

THE UNIVERSITY OF DANANG
UNIVERSITY OF SCIENCE AND TECHNOLOGY



AUN-QA SELF-ASSESSMENT REPORT

**UNDERGRADUATE PROGRAM
TRANSPORTATION CONSTRUCTION ENGINEERING**



August 2018

**THE UNIVERSITY OF DANANG
UNIVERSITY OF SCIENCE AND TECHNOLOGY**

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ABBREVIATION

AA	Academic Affairs
ABET	Accreditation Board for Engineering and Technology
AGPA	Accumulated Grade Point Average
AUN	ASEAN University Network
AUN-QA	ASEAN University Network - Quality Assurance
BRE	Bridge and Road engineering
BUILD-IT	The Building University-Industry Learning and Development through Innovation and Technology
CDIO	Conceive - Design - Implement - Operate
CEAs	Center for Education Accreditation
CLOs	Course Learning Outcomes
CSSBC	Center of Student Services and Business Cooperation
DAA	Department of Academic Affairs
DETQA	Department of Educational Testing and Quality Assurance
DFM	Department of Facilities Management
DSA	Department of Student Affairs
DUT	The University of Danang - University of Science and Technology
ELO	Expected Learning Outcome
FA	Formative assessment
FRBE	Faculty of Road and Bridge Engineering
FTE	Full Time Equivalence
GPA	Grade Point Average
HCERES	High Council for the Evaluation of Research and Higher Education
HEEAP	Higher Engineering Education Alliance Program
HEI	Higher Education Institution
IA	Interim assessment
IT	Information Technology
LIRC	Learning and Information Resource Center
LLLs	Life - Long Learning

LRCC	Learning Resource and Communication Center
MoET	Ministry of Education and Training
MoU	Memorandum of Understanding
PBL	Project-Based Learning
PDCA	Plan-Do-Check-Act
PFIEV	Vietnamese-French Training Program of Excellent Engineers
PLO	Program Learning Outcome
POs	Program Objectives
PS	Program Specification
Q	Question
QA	Quality Assurance
S	Semester
SA	Summative assessment
SAR	Self-Assessment Report
SAR	Self-Assessment Report
SCI	Science Citation Index
SCIE	Science Citation Index Expanded
TCE	Transportation Construction Engineering
TRIG	Teaching Research Innovation Grant
UD	The University of Danang
UED	University of Science and Education
VND	Vietnamese Currency

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PART I. INTRODUCTION

1.1. EXECUTIVE SUMMARY

Transportation Construction Engineering (TCE) study program of The University of Danang – University of Science and Technology (DUT) was started from 1986. Under the Decision No.710/QD-DHBK-KT&DBCLGD issued on July 12, 2017 by the Rector of DUT, the TCE Self-Assessment Council was established for implementing AUN-QA self-assessment report (SAR) which is based on the Self-Assessment Plan No.687/ QD-DHBK-KT&DBCLGD issued on July 3, 2017 by the Rector of DUT.

This self-assessment report is organized as follows.

1. Part I briefly introduces about The University of Danang – University of Science and Technology, the Faculty of Road and Bridge Engineering, Transportation Construction Engineering Study Program. The whole quality assurance system at various levels has been also described.
2. Part II presents in details 11 criteria of the SAR according to AUN-QA requirement.
3. Part III analyzes the strengths, weaknesses, improvement plan and the AUN-QA self-assessment checklist of the TCE study program.
4. Part IV gives the list of evidences for the criteria. For convenient reference, some evidences are duplicated in several criteria.

1.2. ORGANIZATION AND APPROACH OF SELF-ASSESSMENT REPORT

1.2.1. Organization of the self-assessment process

The self-assessment council consists of 15 members who are the representatives of the Rector board, Directors of the Departments, Dean of the Faculty, and Heads of the Divisions, lecturers and students. Dean of the Faculty of Road and Bridge Engineering (FRBE), DUT is appointed to lead and supervise the self-assessment for the TCE program. The taskforce teams consist of the Program Chair, Division Heads and some experienced lecturers, who were trained about AUN-QA criteria in Thailand as well as through workshops conducted by DUT. Each team member was delegated to write one or two criteria of the SAR relating to their working expertise while the Supporting Teams were responsible for collecting relevant evidences for each criterion. The Teams scheduled 4-hour-seminar every week for discussion, individual working as well as group working to find solutions to the arising issues. The SAR was prepared and revised several times by the taskforce teams before being feedback by stakeholder and then finally revised for official submission to AUN-QA.

1.2.2. Approach of the self-assessment report

The self-assessment report follows closely the guidelines of the AUN-QA version 3 which includes 11 criteria with 50 criteria. The criteria reports are written in the following approach: 1) Clarify the criteria in detail; 2) Analyze, compare and evaluate current procedure in order to understand the strengths and the weaknesses of the program in accordance with criteria; 3) Develop the operational plans to promote strengths and improve the weaknesses; 4) After the reports are done, they are cross-checked within the groups and then between different groups in order to identify inconsistent or inappropriate or inadequate evidence; 5) The groups complete the criteria reports and send them to the secretariat who finally prepare the self-assessment report. 6) The secretariat submits the reports to the committee to get final comments; 7) the self-assessment report is also made publicly in order to get comments from all other members of the university including staffs, students. 8) Based on the comments from the members of the

university, members of the self-assessment council, the secretariat and special groups work together in order to finalize the self-assessment report 9) the council approves the report and send it to Department of Educational Testing and Quality Assurance, DUT.

1.3. BRIEF HISTORY OF THE UNIVERSITY OF DANANG - UNIVERSITY OF SCIENCE AND TECHNOLOGY

The University of Danang - University of Science and Technology, the former University Institute of Danang was established on July 15th, 1975 upon the Decree No. 66/QD of the Revolutionary People's Committee in Central Vietnam. Over the past 40 years, DUT graduates, be they engineers, architects, or others have been joining the labor force nationwide, making a significant contribution to the national growth and development. The scientific works and technology transfer projects conducted by DUT lecturers and staff have been put into life, creating a pivotal force driving the process of National Industrialization and Modernization. A large number of these works have come out in publications on well-known national and international journals; and granted with national and international patents.

The unified solidarity and strong commitment of lecturers, administrative staff, students, and post-graduates, combined with the achievements made for the past 40 years, have become a truly solid foundation leading us with confidence to the industrial revolution 4.0. Our goal is to become a research-oriented university, an innovative, creative university, a well-reputed technological institution training graduate and post-graduate degree program, providing learners the best possible and the most professional education and scientific research environment.

Our curricula, especially, those of advanced programs, have been thoroughly and significantly renovated. With an approach to project-based learning, apart from academic and professional knowledge, students are equipped with language competence and necessary skills such as complex problem-solving skill, critical thinking, creativeness, in order to enhance employability and start-up potentials after graduation together with the ability to join in highly competitive labor markets in Vietnam, in the ASEAN economic community, and worldwide.

Activities regarding scientific research, technology transfer, and international cooperation have also been well invested and promoted. Besides its Teaching-Research teams, which is a typical feature of DUT, the Institute of Science – Technology of DUT assumes its key role in organizing and developing science – technology activities of the University. Together with international publications, our research works will be oriented towards applied pathways, turning DUT Campus into a Smart Campus, which surely lays the stepping stone for efforts to build Danang into a Smart City. The vision, mission, educational philosophy and development strategy of the University are as follows:

- **Mission of the University:** DUT is a research university educating qualified graduates, providing excellent science and technology resources to serve the sustainable socio-economic development of Vietnam, especially the Central area and Highlands.
- **Vision of the University:** The University of Danang - University of Science and Technology (DUT) will become a leading university in Southeast Asia
- **Educational Philosophy of the University:** *“Thinking, Creating and Humanity Cherishing”*.
- **Strategy for the development by 2020:** DUT will become a Research Orientation University in 2020; provide scientific technological human resources with high professional level, thinking, wisdom and dedication

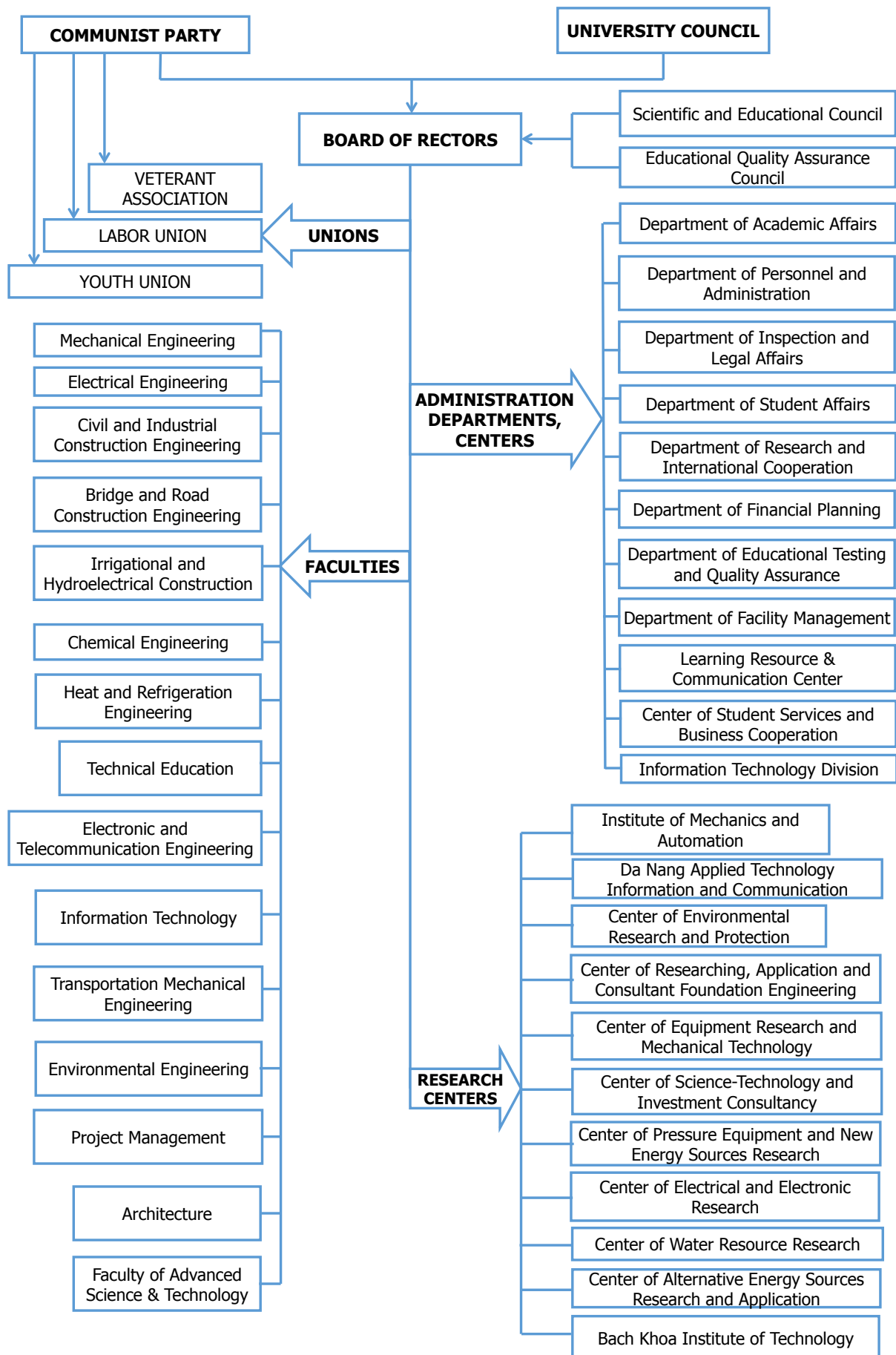


Figure 0. 1. Administration Organization of DUT

1.4. BRIEF HISTORY OF PROGRAM

1.4.1. About Faculty of Road and Bridge Engineering

Faculty of Road and Bridge Engineering, DUT was founded in 1996 from the Division of Road and Bridge under the Faculty of Civil Engineering (founded in 1986). The Faculty has 04 divisions: Division of Fundamental Construction Engineering, Division of Construction Materials, Division of Bridges and Tunnel and Division of Highways and Roads. There are 04 laboratories: Geotechnical Laboratory; Laboratory of Construction Materials; Laboratory of Bridge and Road and Laboratory of Geodesy. The organization of the Faculty of Road and Bridge Engineering is shown in Figure 0.2.

In August 2018, there are 45 staffs in the faculty, including 41 lecturers, 03 lab staffs and 01 administrative secretary. There are 3 associate professors, 12 doctors, 27 masters, 3 engineers. There is 93.3% of staffs who have graduate degrees or higher, and one-third of staffs have doctoral degrees. Currently the number of admission annually is about 100 to 150 students. Moreover, there is one class of construction materials which approximately 60 students attend every year. Also, 40 graduate students annually attend the master classes. The vision, mission, functionalities and duties of the FRBE are as follows.

Vision of Faculty of Road and Bridge Engineering

The Faculty of Road and Bridge Engineering will become the leading and competitive faculty in research and training of the Transportation Construction Engineering in the Central area, the Highlands and Vietnam.

Mission of Faculty of Road and Bridge Engineering

The Faculty of Road and Bridge Engineering is the training center which provides the qualified human resource in Transportation Construction Engineering and Construction Material Engineering. The Faculty provides scientific and technical solutions to serve the socio-economic development of the Danang city, the Central area, the Highlands, and Vietnam.

Functionalities and duties of Faculty of Road and Bridge Engineering

The faculty has educated the undergraduate and graduate students in major of bridge and road engineering and undergraduate students in major of construction materials; including part-time and full-time students and students who transfer from associate programs (community colleges). The faculty will also offer the doctoral program in road and bridge engineering from October 2018.

The faculty plays important roles in scientific research and technology transfer in the area of civil engineering in general and in the area of bridge and road engineering in particular. The lecturers and staffs have contributed in, consulted and supervised the huge number of projects funded by many national agencies and cities' agencies. The faculty has hosted and attended many academic conferences, workshops seminars. The members of the faculty have published many papers in academic journals; and cooperated scientific projects and programs with many institutes, universities and companies.

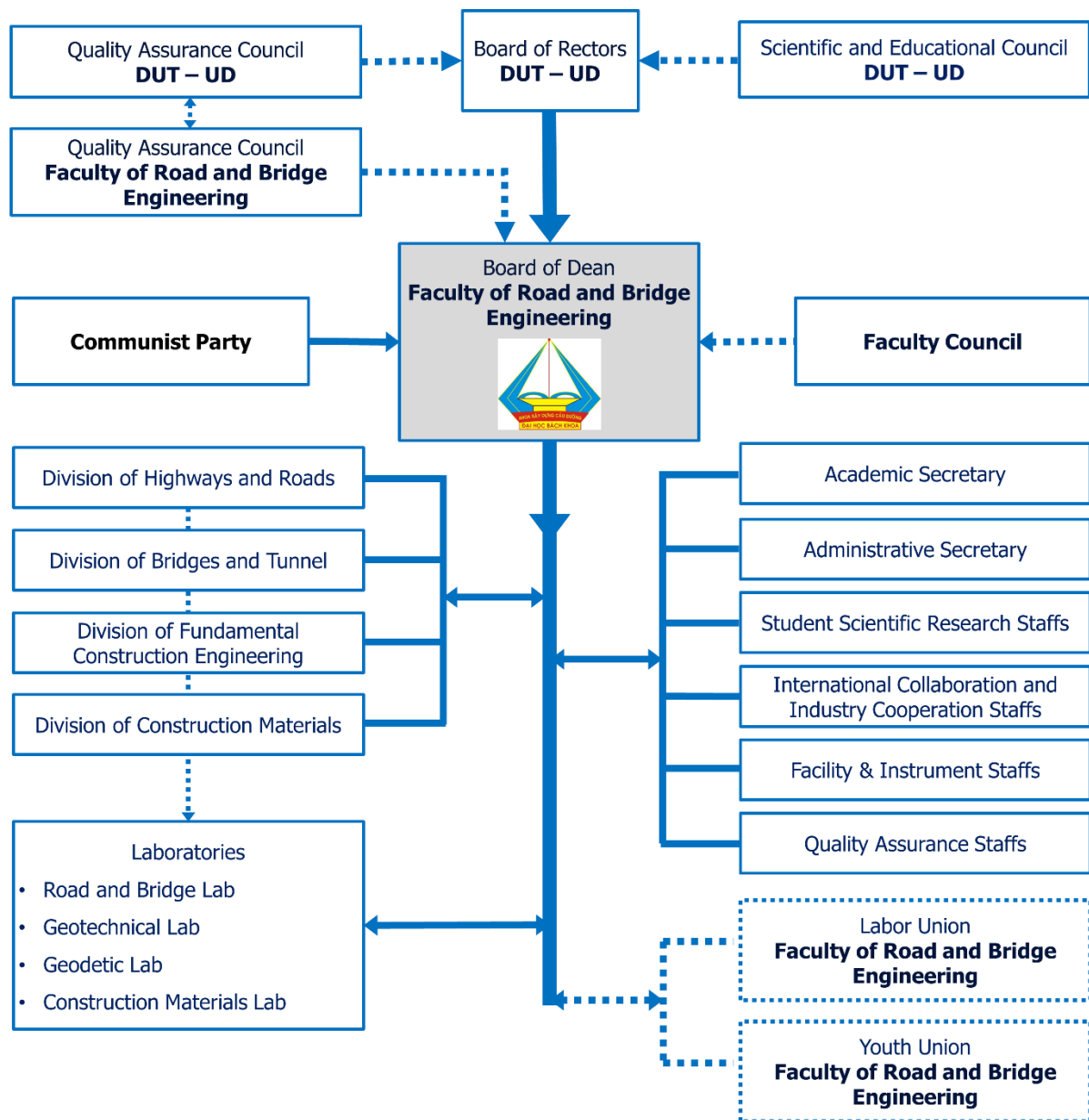


Figure 0. 2. Organization of the Faculty of Road and Bridge Engineering

1.4.2. Transportation Construction Engineering Study Program

The TCE curriculum was developed based on the references of curriculums from national and international universities, with the participation of stakeholders. The program is designed to ensure the transfer from college to university and graduated school in the country and internationally, meeting the requirements of developing new study programs, as stipulated by the Ministry of Education and Training. Specifically, the curricula of all the faculties in the university share the common goals, specific objectives, appropriate and clear outcomes.

The first enrollment course was in 1986 with 22 students, and now it expands to approximately 100 to 150 students each year. Through 32 years (1986-2018), there are more than 5700 bridge and road engineers from different education systems and modes such as formal, intercultural, and in-service training. They are now working for government agencies and industrial companies throughout the country with highly appreciate by the ability and adaptability to work.

To be in line with the trend of general education development as well as to improve the quality and effectiveness of comprehensive training, promote the learner's activeness, and create flexibility as other faculties from DUT, the curriculum of Transportation Construction Engineering was officially established in the form of credits in 2006. At the request of the Ministry of Education and Training on the development and publication of the training outcomes of the programs, the University of Science and Technology has set common goals and specific objectives, output standards and position of the study program with total 179 credits. The output standards were issued under the Decision No. 230 / DHBK issued on October 24, 2009 by the rector of DUT.

With the goal of gradually approaching the study programs from the region and the world, in the school year 2011-2012, the study program was further adjusted and reduced to 153 credits, with the requirement that the curriculum must be able to meet the target and output standards, the total amount of specialized knowledge are not less than 40 credits, the content of a credit must meet the requirement "to accumulate a credit in class, students must prepare individually for at least 30 hours". Thus, the programs are structured reasonably with the requirement of core courses from 80% to 85% and the elective courses are between 15% and 20% of the total volume. The balance between theory and practice as also ensure by requiring about 80% in-class credits and the other 20% for laboratory and fieldtrip credits. The knowledge in each unit was designed as a modules from one subject or as a combination of multiple subjects. This is to ensure that the study program is systematic, meets the standards of knowledge and skills of engineers, and students can continue their learning in the future.

1.5. QUALITY ASSURANCE ACTIVITIES

1.5.1. Quality Assurance Structure of the DUT

The University had showed great concern for Quality Assurance with very early establishment of the Team of Educational Quality Assurance upon the Decree No. 599/ĐHBK of May 16th, 2007 signed by Rector of DUT. In 2014, Department of Educational Testing and Quality Assurance had been established and managed directly by a Vice-Rector of DUT, upon the Document No. 358/ĐHBK of December 12th, 2014. Besides, under strategic plan of MOET in strengthening and assuring higher education quality, Center for Education Accreditation of UD, one of the four CEAs of the nation, had been launched by MOET and UD under the Decree No. 1100/QĐ-BGDĐT of April 04th 2015 signed by Minister of MOET.

With standardized requirements in increasing quality assurance performance, in addition to Scientific and Educational Council of DUT, Faculty Councils, Committees of Program Consultant, the University has established Quality Assurance Councils for the University and the Faculties, aiming to consult the University and the Faculties about planning and training quality of the units. In 2016, DUT has built a complete framework of Internal Quality Assurance system as shown in Figure 0.3 for the University and its Departments, Faculties, upon the Decree No. 36/ĐHBK of January 29th, 2016 signed by Rector of DUT. This framework is designed based on the Input - Process - Output model while quality improvement is based on the PDCA process.

The University of Science and Technology is one of the first universities over the Nation to implement Institutional Quality Assessment based on Quality Standards issued by MOET in October 2006 and had its quality recognized in the period 2009 - 2014. At that time, there were 03 Technical Study programs in Electrical-Electronic, Electronic-Information Technology, Industrial Engineering which were being internally assessed based on the MOET Assessment Standards in 2009. The University then has deployed self-assessment according to MOET's new

Institutional Accreditation standards including 10 criteria and 61 sub-criteria from January 2015 to May 2016. The Center for Education Accreditation - Vietnam National University Hanoi was invited to conduct official assessment on May 2016 and DUT has been then certified Institutional Accreditation for the period 2016- 2021.

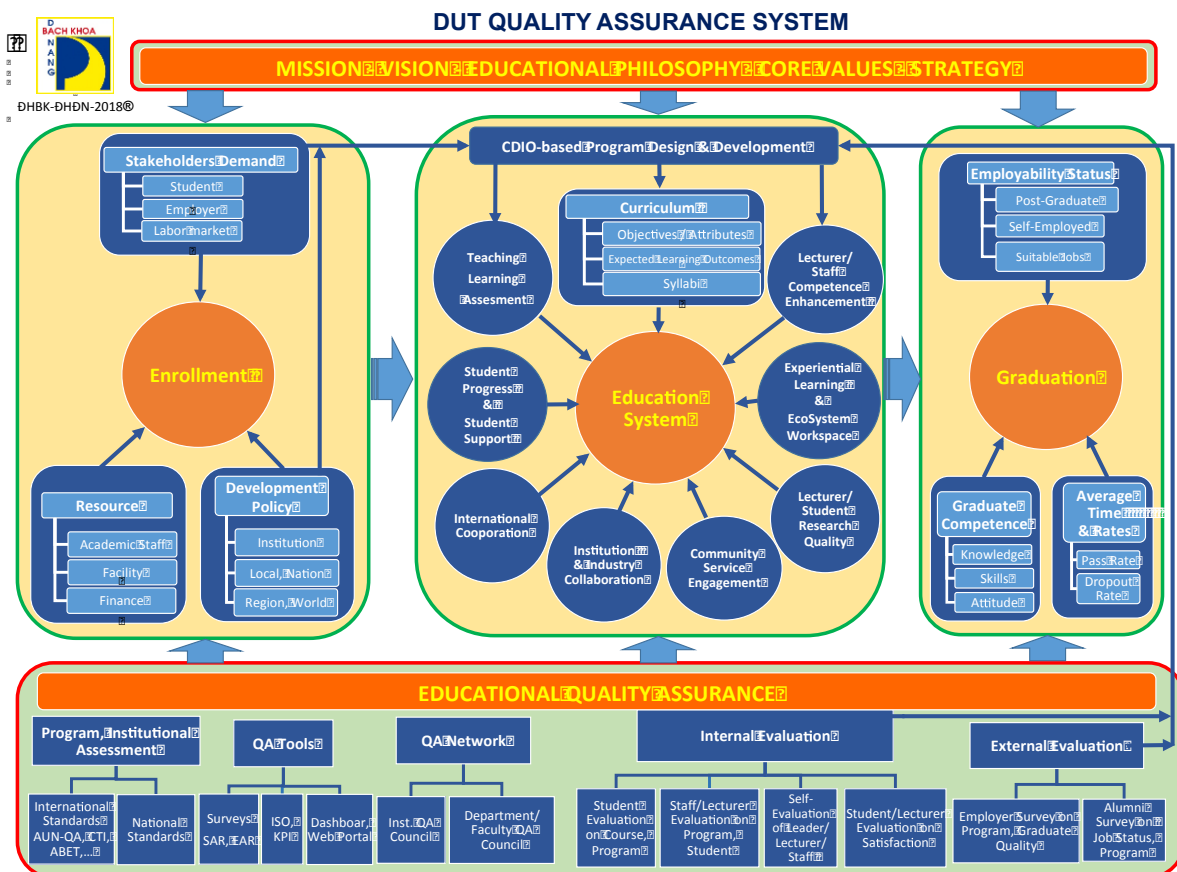


Figure 0. 3. Internal Quality Assurance System of DUT

On June 12th, 2017, DUT has been accredited by the High Council for the Evaluation of Research and Higher Education (HCERES) - a member of the European Association for Quality Assurance in Higher Education and the European Standards and Guidelines. The Accreditation achieved at the highest level with the duration of 5 years (from June 2017 to June 2022) is a deserved recognition for extreme efforts, firm commitment of DUT to training quality and transparency to society and related sides over the years, which encourages the quality assurance and continuous improvement. This is the first time in Vietnamese higher education system, the HEI evaluation was implemented by an International Accreditation Organization. The evaluation was carried out under the request of Viet Nam’s Ministry of Education and Training, in April 2016.

Since 2004 up to now, the 03 Vietnamese-French Programs of Excellent Engineers (PFIEV) have been assessed and certified by Commission des Titres d'Ingénieur, Europe. The 3rd Assessment and Recognition was accomplished in September 2016 for 03 PFIEV Programs: Automatic Production (Mechanical Engineering), Industrial Informatics (Electrical Engineering), Software Engineering (Information Technology). The 02 Advanced Programs in "Electronic and Communication Engineering" and "Embedded Systems Engineering" had been assessed with the AUN-QA standards V2.0 and certified by AUN-QA with the highest scores in Vietnam so far. Recently, there are 04 programs which were being successfully assessed under the AUN-QA

standards V3.0 in April, 2018: Electrical - Electronic Engineering, Petroleum Engineering, Information Technology, and Electronic - Telecommunication Engineering.

All quality assurance and accreditation information, process, results of DUT is fully published at <http://dut.udn.vn/Phong/QualityAssurance> (in Vietnamese) and <http://dut.udn.vn/Phong/QualityAssuranceEN> (in English).

1.5.2. Quality Assurance activities at Faculty of Road and Bridge Engineering

Recognizing the importance of the internal quality assurance of the program, the Board for Quality Assurance (QA) of the Faculty of Road and Bridge Engineering was established by DUT under the Decision No. 110/QĐ-DHBK-KT&ĐBCL issued on April 09, 2015. The QA Board is responsible for advising the faculty leaders and the faculty council on examinations and quality assurance (strategies development, establishing annual and action plans, monitoring and evaluation of the implementation, development and improvement of the department QA system).

Every year, FRBE develops and implements the action plan to ensure the quality of education based on the quality assurance plan established by DUT. This plan includes examinations and getting feedbacks from the stakeholders to evaluate and update the curriculum.

In addition, key staff members will be trained in study programs such as HEEAP, VULLI, BUILD-IT, CDIO, and AUN-QA. These staffs then had the task of spreading the trained program to all other faculty members.

Since May 2017, the University Board of Rectors has approved to deploy the self-assessment report of the study program in Transportation Construction Engineering based on the set of standards of ASEAN University Network.

PART II. AUN-QA CRITERION

1. EXPECTED LEARNING OUTCOMES

1.1. The expected learning outcomes have been clearly formulated and aligned with the vision and mission of the university

Program Learning Outcomes (PLOs) of Transportation Construction Engineering (TCE) program have been built based on the demands of employers [01.01.01]. They are also referred to ABET's outcomes-based criteria, categorizing awareness via Bloom's taxonomy to meet goals of the program. The objectives and the PLOs are clearly described in program specification (PS) [01.01.02]. The PLOs are compatible with the vision and the mission of the DUT [01.01.03] as well as that of the FRBE [01.01.04]. During a design process of the program, the PLOs have been complied with guidelines of MoET, The University of Danang and the DUT as shown in Figure 1.1 [01.01.05]. When achieving the PLOs, graduates will have the job opportunities as mentioned in program specification [01.01.06].

