perfor-mance assess-ment	Course learning outcomes (CLOs)
	country and the world.	- Student groups present the proposed options, documents, and data related to the proposed plan - Group discussion: Groups of students discuss and give comments on proposed options and related documents. **Self-learning:** - Search and research relevant documents.		
3	Analysis and selection of construction sites; raw material sources; production methods	**Teaching activities:** - Guide students to work in class. - Guide and answer students' questions; - Summarize and comment on activities of student groups including discussion between groups, content and quality of projects. - Guide students to find relevant documents. - Guide students to practice content 4. **Learning activities:** - Groups of students present proposed options, collected data on raw materials sources, choice of production methods. - Discussion: Student groups discuss and give comments on the issues presented by other groups. **Self -learning:** - Searching and researching relevant documents for lesson 4.	A1.1; A1.2;	CLO3
4	Experimentally determine the mechanical and physical parameters of the raw materials used to make products according to the set objectives.	**Teaching activities:** - Instruct students in evaluation methods on the quality of raw materials **Learning activities:** - Groups of students conduct experiments - Group discussion: Student groups discuss and exchange **Self-learning:** Search and research relevant documents.	A1.1; A1.2;	CLO2
5	Experimental design of concrete mixture	**Teaching activities:** - Guide students to work in class. - Guide students how to treat experimental data and answer students' questions; - Summarize and comment on activities of student groups, including discussion between groups, content and quality of projects.	A1.1; A1.2;	CLO2

Weeks	Contents	Teaching and Learning Activities	Performance assessment	Course learning outcomes (CLOs)
		- Instruct students to design concrete mixture following the assigned tasks. **Learning activities:** - Groups of students carry out the design of concrete mixture by the calculation method combined with experiments - Discussion groups **Self -learning:** - Edit experimental results.		
6	Technical design of industrial production workshop: setting up technological lines; calculating material balance; selecting machinery and equipment	**Teaching activities:** - Guide students to work in class. - Guiding and answering students' questions; - Guide students to find relevant documents. - Instruct students in the following contents: setting up technological lines in the production workshops, calculating material balance **Learning activities:** - Group discussion: Student groups discuss and give comments on the proposed options **Self -learning**: - Editing practice results - Search and research relevant documents.	A1.1; A1.2;	CLO4
7	Technical design of industrial production workshops: calculation and selection of machinery and equipment	**Teaching activities:** - Guide students to work in class. - Guiding and answering students' questions; - Guide students to find relevant documents. - Instruct students in the contents: calculation and selection of equipment **Learning activities:** - Group discussion: Student groups discuss and give comments on the proposed options **Self -learning:** - Editing practice results - Calculation and selection of machinery and equipment	A1.1; A1.2;	CLO4
8	Technical design of industrial production workshops: calculation and selection	**Teaching activities:** - Guide students to work in class. - Guiding and answering students' questions; - Guide students to find relevant documents.	A1.1; A1.2;	CLO4

Weeks	Contents	Teaching and Learning Activities	Performance assessment	Course learning outcomes (CLOs)
	of machinery and equipment	- Instruct students in the contents: calculation and selection of equipment **Learning activities:** - Group discussion: Student groups discuss and give comments on the proposed options **Self -learning:** - Editing practice results - Calculation and selection of machinery and equipment		
9	Technical design of industrial production workshops: calculation and selection of equipment; the quality assessment process	**Teaching activities:** - Guide students to work in class. - Guiding and answering students' questions; - Guide students to find relevant documents. - Instruct students on the content of the quality assessment process at the manufacturing plant **Learning activities:** - Group discussion: Groups of students discuss and give comments on proposed options **Self - learning:** - Edit the results of the entire technical calculation	A1.1; A1.2;	CLO4
10	Industrial, architectural design and economic efficiency calculation	**Teaching activities:** - Guiding students in class activities. - Guiding and answering students' questions; - Guide students to find relevant documents. - Instruct students in the following contents: technical drawings, factory architecture and calculation of economic indicators **Learning activities:** - Group discussion: Student groups discuss and give comments on the proposed options **Self- learning:** - Work in group - Completing the site layout plan of technology lines - Make technical drawings(Edited)Restore original	A1.1; A1.2;	CLO4
11	Report presentation (reports,	**Teaching activities:** - Guiding students in class activities.	A2.1; A2.2; A2.3	CLO5,6