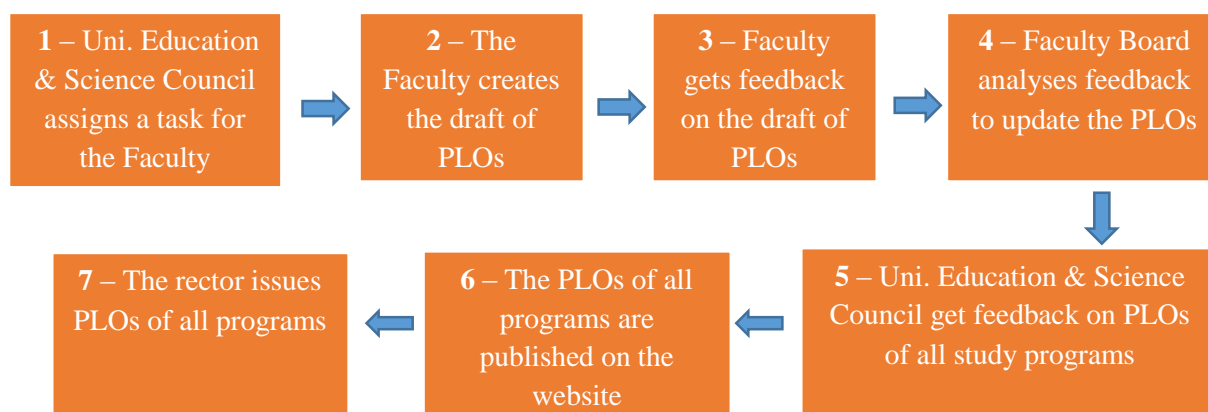


Figure 1.1 The process of building and publishing the PLOs at DUT

Table 1.1 shows the conformity of the PLOs with the vision and the mission of FRBE and DUT. The mission and the vision of the FRBE contribute to that of DUT in the field of TCE. To achieve the mission and the vision of FRBE, TCE students need to have sufficient knowledge in TCE areas as well as obtaining necessary soft skills as detailed in the 11 PLOs. Thus, it can be emphasized that the PLOs have contributed to achieve the vision and the mission of FRBE and that of DUT. Survey results have also shown that the PLOs meet requirements of labor market [01.01.07].

DUT's vision and mission are introduced to students, staffs, employers, alumni by publishing on the university's website, in the students' handbook and by posting on information boards located in buildings and workplaces [01.01.08]. The vision and mission of the FRBE are also disseminated to relevant stakeholders via faculty's website, faculty's information boards, SP, student handbook [01.01.09].

1.2. The expected learning outcomes cover both subject specific and generic (i.e. transferable) learning outcomes

TCE program has been designed to obey the regulations of credit-based training system [01.02.01]. The PLOs of TCE program include both subject specific and generic learning outcomes (Table 1.1).

Table 1.1 The relationship between the PLOs of TCE program and the vision and mission of FRBE and DUT

	Vision	Mission	
DUT	University of Science and Technology - The University of Danang (DUT) will become a leading university in Southeast Asia.	DUT is a research university educating qualified graduates, providing excellent science and technology resources to serve the sustainable socio-economic development of Vietnam, especially the Central area and Highlands.	
FRBE	The Faculty of Road and Bridge Engineering will become the leading and competitive faculty in research and training of the Transportation Construction Engineering in the Central area, the Highlands and Vietnam.	The Faculty of Road and Bridge Engineering is the training center which provides the qualified human resource in Transportation Construction Engineering and Construction Material Engineering. The Faculty provides scientific and technical solutions to serve the socio-economic development of the Danang city, the Central area, the Highlands, and Vietnam.	
PLOs		Subject generic outcomes	Subject specific outcomes
1. Apply the fundamental science for professional work			X
2. Design and construct the infrastructures in traffic construction engineering			X
3. Use the technical equipment to perform measurement and testings, to analyze data.			X
4. Apply informatics for professional work.			X
5. Communicate, present and write report effectively.		X	
6. Figure out, analyze and solve the technical problems in traffic construction engineering.			X
7. Work independently, have critical thinking effectively and work as a team efficiently.		X	
8. Demonstrate understanding of the society, environment, laws and development orientation of the country.		X	
9. Use foreign language in the professional work.		X	
10. Keep learning lifelong.		X	
11. Have the professional ethics and be responsible to society and environment.		X	

In order to meet the PLOs, TCE program is divided into six clusters such as maths and natural sciences; Engineering Fundamentals, Professional Engineering; Projects, Internships and Graduation; General knowledge; Supporting, for which contents of each cluster are designed to meet the PLOs as shown in Table 1.2 [01.02.02].

In addition, to improve physical and responsibilities for society, and to orient development of country, the program also includes physical education (375 hours) and national defense education (135 hours).

Table 1.2 Mapping between PLOs and Curriculum Clusters

Clusters		Credit number	Weight	PLOs										
				1	2	3	4	5	6	7	8	9	10	11
I	Math & Natural Sciences	31	20.3%	H	H	H	M	-	-	L	H	-	H	H
II	General Knowledge	17	11.1%	-	L	-	M	-	-	-	H	-	H	H
III	Supporting	9	5.9%	-	-	-	-	H	-	M	-	H	H	M
IV	Engineering Fundamentals	42	27.4%	H	H	H	M	M	H	M	-	-	M	-
V	Projects, Internships & Graduation	27.5	18.0%	H	H	H	M	H	H	H	H	M	-	H
VI	Professional Engineering	26.5	17.3%	H	H	H	H	H	H	H	-	L	-	M
TOTAL		153	100%	H	H	H	H	H	H	H	H	H	H	H

Notes: H – High, M – Medium, L – Low

1.3. The expected learning outcomes clearly reflect the requirements of the stakeholders

The PLOs of TCE program are designed to be compatible with the vision and the mission of the FRBE and of the DUT (Table 1.1). They are categorized according to Bloom’s taxonomy with 6 levels of awareness. They also meet the requirements of related stakeholders such as employers, alumni, students, senior students and faculty staffs. Based on guidelines of MoET and of DUT for designing the program and on publications of PLOs (Figure 1.1) [01.03.01], as well as referring to some programs accredited by ABET [01.03.02], Faculty Council discussed and built the PLOs of TCE Program [01.03.03]. The PLOs are then announced to relevant stakeholders by DUT decision [01.03.04].

To evaluate and improve the program, the FRBE has conducted annual surveys about the PLOs with related stakeholders including employers, alumni, students, senior students and faculty staffs since 2014 [01.03.05]. The survey results showed that the PLOs satisfy the needs of employers [01.03.06]. Alumni agreed that the program’s objectives and the PLOs meet occupation requirements [01.03.07]. Feedbacks from the final-year students have showed that most of them achieved the PLOs and the quantity of the final-year students achieving the PLOs increases year by year [01.03.08]. Feedback from lecturers has indicated that the program outcomes guarantee general and professional skills/knowledge [01.03.09]. Results of the survey on satisfaction with teaching-learning quality and on fairness in assessment of the program demonstrated that the FRBE and the DUT have implemented many assistances to help students achieve CLOs [01.03.10]. Thus, the PLOs can be obtained via these attempts. Based on involved stakeholders’ feedback, Faculty Science Board reviewed and adjusted the PLOs in 2012, 2015 [01.03.11].

To evaluate the implementation of TCE program, the FRBE conducts an annual self-assessment report and then sends it to Testing and Quality Assurance Department of DUT, where feedback from relevant partners on the program is collected and analyzed to have a plan for program improvement (detailed in section 10.2) [01.03.12].

2. PROGRAM SPECIFICATION

2.1. The information in the program specification is comprehensive and up-to-date

The program specification is designed to provide information for: (i) current students and for those who expect to study and to understand about the programs at the DUT, (ii) employers, who need the information about obtained knowledge and skills of students; (iii) professional organizations, education managers and inspectors in order to help them understand the objectives

and the PLOs of the study program. It is also to: (iv) provide a background for lecturers and staffs to understand syllabuses and to plan teaching and learning activities in order to meet the PLOs, and (v) get feedback from involved stakeholders. General information of the program is shown in Table 2.1.

Table 2.1 General information of the program (version 2015)

Program title:	Transportation Construction Engineering (TCE)
Level:	Undergraduate
Type of diploma:	Engineer
Mode of study:	Full time
Training duration:	4.5 years
Total of credits:	153 (exclude Physical Education and National Defense Education)
Management Faculty:	Faculty of Road and Bridge Engineering (FRBE)
Language:	Vietnamese
Professional accreditation:	On-going AUN assessment
Website:	http://cauduongbkdn.dut.udn.vn
Facebook:	https://www.facebook.com/cauduongbkdn/
Issue:	August, 2015

The program specification also includes the following important information: (i) DUT's educational philosophy, (ii) the vision and the mission of FRBE, (iii) objectives of TCE program, (iv) the PLOs, v) job opportunities, (vi) enrollment criteria, learning process and graduation requirements, (vii) teaching and learning strategies, (viii) assessment and evaluation methods, (ix) scheme of the program curriculum, (x) matrix presenting the relationship between courses and PLOs, (xi) brief description of all courses [02.01.01].

The program specification is reviewed and updated regularly as required by MoET, UD, DUT and demands of labor market and society as well as expectations from learners and trainers. Compared to the study program created in 2009 (180 credits), up to now, the program was updated in 2012 and in 2015. Its details are described in Table 2.2.

Table 2.2 Comparison of Program Specifications [02.01.02]

Version	2012	2015
Total credits	151	153
Duration	5 years	4,5 years
Modification (compare with previous version)	Update curriculum roadmap; Update mapping between courses and PLOs.	Revise and update POs, PLOs; Update DUT's education philosophy, vision and mission of FRBE; Update curriculum roadmap teaching-learning strategies, assessment methods; Update mapping courses and PLOs

2.2. The information of the course specification is comprehensive and up-to-date

In order to help students achieve the PLOs, each course is designed to meet several PLOs at high, medium and low levels. A mapping between each course and the PLOs is described in detail in part 2, section 5 in the SP [02.02.01].

A course specification gives important information that helps learners have a general view of each course as well as providing instructions during study process. The structure of a course specification is applied to all courses in the program, including the following contents [02.02.02]:

- Course title
- Code
- Credit
- Time distribution
- Lecturers
- Prerequisites
- Course description
- Course learning outcomes (CLOs)
- Mapping CLOs to PLOs
- Course assessment plan
- Study materials (textbooks and references)
- Study plan (include teaching and learning methods)
- Student's tasks and policies
- Date of update
- Person-in-charge of approval

In order to improve quality of teaching and learning, students will be asked for their feedback on each course after completing the course. Based on learners' feedback and rapid changes in practice and society, the course specification is periodically reviewed, revised, and updated. In addition, the curriculum is also modified accordingly. Details of this progress are noted in Table 2.3.

Table 2.3 Modification of Course Specifications [02.02.03]

Version	Syllabi 2012	Syllabi 2015	Syllabi 2018
Modification (compare with previous version)	Supplement code, teaching department, course description, lecturers' information, date of update, person-in-charge of approval; Update course content.	Revise and update course objective, credits, time duration; Supplement CLOs, mapping CLOs and course objective, course and PLOs, study plan; Update course content, textbooks and references, assessment methods (add assessment rubrics).	Revise and update CLOs (CLOs refer to CDIO syllabus framework level 3), mapping between CLOs and PLOs in more details.

2.3. The program and course specification are communicated and made available to the stakeholders

The program and course specification are available on the websites of the DUT and the FRBE [02.03.01], which are easy to access. Print copies are also kept at faculty offices for lecturers and students if needed. The surveys have been offered to the employers, alumni, final-year students in order to get their feedback on some parts of the program specification such as PLOs, teaching-learning activities, studying plans, etc. [02.03.02]. The representatives from industry in Faculty Council have get involved in the process of writing, adjusting, and updating the program [02.03.03], they therefore also know clearly about the program and its relevance to actual needs of industry.

Some important contents of the program specification are also informed to high school students and their parents through flyers which include enrollment information, in the open days at DUT or at high school or through university website [02.03.04]. New students are introduced to the program during the orientation in the first week [02.03.05]. In the first semester, each student will be provided a student handbook [02.03.06], in which academic rules and program specification are clearly described. It helps students have an overview of the program and plan their study. Moreover, in every course, lecturers always introduce to students the course specification in their first lesson [02.03.07] [02.03.08].

3. PROGRAM STRUCTURE AND CONTENT

3.1. The curriculum is designed based on constructive alignment with the expected learning outcomes

The current curriculum was established in accordance with the DUT's eight-step policy as shown in Figure 3.1 [03.01.01], which based on the PLOs.

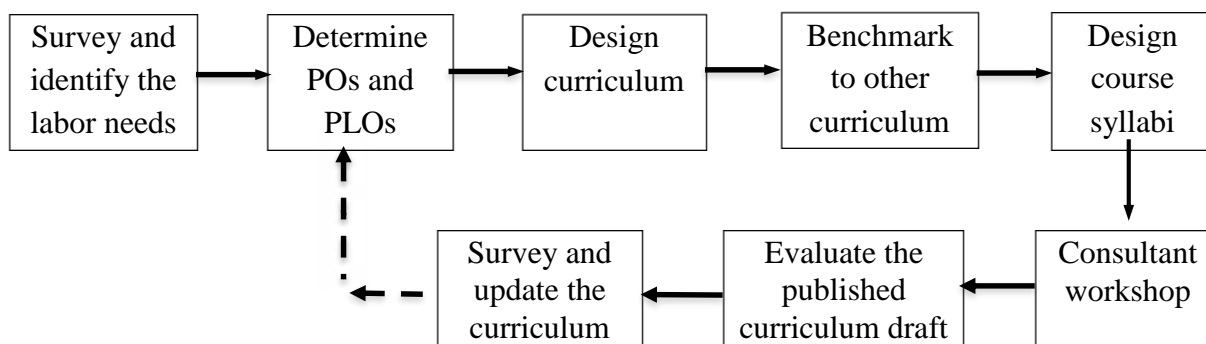


Figure 3.1 Flowchart for curriculum establishment

The curriculum is divided into six clusters, each of the clusters contributes to the students' achievement of the PLOs in terms of knowledge, skills, and attitudes as described in Criterion 1.2 and the program specification, section 2.4 [03.01.02].

In order to achieve the PLOs, there are many strategies of teaching and learning which can be selected and applied appropriately, depending on the CLOs of each course. It is obligated that each PLO has at least one teaching and learning strategy. The detailed descriptions of teaching and learning strategies and the relationship matrix of these strategies with PLOs are presented in the sub-criterion 4.2 and the Program Specification, section 1.9 [03.01.03].

In addition, in order to evaluate how PLOs are achieved, there are many assessment methods such as diagnostic assessment, formative assessment and summative assessment. These methods are designed to evaluate all PLOs. Appropriate assessment methods are selected by faculty members in accordance with the teaching strategies and CLOs. The detailed descriptions of the assessment methods and the relationship matrix of these methods with PLOs are provided in Criteria 5.1, section 1.10 [03.01.04].

3.2. The contribution made by each course to achieve the expected learning outcomes is clear

Each course in the curriculum has CLOs that are associated with the teaching-learning strategies and assessment methods described in the syllabus [03.02.01]. The courses are designed in the ways that the CLOs of each course contribute to the achievement of at least one PLO, and the entire 84 courses of the curriculum will help students to achieve all 11 PLOs. Also, one PLO can be achieved by studying many courses. Since PLOs design are based on a Bloom scale, the level of PLOs achievement will be increased over the time. It can be explained that one PLO may be achieved at lower level in the first year but at higher level at the final year. The relationship matrix shown in section 2.5 of the program specification demonstrates very clearly the level of contribution (low, medium, high) of (i) each course for each PLO in the rows, and (ii) each PLO for each module in the columns [03.02.02]. In the syllabus of each module, the contribution of each CLO to the total 11 PLOs was also explained in more details (section 10) [03.02.03].

The survey results of the curriculum from graduates show that the courses contributes to the PLOs achievement [03.02.04]. Periodically, PLOs and CLOs should be evaluated by getting feedback from students, graduates, faculties' reports [03.02.05].

3.3. The curriculum is logically structured, sequenced, integrated and up-to-date

The structure of the TCE program was established based on the MoET policy and the DUT guidelines [03.03.01]. The 4.5-year program (in 9 semesters) is logically structured by clusters as showed in Table 1.2. In the first two semesters, students mainly focus on general knowledge and skills. Fundamental knowledge and skills are provided in the next three semesters. Based on the fundamental knowledge and skills, students can achieve specialized knowledge and skills in the 6th, 7th, and 8th semesters; and graduation thesis is required in the final semester. The selective courses (16.5 credits, 11%) for the two specialties: Bridge Engineering and Road Engineering, are offered from the 8th semester and beyond. Besides theoretical courses, there are practical courses, internship, course projects and graduation projects (27.5 credits, 18%) to equip students with knowledge, skills, and an understanding of social and business environments (Table 1.2). The curriculum structure shows clearly the connection and progression of courses including prerequisite, previous courses and parallel courses as demonstrated in roadmaps and syllabi [03.03.02]. The roadmap also shows the increasing complexity and profoundness of knowledge and skills students have learnt over the curriculum.

In addition to academic courses, students are also required to earn certificates of physical education, military education and to participate in social activities. These activities help students to improve physical health, social skills and to form and develop social and environmental responsibility.

The curriculum is revised and updated periodically based on industrial demand, labor market demand, and feedback from involved stakeholders in accordance with the MoET, UD and DUT regulations, [03.03.03]. Accordingly, since 2009, the TCE curriculum has had four revisions and updates as follows:

- In 2009: The curriculum was revised and designed in accordance with Circular No. 38/2009/TT-BGDĐT [03.03.04] with total 179 credits in 5 years [03.03.05].

- In 2012: The curriculum was supplemented with detail about goals, PLOs, job opportunities, mapping between courses and PLOs, teaching and learning strategies. The curriculum separated the selective courses, which had been combined before, for two specialties: Bridge Engineering and Road Engineering, being offered from the 8th semester and beyond. The total credit was reduced to 153 in 5 years [03.03.06].

- 2015: Based on involved stakeholders' feedback and market demand, training time was reduced to 4.5 years. There were changes in objectives and LPOs, in structure and organization of the curriculum, teaching-learning strategies, and evaluation methodology in order to meet the requirements of PLOs. Courses' contents were also updated; mapping between courses and PLOs is divided into three levels: high, medium and low [03.03.07].

- 2018: Based on involved stakeholders' feedback, the CLOs are revised and updated to reflect the achievement level based on Bloom scale, with the reference to CDIO syllabus frame level 3. The mapping between each PLO with PLOs are implemented [03.03.08].

4. TEACHING AND LEARNING APPROACH

4.1. The educational philosophy is well articulated and communicated to all stakeholders

The university has a clear educational philosophy, and it has been updated to meet the needs of the country in different period of development. Since 2015, the DUT's of educational philosophy: "Thinking, Creating, and Human Cherishing" [04.01.01] aims to train students to be intellectual, be creative, be able to analyze things independently, have critical thinking, love and

care for the community. Stakeholders, including alumni, businesses, faculty, and students of the FRBE, have been informed the educational philosophy in many ways such as the university's website, bulletin boards on campus, and guidelines in the orientation week [04.01.02].

The university's educational philosophy can be seen in many Faculty's activities in training, research, social activities and community services. These activities and services have effects on the TCE program outcomes (Figure 4.1) [04.01.03]. As the results, students not only have professional knowledge but also are able to be intellectual, creative and caring. Many activities have been held annually by the Faculty such as: students' scientific research [04.01.04], design competition, knowledge competition, community activities such as volunteer summer, blood donation, "Tet festival for smiles" [04.01.05], and many other extracurricular activities [04.01.06].

In addition, the DUT's educational philosophy was improved with the contributions of stakeholders who were the university's board members [04.01.07].

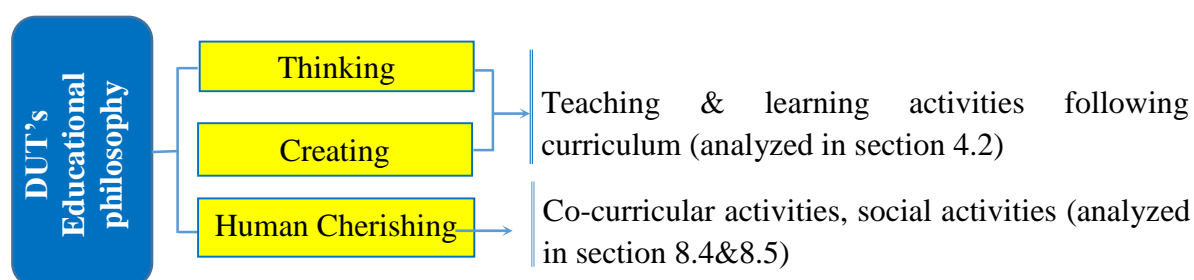


Figure 4.1 Mapping of DUT's Educational philosophy and learning process

4.2. The teaching and learning activities are constructively aligned to the achievement of the expected learning outcomes

The teaching and learning activities are clearly described in the syllabus for each course and are informed directly to the students at the beginning of each course.

In particular, these activities are linked to the CLOs, as well as the PLOs. Each lesson in the syllabus has also been implemented effectively with a variety of teaching strategies and methods, aiming to achieve the required learning outcomes [04.02.01].

Teaching activities are flexibly designed, including various strategies and methods such as Direct Instruction, Indirect Instruction, Experiential Learning, Interactive Learning, and Independent Study, described in detail in [04.02.02]. Depending on the CLOs and the content of the course, instructors can select appropriate teaching methods. For courses with general knowledge such as mathematics and other science subjects, the primary method is direct instruction with discussion questions and exercises. However, for courses with specialized knowledge containing to experiments or projects, students must have skills in structure analysis and design or operating laboratory equipment. The lecturers used a combination of different methods such as teamwork or hands-on experience and research-teaching group [04.02.03]. These activities were reflected in the study program [04.02.04] and directly targeted to the PLOs (Table 4.1).

Table 4.1 Links between PLOs and teaching methods

Strategies and Methods of Teaching and Learning	PLOs										
	1	2	3	4	5	6	7	8	9	10	11
I. Direct Instruction											
1. Explicit Teaching	X	X	X	X					X		

2. Lecture	X	X	X	X				X	X		X
3. Guest Lecture		X			X			X			X
II. Indirect Instruction											
4. Inquiry		X				X					
5. Problem Solving						X	X				
6. Case Study						X					X
III. Experiential Learning											
7. Models		X		X							
8. Field Trip								X			X
9. Experiment			X								
10. Teaching Research Team						X					X
IV. Interactive Instruction)											
11. Debates		X			X		X				
12. Discussions		X			X		X				
13. Peer Learning		X			X		X				
V. Independent Study											
14. Work Assignment	X			X			X		X	X	

In addition to the theoretical courses, practical courses enable students to interact and to be familiar with the actual work. Students work directly on the construction sites or in the company offices during their graduate internship [04.02.05].

In addition, the FRBE always promotes cooperation with industry in training. Some courses are jointly taught by faculty and alumni or employers [04.02.06], industrial sectors joint the committee for evaluating the graduation project [04.02.07]. Cooperation in training and exchange of students to improve the quality of teaching is also welcomed by the FRBE [04.02.08].

FRBE's lecturers as well as other faculty members in the university update professional skills and improve their teaching and learning methods. They were sent to professional training courses such as teaching training [04.02.09], the USA-Vietnam joint projects such as “Higher Education Engineering Alliance Program” (HEEAP), “Building University-Industry Learning and Development through Innovation and Technology” (BUILD-IT), and the CDIO study program of Singapore Polytechnic [04.02.10].

To evaluate and improve the performance of the teaching and learning methods, the DUT has issued the evaluation form at the end of each semester for every course [04.02.11]. Results from the survey showed that TCE students have been satisfied with the teaching activities (Table 4.2). The department also gathered the feedbacks from employers [04.02.12]. All these activities are the basis for the improvement of the curriculum and teaching methods in order to meet the community demands.

Table 4.2 Students' satisfaction level about teaching and learning methods [04.02.11]

Academic year	Sem_ester	Average point/5				
		Question 10	Question 11	Question 12	Question 13	Question 17
2017-2018	I	4.32	4.36	4.39	4.32	4.33
	II	4.29	4.34	4.37	4.31	4.31
2016-2017	I	4.30	4.21	4.23	4.24	4.29
	II	4.33	4.35	4.40	4.32	4.32

2015-2016	I	4.32	4.29	4.30	4.29	4.33
	II	4.23	4.17	4.20	4.20	4.25
2014-2015	II	4.09	3.85	4.03	4.01	4.12

4.3. Teaching and learning activities enhance life-long learning

To promote life-long learning skills for students. The University and the Department are interested in the European standard for life-long learning [04.03.01]. The teaching and learning activities focus on building up skills and competencies for students include: native language communication skills (LLL1) foreign languages communication (LLL2); Math, Science and Technology (LLL3); Computing Skill (LLL4); ability to adapt new learning methods (LLL5); social and civic competencies (LLL6); positive thinking and responsibility (LLL7), and cultural awareness and expression (LLL8) (Table 4.3).

Table 4.3 Teaching and learning activities meet the standards of life-long learning

(Strategies and Methods of Teaching and Learning)	Life-long learning (LLs)							
	1	2	3	4	5	6	7	8
I. Direct Instruction								
1. Explicit Teaching	X		X					
2. Lecture	X	X	X	X				X
3. Guest Lecture	X					X		X
II. Indirect Instruction								
4. Inquiry			X					
5. Problem Solving			X		X		X	
6. Case Study			X		X		X	
III. Experiential Learning								
7. Models				X	X			
8. Field Trip						X		
9. Experiment			X		X			
10. Teaching Research Team		X	X				X	
IV. Interactive Instruction								
11. Debates	X						X	X
12. Discussions	X						X	X
13. Peer Learning	X						X	X
V. Independent Study								
14. Work Assignment		X	X		X			

All the TCE students have to complete the required foreign language courses in the curriculum including Foreign Language Level 1, Foreign Language Level 2, Foreign Language Level 3, and Special English for Bridge and Road Engineering. In addition, to qualify for graduation, students must pass the English language proficiency test at least 3/6 under the 6-level foreign language competence framework [04.03.02]. These requirements ensure that students have sufficient communication skills in foreign languages.

To meet the requirements of native language communication, TCE is committed to providing students with skills in presenting, writing, oral and interpersonal communication skills through internship report, scientific research report, course project, and graduation project [04.03.03]. Most of the courses offered by the TCE are designed to focus on math, science, technology, and computer skills for the learners [04.03.04].

The learning environment for students is appropriate invested, which facilitates the teaching and learning activities for lectures and students. All the classrooms are equipped with high-quality projectors and other support equipment. On campus, there is plenty of space for self-study and group discussion [04.03.05]. The Learning Resources and Communication Center has a rich source of materials and is equipped with updated computers and other facilities; the department also has a mini library to support teaching and learning activities. Students are trained to look up information as well as find materials for learning by lecturers and instructors at the library [04.03.06].

In addition, social and civic competencies, cultural awareness as well as consciousness and responsibility of FRBE students have been built up through extracurricular activities, class activities, and political activities [04.03.07].

By the end of the training program at the TCE, students have full of skills and capacity to obtain higher educations. Many graduates came back for their advanced training or master's degree at the department or other post-graduated institutes [04.03.08].

5. STUDENT ASSESSMENT

5.1. The student assessment is constructively aligned to the achievement of the expected learning outcomes

The student assessment process in TCE and FRBE program is undertaken based on the regulations of higher education issued by MoET [05.01.01] and the training regulations of DUT [05.01.02]. Student assessment includes entrance examinations, assessments based on student progress and end-of-course assessments before graduation. These three assessments are conducted regularly to ensure that students can achieve the expected learning outcomes of individual modules and entire program.

The entrance admission assessment is based on the results of the national high school graduation exam held annually by MoET. Each year, after completing the national high school graduation exam, MoET will set a minimum passing scores for university enrollment and DUT then set minimum passing scores for each specific program of the University [05.01.03] [http://dut.udn.vn/TuyenSinh2018]. Before 2014, DUT would accept entrance examinations with a combination of three subjects: Mathematics, Physics and Chemistry (combination A). From 2015, students have to take part in the DUT English Placement Test [05.01.04], and FRBE will add it to create a combination A1 (Mathematics, Physics, English) besides the combination A. In addition, DUT also applies a direct placement policy to attract students who achieved national and international awards [05.01.05]. **Figure 5.1** shows that CTE has had higher passing scores than the DUT minimum point for many years and higher than other universities in the same training field in Vietnam [05.01.06].

In the credit training system, students are assessed continuously for semester, academic year and entire program as required by DUT [05.01.07]. The content and assessment methodology of a course is structured in a variety of ways and is consistent with CLOs and PLOs (it is described in section 1.10.1 [05.01.08], correlation between the objectives of teaching and learning and the expected learning outcomes of the module, as well as the expected learning outcomes of the CTE curriculum [05.01.08], [05.01.09] (**Table 5.1**). **Table 5.2** shows an example of the relationship between the course learning outcomes (CLOs) as well as the curriculum (PLOs) and the course assessment methodology of CTE curriculum. The assessment methodology of CTE curriculum is designed to refer to the CDIO Level 3 standard for the relationship between the PLO and the CLO.

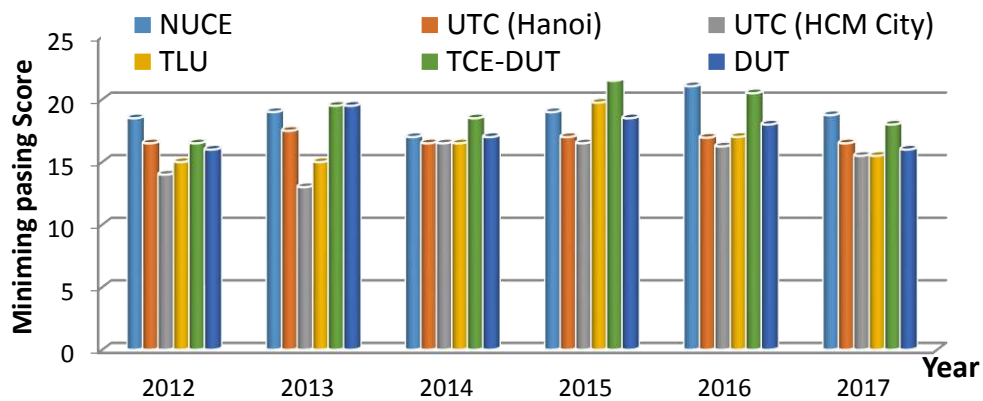


Figure 5.1 Comparison of minimum passing scores between CTE and the Bridge and Road engineering at other schools in Vietnam

At the beginning of each semester, course syllabus including CLOs and PLOs, the learning plan and the assessment form [05.01.10; 05.01.11; 05.01.12] are clearly informed by the instructors to their students. The learning process is assessed regularly throughout the course by different assessment forms (Table 5.1) [05.01.08; 05.01.13]. The percentage weightings for each form of assessment may vary according to the DUT academic regulations [05.01.02] the scoring system is applied to all courses with 10-point scale and then converted to the 4-point scale as shown in Table 5.3 [05.01.02]. When a student does not meet the requirements of a course, he/she need to take the course again in accordance with DUT regulations [05.01.14] In addition, DUT also sets the criteria for assessing student morality. Based on these scores and the academic results that students obtain, DUT will provide annual scholarships [05.01.15].

Table 5.1 Mapping between Assessment methods and PLOs

Assessment methods		PLOs											
		1	2	3	4	5	6	7	8	9	10	11	
I	On-going/Formative Assessment												
1	Attendance Check	X	X						X	X			X
2	Work Assignment	X	X		X			X		X	X		
3	Oral Presentaion					X	X	X					
II	SUMMATIVE ASSESSMENT												
4	Written Exam	X	X	X	X			X	X				X
5	Multiple choice exam	X						X		X			X
6	Oral Exam		X	X		X	X	X					
7	Written Report	X	X	X	X	X	X	X	X			X	
8	Oral Presentaion					X	X	X		X			
9	Peer Assessment					X	X	X				X	

Table 5.2 Example of relationship between CLOs and course assessment methods

1091053: Assignment of Roadbed - Pavement Design

9. COURSE LEARNING OUTCOMES (CLOs)

After completing the course, students have ability to:

TT	Course Learning Outcomes (CLOs)	Bloom Taxonomy	CDIO Syllabus
1	Calculate the performance criteria of a road construction project and testing standard of the intensity of roadbed-pavement structure	Apply	1.2.1, 4.4.3
2	Analyze, compare and select solutions of designing roadbed-pavement	Analyze	2.1.5, 4.4.3
3	Analyze and evaluate the route design solution according to the criteria of exploitation	Evaluate	2.4.3, 4.4.6
4	Design pavement in different conditions	Innovate	2.4.3, 2.4.6, 4.4.4
5	Team working		3.1.1, 3.1.2, 3.1.5, 3.2.8
6	Present reports and drawings		3.2.3, 3.2.5
7	Present and defend		3.2.6, 3.2.8

10. CLOs AND PLOs MAPPING:

PLOs	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
CLO 1	√										
CLO 2											
CLO 3						√					
CLO 4		√								√	
CLO 5							√				
CLO 6				√	√						
CLO 7					√						
Course	H	H		L	M	M	H			M	

Notes: H - High, M - Medium, L - Low

12. COURSE ASSESSMENT:

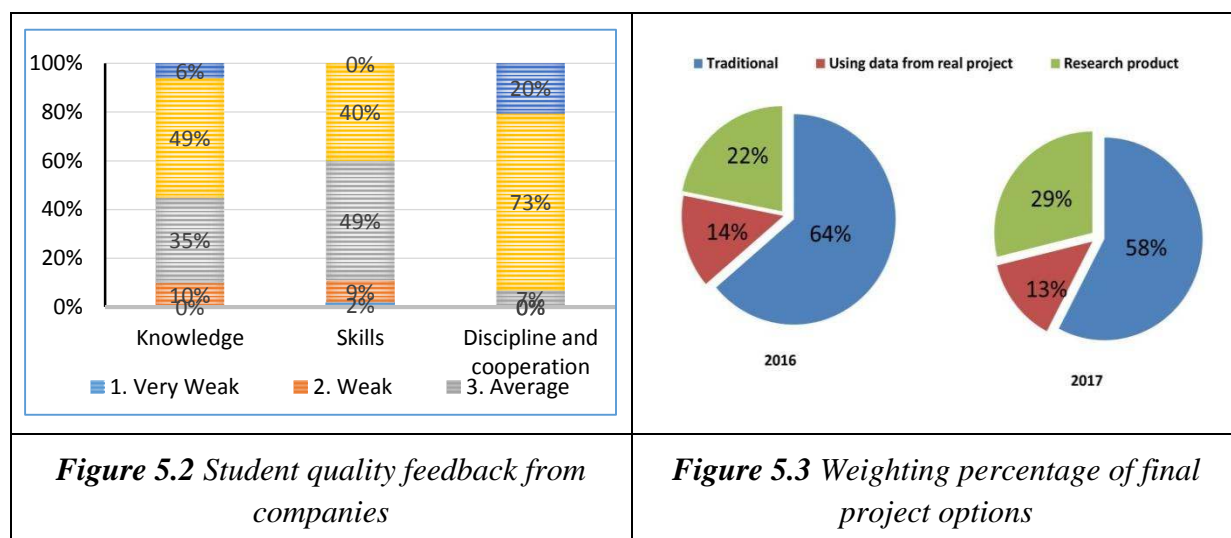
Component	Assessment style	CLOs	Assessment Methods (AM)	Criteria	Weight
A1. Formative Assessment	A1.1 Join the lecturer's project guide	CLO1, CLO5, CLO6	AM 1	Rubric 2	30%
Summative Assessment	A2.1 Completed content of the project	CLO1, LO2, CLO3, LO4, CLO6	AM 7	Rubric 6	30%
	A2.2 Team work	CLO5	AM 9	Rubric 7	10%
	A2.3 Oral exam and defense	CLO7	AM 6	Rubric 5	30%

Final year students must take part in graduation internship at companies and are assessed in accordance with the education program [05.01.16]. They will then work on a final project under the guidance of a lecturer/lecturers at DUT in accordance with DUT regulations [05.01.17]. There are three options: (i) Traditional Graduation Projects, (ii) Using data from a real project and (iii)

projects as a form of research product (Figure 5.3). In terms of using data from a real projects or research projects, the lecturers often select students who have good academic ability at the beginning of the semester of graduation internship [05.01.18]. This practice allows students to pursue topics that are relevant to the reality. Graduation project assessments are strictly regulated by DUT [05.01.19]. Since 2015, in TCE curriculum, the defense committee included not only lecturers in the faculty but also experts from enterprises in the Central region [05.01.20].

Students fulfil all requirements of the program (pass all subjects including final graduation project, achieve at least 2.00/4.00 points of GPA, finishing national defense training, physical education and meet the English proficiency requirement regulated by DUT [05.01.21]. Information Technology certification [05.01.22]) will be awarded with a degree on "Bridge and Road Engineering" by DUT [05.01.23].

Feedbacks from employers [05.01.24], as presented in Figure 5.2, reveal learning outcome of the students. It clearly shows the quality of CTE students' outcome is increasingly appreciated by employers.



5.2. The student assessments including timelines, methods, regulations, weight distribution, rubrics and grading are explicit and communicated to students

Information such as enrollment plan [05.02.01] (including quota, benchmarks, priority subjects ...), training regulation [05.02.02], curriculum [05.02.03], mid-term and end-of-semester exam schedule [05.02.04], regulations on assessment methods, classification of graduation projects [05.02.05]; evaluation of training results [05.02.06], English proficiency test [05.02.07], IT skills [05.02.08] and academic ethic [05.02.09] has been widely published on the DUT website [http://dut.udn.vn]. In addition, the study plan for each academic year - including the training schedule and exam dates - is set up for lecturers and students through the DUT yearbook [05.02.10], student handbook [05.02.11], lecturer handbook [05.02.12] and on the DUT student information system website (<http://daotao.dut.udn.vn/SV>).

In the first week of each course, lecturers provide students a detailed syllabus, which defines the time, method of assessment, and weight of the assessment components [05.02.13]. In terms of theoretical courses, module evaluations usually include attendance (FA), midterm (IS), and end-of-semester assessments (SA). For instructional practices, practices and projects, FA and SA are used according to the DUT regulations [05.02.02]. Table 5.3 extracted from [05.02.02] presents the system for classifying and assessing a module at DUT. For graduation projects, more

detailed ratings are given [05.02.05] to students via the website [<http://daotao.dut.udn.vn/sv/>] and by supervisors at the time of receiving the projects. Rubric developed based on general and program regulations is encoded in the program specification.

At the beginning of each academic year, in "Citizen Week" [05.02.14] DUT also guides all students about the key points of the training regulation [05.02.15], the use of DUT email [05.02.16] and student information system website and how to find information about study plan, grade point average, tuition fees, complaints...[05.02.17]. In addition, students may request additional study or assessment information from their academic advisors [05.02.18].

Table 5.3 DUT course grading system since 2015 cohort

Rank	1-10 points scale	1.0-4.0 points scale	Letter grade scale
Passed	9.50 - 10.0	4.0	A+
	8.50 - 9.49	4.0	A
	8.00 - 8.49	3.5	B+
	7.00 - 7.99	3.0	B
	6.50 - 6.99	2.5	C+
	5.50 - 6.49	2.0	C
	5.00 - 5.49	1.5	D+
	4.00 - 4.99	1.0	D
Fail	< 4.00	0.0	F

Table 5.4 Student survey results on Course Assessment, (the evaluation scores are ranged from 1 to 5, as follows: 1 Weak; 2 Average; 3 Quite Good; 4 Good; 5 Very Good)

	2016 (S 2)	2017 (S 1)	2017 (S 2)	2018 (S 1)	2018 (S 2)
Satisfactory Level on Feedback Assessments of Courses	4.09	4.21	4.35	4.36	4.34
Satisfactory Level on Assessments of Courses	4.14	4.25	4.33	4.35	4.39

By 2015, the TCE program was redesigned, focusing on improving study plans and teaching activities, and assessment [05.02.19]. These data are communicated publicly to students at the beginning of semester. Table 5.4 shows the students' satisfaction with assessment methods and Feedback Assessments used by TCE and FRBE [05.02.20].

5.3. Methods including assessment rubrics and marking schemes are used to ensure validity, reliability and fairness of student assessment

During the study, depending on the desired goal, expected learning outcomes and course content, lecturers select the appropriate methodology that is guided in DUT's training regulations

[05.03.01] and the teaching and assessment strategies in the program handbook [05.03.02] to assess knowledge, ability to apply knowledge and skills learned. Assessment methods often used by lectures are surveyed [05.03.03] and presented in Figure 5.3.

The percentage weighting of partial assessments may vary between courses, modules [05.03.04]. There is a clear set of weightings for different types of modules, as shown in Table 5.5 [05.03.05].

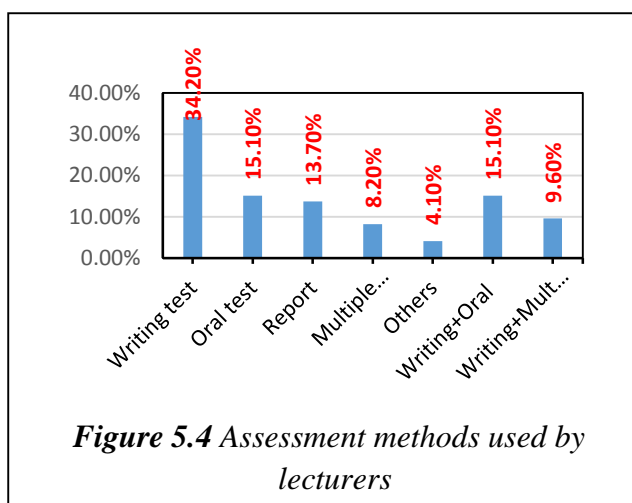


Figure 5.4 Assessment methods used by lecturers

Table 5.5 Weighting distribution of different assessment types

Type of course	Performance assessment	Weighting percentage
Theoretical course (1 credit)	Ongoing assessment	20%
	Final exam	80%
Theoretical course (> 1 credit)	Ongoing assessment	20%
	Mid-term exam	20%
	Final exam	60%
Project modules (mini projects, internship)	Supervisor assessment	30%
	Final assessment	70%

Student performance assessments will be conducted in a variety of ways, depending on the specificity of curriculum, of the module to ensure the accurate assessment of learner outcomes and meet the outcome standards of program and module: self-written, tests, reports, oral presentation, slide presentations, homework [05.03.04; 05.03.06]. Student performance assessments are conducted through mid-term and final exams for each module, and through graduation projects for the final semester. The criteria for different assessments are different and are specified as shown in Table 5.3 [05.03.05]. In particular, the TCE program has specifically announced the content, form of assessment, assessment weights and correlations between the assessment methodology and the CLOs and PLOs for students from the beginning of each semester in rubric [05.03.07] from the course 2015.

The content of the mid-term and final exams of the theoretical courses must meet the CLO and the PLO through a set of questions, and be checked and approved by the Head of Division [05.03.08]. The set of questions were compiled by a group of lectures who are teaching the same courses. In the project sections, interview method was administered by a group of lecturers [05.03.06]. To increase the fairness of the exams, since 2015, DUT has set up a bank including exam questions and held exams for all classes in some modules. Since 2017, all examination of CTE's theory courses are held jointly with questions taken from the bank [05.03.09]. Each exam must be marked by two lectures [05.03.07]. For graduation project, there are clear regulations for assessing it, and from 2015 the panel of assessing graduation project will include a group of FRBE lecturers and invited experts who come from business in order to increase the fairness and reliability in assessment [05.03.10].

In order to increase the reliability of the assessment, DUT has issued regulations on the management of student achievement [05.03.11] and this system is under the supervision of the Department of Academic Affair [http://daotao.dut.udn.vn/cb]. The results will be announced to student via his personal page in the DUT student information system [http://daotao.dut.udn.vn/sv]. In addition, at the beginning of the courses, students were informed by the instructor about the assessment methods, the time of assessment, the rubric assessment [05.03.06]. Table 5.6 shows the students' satisfaction with on reliability and fairness of course assessment used by TCE and FRBE [05.03.12].

Table 5.6 Student survey results on Course Assessment

	Academic year / Semester				
	2016 (S 2)	2017 (S 1)	2017 (S 2)	2018 (S 1)	2018 (S 2)
Satisfactory Level on reliability and fairness of course assessment	4.14	4.23	4.40	4.39	4.37

(1 Weak; 2 Average; 3 Quite Good; 4 Good; 5 Very Good)

5.4. Feedback of student assessment is timely and helps to improve learning

In addition to the training regulations [05.04.01] DUT also has clear rules regarding the publication of student assessment results, including procedures, formats and timelines [05.04.02]. Course results for each module will be updated by faculty members on DUT's individual website at <http://daotao.dut.udn.vn> within 10 days and 15 days, after mid-term and final exams [05.04.03]. Students will then be able to access and track their results with their accounts in the DUT student information system [05.04.04]. The answers of exams as well as other forms of testing (exercises in class, homework) are explained by instructors during lessons to assist students to improve their academic performance. Students can track their scores during their study: the course, the semester, the school year, the alert information on the DUT student information system. Thanks to the timely assessment, students are able to adjust their studies and register for further subjects or register for studying the completed subjects to upgrade the scores [05.04.05].

The results of surveys conducted for last few years' show that students have satisfied with the on feedback assessments of courses during their studies (Table 5.4) [05.04.06].

5.5. Students have ready access to appeal procedure

Complaint process about study results are clearly stated in the DUT training regulation on complaint procedures [05.05.01]. This process is also published on the DUT student information system and student handbook [05.05.02]. If a student is not satisfied with the results of assessment, he/she will proceed to request revision in accordance with prescribed format [05.05.03; 05.05.04], and all requests must be resolved within 30 days from the last day of the exam week. The outcome of the complaint is accepted if the difference is at least 0.5 points compared to the first test result [05.05.04]. In addition, students may provide feedback on the assessment through various means, for example via email (DUT provides each student an email account in the form of studentID@sv.dut.edu.vn). Students may give a response or a claim email to [p.daotao.dky@dut.udn.vn].

Table 5.7 shows the student's satisfaction with the feedback of the remarking results, the feedback of the results of each course as well as the overall scores. [05.05.05]

Table 5.7 Student survey results on Program Education

Year	2016	2017	2018	<i>1 Weak; 2 Average; 3 Quite Good; 4 Good; 5 Very Good)</i>
Satisfactory Level collected by DETAQA	3.76	3.70	3.70	

*DETAQA: department of Educational Testing and Quality Assurance

6. ACADEMIC STAFF QUALITY

The quality of training of an educational institution depends not only on the curriculum but also on the quality of the academic staff. Lecturer is facilitator and also motivator to help students acquire knowledge and develop skills. Therefore, improving the quality of the lecturer group including the qualifications, professional knowledge, experience, teaching skills and professional ethics are always an important objective of DUT and FRBE. To achieve these goals, DUT and FRBE have developed specific long-term and short-term plans for recruiting, and training as well as changing policies to encourage the development of more qualified staffs.

6.1 Academic staff planning (considering succession, promotion, re-deployment, termination, and retirement) is carried out to fulfil the needs for education, research and service.

The FRBE sets up plans to develop staff and assigns responsibility for each position [06.01.01]. The development plan of the Faculty is based on the instruction of the MoET, UD and DUT [06.01.02]. The President of UD and the **Organization and Personnel Committee** are responsible for planning the human resources development. The number of academic staffs at FRBE is determined based on the demand for high quality human resources for the Centre Regions and the whole country. Besides, staffs have been developed based on the vision and mission of the Faculty in the short and long-term development strategy [06.01.03]. The Dean then proposes the plan of human resource to the Rector Board. Since 2014, according to the regulations of UD [06.01.04], DUT has more flexible conditions and self-determination in the recruitment, training and development of human resource.

The structure of the Faculty consists of: one dean, two vice-deans, four division heads, one faculty secretary and lecturers at four division: tunnels and bridge, roads and cities, construction materials and fundamental technology. Academic structure at the postgraduate level increases annually (Table 6.1), especially the doctoral team, which increases from 12.5% in 2012 to 33.3% in 2017 and association professor increases from 0 (2012) to 3 (2017).

Table 6.1 Academic structure of the FRBE from 2012-2017

Year	Staff	Assoc. Prof.	PhD.	Master	Eng.
2012-2013	48	0	6 (12.5%)	34 (70.8%)	8 (16.7%)
2013-2014	48	1	5 (10.4%)	36 (75%)	7 (14.6%)
2014-2015	47	2	12 (25.5%)	31 (66%)	4 (8.5%)
2015-2016	46	3	12 (26.1%)	30 (65.2%)	4 (8.7%)
2016-2017	45	3	15 (33.3%)	27 (60%)	3 (6.7%)

The Faculty develops an annual recruitment plan (short-term plan) based on demands and recommendations from faculty through year-end meetings [06.01.05], then, the faculty makes a plan for recruitment and training for the next year. The long-term plan for the development of the staff is to ensure the quantity and quality of the lecturers who meet the requirements of training, research and community service [06.01.06].

The training process is very rigorous from recruitment to development of young lecturer, and all processes follow the direction of the School and MoET [06.01.07]. After passing the recruitment examination, the school will sign a one-year contract of apprenticeship. During that time, the new lecturer will be instructed by an experienced supervisor in the same field [06.01.08]. In the process of apprenticeship, young teachers have to attend pedagogical knowledge and skills course and take that teaching certificate to improve their teaching skills. The apprenticeship process must be prepared a lecture, taught in the classroom under the advice of supervisors. After one year of apprenticeship, the young lecturer must submit the assigned course syllabus and teach in front of the faculty council for further comments and advice on professional knowledge and skills [06.01.09]. For young lecturer and apprentices, the school sets up the working regime and the self-improvement of foreign language skills for higher education.

In addition, UD and DUT have developed programs for the staffs in terms of technical competences and teaching methods such as the design and implementation of the CDIO approach method and enhance their ability of foreign language for English teaching purpose [06.01.10].

The plans to replace important positions in the Faculty are set up based on the regulations [06.01.11] based on the staff plan (every two years [06.01.12]) with new factor consideration. Leader staff will be sent to train their capacity of management [06.01.13].

The staff committee makes the decision on termination of contract, retires and follow the current social insurance scheme [06.01.14]. The FRBE and DUT encourage and prolong the working time for highly qualified teachers such as Dr., Ass. Prof., and Prof. if they wish [06.01.15].

6.2. Staff-to-student ratio and workload are measured and monitored to improve the quality of education, research and service

At DUT, lecturer-student ratio and workload of lecturers are measured and monitored continuously to ensure the quality of all programs. According to statistics at the end of academic year 2016-2017 [06.02.01], the number of lecturers in the faculty and visiting lecturers participating in the program is shown in Table 6.2.

Table 6.2 Number of academic staff at TCE program

Category	Male	Female	Total		Percentage of PhDs
			Headcounts	FTE*	
First semester					
Professors	0	0	0	0	100 %
Associate Professors	4	0	4	3.6	100 %
Full time lecturers (including Professors, Associate Professors)	48	6	52	46.6	23.1 %
Visiting professors/ lecturers	1	1	2	1.5	0 %
Second semester					
Professors	0	0	0	0	100 %
Associate Professors	5	0	5	4.0	100 %
Full time lecturers (including Professors, Associate Professors)	55	14	69	59.2	26.1 %
Visiting professors/ lecturers	5	0	5	2.4	20 %

Full-time equivalent (FTE) of each lecturer is the ratio of working hours for FRBE and his total working hours [06.02.01]. Table 6.3 shows the percentage of student/FTE lecturers. It can

be seen that the number of students and FTE teachers in the Faculty is low and below 20 which is the threshold set by MoET in Circular No.32/2015/TT-BGDDT [06.02.02]. In order to improve the quality of education, FRBE has gradually reduced the rate of student/FTE lecturer in recent years.

Table 6.3 Statistics of student/FTE ratio of lecturers...

Academic year	Number of lecturers	Total FTE of full time lecturers	Number of visiting lecturers	Total FTE of visiting lecturers	Total FTE	Total number of students	Ratio of students to total FTE of lecturers
First semester							
2016-2017	52	46.6	2	1.50	48.1	910	18.9
2015-2016	85	82.0	7	3.06	85.1	1036	12.2
2014-2015	88	68.5	3	2.01	70.5	1175	16.7
2013-2014	86	70.7	4	2.10	72.8	1205	16.6
2012-2013	90	74.4	5	3.84	78.2	1362	15.62
Second semester							
2016-2017	69	59.2	5	2.36	61.6	871	14.1
2015-2016	69	61.0	2	2.00	63.0	1030	16.4
2014-2015	65	55.9	4	2.59	58.4	1135	19.4
2013-2014	67	60.3	2	1.23	61.5	1194	19.4
2012-2013	74	63.7	5	3.54	67.3	1340	19.92

The required work of each lecturer includes: teaching and doing research are 140 standard hours/semester, 600 hours/year, respectively. The volume of teaching (Table 6.4) is monitored by the DUT's and UD's management system [06.02.03], UD's scientific results management system [06.02.04] and these information be published in each Division. Consequently, the Faculty can adjust annually to improve the quality of education.

Table 6.4 Statistics of lecturers' teaching volume by semester

Academic year	Semester 1 (Volume / lecturers)	Average per lecturer at semester 1	Semester 2 (Volume / lecturers)	Average per lecturer at semester 2	Average per lecturer at whole year (Equivalent volume)
2017-2018	7583.2/35	216.7	10194/35	291.3	253.9
2016-2017	8781.3/33	266.1	6930/28	247.5	256.8
2015-2016	13787.5/33	417.8	12512/31	403.6	410.7
2014-2015	13214.8/35	377.6	14124/34	415.4	396.5
2013-2014	16940.2/36	470.6	16531/39	423.9	447.2

6.3. Recruitment and selection criteria including ethics and academic freedom for appointment, deployment and promotion are determined and communicated

DUT has promulgated recruitment regulations, selection criteria, employment contracts, employment regulations and appointment of professional titles [06.03.01] in accordance with the Civil Servants Act [06.03.02] in order to build the staffs that have professional ethics and professional capacity. UD and DUT have developed recruitment criteria clearly and published on

website (<http://dut.udn.vn/Tintuc/Thongbao> and <http://www.udn.vn/canbo>). These information about Recruitment is prior to the recruitment time at least 3 months [06.03.03].

Candidates trained in developed countries, having excellent academic and research achievements, having high English proficiency, holding PhD degrees are offered more priority [06.03.04]. The recruitment process is conducted at two levels: the faculty level based on the vacancy requirements [06.03.05] then the Recruitment Board of DUT will interview and make decision [06.03.06]. Results of all candidates are widely reported to the faculty and on DUT website [06.03.07].

The appointment and promotion of teaching positions are carried out in a transparent manner and follow the national regulations [06.03.08]. Appointed person must meet the moral qualities and abilities to accomplish the tasks. The appointment was made democratically and publicly in accordance with DUT regulations and UD principles [06.03.09] and based on the survey results from all staffs in the Faculty [06.03.10].

6.4. Competences of academic staff are identified and evaluated

Decision No.58/2010/QĐ-TTg [06.04.01] of the Prime Minister on the promulgation of the University defines and clarifies the standards of lecturer recruitment. Successful candidates are required to take the pedagogic and certification. In addition, to become a lecturer after 1 year of apprenticeship, they must pass the civil service exam [06.04.02].

The tasks of lecturers are identified and evaluated during the recruitment process. Their tasks include teaching, doing scientific research, professional training and other activities. After being recruited, young instructors will be assigned a supervisor by the Division Head to guide preparing course syllabus. At the same time, these young lecturer must attend classes, prepare lectures and teach in front of the Faculty Council. At the end of the apprenticeship period, if they meet the requirements, they will be allowed to finish the apprenticeship and sign the official contract and become a lecturer of the Faculty [06.04.03].

With the support of DUT IT management system, DETQA and the Faculty can delivery survey to student to collect feedback from students in classes as well as prior to graduation [06.04.04], [06.04.05]. The feedback information is managed by DETQA and delivered to the lecturers and Faculty, to help them adjust their activities and promote their strength. In addition, the IT system also help the University to manage information of assessing staff's quality quarterly [06.04.06] with 5 grades (A1, A2, A3, B and C). Each Faculty member will assess by themselves and then the Faculty Dean will review these assessments. Results are used for paying extra salary quarterly and for assessments the lecturers and the end of each academic year.

At the end of each academic year, FRBE holds seminar to summarize the achievement, the strengths and the unsuccessful results to work out the remedies and plans for the next academic year [06.04.07]. All assessment activities are conducted in a transparent and open way, to encourage the lecturer who gets high achievements.

6.5. Training and developmental needs of academic staff are identified and activities are implemented to fulfil them

The FRBE aware that the development of human resource is a very important activity to improve its education quality. The training and development the professional of lecturers at FRBE follows DUT regulations [06.05.01]. The training process, professional development for lecturers are implemented systematically during the working period of lecturers.

For young lecturers, during the apprenticeship period, they need to participate in the pedagogical teaching course, design the assigned course syllabus, and teach in front of the Faculty Council and experienced supervisor [06.05.02]. During their working time, faculty's staffs are encouraged to take short or long-term training courses (foreign language, management skills, and other professional course) [06.05.03].

Every year, FRBE organizes surveys and collects comments from all staffs on further training process. Lecturers who wish to improve their professional skills are required to register at the Faculty to submit to DUT [06.05.04]. Lecturers wishing to study for a master or doctoral degree will register their aspirations in the Faculty planning. In recent years, FRBE has had several young lecturers receiving scholarships for postgraduate studying in developed countries such as USA, Japan, Australia, Germany, France, Italy, Belgium, South Korea, Taiwan, Singapore (Table 6.5) [06.05.05].