Weeks	Contents	Teaching and Learning Activities	Performance assessment	Course learning outcomes (CLOs)
	drawings, slides)	+ Guiding and answering students' questions; + Guide students to check and complete the reports and drawings **Learning activities:** - Groups report all implementation content - The groups exchange ideas to improve reports **Self-learning:** -Finalize the content of the project		

15. Materials

15.1. Books, lectures, main textbooks

[1]. Instructions for Graduation Project- Concrete – Construction Materials Division, Danang University of Science and Technology (internal circulation)

[2]. Technical instructions for choosing concrete components of all types – Ministry of Construction – Construction publisher, 2000.

[3]. Nguyen Tan Quy, Nguyen Thien Rue, Technology of concrete 1, Construction publisher, 2000

15.2. Reference materials

[1] Cement concrete – TCVN standards

[2] Nguyen Tan Quy, Nguyen Thien Rue, Technology of concrete 2, Construction publisher, 2000

16. Scientific code of ethics:

- Students must respect a lecturer and other students.
- Students must comply with the University's academic integrity policy.
- Students must obey the rules and regulations of the university.

17. Approved date: / /2021

18. Approved by:

Dean of Faculty	Program chair	Lecturer in charge
Cao Van Lam, Ph.D.	**Vo Duy Hung, Ph.D.**	**Le Xuan Chuong, M.Sc.**

58. Graduation Project – Binders

THE UNIVERSITY OF DANANG
UNIVERSITY OF SCIENCE AND TECHNOLOGY
Faculty of Road and Bridge Engineering

SOCIALIST REPUBLIC OF VIETNAM
Independence - Freedom - Happiness

UNDERGRADUATE PROGRAM

Awarded degree: Undergraduate/Bachelor

Name of the study program: Construction Materials Engineering and Technology

Program Code: 7510105

SYLLABUS
Course name (Vietnamese): Đồ án tốt nghiệp – Chất kết dính
English name: Graduation Project – Binders

1. Course code:	1092860
2. Course abbreviation:	Graduation Project – Binders
3. Credits: **ECTS credits (*):**	06 credits (180 periods) 10,02
4. Study workload:	
- Lecture:	
- Exercise:	
- Practice/ Laboratory:	
- Self-study/Assignment:	180 periods
5. Responsible persons:	
- Faculty/Division in charge:	Construction Materials Division/Faculty of Road and Bridge Engineering
- Course coordinator:	Lecturers of Construction Materials Division
- Other lecturers:	Construction Materials Division
6. Required and recommended prerequisites for joining the course:	
- Required prerequisite:	PBL3 - Production Technique for Inorganic Binders 1
- Recommended prerequisite:	All courses included in the Training Program
- Corequisite:	
7. Type course:	☒ Compulsory Selected elective Free elective
8. Knowledge clusters:	Math and natural science General knowledge Core engineering fundamental knowledge Disciplinary knowledge Supportive knowledge ☒ Project/ Internship/ Graduate thesis

9. Course description

The Graduation Project for the Undergraduate/Bachelor level of the Construction Materials Engineering and Technology major is a compulsory electives course included in the Professional Engineering Knowledge module. This course synthesizes the knowledge of fundamental engineering subjects and professional engineering subjects. The course content shows the volume of either engineering design projects of manufacturing workshops or plants, research and manufacture of construction materials; or testing of raw materials and products properties. After completing the course, students are equipped to create a technical design of a workshop or a plant for construction material production, or research and manufacture different construction material products.
Students can choose 01 of 03 graduation projects:

10. Course Learning Outcomes (CLOs)

After completing the course, students will be able to:

No.	Course Learning Outcomes (CLOs)	Knowledge	Skills	Attitude	Performance indicators PI (belongs to PLOs)
1	**Establish** production targets: 02 products (types, physico-mechanical properties, technical requirements, scope of use, domestic & global production and consumption)	a.4. Analyze	b.4. Competency	c.3. Attitude	1.3.4; 2.1.1; 2.1.2; 3.1.2; 3.1.3; 8.1.1
2	**Analyze** & **select** construction sites; raw material sources; production methods	a.3. Manipulate	b.4. Competency	c.3. Attitude	3.1.2; 4.1.1; 1.4.3
3	Conduct **empirical experiments** on batch mixing by using 2÷3 types of admixtures with different ratios to manufacture products in accordance with the set targets	a.6. Create	b.3. Accuracy	c.4. Organize	1.3.4; 2.1.1; 2.1.2; 4.1.1; 5.1.2
4	Create a **technical design** of production workshop/plant: establish production line; calculate mass balance; calculate & select equipment; calculate economy.	a.3. Manipulate	b.4. Competency	c.3. Attitude	1.4.9; 3.1.2; 4.1.1.; 5.1.2; 8.2.4.
5	**Present** reports (project description, drawings, slides)		b.4. Competency	c.1. Receive	5.2.6; 7.1.5
	Present & **defense** project			c.3. Attitude	3.1.1

11. The relationship between course learning outcomes (CLOs) and program learning outcomes (PLOs)

PLOs	PLO1	PLO2	PLO3	PLO4	PLO5	PLO6	PLO7	PLO8
Contribution of the course (6)	TU	U	TU	TU	U	U	U	TU
CLO 1	x	x	x	x				x
CLO 2	x		x	x				
CLO 3	x	x		x	x			
CLO 4	x		x	x	x			x
CLO 5					x		x	
CLO 6			x					

12. Student responsibilities

Students must perform the following tasks:

- Attend no less than 80% of the project guide sessions according to the regulations of the course;
- Complete and submit individual/ group assignments according to the regulations of the course;
- Self-study the problems assigned by the lecturer to solve at home or in the library;
- Participate in group discussions on topics assigned by the lecturer;
- Attend the final exam according to the date & time regulated by the University.

13. Course assessments

According to the current graduation project evaluation criteria of the University

14. Teaching and Learning plan

Week/ Lesson	Contents	Teaching and learning activities	Performance Assessment	Course Learning Outcomes (CLOs)
1	**Practice Exercise 1:** Grouping, instructing & assigning graduation project tasks	**Teaching activities:** - Introduce objective, placement and role of course content to students; - Instruct students to form project groups, publish discipline requiements applicable for the course. - Approve the project groups and project tasks for each group. - Instruct students on how to collect relevant materials. - Instruct students on Practice Exercise 2 content. **In-class learning activities:** - Follow the lecture & answer lecturer's questions **Self-learning activities:** - Working in group - Gather & research relevant materials.	A1.1; A2.1	CLO1, 5
2	**Practice Exercise 2:** Establishing production targets: 02 products (types, physico-mechanical properties, technical requirements, scope of use, domestic & global production and consumption)	**Teaching activities:** - Instruct and answer students' questions. - Summarize & comment on student groups activities, including: participation in inter-group discussions, content and quality of projects. - Instruct students on how to collect relevant materials. - Instruct students on Lesson 3 content. **In-class learning activities:** - Student groups present their proposed plans, materials and data related to the proposed plans - Group discussion: Student groups discuss, exchange views and offer comments	A1.1; A1.2; A2.1; A2.2	CLO1, 5, 6