Table 6.5 *The number of lecturers studying overseas*

Postgraduate studying	Number	Countries	Graduation year
PhD	2	Japan, France	2014
	1	France	2015
	2	USA, Japan	2016
	1	Japan	2017
	3	USA, Australia, Italy	2018
PhD student	6	1 Japan, 1 Singapore, 3 France, 1 Australia	
Master	1	Germany	2014
	1	Japan	2015
	1	Australia	2016
	1	Taiwan	2017
Master student	2	1 Japan, 1 Korea,	

In addition, lecturers can participate in short courses to enhance their teaching capacity such as HEEAP, CDIO, AUN-QA [06.05.06]. To develop foreign language skill, they could attend short-term like the project "Teaching and learning foreign languages in the national education system" funded by MoET [06.05.07].

To develop the cooperation in research and education, DUT has signed cooperation agreements with several universities around the world. Many Memorandum of Understanding has been signed between DUT and its partners [06.05.08].

DUT has built up an online learning system in order to support the teaching of the faculty, improve the quality of teaching and improve the conditions of interaction between instructors and students [06.05.09].

6.6. Performance management including rewards and recognition is implemented to motivate and support education, research and service

The performance-based management of lecturers including awards and accreditation is implemented regularly and synchronously at all levels from the Faculty to DUT and UD.

At the Faculty level, each lecturer evaluates them-self on a quarterly basis in relation to DUT requirements [06.06.01]. The Dean will review the self-assessment and re-evaluate each

criterion. The purpose of the assessment is to monitor the performance of the tasks and achievement by each staff during the quarter.

Every year, at FRBE and DUT, the evaluation of tasks and recommendation of reward for the personnel and the group in the past academic year are conducted [06.06.02]. There are some kinds of reward depending on the level of accomplishment and achievement in the past academic year such as advanced workers, grassroots emulation soldiers, emulation fighters ... and someone is being considered to receive a merit at all levels [06.06.03]. Based on achievement, the Faculty will receive some forms of reward such as: collective labor advanced, collective labor excellent... In addition, leader team who get excellent achievement will be considered to get an award from UD and MoET [06.06.04]. Moreover, lecturers who have achieved outstanding achievements in teaching, scientific research and have made great contribution to education will be given the title of outstanding faculty [06.06.05]. At the same time, those who achieve excellent results will be considered for advance pay grades in order to encourage the efforts of all staffs [06.06.06].

To reward the results achieved in research, from academic year 2015-2016, DUT has proposed and supported funding in science and technology activities to increase the number of articles published in SCI, SCIE, Scopus and/ or reported/ published at international scientific conferences [06.06.07]. DUT also provides other supports and rewards to encourage lecturer to improve their knowledge and conduct scientific research such as upgrading salary rate for staffs with doctoral degree or higher, supporting tuition fees for students... [06.06.08].

Information of scientific research, technology transfer and publication of lecturers and units in DUT is collected online and monitored by DSRIC [06.06.09] in order to manage the performance as well as evaluation and reward procedures.

6.7. The types and quantity of research activities by academic staff are established, monitored and benchmarked for improvement

Doing scientific research is a mandatory task for each lecturer and is clearly defined by DUT for each teacher's title [06.07.01]. Lecturers need to develop their research capabilities.

Lecturers of FRBE have participated in many different research activities such as: organizing and attending scientific seminars at DUT [06.07.02], organizing seminars on specialization in Faculty and Department [06.07.03], participating in national and international scientific seminars [06.07.04], collaborate with other universities in the world [06.07.05], writing international publications and international articles [06.07.06], guiding students to do research [06.07.07].

At the end of each academic year, each lecturer reports his research activity results to the Faculty and DUT for evaluation and completing document reports of the Faculty [06.07.08]. Scientific research results are one of the important contents for evaluation and reward of lecturers.

Research topics and their fund are selected by a council established by DUT and/or UD and/ or MoET based on the subject level (DUT level, UD level or Ministry level), duration (1 or 2 years) and the original proposal [06.07.09]. FRBE is one of the faculty obtained high research achievements in DUT. Table 6.6 shows the number of articles published at national and international journals [06.07.10]. From the statistics, it was found that the total number of publications tends to increase, and the publication rate of the FRBE was higher than that of the DUT.

Table 6.6 Number of scientific articles of FRBE and DUT

Academic year	Types of publication		Total	Articles-to-lecturer ratio of FRBE	Articles-to-lecturer ratio of DUT
	National level	International level			
2012-2013	13	16	29	0.71	0.77
2013-2014	30	25	55	1.34	0.88
2014-2015	27	18	45	1.10	1.09
2015-2016	52	22	74	1.80	1.12
2016-2017	54	72	126	3.07	1.72

In addition to teaching, faculty members also participate in technology transfer activities through economic contracts signed between the Center for Applied Research and Technical Consulting Foundation with companies [06.07.11]. Design, inspection or testing contracts have contributed to improve income of the lectures. Besides, many lecturers have been invited by the city, the city's transport department to evaluate the design of the city's key projects such as the tunnel crossing the Han River [06.07.12].

7. SUPPORT STAFF QUALITY

DUT has 14 faculties, 08 departments, 12 centers and 6 organizations with their functions and tasks [07.00.01]. The staffs at departments and organizations server activities of all members of the University where as the staffs at FRBE server directly to activities of FRBE.

Table 7.1 Functions and tasks of some departments, organizations, centers and FRBE

No	Department/organization/center	Functions and tasks	Support staff
I. DEPARTMENT			
I.1	Student Affairs	- Advising and assisting the Rector to perform the function of the government in terms of managing political affairs, the thought of students. - Propagandizing political education for students; Organizing activities, managing and assessing students' sense of learning and training. - http://dut.udn.vn/Phong/SinhVien/Gioithieu/id/1022	Student services
I.2	Facility Management	- Building and managing the projects and facilities of the university. - Managing and reporting the status of equipment, work safety, fire prevention. - http://dut.udn.vn/Phong/Vatchat/Thongbao/id/1035	IT facility, Services
I.3	Academic Affairs	- Advising and assisting the Rector in organizing and managing all the training activities of the university, at all levels and types of training. - Planning strategic and developing the management documents of training activities; organizing enrollment and training; managing the learning outcomes of graduate students and students. - http://dut.udn.vn/Phong/Daotao/Gioithieu/id/1002	Services
I.4	Finance and Accounting	- Carrying out the financial planning and management of the university.	Services

		- Supervising the collection, payment and settlement of funding sources; inspecting and supervising of financial activities. - http://dut.udn.vn/Phong/Taichinh/GioiThieu/id/1026	
I.5	Educational Testing and Quality Assurance	- Building and developing the quality assurance system of the university. - Examining, ensuring and assessing the quality of teaching and learning; training professional knowledge on examinations; evaluating and assuring the quality of education. http://dut.udn.vn/Phong/QualityAssuranceEN/Gioithieu/id/1043	Services
I.6	Scientific Research and International Cooperation	- Organizing, managing and developing strategies for the development of all activities related to scientific research, technology transfer, international cooperation and school-enterprise cooperation in the field of science and technology. - http://dut.udn.vn/Phong/KhoaHoc/Gioithieu/id/1033	Services
I.7	Inspection and Legal Affairs	- Inspecting and supervising the university's activities related to the law and regulations of the higher education as well as protecting the legitimate rights and interests of the units in the university. - Developing documents and proposing measures to improve the effectiveness of legal work. - http://dut.udn.vn/Phong/ThanhTra/Gioithieu/id/1032	Services
I.8	Personnel and Administration	- Coordinating the general activities of the university in the following areas: Organization of personnel, synthesis of reports, archives, reception, security and order in the school. - http://tchc.dut.udn.vn/public/cnnv.aspx	Services
II. ORGANIZATION			
II.1	Communist Youth Union	- Supporting activities related to student union movement - http://yu.dut.udn.vn/	Student services
III. CENTER			
III.1	Technology Information and Communication	- Organizing, exploiting, storing and supplying information and materials in the fields of science, technology, economics... which serve for the training and scientific research of staff, lecturers and students. - Connecting libraries in other countries to improve the ability to exploit, exchange information, organize services on information effectively. - http://www.dut.udn.vn/TTHLTT/Gioithieu/id/1692	At the library, Services
IV. FACULTY			
IV.1	FRBE	- Established in 1996, training engineer in Transportation Construction Engineering (Bridge and Road Engineering), Material Construction Engineering (Construction Materials and Structures Engineering); Master's degree in Transportation Construction Engineering. - http://cauduongbkdn.com/en/	Laboratory, Services

7.1. Support staff planning (at the library, laboratory, IT facility and student services) is carried out to fulfil the needs for education, research and service

At DUT, the Job Placement Scheme is issued every five years [07.01.01] by UD. It is built and reviewed annually based on the guiding of implementation of Ministry of Interior, MoET. To fulfil the duties and authorities of departments and faculties [07.01.02], departments, unions, centers and faculties have strategic human resource development plan [07.01.03].

All regulations and procedures for recruitment and development of support staff are all planned and implemented in accordance with UD, DUT regulations [07.01.04]. FRBE creates the support staff planning in line with DUT's strategy to meet the needs of training, research and community service which are expressed in a summary report and annual recruitment plan [07.01.05]. The specific tasks of support staff are also specified in the work assignment [07.01.06].

Table 7.2 The number and level of support staff of DUT and FRBE from 2012 to 8/2018

Unit	12/2012			12/2015			08/2018		
	Sum	BS	MS	Sum	BS	MS	Sum	BS	MS
General resources of DUT									
Library	17	12	1	16	12	1	18	16	2
Laboratory staff	47	37	10	49	39	10	52	36	16
IT team & IT staff	6	4	2	6	4	2	9	5	4
Other support staff	145	62	14	158	68	24	165	75	30
Total	215	115 (53.5%)	27 (12.6%)	229	123 (53.7%)	37 (16.1%)	244	132 (54.1%)	52 (21.3%)
Specific support team at FRBE									
Academic support staff	1	-	1	1	-	1	1	-	1
Secretariat	1	1	-	1	1	-	1	-	1
Laboratory staff ^(*)	3	2	-	3	3	-	3	3	-
Total	5	3 (60%)	1 (20%)	5	4 (80%)	1 (20%)	5	3 (60%)	2 (40%)

BS – Bachelor degree; MS – Master degree

Table 7.2 shows that the rate of GR level increases. This asserts that DUT focused on the support staff in terms of quantity and quality, meeting the needs of training, research and community service.

(*) FRBE's laboratory staff works in the Bridge & Road laboratories, Geotechnical laboratories, Construction Materials laboratories. Geotechnical laboratories and Building Materials laboratories not only serve FRBE but also related training majors such as civil engineering; water resource engineering. Accordingly, the GR level of FRBE is expected to increase from 40% to 80% by September 2018 and to 100% by 2020 because there are 2 support staffs who will defend master thesis in August 2018 and one support staffs who will enroll master program in August 2018.

7.2. Recruitment and selection criteria for appointment, deployment and promotion are determined and communicated

Based on Regulation 22 of the Law of Officers [07.02.01] and the employment placement scheme of the units, UD and DUT have developed a process and criteria for recruitment, clearly defined and announced on the webpage (<http://dut.udn.vn/Tintuc/Thongbao> and <http://www.udn.vn/canbo>). Since 2012, DUT has given autonomy for FRBE in terms of recruitment, so FRBE submitted the proposal to DUT, DUT announced widely the recruitment [07.02.02]. Candidates apply directly to the Personnel and Administration Department or FRBE, FRBE establishes a recruitment committee [07.02.03] to review applicants and interview candidates whose records meet the required criteria. FRBE submitted a list of qualified candidates to DUT and DUT then conducted a recruitment interview [07.02.04]. After considering and selecting qualified candidates with good ethical qualities, having related disciplines and certificates, IT skills and foreign languages which are suitable to recruitment positions, DUT sent the list of selected candidates to UD. From 2012, the candidates have had to attend recruitment test organized by UD, including 5 subjects: general knowledge, specialization, IT, foreign languages and interviews, and the results are announced widely on the website <http://www.udn.vn/canbo> [07.02.05]. Thus, UD and DUT have made significant improvements, clarity and transparency in the notification and recruitment process, the role of positions has been clearly defined.

UD and DUT clearly define and widely announce the appointment and upgradation of staff classification scale. Once the support staff is recruited, UD sends the contract signing notice and the decision to recruit staff for support staff [07.02.06]. After a period of working at DUT, a staff may upgrade the classification scale based on the Decision No.1642/QĐ-BNV of the Ministry of Home Affairs [07.02.07] and increase in salary is also regulated by the Ministry of Home Affairs [07.02.08]. Support staff who is a leader must abide by the Regulations on Appointment, Reappointment, Resignation and Relocation of Officials and Officials regulated by the DUT [07.02.09].

In order to support DUT to improve its training, service areas and policies were developed to improve the performance of support staff. Since 2015, every two years, DUT has conducted a survey on the satisfaction of support staff which is focusing on education programs, service quality, facilities, teaching tools and policies for students [07.02.10].

7.3. Competences of support staff are identified and evaluated

DUT's annual recruitment notice specifies the capacity and qualifications of each position as detailed in the section 7.2. From year 2012, FRBE has built criteria for the recruitment of support staff who is suitable for professional position (at least hold a bachelor degree, meet requirement in IT and foreign language skills to deal with assigned tasks) [07.03.01]. In particular, support staff working in laboratories should have experience in practical skills, research and production skills, technology transfer [07.03.02].

Each staff has to self-assess his capacity and activities quarterly (classify to levels: A1, A2, A3, B and C) and annually online in the DUT IT system [07.03.03], The Dean will reevaluate them. The Dean and Head of Division will review the results and adjust the activities of the staff. These results are used for considering to distribute additional salary. Through this assessment, DUT has introduced more effective management measures to promote personal and collective contributions.

Annual survey of students on the laboratory staff who supervises students in practical courses is conducted via website (<http://FB.dut.udn.vn>) and the feedback results is delivered to the staffs and the Head of Division in their webpage of DUT IT system [07.03.04], thereby the capacity and practical guidance of laboratory staff can be assessed. FRBE's support staff who is the leader or member of projects, technical innovation, work solutions will be assessed and by the university committee [07.03.05]. In addition, the support staff of the Faculty can do research and publish their work on international journals, participate in supervising students to do research, take part in scientific seminar [07.03.06]. The support staff has to update their results of scientific research, achievements and rewards into scientific background on the website <http://scv.udn.vn> [07.03.07].

7.4. Training and developmental needs of support staff are identified and activities are implemented to fulfil them

The probationary period of newly recruited staff is one year; and staff receives regime according to state regulations. The faculty will assign a competent, experienced and credible staff to guide the probationary staff [07.04.01]. Especially, support staff who works in laboratories has to prepare lectures on practical experiments, lecture at the department until the science committee of the faculty approve [07.04.02]. After one year of apprenticeship, support staff will be assigned to the official grade and sign a 3 year contract and after that a long term contract [07.04.03].

Departments and faculties always facilitate support staff to participate in professional courses and conferences [07.04.04]. After each course, support staff was surveyed about the level of satisfaction with the training course, as well as the relevant information about the course. DUT and FRBE assist support staff to improve their academic, computer skill, foreign language and achieve test certificate for laboratory work [07.04.05].

At FRBE, every year, laboratory staff takes charge of the contract or engage with business owners in order to develop professional and increase capacity [07.04.06]. In addition, laboratory staff can participate in short courses on experimental classes such as soil tests, construction material tests, infrastructure inspection [07.04.07]. FRBE staff is encouraged to improve their skills by attending firefighting classes, civil defense class and master program. The proportion of support staffs who have master degrees increased from 20% (2012) to 40% (2017) and is expected to be 80% (2018) and 100% (2020).

7.5. Performance management including rewards and recognition is implemented to motivate and support education, research and service

DUT takes great care in managing employees according to work results in order to encourage and motivate them. DUT always has reward and recognition policies for their staff very timely.

In terms of commendation and reward work, support staff registers the individual emulation for the school year in June [07.05.01] and this will be an evidence for considering the commendation and reward for the next academic year. At the end of each academic year, the staff will complete the individual work report of the academic year. The faculty organizes the meeting to evaluate each individual and collect comments from others, so it is completely democratic, public and transparent. Individuals who have good achievements in teaching and research support will be given certificates of merit from all levels such as advanced labors, certificates of merit from the President, certificates of merit of the University of Danang [07.05.02]. By 2015, staff will with the forms issued by DUT [07.05.03]. From the first quarter of 2016, support staff will

self-assess quarterly in the IT system. The Dean then will review and confirm evaluation results to the University.

DUT facilitates support staff to lead and participate in projects, technical innovations and encourages them to public their works on prestigious journals. Especially, FRBE has an encouraged policy for supporting staff who supervises students to achieve the high prize in research competitions. They will be given priority in the order of priority list receiving award from the President of UD. This award is an evidence to consider salary increase [07.05.04]. In addition, DUT also has regulations to encourage staff to participate in professional trainings, scientific research activities such as the payment of working allowances for staff participating in workshops; financial support for individual or group of authors who get a patent, intellectual property, and publication in prestigious international journal (SCIE, ISI) [07.05.05].

In terms of community, DUT encourages the whole staff to participate in union activities. DUT awards individuals who have attained achievement when participating in UD-level and DUT-level literary activities [07.05.06].

8. STUDENT QUALITY AND SUPPORT

8.1. The student intake policy and admission criteria are defined, communicated, published, and up-to-date

The policy and criteria of the admission in TCE are defined in accordance with the regulations of MOET, UD, and DUT. The basic regulations are as follows:

1. Students who hold a high school graduation certificate or its equivalent are eligible to enroll in TCE.
2. Before 2014, the admission are based on the results of the national university entrance exam [08.01.01]. Since 2015, the admission to universities has been based on the results of the national high school graduation exam [08.01.02].
3. Being based on basic grade to HEIs defined by MOET [08.01.03], and total quota to DUT as well as quotas to each program, DUT sets its own minimum entrance score and cut-off score for each study program of the university.
4. The admission to the University of students is evaluated from top to down for each study program, based on their exam scores.
5. In addition, the university also considers some of the following cases: Students who obtain national or international exam awards are enrolled to the university without an exam. Students who are living in deep-lying, mountainous and island areas and in ethnic groups have priority scores.

The TCE's admission process is widely published in admission booklet and website of MOET [08.01.04]; website and Facebook of UD, DUT, and FRBE [08.01.05], [08.01.06]. The university and the faculty also spread the admission information through the "Open Day" organized every year at the university [08.01.07], the press conference where the admission program is announced [08.01.08], and in high schools [08.01.09]. Since 2018, the university has developed the "chat 5S" software [08.01.10] and fan page DUT [08.01.11] for admission online support.

The admission information includes the admission process, the criteria, the tuition fees, the minimum required scholarships, the subject sets, the amount of basic knowledge to be learned, the university infrastructure facilities, the employment rate of graduate students, the quotas and

admitted scores in previous years, priority policies, study time and scholarships. The student admission numbers in recent years are summarized in Table 8.1.

Table 8.1 Student admission quantity from 2013 to 2018

Year	No. offered	No. applied	N. passed	No. admitted	Entry benchmark score
2013	185	962	191	178	19.5
2014	210	479	240	232	18.5
2015	170	(*)	176	166	21.5
2016	135	(*)	131	131	20.5
2017	125	(*)	88	83	18
2018	120	487	152	132	16.5

(*): enrollees with many choices of majors

Over the past few years, the enrollment quota has been gradually reduced to improve the quality of entry students, increase job opportunities after graduation, and ensure suitability of training institutions [08.01.12], as shown in Table 8.1. Admission criteria are also adjusted to meet social requirements. In addition to the traditional admissions (mathematics-physics), there has been a new subject set (English-mathematics) since 2014. By 2015, the high school entrance examination scores was used. Priority score has gradually reduced due to a decrease in regional disparities [08.01.13] since 2018.

Table 8.2 shows the number of TCE students in the last 5 academic years [08.01.14], which indicates that the total number of TCE students has been decreasing over the years.

Table 8.2 Quantity of students in TCE from 2012-2013 to 2017-2018

Cohort	Students											
	1 st year		2 nd year		3 rd year		4 th year		5 th year		Total	
	1 st SE.	2 nd SE.	1 st SE.	2 nd SE.	1 st SE.	2 nd SE.	1 st SE.	2 nd SE.	1 st SE.	2 nd SE.	1 st SE.	2 nd SE.
2013	178	178	260	257	270	268	249	247	248	244	1205	1194
2014	232	231	177	175	256	251	267	244	243	234	1175	1135
2015	166	165	220	223	171	172	244	240	235	230	1036	1030
2016	131	127	165	155	221	208	165	163	228	218	910	871
2017	83	83	125	111	151	124	201	195	159	154	719	667

8.2. The methods and criteria for the selection of students are determined and evaluated

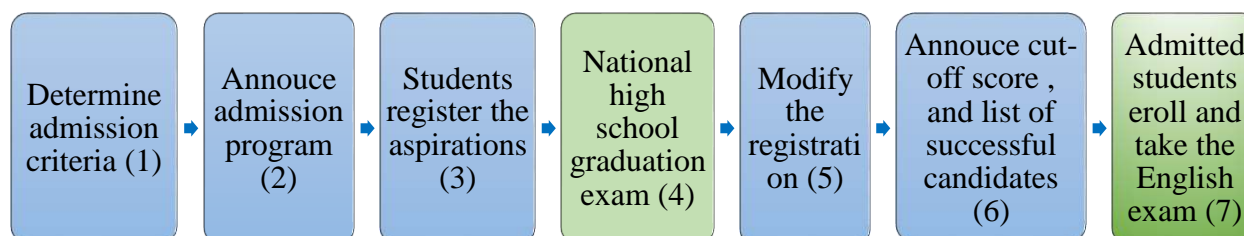


Figure 8.1 The admission process at DUT and FRBE

- (1) The TCE enrollment quota is calculated and approved by DUT, UD, and FRBE based on the ability of facilities and teaching staffs [08.02.01].

- (2) MOET issues admission regulations including requirements and admission methods in March every year [08.02.02]. Based on that, DUT and FRBE develop the admission program [08.02.03].
- (3) Candidates register multiple aspirations into the university listed by MOET [08.02.04].
- (4) Candidates take the national high school graduation exam at the end of June.
- (5) Candidates modify the registration at (3) [08.02.05];
- (6) DUT coordinates with UD, MOET evaluates the students' expectations and announces the entry benchmark score and the list of admitted students [08.02.06];
- (7) Candidates come to the DUT to complete enrolment procedures at the end of August. In the 1st week, students must take the English proficiency exam [08.02.07] to place the class.

The admission criteria are defined and informed to all concerned stakeholders and are updated over the years as described in Table 8.3, in accordance with the MOET, UD, DUT regulations.

Table 8.3 The methods and criteria for the selection of students from 2014-2018

Year	2014	2015	2016	2017	2018
Criteria	210	170	135	125	120
No. passed	240	176	131	88	152
No. admitted	232	166	131	83	132
Admission method	- Based on national entrance exam 2014 - Candidates must be registered their aspirations to the university before the exam - The selection procedure is based on the exam score, the order of aspirations, and the enrollment quota [08.02.08]	- Based on national high school graduation exam 2015 - Candidates are permitted to register their aspirations to different universities and have a maximum of 4 aspirations - The selection procedure is based on the exam score, the order of aspirations, and the enrollment quota [08.02.09]	- Based on national high school graduation exam 2016 - Candidates are permitted to register their aspirations to 2 universities and have a maximum of 4 aspirations - The selection procedure is based on the exam score, the order of aspirations, and the enrollment quota [08.02.10]	- Based on national high school graduation exam 2017 - There is no limitation in the number of universities and aspirations registered - The selection procedure is based on the exam score, the order of aspirations, and the enrollment quota [08.02.11]	- Based on national high school graduation exam 2018 - There is no limitation in the number of universities and aspirations registered - The selection procedure is based on the exam score, the order of aspirations, and the enrollment quota [08.02.12]
Set of subjects	Math, Physics, and Chemistry Math, Physics, and English	Math, Physics, and Chemistry Math, Physics, and English	Math, Physics, and Chemistry Math, Physics, and English	Math, Physics, and Chemistry Math, Physics, and English	Math, Physics, and Chemistry Math, Physics, and English

UDT entry benchmark score	17	18.5	18	16	15
TCE entry benchmark score	18.5	21.5	20.5	18	16.5

The TCE minimum passing score is higher than that of DUT. This figure is equivalent with high-ranked universities having the same specialty, as shown in [Figure 5.1](#) in [section 5.1](#).

Before each admission, DUT holds meetings with faculties to review the results of previous admissions, analyze trends to make decisions or adjust enrollment criteria and relevant criteria [\[08.02.13\]](#). Based on that, the university plans to receive the information and to develop the admission plan and procedure. After the national exam, another meeting between the university and faculties is organized to analyze the exam data provided by MOET and determine the passing score and the plan for the enrollment of students. [\[08.02.14\]](#). In recent years, the admission procedure becomes simpler; it allows students who will have the right choice in the specialty and reduces the risk for students in the whole process. There are also some specific contains to ensure the quality of the students.

8.3. There is an adequate monitoring system for student progress, academic performance, and workload

DUT has an online management system to track the study progress of students. The system has been used since 2006 and frequently upgraded. DUT also develops a training management tool including module tmProx [\[08.03.01\]](#) and online module (<http://daotao.dut.udn.vn/cb/>) [\[08.03.01\]](#) for assisting university staff in monitoring the student progress. Student information website (<http://sv.dut.udn.vn/>) [\[08.03.02\]](#) aims to provide quick and accurate information about the student progress for students and families.

The academic affairs (DAA) is responsible for the management of student training and education, monitoring of progress and processing of student data [\[08.03.03\]](#). At FRBE, a faculty board member and faculty secretariat are responsible for supporting students [\[08.03.04\]](#). The academic advising system is also organized, in which each class is designed a teaching staff to support students in the class twice a semester [\[08.03.05\]](#). Online forms for communicating between university staffs and are also implemented in various ways via text message, email or social networking, and forums [\[08.03.06\]](#). In addition to the results of the study, students will also be assessed through the self-assessment and collective-assessment [\[08.03.07\]](#).

The online management system is used as a means of tracking student progress. At the end of each semester, students are provided with academic records including registered credits and semester GPA, semester credits, cumulative credits, and cumulative AGPA [\[08.03.08\]](#). Study results are published on the website, so students, teaching staff, administrators, and parents have the right to access.

DUT organizes academic review meetings on each semester to notify students about their study progress, to assign graduation projects, and to evaluate graduation admissions [\[08.03.09\]](#). The meeting information is delivered to the faculty for processing related procedure such as assigning supervisors for graduation projects, sending lists of weak students or failing to meet the academic progress [\[08.03.10\]](#) to students, homeroom lecturers, and student families. Table 8.4 shows student academic record statistics for the last 10 semesters. The results show that the student learning outcomes are monitored and that the ratio of poor and very poor students has declined

from 40% in 1st semester in academic year 2013-2014 to 34% in 1st semester in academic year 2017-2018. The ratio of very good and excellent students has increased from 7% to 10% in the corresponding semesters.

Table 8.4 Academic levels of students from academic year 2013-2014 to 2017-2018

Academic year - Semester	No. of students in each academic level / total No. of students						Total No. students	No. average credits/ No. students
	Very poor ($GPA < 1$)	Poor ($1 \leq GPA < 2$)	Ordinary ($2 \leq GPA < 2.5$)	Good ($2.5 \leq GPA < 3.2$)	Very good ($3.2 \leq GPA < 3.6$)	Excellent ($3.6 \leq GPA$)		
2013-2014-S1	24(2%)	459(38%)	314(26%)	332(28%)	55(5%)	21(2%)	1205	19.5
2013-2014-S2	50(4%)	472(40%)	292(24%)	314(26%)	38(3%)	28(2%)	1194	19.5
2014-2015-S1	99(8%)	366(31%)	343(29%)	308(26%)	46(4%)	13(1%)	1175	18.4
2014-2015-S2	140(12%)	383(34%)	268(24%)	289(25%)	25(2%)	30(3%)	1135	18.6
2015-2016-S1	77(7%)	319(31%)	284(27%)	316(31%)	36(3%)	4(0%)	1036	18.1
2015-2016-S2	91(9%)	342(33%)	293(28%)	246(24%)	26(3%)	32(3%)	1030	16.9
2016-2017-S1	85(9%)	246(27%)	283(31%)	251(28%)	43(5%)	2(0%)	910	15.5
2016-2017-S2	99(11%)	277(32%)	202(23%)	232(27%)	18(2%)	43(5%)	871	18.1
2017-2018-S1	37(5%)	205(29%)	209(29%)	198(28%)	63(9%)	7(1%)	719	15.5

The study plan of the whole course and each academic year are announced to the students [08.03.11]. Students are able to flexibly register their credits according to DUT regulations: the minimum credit for students having $GPA \geq 2.0$ is 14; and is 10 credits for students having $GPA < 2.0$ [08.03.12]. In addition, students are tested for their English proficiency every year. Students who fail this test will be limited to a maximum of 14 credits in order to allow students to improve their language proficiency [08.03.13]. Table 8.4 also shows the average credit for each student in the semester [08.03.14].

8.4. Academic advice, co-curricular activities, student competitions, and other student support services are available to improve learning and employability

Students can refer to the study program guides, student handbooks [08.04.01] and student websites (<http://sv.dut.udn.vn>). Academic counseling is organized by faculty officers, secretaries [08.04.02], class head lecturers [08.04.03] and course lecturers. In addition, students are advised by DAA and DSA.

For graduation projects, students are advised to choose topics in the beginning of graduation internship [08.04.04]. Two or a group of advisers are usually assigned to supervise students during the graduation projects. For special topics, the faculty may invite enterprise experts for co-supervising or evaluating [08.04.05].

The student's course consists of 3 enterprise internships at the end of the third and fourth year [08.04.06] to provide students with accessing to practical work and building up their knowledge and skills. Opportunities for students and enterprises exchanges are always paid attention to, such as inviting enterprises experts to specialized reports, specialized seminars, technology transfer, software instruction [08.04.07].

Moreover, every year, student have change to participate to a number of interesting co-curricular activities [08.04.08] held by the union of the community [08.04.09] as shown in table 8.5. These activities are not required but in case of joining with good result, students will be

rewarded and get good assessment in training points. Exchange activities among foreign universities are also held regularly [08.04.10].

Table 8.5 Typical co-curricular activities of TCE students

No.	Content	Number of Students	Link
1	Enterprise internships for 3 rd , 4 th , 5 th year students	~500	Link1 , link 2 , link 3 , link 4
2	Interaction with businesses	~150	Link 1 , link 2
3	Welcome new students	~200	Link 1 , link2
4	Students Soccer Championship	~250	Link 1 , link 2 , link 3
5	Students Volleyball Championship	~20	Link1 , link2
6	Student Camp 26 March	~100	Link1 , link2 , link 3
7	Study tours abroad	~8	Link 1 , link 2 , link 3
8	Exchange activities at the Military School	~150	Link1 , link 2
9	Performing arts, fashion festival	~30	Link 1 , link 2 , link 3 , link 4

Every year, DUT cooperates with FRBE to organize many competitions both in terms of expertise and skills. Annual scientific research is a very typical FRBE competition for fourth or fifth year students, which is useful for students in lifelong learning. Table 8.6 shows the results of the typical TCE competition and winners in the past 5 years.

Table 8.6 Awards and competitions

No.	Name of competitions	No. of students/winners				
		13-14	14-15	15-16	16-17	17-18
1	Scientific research [08.04.11]	9/9	17/9	24/9	25/9	23/9
2	No. of paper written by students [08.04.12]	-	2	5	7	-
3	Exhibit BK Techshow [08.04.13]	8	8	10	8	9
4	National Mechanics Olympic (SV) [08.04.14]	5/2	6/4	8/1	7/2	10/4
5	Excellent students UD [08.04.15]					4
6	Design of traffic model [08.04.16]			50/15		
7	TCE Got talented [08.04.17]				1	
8	TCE Knowledge Competition [08.04.18]	12				
9	Construction Materials Challenge [08.04.19]				12	

The DSA plays an important role in student management, counseling, career guidance, soft skills training, job application assistance, alumni relations, scholarships, policy, accommodation for students [08.04.20]. The CSSBC [08.04.21] serves as a bridge between students and businesses, working with DSA to provide career guidance and job placement services to students. In addition, FRBE and institutions such as the Student Dormitory, the Youth Union and the Faculty, the Health group also support students throughout their studies and even after graduation.

After getting admission, DUT organizes the first civic week for counseling on academic, security, safety and health issues for students [08.04.22]. During the study, students receive continuous support from DSA, FRBE, Youth Union, Student Union and class head lecturers in their studies, training and activities. After graduation, some students are introduced to work immediately by businesses that have cooperative relations with FRBE or Alumni [08.04.23]. The faculty also repeatedly consult and discuss the employment situation of graduated students [08.04.24] and published employment information on the website (link). Every year, DUT and

FRBE also organize many career counseling, job placement [08.04.25] and student skills enhancement projects [08.04.26].

TCE students in difficult families can receive financial support such as scholarships and tuition exemptions [08.04.27]. They can also receive scholarships of over 8% tuition fees [08.04.28]; scholarships of organizations, individuals for poor students overcoming difficulties. Table 8.7, presenting statistics on the types of scholarships over the past five years, shows that the number of scholarships has remained constant and increasing.

Table 8.7 Scholarships of DUT and enterprise

Encouraging Scholarship [08.04.29]			Enterprise Scholarship [08.04.30]	
Year	No.	Value (1E+06 VND)	Scholarship name	No. of students per year
2013-2014	237	439.9	Vallet	1-2
2014-2015	299	551.8	Lawrence S. Ting	2
2015-2016	347	575.1	Hessen	2
2016-2017	400	583.1	Panasonic	1-2
2017-2018 (S1)	94	195.6	Study Promotion Fund	10

The DUT and FRBE student support services has brought practical effects for students, confirmed by the results of the Student Satisfaction Survey of Support Services [08.04.31] as shown in Figure 8.2, which shows a higher satisfaction with the support activities of TCE students than DUT students.

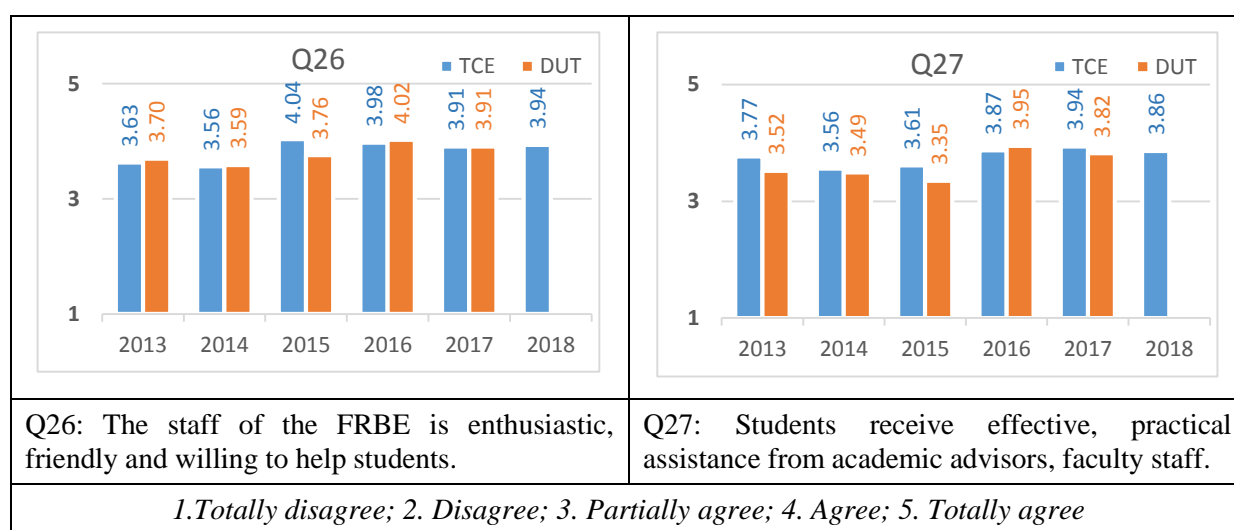


Figure 8.2 Graduates' feedback about supporting services

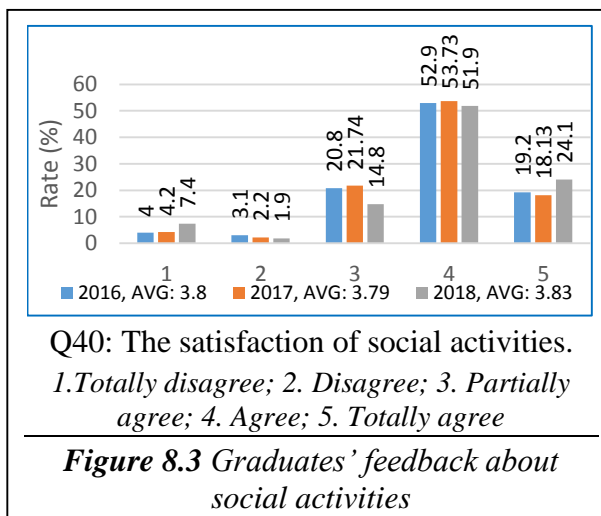
8.5. The physical, social and psychological environment is conducive for education and research as well as personal well-being

Universities with spacious campus, grassy areas, trees, self-study area help students to create airy space, useful for studying [08.05.01]. Every year, FRBE welcomes new students to help them communicate with their seniors and have the best psychology in their first days of university [08.05.02]. Students provided with accommodation in dormitories near the school are convenient and safe in daily activities [08.05.03]. After school, students can take part in compulsory sport activities [08.05.04] or freely at UD multipurpose sports hall [08.05.05].

DUT organizes health examinations (including psychological health) for students [08.05.06] on new enrollment and after graduation. During the study, if students experience psychological problems, it may be advisable to get consult from friends, teachers, or a doctor at the university's health center [08.05.07] or local hospital. Youth Union, Student Union or

Homeland association... [08.05.08] are places where TCE students can participate in for exchanges, entertainment, making friends to minimize their stress. The media channel “[DUT media](#)”, the fanpage also support students ([link1](#), [link 2](#)) [08.05.09].

Youth Union [08.05.10] is the organization of social activities of students. DUT has formed many clubs [08.05.11] to support students in recreational activities such as culture, arts, sports, social activities, science and technology, startup business [08.05.12] and to create a happy environment, physical health for students. Regular activities, especially volunteer summer activities “Green Summer” and charitable activities in disadvantaged areas, visiting and giving away to children [08.05.13] help students have necessary social experience before graduation. Surveys of student satisfaction on environment and social activities show good results, shown in Figure 8.3 [08.05.14].



9. FACILITIES AND INFRASTRUCTURE

9.1. The teaching and learning facilities and equipment (lecture halls, classrooms, project rooms, etc.) are adequate and updated to support education and research

Main infrastructure of university has various blocks which were built separately [09.01.01] on plots of land that are granted long-term using by government, in accordance with land use planning [09.01.02]. DUT has 143 classrooms with a total area of 229554m², in which 17 classrooms can accommodate over 200 people and 02 foreign language classrooms [09.01.03]. The rooms are fully equipped teaching aids facilities for the needs of use [09.01.04]. Lecture hall and laboratory are managed online through the website ([link](#)) [09.01.05] so it is convenient and optimal. Details of DUT classrooms are shown in Table 9.1 [09.01.06].

Table 9. 1. Classroom statistics at DUT

No.	Building	Number of classrooms	Number of classrooms with air-conditioner
1	B	20	-
2	C	30	07
3	E	22	13
4	F	34	03
5	H	26	01
6	Specialized Study	11	11
Total		143	35

For activities that require more space such as seminars, dialogues, workshop, Youth Union activities and other big events, DUT shares the conference room for all departments, international meeting room (A1 A2, F and E) with capacity from 100 to 500 seats. In addition, the 11-storey building has been put into use in 2018 for administrative purposes, library, training, seminars [09.01.07]. Students can use the accommodation in city dormitory near university [09.01.08] and DUT dormitory [09.01.09] with 322 rooms, all rooms and self-study areas, stadiums, 1200m² sport area, cafeteria and kiosk for self-study, life and entertainment are good for students. DUT

has specific regulations on registration, use as well as instructions and assignments to staffs in the Department of Facilities Management (DFM), Department of Personnel and Administration (DPA) to coordinate the operation and maintenance [09.01.10].

DUT gives the right for FRBE to manage and develop various facilities including 01 student consultant office, 01 department board room, 01 50-seat meeting room, 04 specialized study rooms, 01 specialized computer room combined with professional activities, a self-study room for students with sufficient equipment and free internet [09.01.11].

The monitoring of facility condition is carried out regularly to know the condition of facilities [09.01.11], from which the maintenance plan, reasonable shopping plan for the classroom, staff offices and laboratories, and the university's centers [09.01.12]. The annual budget for procurement and repair of equipment and tools is specifically set out in the university's regulations, in accordance with state regulations [09.01.13]. This budget is financed by the Government and non-governmental organizations, [09.01.14]. Figure 9.3 demonstrates the university's ongoing investment costs; this indicates that the level of facility investment is increasing.

DUT has a list of phone numbers, comments notebook or comment boxes, and e-mail boxes [09.01.15] for staff to write their opinions about facilities condition. Collecting the feedback from related stakeholders and reviewing them to make adjustments and improvements for the facilities are done regularly. The survey results of the satisfaction of related stakeholders on the facilities are shown in the diagrams in Figure 9.1, which shows the satisfaction of students and lecturers at 4/5 [09.01.16] and the students' satisfaction increases.

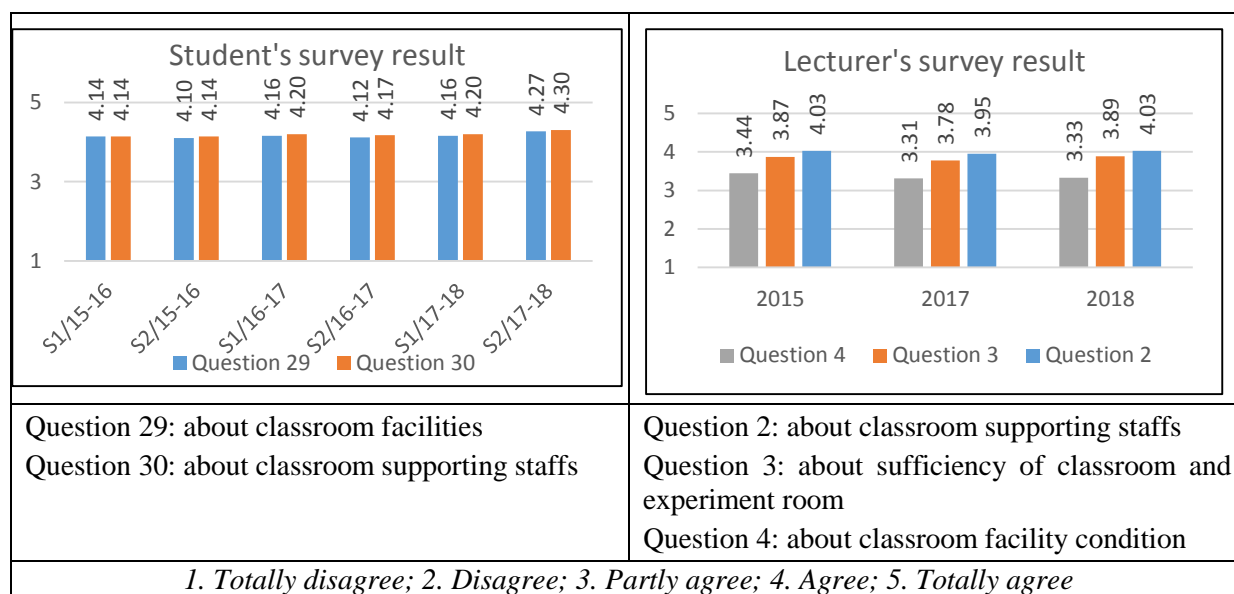


Figure 9.1 Results of satisfaction survey on facilities

9.2. The library and its resources are adequate and updated to support education and research

To provide resources for Lecturers, TCE students, we have Center for Learning and Communication (LRCC) of the DUT (<http://www.dut.udn.vn/TTHLTT>) and the LIRC Information and Resource Center) of UD (www.lirc.udn.vn). The LRCC building is a modern 4-storey building, with an area of 4500m², with reading rooms and self-study rooms, conference rooms, discussion rooms, group study, audio-visual rooms, computer system connected to the internet and other equipment [09.02.01] ensure serving well for students and lecturers.

In order to help students exploit maximum use of the database, the LRCC issues a clear, scientific, and widely publicized policy to the users [09.02.02]. To use the database and other facilities, students and faculty must have a user card to control access and use of the user [09.02.03]. The documentation is very detailed and suitable for different types of data [09.02.04].

Based on the demand proposed by FRBE, LRCC has equipped and increased the textbooks and the reference books in Vietnamese and English. To date, the number of specialized books is 1399 with 9900 copies, 170 general books with 20488 copies. The detailed data are shown in Table 9.2 [09.02.05]. Besides printed materials, the LRCC has signed cooperation agreements with non-governmental organizations about using databases. These are very diverse databases and can be used free at DUT, detailed statistics are shown in Table 9.2 [09.02.06]. In addition, the divisions are equipped with a mini library [09.02.07] with specialized materials for the professional activities of students and faculty as well as accounts for accessing a number of basic databases [09.02.08].

Table 9.2 Statistical materials used and the database at LRCC and FRBE

No	Content	Type	Number						
			Total	Text book	Mono_ graphic	reference	Scientific report	Thesis, dissertation	Others
1	Specialized materials	Number of names	1,399	236	567	128	46	388	34
		Number of books	9,900	7,121	1,572	153	50	388	616
2	General materials	Number of names	170						
		Number of books	20,488						
3	Databases [09.02.06]	Students can access the database online at http://lib.dut.udn.vn/ , and http://lirc.tailieu.vn/ , and http://tailieuso.udn.vn/ .							
		Available databases are shared: Lac Viet Vebrary, ProQuest Central, and National Agency for Science and Technology Information, OECD iLibrary, World Bank eLibrary and UN iLibrary.							
4	Materials at the faculty	4 mini-libraries in 4 departments of the faculty [09.02.07]							
		Account to access the database (https://thuvienphapluat.vn/)[09.02.08]							

Yearly, FRBE collaborates with LRCC to review and supplement materials for increasing demand for content and the number of readers [09.02.09]. The cost of procurement of cumulative reference materials from 2011 to 2018 shows the interest of DUT in investing to increase the materials for study and research of students and lecturer. This is shown in Figure 9.2 [09.02.10].

The tracking of user information such as number of entries, number of transaction documents is done automatically by LRCC card and software. The results show that the

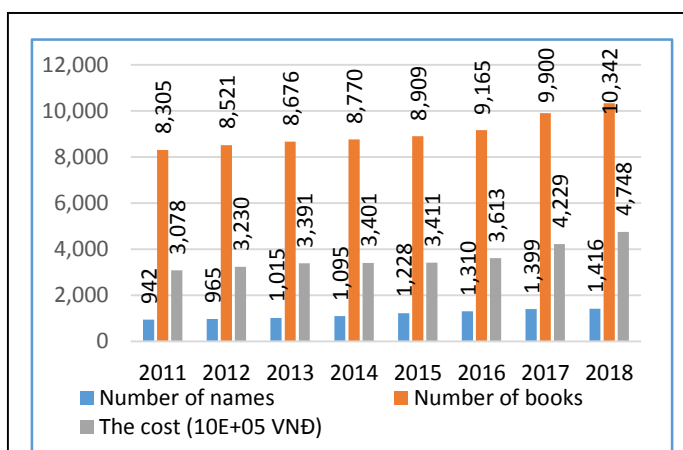


Figure 9.2. Books from 2011 to 2018

number of outlets, documentary transactions have increased gradually and in large quantity in the last two years 2016, 2017 [09.02.11]. In order to improve its performance, the LRCC conducted a survey of people using [09.02.12] and quality of service at the LRCC. The results showed that the majority of students and lecturers were satisfied with the results. Details are shown in Figure 9.3 [09.02.13], he results show that most of students agree that reference materials of the university are sufficient for them.

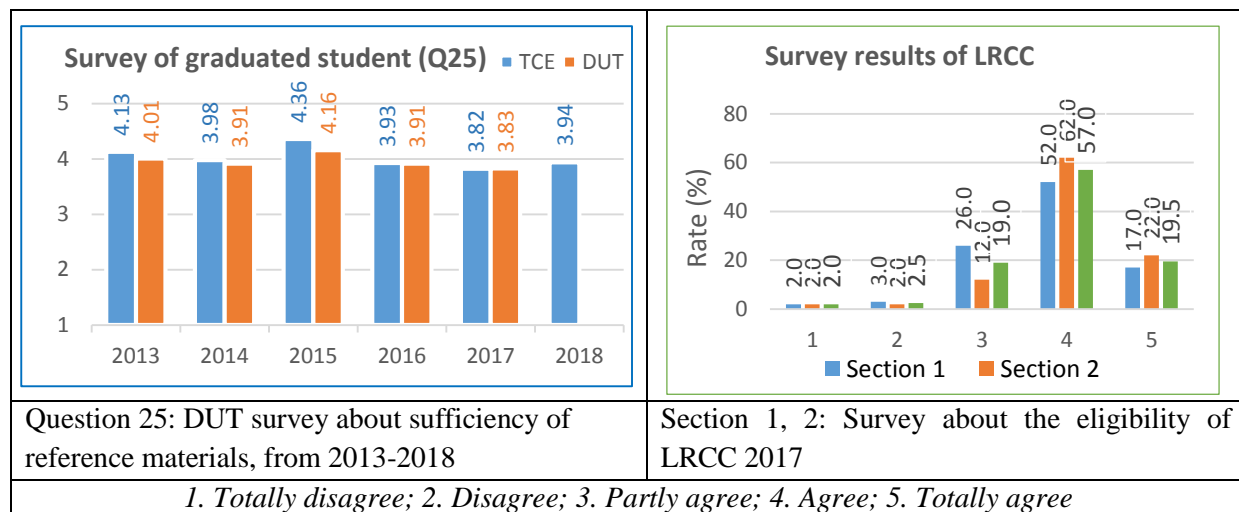


Figure 9.3 Library and Document Satisfaction Survey of DUT & LRCC

9.3. Laboratories and equipment are adequate and updated to support education and research

The university regularly invests in various laboratories. Particularly, there are 108 laboratories with an area of 12917 m², 14 training workshops with an area of 3510 m² [09.03.01], of which there are a number of rooms that FRBE is shared and FRBE are allowed to be managed and developed some of them. Statistics of laboratories use for TCE as shown in Table 9.3 [09.03.02]:

Table 9.3 Laboratory statistics table

STT	Name of laboratory	Link	Area	Location	Management	Code module use
1	Computer practice room	Link	210	Block C	DUT	1020701
2	Laboratory of physics	Link	50m ²	UED	UD	3050601
3	Hydraulic laboratory	Link	50m ²	Block G	DUT	1110023
4	Laboratory of soil mechanics	Link	50m ²	Block G	FRBE	1090462, 1090043
5	Laboratory of building materials	Link	100m ²	Block G	FRBE	1090980
6	Laboratory of Bridge and Road	Link	100m ²	Block G	FRBE	1091173, 1091143
7	High quality laboratory	Link	50m ²	Block G	FRBE	1090323, 091183
8	Department of geodetic machine	Link	50m ²	Block G	FRBE	1090752

Equipment and tools for experiment are fully equipped, become modern gradually, meet the requirements of teaching, research and they are designed from basis of practice lessons and research orientation [09.03.03]. Besides the laboratory equipment invested from government's

budget, FRBE also received the investment of TRIG project [09.03.04] and the Research Enhancement Project [09.03.05] as well as the support lending equipment from the outside company [09.03.06] in order to develop laboratories gradually. Materials, chemicals, laboratory instruments are provided for practice and experiment of students at the beginning of the semester based on every semester's teaching plan [09.03.07], level the investment budget is shown in Figure 9.3. All laboratories have operation's rules [09.03.08] as well as full manual of equipment [09.03.09].

DUT has full bookkeeping system, asset tracking software. Fixed asset inventory is carried out periodically at the end of the year by DFM, to classify, evaluate the situation ... [09.03.10]. The labs, workshops have a diary about use of equipment to monitor the frequency of exploitation [09.03.11]. DUT issued the "Regulation on the use of laboratory equipment" to facilitate the lecturers and students to exploit the equipment [09.03.12]. Base on this Regulation, FRBE has issued the appendices "Use of high-performance equipment" to regulate the using process, to collect funding for repairing equipment [09.03.13].

DUT has procedures to maintain, repair, upgrade the old equipment which does not meet demand or purchase new equipment yearly [09.03.14]. The level of investment is shown in Figure 9.4 [09.03.15], which shows the facility investment increases more and more each year. However, in order to meet the requirements of the development of science and technology in construction, FRBE will work with DUT to continue to invest in modern equipment in a variety of forms [09.03.16].

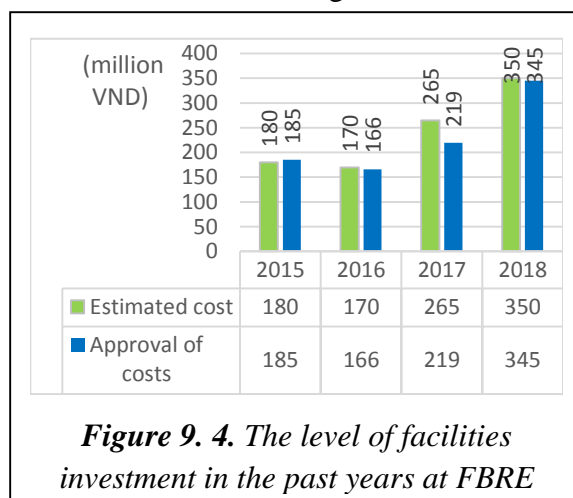


Figure 9. 4. The level of facilities investment in the past years at FBRE

9.4. The IT facilities including e-learning infrastructure are adequate and updated to support education and research

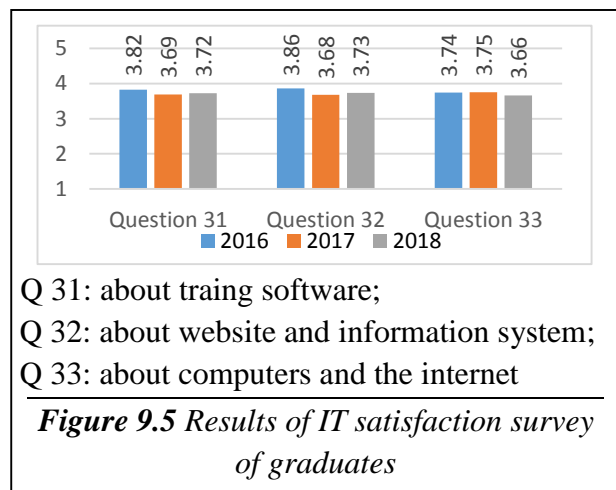
The entire campus is connected to a fiber optic network with Internet speeds of 50 Mbps for local access and 15 Mbps for international access, allowing students and faculty access to data quickly and efficiently. [09.04.01]. In addition to personal laptop, the DUT has computer labs that sever well for general and specialized modules, scientific research [09.04.02]. Application software is also invested and funded by domestic and foreign enterprises [09.04.03]. Table 9.4 shows the full range of computer room and application software available for TCE students and faculty.

Table 9.4 Computer rooms and software statistics

Computer Room [09.04.02]	C101, C201, C206, C128, C 1 st floor	Basic practice computer, DUT share
	E202	Share computer room for civil engineering students
	A314	Computer room for BRBE
Software	Office 365	Office software [09.04.03]
	ACITT 2015, CAD/CAM, SMS 10.1, Autodesk, Du toan F1, VN Road; AndDesign, ADS, Midas Civil	Specialized Software [09.04.03]

	Envir, PDA-W, PDILOT, GRLWEAP+ CAPWAP, LFWD, CHA/, SDA – 7910, Roughometer III	Software attached [09.04.04]
Operational tools	TmProx processing module	Running on a local network DUT [09.04.05]
	Module dealing with the Internet	http://daotao.dut.udn.vn/cb/ [09.04.06]
	Information system for students	http://sv.dut.udn.vn/ [09.04.07]
	Forum of more than 130,000 members of FRBE	http://cauduongbkdn.com/f@rums/forum.php [09.04.08]
	Online training system	http://lms1.dut.udn.vn:8080/ [09.04.09]

The survey of students and lecturers on information technology system is done regularly, the results in Figure 9.5 [09.04.10] show that student satisfaction is relative high. Updating IT systems is also of interest to DUT and FRBE. Typically, DUT has signed a cooperation agreement with Viettel Group on building a campus network [09.04.11] and other cooperation agreements on information technology; BIM workshop series - a modern integrated system of construction management has been implemented [09.04.12]. FRBE actively coordinates with DUT to implement e-learning system for teaching [09.04.09]



9.5. The standards for environment, health and safety; and access for people with special needs are defined and implemented

The campus has been planned, renovated and upgraded many times with lots of greenery, grass lawns [09.05.01] and daily cleaning staff in the area and the lecture halls. Ensure the environment of learning and work is always clean [09.05.02]. Building standards always pay attention to ensure the convenience of handicap [09.05.03]. Dormitory cafeterias, university cafeterias are always checked the food safety inspections by local health authorities [09.05.04], compulsory insurance claims [09.05.05], Periodic physical health examinations [09.05.06] as well as support services for physical activity and sports [09.05.07] are always focused to ensure the health of staff and students. Laboratories also equipped with protective equipment [09.05.08] as well as measurement and monitoring of environmental parameters are always noted [09.05.09].

DUT has own security guard staff who always keep watch to stand by [09.05.10] and installs surveillance cameras in the corridors [09.05.11] as well as quick communication with local police so security in the university, so campus safety is guaranteed. TCE students are often concentrated in the university dormitories and in the city dormitories near the campus [09.05.12] and they are well-informed about security, defense and safety [09.05.13] as well as being subject to handling sanctions from DUT [09.05.14], therefore it should be very safe in their activities.