		on the proposed plans and related materials. **Self-learning activities:** - Correct the results of Practice Exercise 1 and complete Pracice Exercise 2. - Gather & research relevant materials.		
3	**Practice Exercise 3:** Analyzing & selecting construction sites; raw material sources; production methods	**Teaching activities:** - Instruct students on in-class activities. - Instruct and answer students' questions - Summarize & comment on student groups activities, including: participation in inter-group discussions, content and quality of projects. - Instruct students on how to collect relevant materials. - Instruct students on Practice Exercise 4 content. **In-class learning activities:** - Student groups present their proposed plans, materials and data related to the proposed plans - Group discussion: Student groups discuss, exchange views and offer comments on other groups' presentation. **Self-learning activities:** - Correct the results of Practice Exercise 2 and complete Pracice Exercise 3. - Complete Practice Exercise 2 - Gather & research relevant materials for Practice Exercise 4.	A1.1; A1.2; A2.1; A2.2	CLO1, 5, 6
4	**Practice Exercise 4:** Conducting empirical experiments on batch mixing by using 2÷3 types of admixtures with different ratios to manufacture products in accordance with the set targets	**Teaching activities:** - Instruct students on how to assess the quality of the prepared raw materials - Instruct students on batch mixing methods (intermeshing grinding or separate grinding-mixing) **In-class learning activities:** - Student groups conduct experiments - Group discussion: Student groups discuss & exchange views. **Self-learning activities:** - Correct the results of Practice Exercise 3 and complete Pracice Exercise 4. - Complete Practice Exercise 3 - Gather & research relevant materials.	A1.1; A1.2; A2.1; A2.2	CLO1, 2 (3), 5, 6
5	**Practice Exercise 5:** Conducting Product Quality Control Tests in accordance with the batch mixing method	**Teaching activities:** - Instruct students on in-class activities. - Instruct students on experiment data processing & answer students' questions. - Summarize & comment on student groups activities, including: participation	A1.1; A1.2; A2.1; A2.2	CLO1, 2 (3), 5, 6

		in inter-group discussions, content and quality of projects. - Instruct students on how to collect relevant materials. - Instruct students on Practice Exercise 5 content. **In-class learning activities:** - Student groups present experiment results, offer comments to assess product quality, analyze results and propose improvements - Group discussion: Student groups discuss, exchange views and offer comments on other groups' presentation. **Self-learning activities:** - Correct the results of Practice Exercise 4 and complete Pracice Exercise 5. - Complete Practice Exercise 4 - Gather & research relevant materials.		
6	**Practice Exercise 6:** Create a technical design of production workshop/plant: establish production line; calculate mass balance; calculate & select equipment; calculate economy.	**Teaching activities:** - Instruct students on in-class activities. - Instruct & answer students' questions. - Instruct students on how to collect relevant materials. - Instruct students on the following content: establishing production line for workshop, calculating mass balance **In-class learning activities:** - Group discussion: Student groups discuss, exchange views and offer comments on proposed plans. **Self-learning activities:** - Correct the results of Practice Exercise 5 and complete Pracice Exercise 6. - Complete Practice Exercise 5 - Gather & research relevant materials.	A1.1; A1.2; A2.1; A2.2	CLO1, 2 (3), 5, 6
7	**Practice Exercise 7:** Create a technical design of production workshop/plant: establish production line; calculate mass balance; calculate & select equipment; calculate economy.	**Teaching activities:** - Instruct students on in-class activities. - Instruct & answer students' questions. - Instruct students on how to collect relevant materials. - Instruct students on the following content: calculating & selecting equipment **In-class learning activities:** - Group discussion: Student groups discuss, exchange views and offer comments on proposed plans. **Self-learning activities:** - Correct the results of Practice Exercise 6 and complete Pracice Exercise 7. - Complete Practice Exercise 6 - Gather & research relevant materials.	A1.1; A1.2; A2.1; A2.2	CLO1, 2 (3), 5, 6

8	**Practice Exercise 8:** Create a technical design of production workshop/plant: establish production line; calculate mass balance; calculate & select equipment; calculate economy.	**Teaching activities:** - Instruct students on in-class activities. - Instruct & answer students' questions. - Instruct students on how to collect relevant materials. - Instruct students on the following content: calculating & selecting equipment, evaluate the relevant parameters among different types of equipment **In-class learning activities:** - Group discussion: Student groups discuss, exchange views and offer comments on proposed plans. **Self-learning activities:** - Correct the results of Practice Exercise 7 and complete Pracice Exercise 8. - Gather & research relevant materials.	A1.1; A1.2; A2.1; A2.2	CLO1, 3 (4), 5, 6
9	**Practice Exercise 9:** Create a technical design of production workshop/plant: establish production line; calculate mass balance; calculate & select equipment; calculate economy.	**Teaching activities:** - Instruct students on in-class activities. - Instruct & answer students' questions. - Instruct students on how to collect relevant materials. - Instruct students on the following content: completing the technical calculations. **In-class learning activities:** - Group discussion: Student groups discuss, exchange views and offer comments on proposed plans. **Self-learning activities:** - Correct the results of all technical calculations. - Plan the technological layout.	A1.1; A1.2; A2.1; A2.2	CLO1, 3 (4), 5, 6
10	**Practice Exercise 10:** Create a technical design of production workshop/plant: establish production line; calculate mass balance; calculate & select equipment; calculate economy.	**Teaching activities:** - Instruct students on in-class activities. - Instruct & answer students' questions. - Instruct students on how to collect relevant materials. - Instruct students on the following content: technical drawings, economy calculations **In-class learning activities:** - Group discussion: Student groups discuss, exchange views and offer comments on proposed plans. **Self-learning activities:** - Working in group. - Finish planning the technological layout. - Set up technical drawings	A1.1; A1.2; A2.1; A2.2	CLO1, 3 (4), 5, 6
11	**Practice Exercise 11:** Presenting reports (project descriptions, drawings, slides)	**Teaching activities:** - Instruct students on in-class activities. - Instruct & answer students' questions.	A2.1; A2.2; A2.3	CLO6, 7

		- Instruct students on how to check & complete project description & drawings. **In-class learning activities:** - Student groups report all implementing content. - Student groups discuss, exchange views and offer comments for improvements. **Self-learning activities:** - Working in group. - Finish project content.		

15. Learning Materials:

15.1. Books, lectures, main textbooks:

[1] Huynh Phuong Nam, Nguyen Thi Tuyet An, Do Thi Phuong, *Construction Materials*, Construction Publishing House, Hanoi, 2016.

[2] Construction Materials Division, *Construction Materials Laboratory Manual* (for internal use only).

15.2. Reference materials:

[1] Phung Van Lu, Pham Duy Huu, Phan Khac Tri, *Construction Materials*, Vietnam Education Publishing House, Hanoi, 2001.

[2] Pham Duy Huu, Ngo Xuan Quang, *Construction Materials*, Transport Publishing House, Hanoi, 2004.

[3] Ministry of Construction, *Technical Manual for Concrete Composition Selection*, Construction Publishing House, Hanoi, 2000.

[4] TCVN, Construction Materials Standards

16. Scientific code of ethics:

- Students are not allowed to copy each other's assignments verbatim.
- Students must not use reference materials in mid-term exams.
- Students must not use audio-visual equipment in the examination room.

17. Approved date: / /2022

18. Approved by:

Dean of Faculty	Program chair	Lecturer in charge
Cao Van Lam, PhD.	**Vo Duy Hung, PhD.**	**Nguyen Thi Tuyet An, M.Sc.**

59. Graduation Project – Ceramics

THE UNIVERSITY OF DANANG
UNIVERSITY OF SCIENCE AND TECHNOLOGY
Faculty of Road and Bridge Engineering

SOCIALIST REPUBLIC OF VIETNAM
Independence - Freedom - Happiness

UNDERGRADUATE PROGRAM

Awarded degree: Undergraduate/Bachelor

Name of the study program: Construction Materials Engineering and Technology Program Code: 7510105

SYLLABUS
Course name (Vietnamese): Đồ án tốt nghiệp - Gốm XD
English name: Graduation Project – Ceramics

1. Course code:	1092870
2. Course abbreviation:	Graduation Project – Ceramics
3. Credits: **ECTS credits (*):**	06 credits (180 periods) 10,02
4. Study workload:	
- Lecture:	
- Exercise:	
- Practice/ Laboratory:	
- Self-study/Assignment:	180 periods
5. Responsible persons:	
- Faculty/Division in charge:	Construction Materials Division/Faculty of Road and Bridge Engineering
- Course coordinator:	Lecturers of Construction Materials Division
- Other lecturers:	Construction Materials Division
6. Required and recommended prerequisites for joining the course:	
- Required prerequisite:	PBL4 - Technology of Construction Ceramics 1
- Recommended prerequisite:	All courses included in the Training Program
- Parallel courses	
7. Type course	☒ Compulsory Selected elective Free elective
8. Knowledge clusters:	Math and natural science General knowledge Core engineering fundamental knowledge Disciplinary knowledge Supportive knowledge ☒ Project/ Internship/ Graduate thesis