Fire, explosion and disaster prevention are also respected by the university. All departments have facilities and guidelines on fire safety [09.05.15]. Every year, DUT staffs are regularly trained, this create the sense of initiative in responding to firefighting [09.05.16]; security and defense; Disaster preparedness [09.05.17] for managers, lecturers and students.

Thanks to implement well above policies, the environmental conditions and student's health students are guaranteed, this shows the quite high satisfaction of students as Figure 9.6.

10. QUALITY ENHANCEMENT

10.1. Stakeholders' needs and feedback serve as input to curriculum design and development

Quality assurance is a mandatory requirement for ensuring that a curriculum meets the objectives and needs of the stakeholders. Therefore, DUT has set up the Department of Educational Testing and Quality Assurance (DETQA), the Council for Quality Assurance at university and department level, to disseminate the quality assurance of education to staff and students. At the same time, the DUT has issued the internal education quality assurance system [10.01.01].

When designing and developing the curriculum, the needs and feedbacks of the stakeholders are one of the most important factors to be considered first. This is clearly stated in the document of MoET [10.01.02], UD [10.01.03] and DUT [10.01.04].

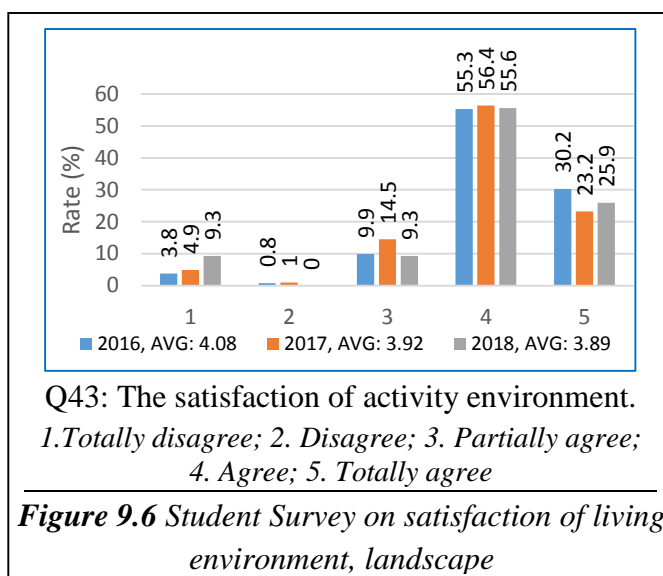
At least every two years, the curriculum is evaluated, reviewed and improved based on the results of the annual survey and additional comments [10.01.05]. Businesses and alumni are consulted through the annual survey questionnaire, annual assessment workshop or at least once every 2 years. [10.01.06] [10.01.07] [10.01.08]. Lecturers and support staff are surveyed annually through assessment sheets, through professional meetings on semester teaching [10.01.09]. Students were consulted on CLOs and curriculum, course assessment, methods of teaching/assessment, content of course, level of response of the service system [10.01.10].

All responses of stakeholders are aggregated into survey result reports [10.01.11], DETQA is responsible for analyzing and providing appropriate improvement activities for each semester [10.01.12]. In addition, every two years, the curriculum are reviewed based on the feedback of stakeholders [10.01.13], [10.01.14].

The process of collecting the feedback of stakeholders has been improved regularly. The document system has been added and updated [10.01.15], survey method includes paper surveys and online surveys. Software is integrated into the general system of the university [10.01.16]. Feedback gathering process is conducted at the university level and at the faculty level, and the form used to gather feedback is plentiful and varied. DUT, FRBE will continue to promote cooperation with enterprises in designing, improving the curriculum and invite them to participate in teaching, research and supervising graduation projects. Hence, the need of stakeholders can be understand which can be used to improve the curriculum [10.01.17].

10.2. The curriculum design and development process is established and subjected to evaluation and enhancement

The curriculum is set up, evaluated and always improved according to a system of completed documents [10.02.01]. The establishment and improvement of the curriculum is based on the feedback of stakeholders, responding to changes in state and school regulations, new



advances in the field of specialization; socio-economic issues, research results related to the CEM and must be passed by the QA.

The curriculum of Transportation Construction Engineering is developed based on a survey of human resources needs, thus providing the objectives and the CLOs of the curriculum. The design of the curriculum fulfill the goals and the CLOs [10.02.02]. Following the above rigorous procedures, the development of a curriculum includes eight steps mentioned in Criterion 3.1.

Every two years, the curriculum is updated, adjusted and supplemented. The improvement of the curriculum is also carried out according to the following steps: i) planning improvement, ii) gathering evidence of improvement needs, iii) developing assessment reports of the existing curriculum, iv) drafting the improvement content, v) the faculty council approves and submits to the rector of university for approval. The quality assurance council of the faculty is responsible for ensuring the implementation, evaluation and review of the curriculum in accordance with the process and quality [10.02.03]. In the evaluation and improvement activities, the faculty has always been matched with the same field curriculum in other accredited institutions [10.02.04]. Through these improvements, the curriculum has become more advanced and accessible to countries in the region and the world: moving from semester training to credit-based training with a total of 179 credits over a period of 5 years (2006), reducing the number of credits to 153 in five years (2012), reducing the training time to 4.5 years with 153 credits (2015) [10.02.05].

In order to improve the quality of training, the development of the curriculum has started towards higher quality assurance standards such as CDIO (2017), ABET (2018) [10.02.06]. The entire process of assessment and improvement has been publicized on the website [10.02.07], explained to the public and the higher level, and matched to the MoET's enrollment policy. They are the priority of assessed curriculums.

10.3. The teaching and learning processes and student assessment are continuously reviewed and evaluated to ensure their relevance and alignment

DUT has issued regulations, developed mechanisms and favorable environment to ensure that the teaching-learning, testing-assessing students' outcomes are reviewed and evaluated regularly at the level of curriculum and level of subject [10.03.01].

At the level of curriculum, the review and evaluation is carried out by a variety of ways: graduated students' feedback on content, program structure, the method of assessment [10.03.02]; lecturers' feedback on the service system, facilities, peer review or discussion of teaching outcomes [10.03.03]; students' feedback on the level of responsibility of the service system, the assurance of the training activities, the remarking via questionnaire survey or meetings [10.03.04]; evaluate and refine course syllabus to ensure the achievement of the CLOs as well as to continually improve to be consistent with the CLOs of subject [10.03.05]. At the level of course, after each semester students assess the teaching-learning process, assessment methods [10.03.06]. In addition, students can respond to lecturers using online tools such as email, Facebook, forum or comment box [10.03.07]. Teaching activities, teaching methods, method of assessment and evaluation, CLOs of subjects are always assessed and improved in the new versions of study program [10.03.08].

DUT has also developed a complete operating system to manage the teaching-learning and assessment process. At the beginning of semester, lecturers must develop a teaching plan and get the approval of the division; the registration of teaching schedule change and make-up can be undertaken online [10.03.09]. The Department of Inspection and Legal Affairs will inspect the

implementation of each individual's teaching plan [10.03.10]. The Department of Educational Testing and Quality Assurance is responsible for building, inspecting and ensuring the quality of testing work (the test bank, test plan) [10.03.11] and student's remarking [10.03.12].

Assessment based on the feedback of students are always received by lecturers in order to improve timely, respond to students or report to leaders. Faculty conducts assessment according to students' feedback, develops improvement plan and monitors improvement results. Improvement plans are reported to the university and announce publicly according to regulations [10.03.13].

In order to improve the quality of the review and assessment, DUT has set new requirements: reviewing credit-based training, lectures, teaching materials [10.03.14]; lecturers report the result of teaching activities each semester [10.03.15].

10.4. Research output is used to enhance teaching and learning

As a research-oriented university, DUT always focuses on scientific research and uses research results to improve the quality of teaching and learning [10.04.01].

FRBE is one of the faculties which has the best research results in DUT [10.04.02]. Lecturers always encourage and motivate students to participate in scientific research activities, thus contributing to form students' output capacities in terms of identifying and solving problem, analyzing and synthesizing problem. Students may apply these skills into research projects [10.04.03]. Based on the results of the research, lecturers have written textbooks or chapters as teaching materials [10.04.04], and also equipped more experimental equipment and machines assisting the teaching activities of the faculty [10.04.05]. Through research, the lecturers have cooperated with international professors and invited professors to supervise students to do research as well as to present at scientific seminars [10.04.06]. Every year, DUT and FRBE organize scientific conferences [10.04.07]. Each group is supervised by one or two lecturers and the results are a part of the student's graduation projects [10.04.08].

In order to improve the effectiveness of teaching-learning activities, the faculty plans to improve the curriculum in terms of implementing project-based learning (PBL) and doing capstone projects in enterprises [10.04.09].

10.5. Quality of support services and facilities (at the library, laboratory, IT facility and student services) is subjected to evaluation and enhancement

The quality assurance of support services and facilities for teaching and learning are always addressed by DUT and the faculty and regularly assessed and improved.

The university issues regulations and periodically checks the quality of facilities so that units can plan to repair, purchase additional facilities annually to ensure the quality of teaching and learning [10.05.01] [10.05.02]. Related units such as the library, the department of facility management have to assess the quality of facilities based on the feedback of others units. Hence, they will propose annually improved plans to the university to improve the quality of services and facilities [10.05.03] [10.05.04].

As a result, the service system and facilities supporting learning and teaching have increased and improved. It was reflected through the level of investment, the number of classrooms, laboratories as well as support services as described in Criterion 8 and Criterion 9 [10.05.05]. The level of satisfaction of the service system and facilities was assessed by students, lecturers and support staff through the questionnaires on satisfaction level of graduated students, the satisfaction level of students with courses, the satisfaction level of students with the service

system and facilities, the satisfaction level of teachers with the departments, libraries and facilities, the satisfaction of support staff [10.05.06]. The following survey results show the level of satisfaction of stakeholders with the service system and the responsible level of facilities. Referring to Criterion 11.5 for more details [10.05.07].

The method of gathering feedback from stakeholders has been significantly improved: using web-based questionnaires (from 2016) [10.05.08] replacing paper questionnaires; diversify the way of gathering feedback such as directly gathering feedback through faculty meetings, student dialogue and email [10.05.09]. As a result, the assessment and improvement of support services and facilities are faster and more effective. The university also expands learning areas, assists leisure activities, social activities, physical education to meet the increasing needs of students [10.05.10].

10.6. The stakeholder's feedback mechanisms are systematic and subjected to evaluation and enhancement

The university has developed an internal quality assurance system that targets universal standards and is increasingly improving, including the feedback of stakeholders as described in Figure 10.1. The university has issued a system of documents, procedures, units, reports to survey opinions of stakeholders including students, lecturers, alumni and enterprises [10.06.01].

Gathering feedback from stakeholders is carried out as planned, periodically and regularly reviewed and is evaluated according to the above procedures [10.06.01]. The quality assurance board of the curriculum is responsible for gathering the feedback from stakeholders about the curriculum, from alumni about the curriculum and employment after 6 months, 1 year and from students and lecturers about the curriculum and other fields [10.06.02]. Before each review, assessment and improvement of the curriculum, the faculty conducted a special survey on the CLOs and related issues [10.06.03]. Student feedback is gathered directly through interviews

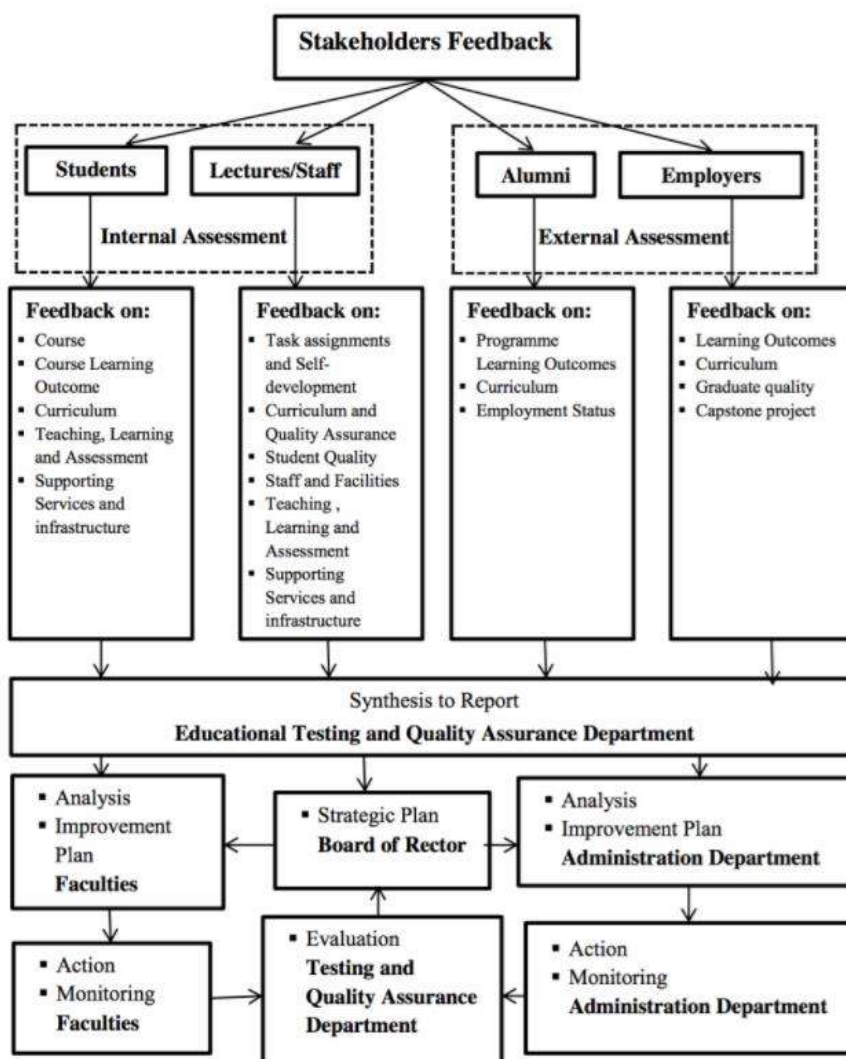


Figure 10.1 Process and system for gathering feedback from stakeholders

assurance board of the curriculum is responsible for gathering the feedback from stakeholders about the curriculum, from alumni about the curriculum and employment after 6 months, 1 year and from students and lecturers about the curriculum and other fields [10.06.02]. Before each review, assessment and improvement of the curriculum, the faculty conducted a special survey on the CLOs and related issues [10.06.03]. Student feedback is gathered directly through interviews

with study counselors, student dialogue sessions, or via email, personal accounts, annual questionnaires. [10.06.04]

Indirect surveys conducted by students on the assessment of courses, service quality, and facilities, by graduated students on the assessment of the curriculum and indirect surveys conducted by lecturers and support staff were conducted annually by the Department of Educational Testing and Quality Assurance using the university's online tool [10.06.05]. The report including the analyzed results of the survey is sent to the faculty for developing improved plans [10.06.06]. Improved plans developed after each survey are implemented in accordance with regulations and reported to the leaders of the university [10.06.07]. The internal quality assurance system ensures the implementation of accreditation procedures, including self-assessment as specified in the documents. The committee of curriculum self-assessment includes all stakeholders, particularly students [10.06.08].

The gathering feedback process from stakeholders is improved by DUT and FRBE by increasing the use of IT in surveying, analyzing and storing data. Quality improvement plans and the survey results are promptly proposed and explained to the society as well as state management units [10.06.09].

11. OUTPUT

When evaluating the quality of the output, the DUT also evaluates the outcome quality of the graduates aside from the progress of students. The DUT and the FRBE have evaluated by surveys the learning outcomes of graduates, the pass rate, graduation rate, dropout rate, average time to graduation and employability of graduates. Based on these surveys, the DUT and the FRBE analyze the satisfaction of the stakeholders in order to suggest the improvements for educational program and quality assurance system.

11.1. The pass rates and dropout rates are established, monitored and benchmarked for improvement

There are 1,507 graduates from the FRBE over the last 6 cohorts [11.01.01]. The graduate and dropout rates are monitored and benchmarked to improve quality.

The university has a system to manage dropout and graduation rates effectively through the website [11.01.02]. The FRBE also monitor and evaluate the graduation and dropout rate annually from 2012 to 2017 as shown in the Table 11.1 [11.01.03].

Table 11. 1. Graduation and dropout rate over the 6 recent courses

Courses	Total students	Percentage of student finished the course in			Percentage of dropout students during				
		5 years (in time)	6 years	>6 years	1st year	2nd year	3rd year	4th year	After 5th year
2007-2012	288	32,6	50,7	57,6	0	0	0	4,9	37,5
2008-2015	238	49,2	69,7	74,4	0	0	5,5	2,9	17,2
2009-2014	298	38,6	61,4	69,1	0	3,4	3,6	2,0	21,5
2010-2015	273	47,3	67,4	74,7	0,4	4,0	1,1	8,1	7,6
2011-2016	280	55,7	68,6	68,9	2,1	1,1	5,7	9,0	4,6
2012-2017	138	55,8	82,6	82,6	0	0,73	0	0	4,35

Data from the table shows that the percentage of graduates during the last 7 courses after 5 years increased steadily from 57.6% for the course 2007-2012 to 82.6% for the course 2012-

2017. The on-time graduation rate (within 5 years) also increased from 32.5% for the 2007-2012 course to 55.8% for the 2012-2017 course.

The percentage of dropout students after the fifth year in the course of 2007-2012 was 42.4% and decreased gradually in the next courses to the lowest rate of 5.1% in the course 2012-2017. Students are excluded from school due to many reasons such as poor academic performance, the desire to transfer to other fields of study, opportunities to receive oversea scholarships etc. [\[11.01.04\]](#).

To achieve the graduation rates increasing over the years as well as the dropout rates decreasing from 2007-2012 course to 2012-2017 course, the DUT and the FRBE have implemented a number of comprehensive solutions such as opening more intensive classes at night time and on holidays [\[11.01.05\]](#) for students to improve their grades, offering summer classes [\[11.01.06\]](#), revising English language outcome standards annually to ensure that students can meet the English outcome standards on time [\[11.01.07\]](#), as well as regularly offering English proficiency examinations for students [\[11.01.08\]](#).

DUT completed the information system to manage the training process for students, easily extract statistical data and other important indexes [\[11.01.09\]](#). DUT improves the ABET training program to increase the attractiveness of the curriculum, shorten the study period from 5 years to 4.5 years, reducing the possibility of dropping out and increasing the graduation rate on time [\[11.01.10\]](#). At the same time, DUT and FRBE formulated the finance assistant policies, appealed financial support from industry to encourage students who have financial difficulty [\[11.01.11\]](#).

11.2. The average time to graduate is established, monitored and benchmarked for improvement

There are 1,507 students [\[11.02.01\]](#) were enrolled in the 180 credits [\[11.02.02\]](#) program over the last 6 courses. The desire training time was 5 years, and the can be extended to a maximum of 8 years. The average student graduation time is monitored, matched and timely measures to improve the quality [\[11.02.03\]](#).

Table 11. 2. Average time to graduate over the last six courses

Year of enrollment	2007	2008	2009	2010	2011	2012
Number of students	166	177	206	204	193	138
Time to graduate (years)	5,39	5,32	5,30	5,37	5,14	5,16

The above table shows that the average time to graduate over the last 6 courses has decreased from 5.39 years in 2007 to 5.16 in 2012.

FRBE has monitored and apply some solutions to reduce the average graduation time such as consulting a reasonable study plan through the [\[11.02.04\]](#), students submit their graduation project in two batches in one year [\[11.02.05\]](#), opening more intensive classes [\[11.02.06\]](#) and summer classes [\[11.02.07\]](#), revising English outcome standard [\[11.02.08\]](#), regularly offering English language proficiency examinations for students [\[11.02.09\]](#).

In 2012, FRBE revised the curriculum to reduce the total credits to 150 [\[11.02.10\]](#), while keeping the same training time of 5 years. From 2015, the training time was shortened to 4.5 years [\[11.02.11\]](#).

11.3. Employability of graduates was established, monitored and benchmarked for improvement

The DUT has issued regulations to systematically conduct surveys and monitor the employment situation of graduates within one month, six months and one year after graduation. Information on the employment situation includes the rate of employment, the suitability of employment with the training program, salary range, the field of work [11.03.01].

The one-month job-placement survey was conducted by DETQA via online tool when students returned to school to receive their diplomas [11.03.02]. Job surveys after 6 months and a year of graduation are conducted annually [11.03.03] by FRBE. In addition, alumni surveys conducted by the FRBE also provide information on the employment situation such as salary range, suitability of the training field, field of work [11.03.04].

Table 11. 3. Employment percentage of FRBE graduates after one month and one year

Getting job after	Employment percentage of graduation year					
	2012	2013	2014	2015	2016	2017
1 month	17%	13,6%	16,3%	11,6%	16,4%	31,2%
1 year	92,6%	100%	96,2%	88,9%	97,2%	97,9%
DUT 1 month	24%	17,2%	18,8%	13,3%	23,9%	37%
DUT 1 year	63,3%	71,5%	75,8%	92,5%	96,9%	

The survey shows that the employment rate after one year of graduation of the last 6 courses is from 88.9% to 100%. This is a great result. In addition, the job survey of students also shows that 93, 5% of students have job after one year. Over 85% of graduates in 2017 have average income over 5 million VND/month. The detail was shown in the Figure 11.1 [11.03.05].

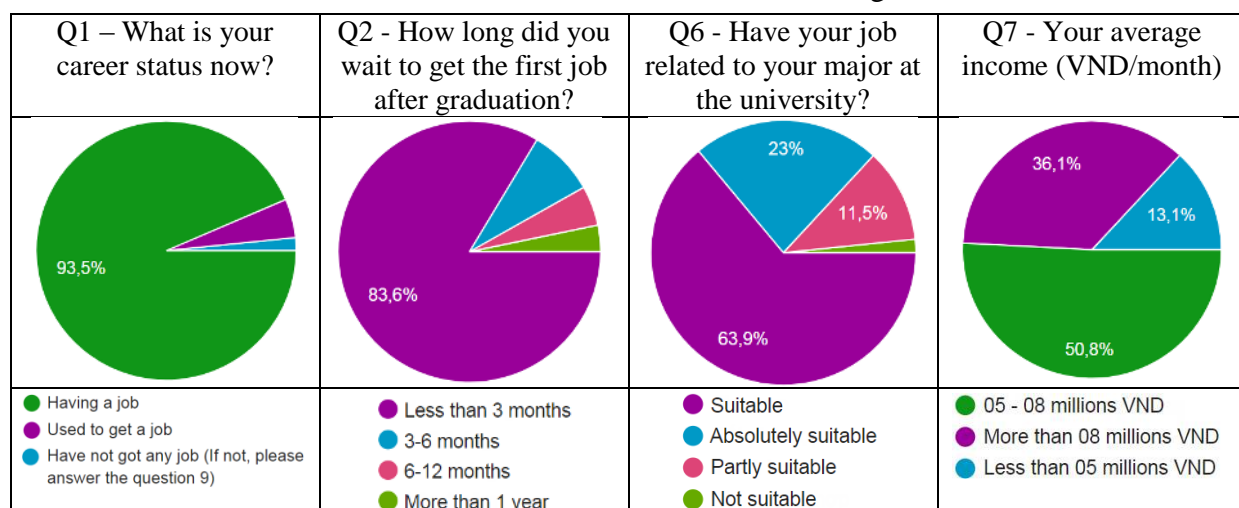


Figure 11. 1. Job survey of students graduated in 2017

This result also reflected the efforts of the graduates and the FRBE in job advertising via the FRBE website [11.03.06] and social network such as Facebook [11.03.07], establishing the liaison committee in provinces and cities nationwide [11.03.08], inviting industrial enterprises to join the board of final project evaluation [11.03.09], invite business leaders to participate in some lectures [11.03.10]. Encourage exchanges with businesses to improve training programs in line with actual needs to increase employment opportunities for students [11.03.11].

The FRBE's curriculum is up to date and in accordance with the current situation [11.03.12], shorten training time 4.5 years compared to 5 years [11.03.13].

Many of the FRBE alumni continued their higher education and pursued masters and doctoral degrees [11.03.14]. Some of the alumni are currently the leaders of government management agencies [11.03.15] or large construction groups with high prestige throughout the country [11.03.16].

11.4. The types and quantity of research activities by student are established, monitored and benchmarked for improvement

Beside academic curriculum, student scientific research activities play an important role in achieving the training results and meeting the labor market. Student research activities are supervised, matched and always improved quality. DUT and the Department of Scientific Research and International Cooperation together with FRBE formed the system to monitor student scientific research activities [11.04.01]. Student research activities include co-authoring with lecturers [11.04.02], implementing in graduation project [11.04.03], Student Invention Contests, participating in surveying and processing data on traffic in the downtown of Da Nang city [11.04.04], participating and winning the National Olympics of Mechanics, awards, Loa Thanh awards, etc. [11.04.05].

Student scientific research is always promoted at the FRBE. Students are provided with laboratory equipment and financial supported from the university and industry [11.04.06]. Student scientific research seminar is held yearly by the department. Results include application solutions, application products, software, and model [11.04.07]. Awarded projects are selected to participate in the Student Research Conference of the University [11.04.08].

Table 11. 4. Number of projects and number of students participated in scientific research.

Year	2012	2013	2014	2015	2016	2017	2018
Number of projects	17	21	6	17	24	25	23
Number (%) of student participated	32 (11,1%)	42 (17,7%)	11 (3,7%)	30 (10,9%)	46 (16,4%)	47 (34,1%)	44 (24,1%)
Number of awards	6	6	6	9	9	9	9
Budget (in M VND)	2,3	4,5	4,8	8,9	10,6	11,2	15,1

The table above indicates that the number of students participated in scientific research increased with the number of topics as well as the number of participants. FRBE is highly valued for the number of students participating in scientific research, the quality of research is reflected in the number of awards students have achieved [11.04.09]. DUT and FRBE improved the policy to encourage students doing research and research funding also increases over the years [11.04.10] to attract more student participating in research.

11.5. The satisfaction levels of stakeholders are established, monitored and benchmarked for improvement

DUT and FRBE have a quality system that ensures an improved perception of stakeholder feedback, including satisfaction [11.05.01]. This indicator is always monitored and benchmarked for improvement and responsiveness of the training program. Key stakeholders include students, alumni, lecturers, and employers.

Satisfaction of the training programs of the above components through direct survey (seminars, dialogues, interviews, etc.) and indirect survey (comments box, emails, and surveys with business and alumni) [11.05.02].

The Department of Educational Testing and Quality Assurance and Training conducts the online surveys on the satisfaction of the students and lecturers. Results of the survey are reported in a timely manner for improvement [11.05.03].

After each survey, the program always has analytical meetings to analyze satisfaction level and propose improvement plan. The results are monitored and timely explained to the managers [11.05.04].

a. Student satisfaction:

At the end of each semester, students provide their feedbacks through the DUT’s website [11.05.05] about issues related to the teaching activities and support facilities [11.05.06].

Each year at the graduation ceremony, graduates assess their levels of satisfaction with the entire curriculum and teaching activities, academic support activities as well as contributing ideas for improvement.

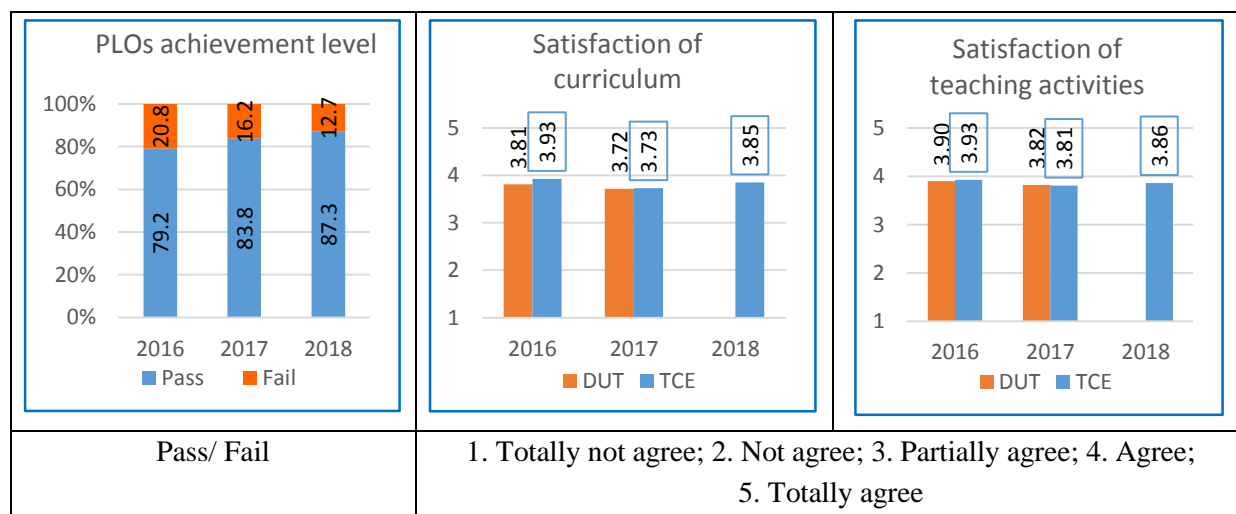
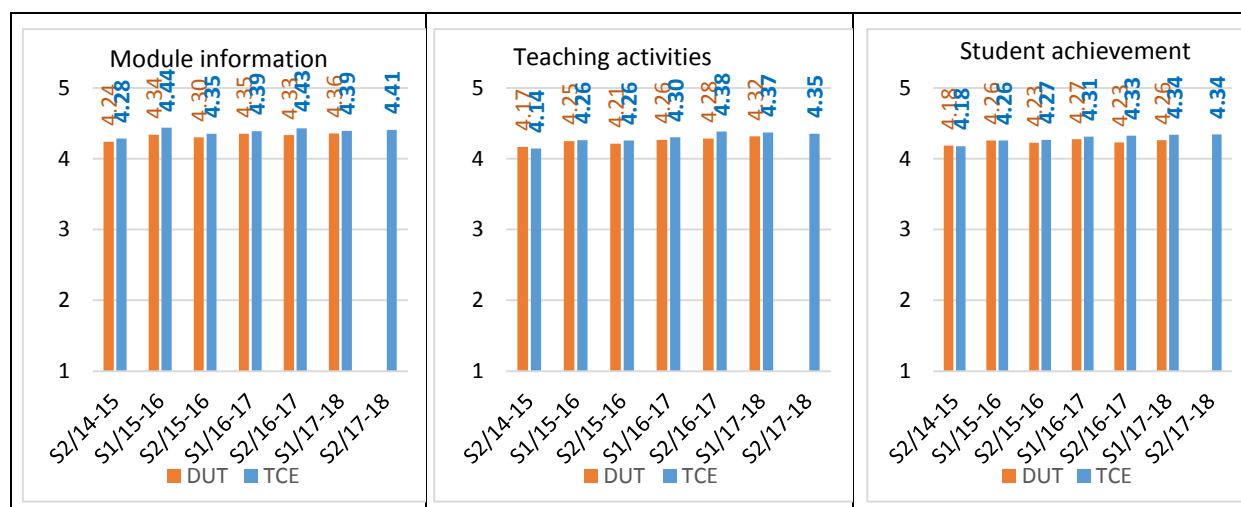


Figure 11. 2. Graduates Survey Results about the Training Program [11.05.07]

The survey on the student satisfaction is conducted regularly in each semester. The results of the survey in the last 7 semesters in Figure 11.3 show that the level of satisfaction of TCE students is constantly increasing and always higher than the DUT level



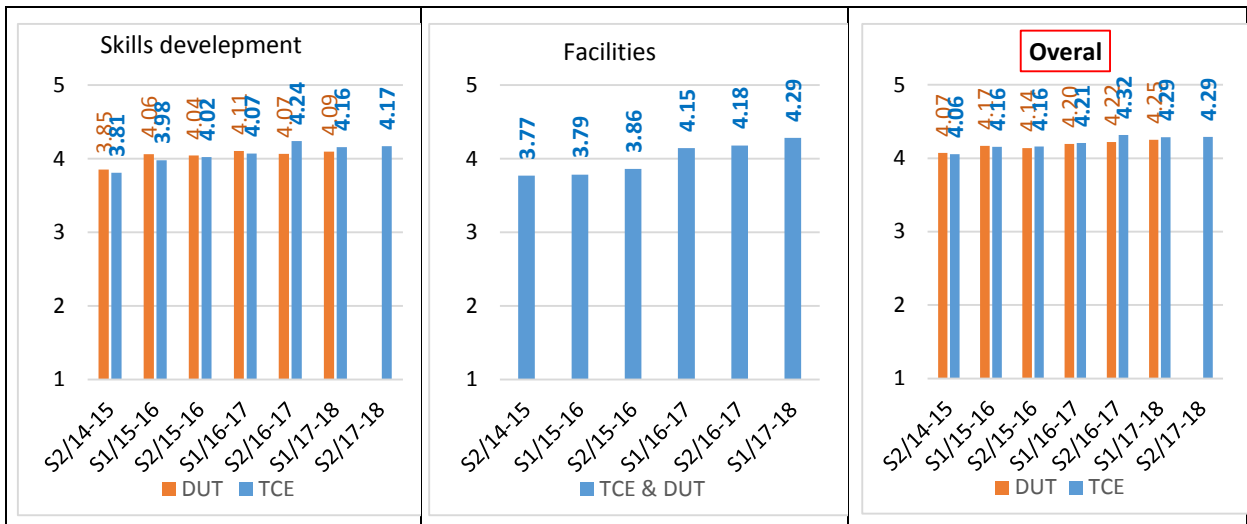


Figure 11. 3. Student satisfaction levels about the modules [11.05.08]

b. Alumni satisfaction

DUT and FRBE have surveyed alumni to evaluate their job opportunities [11.05.09], income levels, satisfaction as well as comments to improve the training program. The result of the job survey is showed in table 11.3.

Alumni also have the opportunity to express their satisfaction with the training program, the method of assessment and the suitability of the training program with actual work, the results in Figure 11.4 show that they are quite satisfied with the study program they have learned [11.05.10].

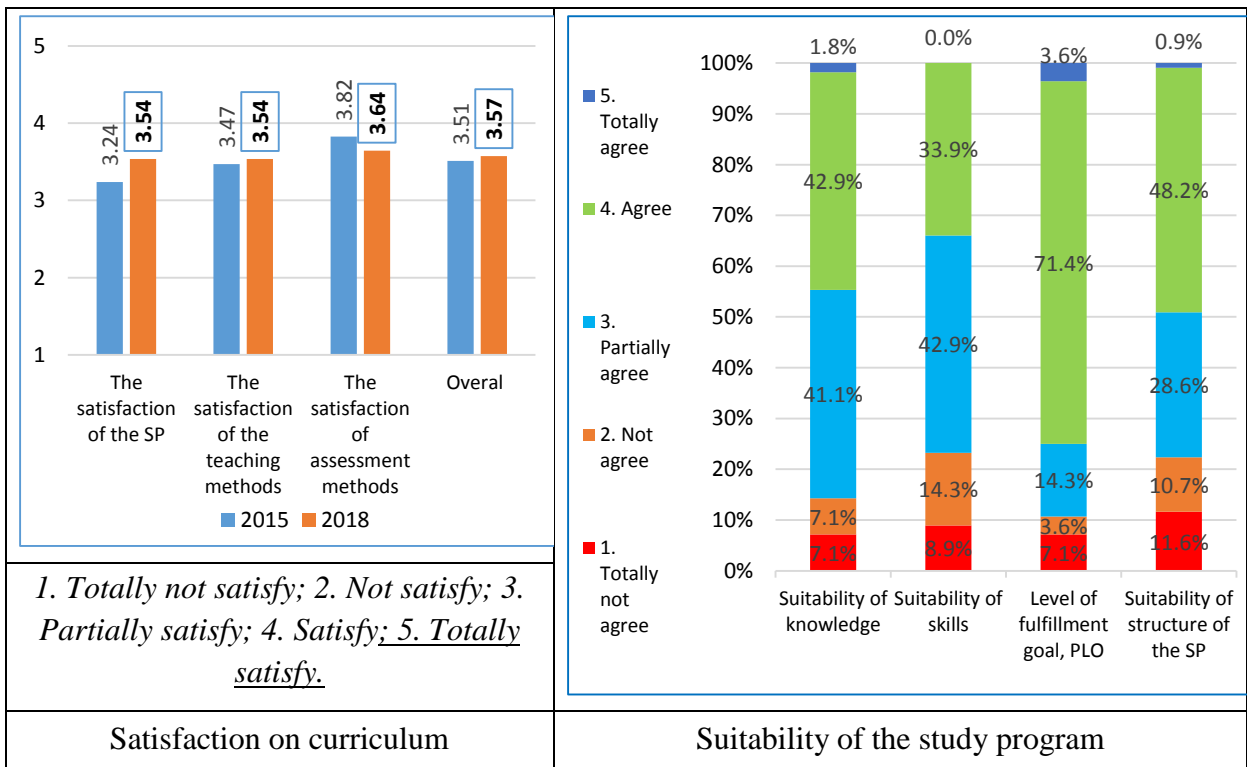


Figure 11. 4. Results of the alumni survey on the training program

c. Lecturers satisfaction

DUT has surveyed the satisfaction levels from lecturers in the following areas: training and development of staff, training programs, educational activities and quality assurance, students,

support staff, teaching facilities. The most recent surveys were conducted in 2015, 2017 and 2018. These documents were collected and analyzed, the results showed that most of the survey lectures were quite satisfied with the DUT education activities [11.05.11].

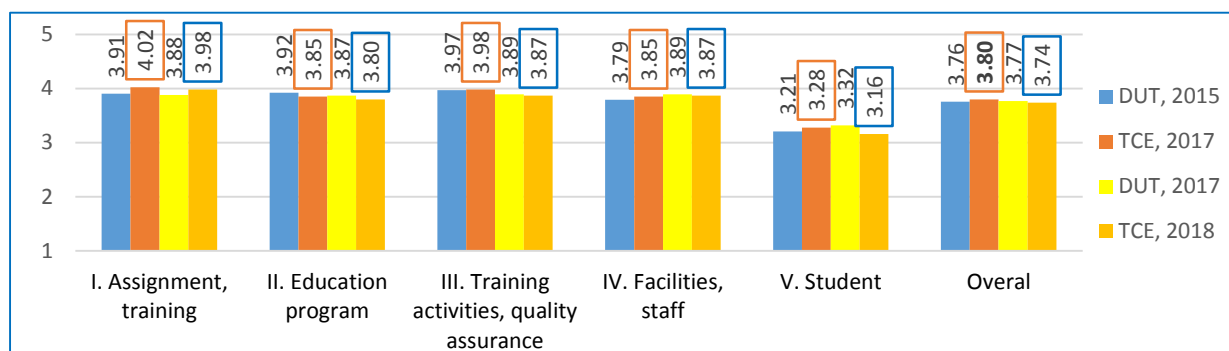


Figure 11. 5. Satisfaction levels of lecturers

d. Employers satisfaction

FRBE conducts a survey of employer satisfaction with the student quality after graduation by sending evaluation forms to the business leaders. Throughout this form, businesses have provided feedback on FRBE graduates about academic, foreign languages, skills in using information technology, information gathering and processing, organizational capabilities and job performance, as well as the suitability of the employers with the goals and the program outcomes [11.05.12]

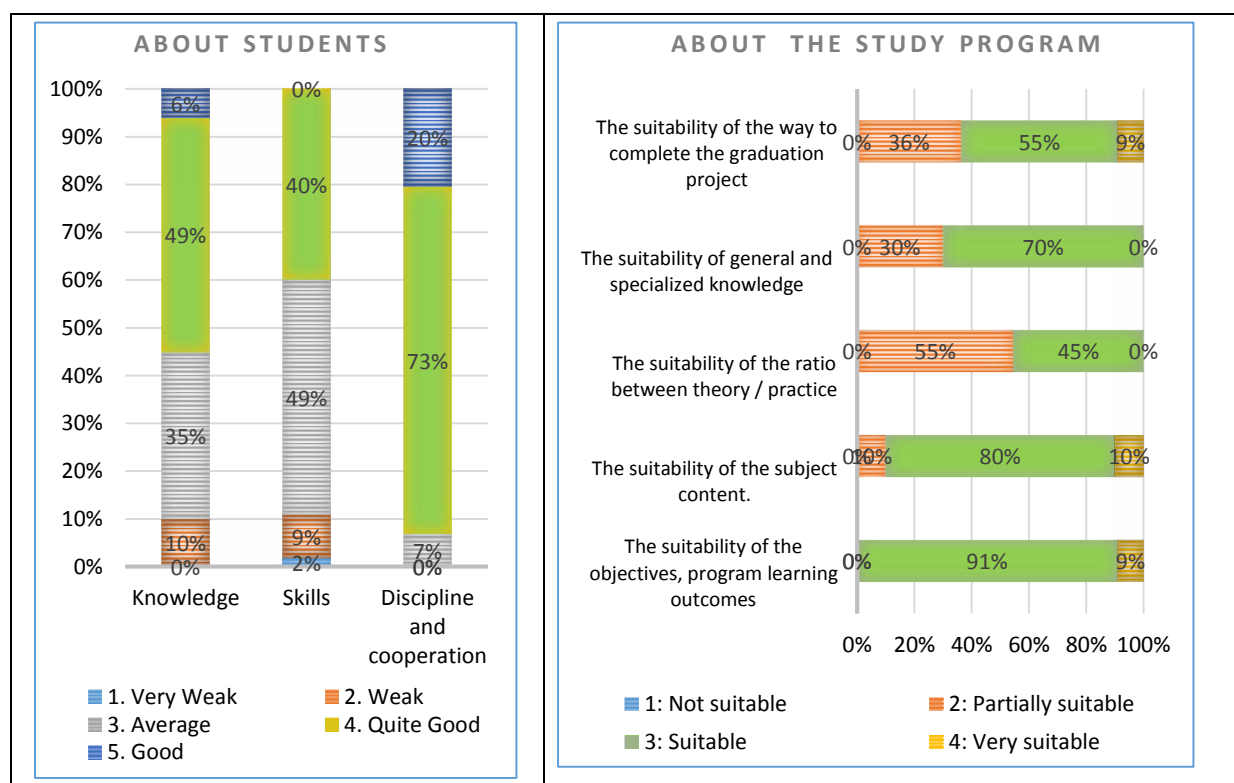


Figure 11. 6. Result of employer survey

Consequently, the results show that companies are highly appreciated by the FRBE graduates. Through these survey results, FRBE has analytical meetings on satisfaction and improvement plans [11.05.13] in order to make the training more effective.

PART 3. STRENGTH AND WEAKNESS ANALYSIS

3.1. Summary of strengths, weaknesses analysis, and improvement plan

A summary of strengths, weaknesses analysis, and an improvement plan of TCE is shown in Table 3.1.1

Table 3.1. 1. Summary of strengths, weaknesses analysis, and improvement plan

No.	Strength	Weaknesses	Improvement Plan
1	Expected Learning Outcomes		
	<ul style="list-style-type: none"> - PLOs have been clearly formulated and aligned with the vision and mission of DUT, FRBE; meet the requirements of stakeholders - PLOs follow Bloom Taxonomy, be benchmarked with accredited programs - PLOs cover both subject specific and generic learning outcomes and soft-skills 	<ul style="list-style-type: none"> - The survey system to get stakeholders' feedbacks has not been upgraded regularly 	<ul style="list-style-type: none"> - Upgrading the survey system to be more convenient and regularly. (FRBE and DETQA in charge in 2018)
2	Program Specification		
	<ul style="list-style-type: none"> - The Program and Course specification are informative and up-to-date, meet the requirement of AUN-QA - The information of Program and Course specification have been widely communicated and made available to stakeholders via DUT & FRBE websites and other ways 	<ul style="list-style-type: none"> - The information of program has been widely communicated to current stakeholders, but not widely to potential student 	<ul style="list-style-type: none"> - Building the plan to publish information of program widely to stakeholders, especially to potential students and their parents. (FRBE and DETQA in charge in 2018)
3	Program Structure and Content		
	<ul style="list-style-type: none"> - The program structure is logically structured, sequenced, integrated, is designed based on constructive alignment with the PLOs; content of courses and teaching learning strategies are designed to help students achieve PLOs. - The program structure is flexible to help students have suitable courses for their career path and up-to-date 	<ul style="list-style-type: none"> - Courses that support student improve their soft skills and English skill are not sufficient 	<ul style="list-style-type: none"> - Adding some courses that support student improve their soft skills and English skill. (FRBE and DUT in charge in 2018-2019)
4	Teaching and Learning Approach		
	<ul style="list-style-type: none"> - Teaching and learning approaches, which are improved and upgraded regularly, have clearly transferred DUT educational philosophy. - The teaching activities have been designed in a variety and clearly described in the program and alignment with the PLOs. - There are a various teaching strategies and methods such as models and teaching research team. These approaches enhance life-long learning. 	<ul style="list-style-type: none"> - The active teaching-learning strategies and methods have been not applied for all course of program. 	<ul style="list-style-type: none"> - Widely applying the active teaching-learning strategies and methods for all courses. (FRBE and DUT in charge in 2019)
5	Student Assessment		

No.	Strength	Weaknesses	Improvement Plan
	<ul style="list-style-type: none"> -Explicit assessment methods and matching with PLOs of program. Procedures and methods are applied to ensure that student assessment is valid, reliable and fairly. -The assessment methods have been communicated to all students. -Assessment are performed during the course. 	<ul style="list-style-type: none"> -Rubrics of assessment are not detailed and various used for different assessment methods. -Lecturers have not widely applied new assessment methods and in all courses yet. 	<ul style="list-style-type: none"> -Building the new rubrics which are more detailed and updated. - Informing and suggesting lecturers to use the new rubrics. -(FRBE in charge in 2019)
6 Academic Staff Quality			
	<ul style="list-style-type: none"> -Faculty of bridge and road has strategy and planning to develop academic staffs. The academic staff with large number and high quality; in addition, percentage of young lectures are higher and all most got master and doctor degrees from developed countries such as America, Japan, France, Australia, Italia ... - Academic staff of the FBR have conducted many research activities. -Lectures have opportunities to improved qualification and teaching quality periodically. -Academic staff planning is carried out to fulfill the needs for teaching, research and services. 	<ul style="list-style-type: none"> -Expenditures and budget for research activities is not satisfied and the remuneration is quite low. -Lectures' English skill is not fluent to restrict teaching and research activities 	<ul style="list-style-type: none"> -Opening short-term English courses for staffs to improve English skill. -Increasing the support to motivate lecturer's scientific research. -(FRBE and DUT in charge in 2019)
7 Support Staff Quality			
	<ul style="list-style-type: none"> -Support staff number and quality can be conducted their responsibilities. -The support staff members can used all most facilities in laboratory. -They can help students and lectures to do experiment and research. -DUT and FRBE have a good working environment for support staff and support staff members satisfied with their roles 	<ul style="list-style-type: none"> -English skill of staffs is not fluent. -Supporting staff number is not adequate to perform their jobs 	<ul style="list-style-type: none"> - DUT and FRBE have plan to develop support staff qualification and English capacity, in addition need to recruit a new member. (FRBE and DUT in charge in 2018-2019)
8 Student Quality and Support			
	<ul style="list-style-type: none"> -The student intake policy are clearly defined, communicated, published and up to date. -There is an adequate monitoring system. -Students satisfied with the support services available. -Have a good environment to develop health, mental and public. - The intake methods are suitable for student selected favorite major. 	<ul style="list-style-type: none"> -Student's soft skill and English skill are not good. - Social responsibility of students is not high. 	<ul style="list-style-type: none"> -Adding some courses to improve soft skill, English skill of student and enhance their responsibility. (FRBE and DUT in charge in 2018-2019)

No.	Strength	Weaknesses	Improvement Plan
9	Facilities and Infrastructure		
	<ul style="list-style-type: none"> -The teaching and learning facilities and equipment are adequate and modern. -The laboratories and equipment are adequate and updated to support education and research. -The library and its resources are adequate and updated to support education and research. -The IT facilities including e-learning infrastructure are adequate and satisfy teaching, learning and research activities. 	<ul style="list-style-type: none"> -There are moderate people utilize LRCC service -Company's support for laboratory is not encouraged. -Online leaning is just start. 	<ul style="list-style-type: none"> -Increasing corporation with companies and send students to conduct experiments at company. - Enhancing online study activities and change traditional learning approach to online method. (FRBE and DUT in charge in 2019)
10	Quality Enhancement		
	<ul style="list-style-type: none"> -The quality assurance's system and procedure are uniform at program and DUT level. -Available online system enhances training and quality assurance activities. -The stakeholder's feedback mechanisms are conducted periodically to enhance teaching and learning quality. 	<ul style="list-style-type: none"> -Quality enhancement based on the stakeholder's feedback is not strongly conducted. -Feedback's participants are not equal between groups 	<ul style="list-style-type: none"> -The stakeholder's feedback system needs to be improved. -The stakeholder's feedback is regularly monitored and periodical improved. (FRBE and DETQA in charge in 2018-2019)
11	Output		
	<ul style="list-style-type: none"> -The pass rates, dropout rates and average time to graduate average, employability of graduates are established, monitored and benchmarked for improvement. Research activities carried out by students are conducted regularly. -Stakeholders' satisfactions are periodically monitoring to improve the quality of the programmer. -Stakeholder' satisfaction trends and quality of graduates increase day by day. 	<ul style="list-style-type: none"> -Percentage of graduates is increased but still not good. - The results of monitoring is not high reliable because employers feedback did not match the expected standards. 	<ul style="list-style-type: none"> -Improving relevant activities to enhance percentage of graduates and reduce dropout rates. -The results of stakeholder' monitoring need to be improved. (FRBE and DUT in charge in 2018)

3.2. Checklist for AUN-QA assessment at program level

Table 3.2. 1. Checklist for AUN-QA assessment at program level

1	Expected Learning Outcomes	1	2	3	4	5	6	7
1.1	The expected learning outcomes have been clearly formulated and aligned with the vision and mission of the university					x		
1.2	The expected learning outcomes cover both subject specific and generic (i.e., transferable) learning outcomes						x	

1.3	The expected learning outcomes clearly reflect the requirements of the stakeholders					x		
	Overall opinion					5		
2	Program Specification							
2.1	The information in the program specification is comprehensive and up-to-date						x	
2.2	The information in the course specification is comprehensive and up-to-date						x	
2.3	The program and course specifications are communicated and made available to the stakeholders					x		
	Overall opinion						6	
3	Program Structure and Content							
3.1	The curriculum is designed based on constructive alignment with the expected learning outcomes					x		
3.2	The contribution made by each course to achieve the expected learning outcomes is clear						x	
3.3	The curriculum is logically structured, sequenced, integrated and up-to-date						x	
	Overall opinion						6	
4	Teaching and Learning Approach							
4.1	The educational philosophy is well articulated and communicated to all stakeholders					x		
4.2	Teaching and learning activities are constructively aligned to the achievement of the expected learning outcomes					x		
4.3	Teaching and learning activities enhance life-long learning						x	
	Overall opinion						5	
5	Student Assessment							
5.1	The student assessment is constructively aligned to the achievement of the expected learning outcomes					x		
5.2	The student assessments including timelines, methods, regulations, weight distribution, rubrics and grading are explicit and communicated to students					x		
5.3	Methods including assessment rubrics and marking schemes are used to ensure validity, reliability and fairness of student assessment					x		
5.4	Feedback of student assessment is timely and helps to improve learning						x	
5.5	Students have ready access to appeal procedure						x	
	Overall opinion						5	
6	Academic Staff Quality							
6.1	Academic staff planning (considering succession, promotion, re-deployment, termination, and retirement) is carried out to fulfill the needs for education, research and service						x	

6.2	Staff-to-student ratio and workload are measured and monitored to improve the quality of education, research and service								X	
6.3	Recruitment and selection criteria including ethics and academic freedom for appointment, deployment and promotion are determined and communicated								X	
6.4	Competences of academic staff are identified and evaluated								X	
6.5	Training and developmental needs of academic staff are identified; and activities are implemented to fulfill them								X	
6.6	Performance management including rewards and recognition is implemented to motivate and support education, research and service							X		
6.7	The types and quantity of research activities by academic staff are established, monitored and benchmarked for improvement							X		
	Overall opinion									6
7	Support Staff Quality									
7.1	Support staff planning (at the library, laboratory, IT facility and student services) is carried out to fulfil the needs for education, research and service							X		
7.2	Recruitment and selection criteria for appointment, deployment and promotion are determined and communicated								X	
7.3	Competences of support staff are identified and evaluated							X		
7.4	Training and developmental needs of support staff are identified; and activities are implemented to fulfil them							X		
7.5	Performance management including rewards and recognition is implemented to motivate and support education, research and service							X		
	Overall opinion									5
8	Student Quality and Support									
8.1	The student intake policy and admission criteria are defined, communicated, published, and up-to-date								X	
8.2	The methods and criteria for the selection of students are determined and evaluated								X	
8.3	There is an adequate monitoring system for student progress, academic performance, and workload							X		
8.4	Academic advice, co-curricular activities, student competition, and other student support services are available to improve learning and employability								X	
8.5	The physical, social and psychological environment is conducive for education and research as well as personal well-being							X		
	Overall opinion:									6
9	Facilities and Infrastructure									

9.1	The teaching and learning facilities and equipment (lecture halls, classrooms, project rooms, etc.) are adequate and updated to support education and research					X	
9.2	The library and its resources are adequate and updated to support education and research						X
9.3	The laboratories and equipment are adequate and updated to support education and research						X
9.4	The IT facilities including e-learning infrastructure are adequate and updated to support education and research					X	
9.5	The standards for environment, health and safety; and access for people with special needs are defined and implemented					X	
	Overall opinion					5	
10	Quality Enhancement						
10.1	Stakeholders' needs and feedback serve as input to curriculum design and development						X
10.2	The curriculum design and development process is established and subjected to evaluation and enhancement					X	
10.3	The teaching and learning processes and student assessment are continuously reviewed and evaluated to ensure their relevance and alignment					X	
10.4	Research output is used to enhance teaching and learning						X
10.5	Quality of support services and facilities (at the library, laboratory, IT facility and student services) is subjected to evaluation and enhancement					X	
10.6	The stakeholder's feedback mechanisms are systematic and subjected to evaluation and enhancement						X
	Overall opinion						6
11	Output						
11.1	The pass rates and dropout rates are established, monitored and benchmarked for improvement						X
11.2	The average time to graduate is established, monitored and benchmarked for improvement					X	
11.3	Employability of graduates is established, monitored and benchmarked for improvement						X
11.4	The types and quantity of research activities by students are established, monitored and benchmarked for improvement						X
11.5	The satisfaction levels of stakeholders are established, monitored and benchmarked for improvement					X	
	Overall opinion						6
	Overall verdict						6

PART 4. LIST OF EVIDENCES

Criterion 1: Expected Learning Outcomes	
<i>Sub-Criterion 1.1: The expected learning outcomes have been clearly formulated and aligned with the vision and mission of the university</i>	
01.01.01	Employer's survey form on PLOs
01.01.02	Program Specification 2015 (section 1.5, 1.6 – POs and PLOs)
01.01.03	Vision & Mission of DUT
01.01.04	Vision & Mission of FRBE
01.01.05	Documents of PLOs design instruction
01.01.06	Program Specification 2015 (section 1.7 - Job and Post-graduate study opportunities)
01.01.07	Results of employers' survey on satisfaction about PLOs
01.01.08	Publishing of Vision & Mission of DUT
01.01.09	Publishing of Vision & Mission of FRBE
<i>Sub-Criterion 1.2: The expected learning outcomes cover both subject specific and generic (i.e. transferable) learning outcomes</i>	
01.02.01	Regulations on credit-based training systems
01.02.02	Program Specification 2015 (section 2.5 – Clusters & PLOs)
<i>Sub-Criterion 1.3: The expected learning outcomes clearly reflect the requirements of the stakeholders</i>	
01.03.01	Documents of PLOs design instruction
01.03.02	Benchmarking programs
01.03.03	Faculty Board's meeting minutes on PLOs
01.03.04	DUT decisions of publishing PLOs 2009, 2012, 2015
01.03.05	Stakeholder's survey form on PLOs
01.03.06	Results of employers' survey on PLOs' satisfaction
01.03.07	Results of alumni's feedback on PLOs' satisfaction
01.03.08	Results of senior students' feedback on PLOs' achievement
01.03.09	Results of faculty's feedback on PLOs
01.03.10	Results of students' feedback on CLOs' achievement
01.03.11	PLOs 2012, 2015
01.03.12	Self-assessment reports
Criterion 2: Program Specification	
<i>Sub-Criterion 2.1: The information in the program specification is comprehensive and up-to-date</i>	
02.01.01	Program Specification 2015
02.01.02	Program Specification 2009, 2012, 2015
<i>Sub-Criterion 2.2: The information in the course specification is comprehensive and up-to-date</i>	
02.02.01	Program Specification 2015
02.02.02	Sample of syllabus 2018
02.02.03	Sample of syllabi 2009, 2012, 2015, 2018
<i>Sub-Criterion 2.3: The program and course specification are communicated and made available to the stakeholders</i>	
02.03.01	Program specifications are published on websites