9. Course description

The Graduation Project for the Undergraduate/Bachelor level of the Construction Materials Engineering and Technology major is a compulsory electives course included in the Professional Engineering Knowledge module. This course synthesizes the knowledge of fundamental engineering subjects and professional engineering subjects. The course content shows the volume of either engineering design projects of manufacturing workshops or plants, research and manufacture of construction materials; or testing of raw materials and products properties. After completing the course, students are equipped to create a technical design of a workshop or a plant for construction material production, or research and manufacture different construction material products.
Students can choose 01 of 03 graduation projects:

10. Course Learning Outcomes (CLOs)

After completing the course, students will be able to:

No.	Course Learning Outcomes (CLOs)	Knowledge	Skills	Attitude	Performance indicators PI (belongs to PLOs)
1	**Establish** production targets: 02 products (types, physico-mechanical properties, technical requirements, scope of use, domestic & global production and consumption)	a.4. Analyze	b.4. Competency	c.3. Attitude	1.4.9. 6.1.1 8.1.1
2	**Analyze** & **select** construction sites; raw material sources; production methods	a.3. Manipulate	b.4. Competency	c.3. Attitude	2.2..1 3.1.1 7.2.1
3	**Conduct** batch mixing in accordance with the set targets	a.6. Create	b.3. Accuracy	c.4. Organize	1.4.9. 2.1.1 3.2.1 7.2.1
4	Create a **technical design** of production workshop/plant: establish production line; calculate mass balance; calculate & select equipment; calculate economy.	a.3. Manipulate	b.4. Competency	c.3. Attitude	7.2.1 8.2.1
5	**Present** reports (project description, drawings, slides)		b.4. Competency	c.1. Receive	3.2.1.; 4.1.1.; 5.1.1.; 5.2.1; 6.1.1.; 7.1.1; 8.3.1
	Present & **defense** project			c.3. Attitude	3.2.1.; 4.1.1; 5.1.1; 5.2.1; 6.1.1; 7.1.1; 8.3.1

11. The relationship between course learning outcomes (CLOs) and program learning outcomes (PLOs)

PLOs	PLO1	PLO2	PLO3	PLO4	PLO5	PLO6	PLO7	PLO8
Contribution of the course (6)	TU	U	TU	TU	U	U	U	TU
CLO 1	X					X		X
CLO 2		X	X				X	

CLO 3	X	X	X				X	
CLO 4							X	X
CLO 5			X	X	X	X	X	X
CLO 6			X	X	X	X	X	X

12. Student responsibilities

Students must perform the following tasks:

- Attend no less than 80% of the project guide sessions according to the regulations of the course;
- Complete and submit individual/ group assignments according to the regulations of the course;
- Self-study the problems assigned by the lecturer to solve at home or in the library;
- Participate in group discussions on topics assigned by the lecturer;
- Attend the final exam according to the date & time regulated by the University.

13. Course assessments

According to the current graduation project evaluation criteria of the University

14. Teaching and Learning plan

Week/ Lesson	Contents	Teaching and learning activities	Performance Assessment	Course Learning Outcomes (CLOs)
1	**Practice Exercise 1:** Grouping, instructing & assigning graduation project tasks	**Teaching activities:** - Introduce objective, placement and role of course content to students; - Instruct students to form project groups, publish discipline requiements applicable for the course. - Approve the project groups and project tasks for each group. - Instruct students on how to collect relevant materials. - Instruct students on Practice Exercise 2 content. **In-class learning activities:** - Follow the lecture & answer lecturer's questions **Self-learning activities:** - Working in group - Gather & research relevant materials.	A1.1; A2.1	CLO1, 5
2	**Practice Exercise 2:** Establishing production targets: 02 products (types, physico-mechanical properties, technical requirements, scope of use, domestic & global production and consumption)	**Teaching activities:** - Instruct and answer students' questions. - Summarize & comment on student groups activities, including: participation in inter-group discussions, content and quality of projects. - Instruct students on how to collect relevant materials. - Instruct students on Lesson 3 content. **In-class learning activities:** - Student groups present their proposed plans, materials and data related to the proposed plans	A1.1; A1.2; A2.1; A2.2	CLO1, 5, 6

		- Group discussion: Student groups discuss, exchange views and offer comments on the proposed plans and related materials. **Self-learning activities:** - Correct the results of Practice Exercise 1 and complete Pracice Exercise 2. - Gather & research relevant materials.		
3	**Practice Exercise 3:** Analyzing & selecting construction sites; raw material sources; production methods	**Teaching activities:** - Instruct students on in-class activities. - Instruct and answer students' questions - Summarize & comment on student groups activities, including: participation in inter-group discussions, content and quality of projects. - Instruct students on how to collect relevant materials. - Instruct students on Practice Exercise 4 content. **In-class learning activities:** - Student groups present their proposed plans, materials and data related to the proposed plans - Group discussion: Student groups discuss, exchange views and offer comments on other groups' presentation. **Self-learning activities:** - Correct the results of Practice Exercise 2 and complete Pracice Exercise 3. - Complete Practice Exercise 2 - Gather & research relevant materials for Practice Exercise 4.	A1.1; A1.2; A2.1; A2.2	CLO1, 5, 6
4	**Practice Exercise 4:** Conducting batch mixing in accordance with the set targets	**Teaching activities:** - Instruct students on how to assess the quality of the prepared raw materials - Instruct students on batch mixing methods (intermeshing grinding or separate grinding-mixing) **In-class learning activities:** - Student groups conduct experiments - Group discussion: Student groups discuss & exchange views. **Self-learning activities:** - Correct the results of Practice Exercise 3 and complete Pracice Exercise 4. - Complete Practice Exercise 3 - Gather & research relevant materials.	A1.1; A1.2; A2.1; A2.2	CLO1, 2 (3), 5, 6
5	**Practice Exercise 5:** Conducting Product Quality Control Tests in accordance with the batch mixing method	**Teaching activities:** - Instruct students on in-class activities. - Instruct students on experiment data processing & answer students' questions. - Summarize & comment on student groups activities, including: participation in inter-group discussions, content and quality of projects. - Instruct students on how to collect relevant materials.	A1.1; A1.2; A2.1; A2.2	CLO1, 2 (3), 5, 6

		- Instruct students on Practice Exercise 5 content. **In-class learning activities:** - Student groups present experiment results, offer comments to assess product quality, analyze results and propose improvements - Group discussion: Student groups discuss, exchange views and offer comments on other groups' presentation. **Self-learning activities:** - Correct the results of Practice Exercise 4 and complete Pracice Exercise 5. - Complete Practice Exercise 4 - Gather & research relevant materials.		
6	**Practice Exercise 6:** Create a technical design of production workshop/plant: establish production line; calculate mass balance; calculate & select equipment; calculate economy.	**Teaching activities:** - Instruct students on in-class activities. - Instruct & answer students' questions. - Instruct students on how to collect relevant materials. - Instruct students on the following content: establishing production line for workshop, calculating mass balance **In-class learning activities:** - Group discussion: Student groups discuss, exchange views and offer comments on proposed plans. **Self-learning activities:** - Correct the results of Practice Exercise 5 and complete Pracice Exercise 6. - Complete Practice Exercise 5 - Gather & research relevant materials.	A1.1; A1.2; A2.1; A2.2	CLO1, 2 (3), 5, 6
7	**Practice Exercise 7:** Create a technical design of production workshop/plant: establish production line; calculate mass balance; calculate & select equipment; calculate economy.	**Teaching activities:** - Instruct students on in-class activities. - Instruct & answer students' questions. - Instruct students on how to collect relevant materials. - Instruct students on the following content: calculating & selecting equipment **In-class learning activities:** - Group discussion: Student groups discuss, exchange views and offer comments on proposed plans. **Self-learning activities:** - Correct the results of Practice Exercise 6 and complete Pracice Exercise 7. - Complete Practice Exercise 6 - Gather & research relevant materials.	A1.1; A1.2; A2.1; A2.2	CLO1, 2 (3), 5, 6
8	**Practice Exercise 8:** Create a technical design of production workshop/plant: establish production	**Teaching activities:** - Instruct students on in-class activities. - Instruct & answer students' questions. - Instruct students on how to collect relevant materials.	A1.1; A1.2; A2.1; A2.2	CLO1, 3 (4), 5, 6