02.03.02	Survey forms for stakeholders about curriculum
02.03.03	Decision of Faculty Council's establishment
02.03.04	Communicate program's information to candidates
02.03.05	Schedule of the first week for freshmen
02.03.06	Student's handbooks
02.03.07	Sample of teaching plan
02.03.08	Student's feedback on course evaluation
Criterion 3: Program Structure and Content	
<i>Sub-Criterion 3.1: The curriculum is designed based on constructive alignment with the expected learning outcomes</i>	
03.01.01	Regulation of DUT on curriculum design process
03.01.02	Part 2.5, Program Specification (Mapping clusters and PLOs)
03.01.03	Part 1.9, Program Specification (Teaching and learning strategies)
03.01.04	Part 1.10, Program Specification (Assessment methods)
<i>Sub-Criterion 3.2: The contribution made by each course to achieve the expected learning outcomes is clear</i>	
03.02.01	Example of syllabus (part 9)
03.02.02	Part 2.5, Program Specification (Mapping of courses and PLOs)
03.02.03	Example of syllabus (part 10)
03.02.04	Results of senior student's feedbacks on PLOs' achievement
03.02.05	Stakeholders' feedback forms on PLOs and CLOs
<i>Sub-Criterion 3.3: The curriculum is logically structured, sequenced, integrated and up-to-date</i>	
03.03.01	Regulations on credit-based training systems
03.03.02	Program specification 2015
03.03.03	Regulations of MoET, UD, DUT on program curriculum revision
03.03.04	MoET's regulation on curriculum framework
03.03.05	Program curriculum 2009
03.03.06	Program curriculum 2012
03.03.07	Program curriculum 2015
03.03.08	Syllabi 2018
Criterion 4: Teaching and Learning Approach	
<i>Sub-Criterion 4.1: The educational philosophy is well articulated and communicated to all stakeholders</i>	
04.01.01	Decision on the announcement of educational philosophy 2015
04.01.02	Educational philosophy communicated to the stakeholders
04.01.03	Educational philosophy is well articulated in program curriculum
04.01.04	Students' Research
04.01.05	Social activities
04.01.06	Extracurricular activities
04.01.07	Improvement of Educational philosophy
<i>Sub-Criterion 4.2: Teaching and learning activities are constructively aligned to the achievement of the expected learning outcomes</i>	
04.02.01	Course syllabus relevant to CLOs
04.02.02	Description of Teaching and learning Methods

04.02.03	Team work and presentation activities
04.02.04	Program Curriculum
04.02.05	Student activities in companies/sites
04.02.06	Employer relationship in education
04.02.07	Committee of thesis education 2014
04.02.08	Student exchange and MOU
04.02.09	University Pedagogy Training
04.02.10	Workshops of Pedagogy Training
04.02.11	Student survey
04.02.12	Employers survey on education quality and program curriculum
<i>Sub-Criterion 4.3: Teaching and learning activities enhance life-long learning</i>	
04.03.01	European-Key-Competences-LLL
04.03.02	Decision No 389-DUT on students' English requirement
04.03.03	Reports
04.03.04	Program curriculum frame
04.03.05	Self-studying spaces
04.03.06	DUT's Library
04.03.07	Meeting schedule
04.03.08	Alumni joint in master course
Criterion 5: Student Assessment	
<i>Sub-Criterion 5.1: The student assessment is constructively aligned to the achievement of the expected learning outcomes</i>	
05.01.01	Decision No.43/2007/QĐ-BGDĐT issued by MOET: Academic regulations on higher education and college according to the credit system
05.01.02	Decision of university training system under the credit system
05.01.03	DUT Regulation Enrollment scheme
05.01.04	Decision English Level
05.01.05	Regulation Direct Selection of DUT
05.01.06	Comparison of minimum passing scores between CTE and Bridge and Road engineering at other school in Vietnam
05.01.07	Decisions on Training according to Credit System
05.01.08	Program Specification
05.01.09	Program Curriculum
05.01.10	Sample of Course Syllabus Project of roadbed-pavement design
05.01.11	Student's Handbook
05.01.12	Learning Program Progress
05.01.13	Learning activities and assessments
05.01.14	Notification, DUT's summer and intensives classes
05.01.15	Assessment form on student's ethics
05.01.16	DUT regulation No 564: graduation internship
05.01.17	DUT's Regulations of graduation project
05.01.18	Graduation project scientific research
05.01.19	Final Project Rubric Assessment Form
05.01.20	Establishment of the graduation thesis council 2017

05.01.21	DUT regulation on English standard No.389
05.01.22	DUT's regulation on IT skill No.417
05.01.23	Samples of student's degree and transcript
05.01.24	Feedback results on student quality from companies 2016
<i>Sub-Criterion 5.2: The student assessments including timelines, methods, regulations, weight distribution, rubrics and grading are explicit and communicated to students</i>	
05.02.01	General information about DUT enrollment
05.02.02	Academic regulations of credit system
05.02.03	Program Curriculum
05.02.04	DUT information system, assessment schedule
05.02.05	Final Project Rubric Assessment
05.02.06	MOET Regulation ethics Evaluation
05.02.07	DUT Provision of English requirements
05.02.08	Regulation for IT skill No.417
05.02.09	Decision 029/QĐ-ĐHKB/2017 issued by the Rector of DUT: Regulation in Academic Integrity
05.02.10	DUT's Study Calendar
05.02.11	Student's Handbook
05.02.12	Lecture's Handbook
05.02.13	Sample of Course Syllabus Project of roadbed-pavement design
05.02.14	Time schedule Citizenship Orientation Week
05.02.15	Guidance for new student in Student Citizenship Orientation Week
05.02.16	DUT Email Guide for new students
05.02.17	DUT Guide on Preparation, Implementation of Registration, Fees, Help, Questions and Complaints
05.02.18	List of study consultants
05.02.19	Rubric and method assessment
05.02.20	Student survey results on course assessment
<i>Sub-Criterion 5.3: Methods including assessment rubrics and marking schemes are used to ensure validity, reliability and fairness of student assessment</i>	
05.03.01	Decisions of DUT and MOET: Academic regulations on higher education to the credit system
05.03.02	Program Specification
05.03.03	Lecturer Survey
05.03.04	Sample of Course syllabus: Roadbed-Pavement-design-assignment
05.03.05	Decision No.564 DUT: chapter 3-Assessment and Evaluation method
05.03.06	Rubric and assessment method
05.03.07	Final exam and Mid-term exam
05.03.08	Final exam Organization Notification
05.03.09	List of Exam Organization
05.03.10	Final project assessment form
05.03.11	Decision Score Management
05.03.12	Student survey results on Course Assessment
<i>Sub-Criterion 5.4: Feedback of student assessment is timely and helps to improve learning.</i>	
05.04.01	Decisions on Training according to Credit System

05.04.02	Decision No.156 DUT: Score entering and management of full-time students' academic results
05.04.03	Regulations on entering scores for final exam and midterm
05.04.04	DUT information system for student
05.04.05	Notification, DUT's summer and Intensive classes
05.04.06	Student survey results on Course Assessment
<i>Sub-Criterion 5.5: Students have ready access to appeal procedure.</i>	
05.05.01	Score entering and management DUT
05.05.02	Student Handbooks
05.05.03	Template of Replication form
05.05.04	Appeal Form and regulation
05.05.05	Student survey results on Program Assessment
Criterion 6 Academic Staff Quality	
<i>Sub-Criterion 6.1: Academic staff planning (considering succession, promotion, re-deployment, termination, and retirement) is carried out to fulfil the needs for education, research and service</i>	
06.01.01	Job placement project
06.01.02	Developing job placement project
06.01.03	Strategic development plan of Faculty of Road and Bridge engineering
06.01.04	Regulations for organization and operation of the regional university
06.01.05	General report of the Faculty of Road and Bridge engineering
06.01.06	Strategic development plan of Faculty of Road and Bridge engineering
06.01.07	Recruitment Notification
06.01.08	Working regulations for under 3 years teaching lecturers.
06.01.09	Opening pedagogical class for lecturers
06.01.10	Professional capacity building program for lecturers
06.01.11	Nomination regulations
06.01.12	Results of the planning leading cadres
06.01.13	Course of enhancing management capacity
06.01.14	Decision of retirement
06.01.15	Provisions for extension of working time and retirement.
<i>Sub-Criterion 6.2: Staff-to-student ratio and workload are measured and monitored to improve the quality of education, research and service</i>	
06.02.01	FTE of TCE program lecturers
06.02.02	Regulations on determining enrollment quotas
06.02.03	Workload of lecturer
06.02.04	Statistics for research hours
<i>Sub-Criterion 6.3: Recruitment and selection criteria including ethics and academic freedom for appointment, deployment and promotion are determined and communicated</i>	
06.03.01	Regulations of recruitment, employment contracts, probationary and appointment of job titles
06.03.02	The law of officials
06.03.03	Officers recruitment notification
06.03.04	Officers recruitment notification
06.03.05	Recruitment process

06.03.06	Establishing the 2015 University of Danang recruitment council
06.03.07	Approval of the first phase of 2017 recruitment result
06.03.08	Appointment and examination of the job titles
06.03.09	Nomination regulations
06.03.10	Consult with the Dean and Vice Dean of Faculty of Road and Bridge engineering
<i>Sub-Criterion 6.4: Competences of academic staff are identified and evaluated</i>	
06.04.01	University regulations
06.04.02	Regulation on recruitment examinations.
06.04.03	Decision of probationary
06.04.04	Survey of students' opinions
06.04.05	Students surveying system
06.04.06	Quarterly assessment of officials
06.04.07	Summary report
<i>Sub-Criterion 6.5: Training and developmental needs of academic staff are identified and activities are implemented to fulfil them</i>	
06.05.01	Process of training and fostering cadres
06.05.02	Regulations for young lecturers
06.05.03	Course advancing qualifications
06.05.04	Training needs
06.05.05	List of staffs of Road and Bridge engineering Faculty
06.05.06	List of staffs involved in the HEEAP project
06.05.07	Development plan for research and teaching capacity
06.05.08	Memorandum of Understanding between DUT and other schools
06.05.09	Implementing online teaching and learning support systems.
<i>Sub-Criterion 6.6: Performance management including rewards and recognition is implemented to motivate and support education, research and service</i>	
06.06.01	Evaluation and grading of teachers
06.06.02	Reward form
06.06.03	Report of emulation title consideration
06.06.04	Report on achievements of Road and Bridge engineering Faculty
06.06.05	Considering the title of People's Teacher, Excellent Teacher
06.06.06	Regulation on irregularly wage increase
06.06.07	Additional adjustments to operational research supporting
06.06.08	Internal spending regulation
06.06.09	The system of research hour declaration
<i>Sub-Criterion 6.7: The types and quantity of research activities by academic staff are established, monitored and benchmarked for improvement</i>	
06.07.01	Regulation on scientific research for teachers
06.07.02	Decision to establish the Organizing Committee for the academic year 2017-2018
06.07.03	Minutes of the faculty seminar
06.07.04	Joining the conference
06.07.05	MoU
06.07.06	Books and international conferences
06.07.07	List of students' research topics

06.07.08	Individual summary report
06.07.09	Projects in University level, in Ministry level
06.07.10	Ratio of number of articles
06.07.11	Financial report of the Center for Applied Research and Engineering Hydrology
06.07.12	Public activities, Participating in evaluating the project of crossing the Han Rive
Criterion 7: Support staff quality	
07.00.01	Duties and functions of departments, unions, center shown on the website: www.dut.udn.vn
Sub-Criterion 7.1: Support staff planning (at the library, laboratory, IT facility and student services is carried out to fulfil the needs of education, research and service.	
07.01.01	The documents on the job placement project
07.01.02	Tasks and powers of functional departments
07.01.03	Strategic development plan
07.01.04	Plan, regulations, recruitment process of UD, DUT
07.01.05	Summary report and recruitment plan of FRBE
07.01.06	The FRBE assignment of duties 2018 - 2023.
Sub-Criterion 7.2 Recruitment and selection criteria for appointment, deployment and promotion are determined and communicated	
07.02.01	Law of officer No. 58/2010/QH12 December 15, 2010 of Congress
07.02.02	Recruitment announcement
07.02.03	Council and the results of FRBE recruitment.
07.02.04	Decision on the establishment of the DUT staff recruitment council - phrase 2 2017.
07.02.05	Recruitment results
07.02.06	Notice of contract signing, decision on recruitment of FRBE staff
07.02.07	Decision No.1642/QĐ-BNV June 23, 2016 of Ministry of Home Affairs on promulgation of the plan to organize civil servant rank promotion examinations in 2016 in national agencies and public units.
07.02.08	Circular regulating job titles
07.02.09	Regulation on appointment, re-appointment
07.02.10	Survey of support staff satisfaction
Sub-Criterion 7.3 Competences of support staff are identified and evaluated	
07.03.01	University degrees, computer and foreign language certificates of FRBE support staff
07.03.02	Qualification of FRBE support staff
07.03.03	Evaluation of cadres and staff
07.03.04	Evaluation of cadres and civil servants
07.03.05	Acceptance of research, initiative solutions of the support staff
07.03.06	Scientific research of support staff
07.03.07	Curriculum vitae of the facilitator
Sub-Criterion 7.4 Training and developmental needs of support staff are identified, and activities are implemented to fulfil them	
07.04.01	Probationary process and decision
07.04.02	Minutes of meeting, lecture
07.04.03	Appointment and one-year, three-year and long-term contracts of support staff
07.04.04	Training and support staff attending conferences

07.04.05	Internal spending and academic credentials of support staff
07.04.06	Project contract, technology transfer of FRBE support staff
07.04.07	Short term course for support staff
<i>Sub-Criterion 7.5 Performance management including rewards and recognition is implemented to motivate and support education, research and service</i>	
07.05.01	Emulation and Reward
07.05.02	Reward and regular wage increase
07.05.03	Forms of self-assessment of officials
07.05.04	Irregular wage increase
07.05.05	Internal spending management
07.05.06	The DUT's cultural and sport activities
Criterion 8: Student Quality and Support	
<i>Sub-Criterion 8.1: The student intake policy and admission criteria are defined, communicated, published, and up-to-date</i>	
08.01.01	Regulations on admission of MOET 2014
08.01.02	Regulations on admission of MOET 2015-2018
08.01.03	Regulations on entry minimum score of MOET
08.01.04	Admission booklet, website MOET
08.01.05	Admission information of UD, DUT, MOET on web, social network
08.01.06	Flyers about admission
08.01.07	Open day
08.01.08	Press conference to announce “admission program”
08.01.09	Admission guidance
08.01.10	Application “chat 5s”
08.01.11	Fan page DUT for admission guidance
08.01.12	Regulation on university capacity
08.01.13	Regulations on prior potential student based on regions 2017-2018
08.01.14	Student quantity of TCE in the last 5 years
<i>Sub-Criterion 8.2. The methods and criteria for the selection of students are determined and evaluated</i>	
08.02.01	Regulations on enrollment quota
08.02.02	Admission documents of MOET
08.02.03	Admission program of UD, DUT
08.02.04	Admission regulation 2018 on registration
08.02.05	Admission regulation 2018 on registration modification
08.02.06	List of entry score, list of entry student
08.02.07	Information of English proficiency exam at the first week
08.02.08	Admission regulation 2014
08.02.09	Admission regulation 2015
08.02.10	Admission regulation 2016
08.02.11	Admission regulation 2017
08.02.12	Admission regulation 2018
08.02.13	Meeting for admission preparation

08.02.14	Meeting for passing score determination
<i>Sub-Criterion 8.3. There is an adequate monitoring system for student progress, academic performance, and workload. Student progress, academic performance and workload are systematically recorded and monitored, feedback to students and corrective actions are made where necessary.</i>	
08.03.01	Software for academic assistant tmprox
08.03.02	Webpage of student information
08.03.03	Academic Affair Department, role and mission
08.03.04	Board of Dean's assignment on student, student meeting schedule
08.03.05	Regulation on academic advisor, meeting schedule with academic advisor
08.03.06	Communication with student via social network, forum
08.03.07	Regulation on self-assessment and collective-assessment
08.03.08	Student academic results
08.03.09	Academic review meeting
08.03.10	Lists of weak students or failing to meet the academic progress
08.03.11	Information of Program Specification on website
08.03.12	DUT regulation on limited credit register QD268
08.03.13	QD389 English capacity
08.03.14	Student GPA
<i>Sub-Criterion 8.4. Academic advice, co-curricular activities, student competition, and other student support services are available to improve learning and employability</i>	
08.04.01	Student handbook
08.04.02	Academic advisor, student meeting schedule
08.04.03	Regulation on academic advisor
08.04.04	Graduation internship
08.04.05	Final project
08.04.06	Internship
08.04.07	Workshop, meeting employer – student
08.04.08	Student extra activities
08.04.09	Youth Union at Faculty level
08.04.10	Exchange student
08.04.11	Student research
08.04.12	Papers published by student
08.04.13	BK Techshow
08.04.14	National Olympic exam result
08.04.15	Excellent students UD exam
08.04.16	Design of traffic model
08.04.17	TCE Talented
08.04.18	TCE Knowledge Competition
08.04.19	Construction Materials Challenge
08.04.20	DSA function
08.04.21	CSSBC activities
08.04.22	First week activities for student

08.04.23	Partners of FRBE
08.04.24	Employment survey
08.04.25	Employment Festival
08.04.26	Student skills enhancement projects
08.04.27	Preference for poor student
08.04.28	Scholarship regulation
08.04.29	List of DUT scholarship
08.04.30	List of DUT scholarship from industry
08.04.31	Survey on student satisfaction about support service
<i>Sub-Criterion 8.5. The physical, social and psychological environment is conducive for education and research as well as personal well-being</i>	
08.05.01	Pictures of spacious campus, grassy areas, trees
08.05.02	New student welcome festival
08.05.03	DUT dormitory
08.05.04	Compulsory physical course
08.05.05	UD multipurpose sports hall
08.05.06	Health check for student
08.05.07	DUT health center
08.05.08	Youth Union, Student Union
08.05.09	“ DUT media ”, fanpage of DUT, FRBE
08.05.10	Youth Union activities
08.05.11	Student clubs
08.05.12	Extra activities for students
08.05.13	Volunteer activities
08.05.14	Survey on student satisfaction about environment and Youth Union activities
Criteria 9: Facilities and Infrastructure	
<i>Sub-Criteria 9.1: The lecture facilities (lecture halls, small course rooms) are adequate</i>	
09.01.01	Public DUT facilities, ground plan
09.01.02	Ownership documents, maps 1/500
09.01.03	Statistics facilities, lecture hall
09.01.04	Images teaching Faculties
09.01.05	Classroom management system online
09.01.06	Details area classrooms
09.01.07	Multipurpose building information
09.01.08	City dormitory
09.01.09	Dormitory, cafeteria, stadium information
09.01.10	Classroom regulations, asset management
09.01.11	FRBE facilities
09.01.12	Asset tracking process
09.01.13	Plan for annual repairing and purchasing equipment
09.01.14	Annual budget for offices
09.01.15	Phone number, ideas box
09.01.16	Survey results of Faculties
<i>Sub-Criteria 9.2: The library is adequate and up-to-date</i>	

09.02.01	LRCC overview of the library
09.02.02	LRCC operation policy
09.02.03	Manage library users at LRCC
09.02.04	LRCC library guide
09.02.05	List of books in the library at LRCC
09.02.06	Database system LRCC
09.02.07	Mini library in the Faculties
09.02.08	User's account in the Faculties
09.02.09	Annual supplementary books
09.02.10	Annual purchasing budget 2011-2017
09.02.11	Statistics for users at LRCC
09.02.12	Survey user needs
09.02.13	Feedback from students
<i>Sub-Criteria 9.3: The laboratories are adequate and up-to-date</i>	
09.03.01	List of laboratories of University of Science and technology
09.03.02	List of laboratories of the Faculties
09.03.03	List of equipment laboratories of the Faculties
09.03.04	TRIG Project
09.03.05	Project to strengthen research capacity
09.03.06	Procedures for receiving machinery and equipment support from enterprises
09.03.07	Proposal for laboratory equipment purchase
09.03.08	Laboratory regulations
09.03.09	Equipment instruction
09.03.10	Laboratory inventory
09.03.11	Monitoring notebook of equipment
09.03.12	Statutes for using equipment in DUT
09.03.13	Statutes for using, charging high-performance equipment in FRBE
09.03.14	Equipment procedures and maintenance
09.03.15	List of budgets for purchasing equipment
09.03.16	Laboratory projects are preparing to deploy
<i>Sub-Criteria 9.4: The computer facilities are adequate and up-to-date</i>	
09.04.01	Internet at DUT
09.04.02	Computer lab inventory
09.04.03	Licensed office software inventory
09.04.04	Licensed office software and equipment inventory
09.04.05	Module tmProx for academic management
09.04.06	Module for academic management online
09.04.07	Information system for students
09.04.08	Online forum of the FRBE
09.04.09	E-learning online training system
09.04.10	User surveys in Information Technology
09.04.11	Cooperation contract with Viettel in Information Technology
09.04.12	Seminars in BIM application in construction management
<i>Sub-Criteria 9.5: Environmental health and safety standards meet requirements in all aspects</i>	

09.05.01	Standards for plants and grass at DUT
09.05.02	Contract for cleaning at DUT, policy for services at classrooms and offices
09.05.03	Policy and solution for disables
09.05.04	Policy in food safety in cafeterias and dormitories of DUT
09.05.05	Policy in periodical health insurance for students
09.05.06	Policy in periodical health check-up for students
09.05.07	Sport equipment
09.05.08	Safety equipment
09.05.09	Schedule of environmental monitoring
09.05.10	Contract with Security staffs and contact with local polices
09.05.11	Camera system
09.05.12	Dormitory activities
09.05.13	Training classes in security, defense
09.05.14	Suspension & Expulsion -Policy– QĐ268/ĐHBK
09.05.15	Anti-fire system and instruction
09.05.16	Training in fire fight
09.05.17	Training in security, defense and disaster response
Criterion 10: Quality Enhancement	
<i>Sub-Criterion 10.1: Stakeholders' needs and feedback serve as input to curriculum design and development</i>	
10.01.01	Decisions relating to quality assurance system
10.01.02	Circulars of MoET on design, review, appraisal, publish Study program
10.01.03	TT3219_2015 UD Instruction of implementing TT07_2015 MoET
10.01.04	Decisions of DUT on program curriculum design, appraisal, revision and establishment
10.01.05	Self-assessment report on program curriculum
10.01.06	Employer's survey form on Program and Graduate qualification
10.01.07	Alumni's survey forms
10.01.08	Meeting minutes of stakeholders on program
10.01.09	Faculty's survey forms
10.01.10	Student's survey forms
10.01.11	Report of survey's results
10.01.12	Plan for improvement due to stakeholders' feedback
10.01.13	Reports on reviewing Program Curriculum
10.01.14	Comparison between Curriculum versions
10.01.15	Stakeholders feedback processes and diagrams
10.01.16	DUT feedback online systems
10.01.17	Cooperation between faculty and industry
<i>Sub-Criterion 10.2: The curriculum design and development process are established and subjected to evaluation and enhancement</i>	
10.02.01	Document about Program Curriculum
10.02.02	Decisions on publishing PLOs
10.02.03	Program curriculum Improvement
10.02.04	Benchmarking programs

10.02.05	Decisions on establishing Program Curriculums
10.02.06	Improve curriculum tend to CDIO, ABET
10.02.07	Webpage “public information” of DUT: http://dut.udn.vn/Tintuc/Gioithieu/id/21
<i>Sub-Criterion 10.3: The teaching and learning processes and student assessment are continuously reviewed and evaluated to ensure their relevance and alignment</i>	
10.03.01	Regulations and Plans for DUT QA activities
10.03.02	Senior Student – Program Evaluation - form
10.03.03	Staff’s feedbacks on Program
10.03.04	Student’s feedbacks on Program
10.03.05	Meeting minutes of Divisions on improving syllabus and teaching-learning-assessment methods
10.03.06	Webpage for Student Evaluation on Courses: http://daotao.dut.udn.vn/ca/
10.03.07	Channels of student feedback to faculties
10.03.08	Sample of Syllabi with various versions
10.03.09	Webpage for DUT staff: http://daotao.dut.udn.vn/CB/
10.03.10	Inspection of teaching activities
10.03.11	Educational testing plan
10.03.12	Check examination paper
10.03.13	Improvement Plan due to Student Feedback on Course
10.03.14	Report on inspection of syllabi, study materials
10.03.15	Lecturer's report after semester - form
<i>Sub-Criterion 10.4: Research output is used to enhance teaching and learning</i>	
10.04.01	Documents about scientific research policy
10.04.02	Scientific Research rewards of FRBE
10.04.03	List of faculty’s scientific research with students
10.04.04	List of books of FBRE academic staff
10.04.05	List of machinery, apparatus from scientific research activities
10.04.06	Pictures of research cooperation
10.04.07	List of annual student’s scientific research of FBRE from 2012 to 2018
10.04.08	List of student’s scientific research as a part of final project
10.04.09	Documents on implementing PBL and Capstone Project
<i>Sub-Criterion 10.5: Quality of support services and facilities (at the library, laboratory, IT facility and student services) is subjected to evaluation and enhancement</i>	
10.05.01	Annual plan of facility inventory
10.05.02	Annual plan of facility investment
10.05.03	Annual plan of Library
10.05.04	Annual plan of Department of Facility Management
10.05.05	Investment of DUT on facility
10.05.06	Stakeholder feedback on quality of support services and facility form
10.05.07	Stakeholder feedback results on quality of support services and facility satisfaction
10.05.08	Online survey on quality of support services and facility
10.05.09	Meeting minutes with stakeholder about quality of support services and facility
10.05.10	Improvement of quality of support services and facility
<i>Sub-Criterion 10.6: The stakeholder’s feedback mechanisms are systematic and subjected to evaluation and enhancement</i>	

10.06.01	Stakeholders feedback processes and diagrams
10.06.02	Decision on establishing of FBRE QA Board
10.06.03	Employer feedback form on PLOs (questions 26,27)
10.06.04	Student feedback channels
10.06.05	Implement and plan of stakeholder surveys
10.06.06	Report of stakeholder feedback on Program, Course, Satisfaction
10.06.07	Improvement Plan after stakeholder feedback
10.06.08	Decisions on establishing self-assessment Board of Program Curriculum
10.06.09	Webpage publish information of stakeholder feedback: http://dut.udn.vn/Phong/QualityAssurance/Gioithieu/id/2018
Criteria 11: Output	
<i>Sub-Criterion 11.1: The graduation rates and dropout rates are established, monitored and benchmarked for improvement</i>	
11.01.01	Percentage of graduation and dropout for 6 courses
11.01.02	Operation system, the ratio of graduation and dropout
11.01.03	The ratio of graduation and dropout for 6 courses
11.01.04	Dropout student information
11.01.05	Intensive class schedule
11.01.06	Summer class schedule
11.01.07	English output standard
11.01.08	English testing schedule
11.01.09	Training management system
11.01.10	Minutes to shorten training time to 4,5 years
11.01.11	Student support policy
<i>Sub-Criterion 11.2: The average time to graduate is established, monitored and benchmarked for improvement</i>	
11.02.01	Student statistic for 6 courses
11.02.02	The decision for 180-credit curriculum
11.02.03	Training time regulation for credit-based curriculum
11.02.04	List of homeroom teachers
11.02.05	List of graduation board with guess members
11.02.06	Intensive class schedule
11.02.07	Summer class schedule
11.02.08	English outcome standard
11.02.09	English language proficiency testing schedule
11.02.10	150-credit curriculum, 2012
11.02.11	150-credit curriculum, 2015
<i>Sub-Criterion 11.3: Employability of graduates was established, monitored and benchmarked for improvement</i>	
11.03.01	Regulations and forms of employment survey
11.03.02	Results of one-month after graduation survey
11.03.03	Results of one-year after graduation survey
11.03.04	Results of employer survey
11.03.05	Results of employment survey
11.03.06	Department website

11.03.07	Job advertised on the department fan page website
11.03.08	List of alumni associations at different provinces
11.03.09	List of graduation board with guest members
11.03.10	Employer reports
11.03.11	Employer survey results on study program
11.03.12	150-credit curriculum in 4.5 years
11.03.13	150-credit curriculum in 5 years
11.03.14	List of graduates continue to master's or Ph.D. degrees
11.03.15	List of alumni who are government agency leaders
11.03.16	List of alumni who are business leaders
<i>Sub-Criterion 11.4: The type and quantity of research activities by student are established, monitored and benchmarked for improvement</i>	
11.04.01	Monitoring and statistics of student scientific research
11.04.02	List of students who are co-authors with lecturers
11.04.03	Graduation project with 100% scientific research
11.04.04	List of students participating on traffic survey
11.04.05	List of students participating in contests
11.04.06	Financial support policy for student scientific research
11.04.07	List of research topics presented at the the department level
11.04.08	List of research topics presented at the the university level
11.04.09	List of research awards for 6 courses
11.04.10	Budget for student scientific research
<i>Sub-Criterion 11.5: The satisfaction levels of stakeholder are established, monitored and benchmarked for improvement</i>	
11.05.01	Process and survey questionnaires for stakeholders
11.05.02	Survey the satisfaction with direct forms
11.05.03	Survey report
11.05.04	Improvement plans
11.05.05	Process and survey questionnaire for students
11.05.06	Feedbacks from students about the class modules
11.05.07	Feedbacks from graduates about the study program
11.05.08	Student Satisfaction about the class modules
11.05.09	Process and employment survey questionnaires
11.05.10	Results of survey about students satisfaction on study program
11.05.11	Satisfaction survey on lecturers and support staffs
11.05.12	Survey results on employers
11.05.13	Meeting minutes of program improvement