	line; calculate mass balance; calculate & select equipment; calculate economy.	- Instruct students on the following content: calculating & selecting equipment, evaluate the relevant parameters among different types of equipment **In-class learning activities:** - Group discussion: Student groups discuss, exchange views and offer comments on proposed plans. **Self-learning activities:** - Correct the results of Practice Exercise 7 and complete Pracice Exercise 8. - Gather & research relevant materials.		
9	**Practice Exercise 9:** Create a technical design of production workshop/plant: establish production line; calculate mass balance; calculate & select equipment; calculate economy.	**Teaching activities:** - Instruct students on in-class activities. - Instruct & answer students' questions. - Instruct students on how to collect relevant materials. - Instruct students on the following content: completing the technical calculations. **In-class learning activities:** - Group discussion: Student groups discuss, exchange views and offer comments on proposed plans. **Self-learning activities:** - Correct the results of all technical calculations. - Plan the technological layout.	A1.1; A1.2; A2.1; A2.2	CLO1, 3 (4), 5, 6
10	**Practice Exercise 10:** Create a technical design of production workshop/plant: establish production line; calculate mass balance; calculate & select equipment; calculate economy.	**Teaching activities:** - Instruct students on in-class activities. - Instruct & answer students' questions. - Instruct students on how to collect relevant materials. - Instruct students on the following content: technical drawings, economy calculations **In-class learning activities:** - Group discussion: Student groups discuss, exchange views and offer comments on proposed plans. **Self-learning activities:** - Working in group. - Finish planning the technological layout. - Set up technical drawings	A1.1; A1.2; A2.1; A2.2	CLO1, 3 (4), 5, 6
11	**Practice Exercise 11:** Presenting reports (project descriptions, drawings, slides)	**Teaching activities:** - Instruct students on in-class activities. - Instruct & answer students' questions. - Instruct students on how to check & complete project description & drawings. **In-class learning activities:** - Student groups report all implementing content. - Student groups discuss, exchange views and offer comments for improvements. **Self-learning activities:** - Working in group.	A2.1; A2.2; A2.3	CLO6, 7

		- Finish project content.		

15. Learning Materials:

15.1. Books, lectures, main textbooks:

[1] Construction Materials Technlogy Division – University of Construction, *Graduation Project Design Guide for Calcined Materials Technology* 1985.

[2] Vu Minh Duc, *Construction Ceramics Technology,* Construction Publishing House, 1999.

15.2. Reference materials:

[1] Doan Tai Ngo, Nguyen Thieu Xuan, Tran Van Tuan, Nguyen Thi Thanh Mai, Nguyen Kiem Anh, *Equipment in Construction Materials & Components Production*, Construction Publishing House, 2000

[2] Nguyen Kim Huan, Bach Dinh Thien, *Thermal Equipment in Construction Material Production*, Science and Technics Publishing House, Hanoi, 1996.

[3] Truong Hoai Chinh, *Industrial Workshop Design Basis*, Danang Plishing House, 2013.

[4] Do Thi Phuong, Vu Hoang Tri, *Construction Ceramics Laboratory Manual* (for internal use only), 2021.

[5] Vietnamese Standards (TCVN)

16. Scientific code of ethics:

- Students must respect the lecturer and other students.
- Students must comply with the University's academic integrity policy.
- Students must obey the rules and regulations of the University.

17. Approved date: xx/xxx/2022

18. Approved by:

Dean of Faculty	Program chair	Lecturer in charge
Cao Van Lam, PhD.	**Vo Duy Hung, PhD.**	**Do Thi Phuong, M.Sc.**