SELF - ASSESSMENT REPORT FOR AUN-QA

BACHELOR OF ENGINEERING
IN ENVIRONMENTAL ENGINEERING TECHNOLOGY

AUN-QA
A Touch of Quality

The AUN Quality Assessment at Programme Level
November 07 - 09, 2017

HCMUTE

ASEAN University Network

AUN-QA SELF-ASSESSMENT REPORT

of the Bachelor of Engineering in

ENVIRONMENTAL ENGINEERING TECHNOLOGY

We hereby confirm to approve this AUN-QA Self-Assessment Report of the Bachelor of Engineering in Environmental Engineering Technology programme for assessment according to AUN-QA Criteria (V3.0).

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Faculty of Chemical and Food Technology

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List of Abbreviations

AAO	Academic Affairs Office
AET	Automotive Engineering Technology
AIO	Academic Inspectorate Office
ASAO	Admissions and Student Affairs Office
ASC	Academic and Scientific Committee
AUN	ASEAN University Network
BUILD- IT	Build University-Industry Learning and Development through Innovation and Technology
CEFT	Chemical – Environmental – Food Technology
CET	Construction Engineering Technology
CLOs	Course Learning Outcomes
COMET	Connecting the Mekong through Education and Training
DET	Department of Environmental Technology
DLC	Digital Learning Centre
E/M learning	Electronic/ Mobile learning
EEET	Electrical and Electronic Engineering Technology
EET	Environmental Engineering Technology
ELOs	Expected Learning Outcomes
ERO	Enterprises Relations Office
FCE	Faculty of Civil Engineering
FCFT	Faculty of Chemical and Food Technology
FEEE	Faculty of Electrical and Electronic Engineering
FME	Faculty of Mechanical Engineering
FVEE	Faculty of Vehicle and Energy Engineering
GPA	Grade Point Average
HC	Health Centre
HCMUTE	Ho Chi Minh City University of Technology and Education
HEEAP	Higher Engineering Education Alliance Programme
HRMO	Human Resources Management Office
IoT	Internet of Things

ISO	International Organization for Standardization
IT	Information Technology
KPIs	Key Performance Indicators
LMS	Learning Management System
MET	Mechatronics Engineering Technology
MMT	Machine Manufactory Technology
MOET	Ministry of Education and Training
MONRE	Ministry of Natural Resources and Environment
PDCA	Plan, Do, Check, Act
POs	Programme Objectives
QA	Quality Assurance
QAO	Quality Assurance Office
SAR	Self – Assessment Report
SSC	Student Services Centre
SWOT	Strengths, Weaknesses, Opportunities, Threats
VULII	Vocational University Leadership Innovation Institute
YSA	Youth – Student Association

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PART I. INTRODUCTION

1. Executive Summary

The Environmental Engineering Technology (EET) programme of the Faculty of Chemical and Food Technology (FCFT) was selected for quality assessment according to AUN-QA standards (version 3.0); and the Self-Assessment Report (SAR) has been made as one of the requirements. This report has been written using the data as of August, 2017.

This SAR includes four parts as follows:

Part I – Introduction: This part shown an overall picture of Ho Chi Minh City University of Technology and Education (HCMUTE). FCFT is also introduced and mentioned as the main objective of this report.

Part II - AUN-QA Criteria: 11 criterions of the AUN-QA (version 3.0) are reported and analyzed through roughly with relevant exhibits referred.

Part III - Strengths and Weaknesses Analysis: Strengths and weaknesses of the curriculum are pointed out and discussed. Plans for future improvements are also proposed.

Part IV – Appendices: In this part, a list of supporting documents and evidences to support this report is given.

An implementation team was formed in September, 2016 to fulfill this task based on the decision of HCMUTE *[Exh 0.1. HCMUTE decision on forming the SAR team]*. This team included three members of the Board of FCFT and key staffs in the involving department. In addition, there was a supporting team including secretaries and staff from FCFT. In general, each member of the implementation team was assigned a certain criteria for which necessary data and evidences should be collected for writing up. The team leader was to finalize the report after several discussions among all members. The first version of the report was completed in June, 2017. It was sent to the FCFT members, Quality Assurance Office (QAO) of HCMUTE for questions and comments, and then the SAR was revised for the second SAR in July, 2017. The final report was completed at the end of August, 2017 taking into account the comments from the FCFT members, QAO and experts.

2. Ho Chi Minh City University of Technology and Education

Established on October 05th, 1962, HCMUTE is one of the top universities in training and providing high quality human resources in science and technology, serving the industrialization and modernization of the cities and provinces in the South of Vietnam.

As of September, 2016, HCMUTE had 15 faculties, 19 functional offices, 16 institutes and centres *(Figure 0.1)*. There are 571 lecturers and 199 staffs with about 26,000 students in HCMUTE. HCMUTE has an area of 21 hectares, with 12.2 hectares of construction floors.

Vision

HCMUTE will become a top centre of training, research, creativity, innovation and entrepreneurship in Vietnam, on a par with regional and worldwide prestigious universities.

Mission

The mission of HCMUTE is to be a leading institution in training, scientific research and technology transfer in Vietnam, continuously innovating to provide human resources and scientific products with high quality in the fields of technical and vocational education, science and technology to meet the demands of the social - economic development of the country and the region.

Quality Policy of HCMUTE

Continuously upgrade quality of teaching, learning and scientific research to provide students with the best conditions to develop comprehensively their professional skills in order to satisfy the demands of society and international integration.

Quality Assurance System of HCMUTE

Before 2008, the Academic Affairs Office (AAO) managed the educational quality of HCMUTE. However, in 2008, to enhance the quality of education in the universities, the Ministry of Education and Training (MOET) issued a regulation in which every university has to set up a Quality Assurance Office (QAO). QAO follows the International Organization for Standardization (ISO) 9001 standard with a system of 42 procedures, develops internal quality assurance system and does quality assessment as well as accreditation at institutional level and programme level in accordance with national, regional and international standards.

The QAO's staffs have attended the annual QA training courses in order to assure the improvement of the internal quality assurance system based on AUN-QA model. Furthermore, 01 member from HCMUTE has been functioning as an AUN-QA assessor and an education accreditor of the General Department of Education Testing and Accreditation belonging to MOET since 2014. The main event of QA activities and results from 2005 are shown in *Table 0.1.*

Table 0.1. Overview of the quality assessment/accreditation of HCMUTE

Year	Programme/Institution	Assessed/ Accredited by
2005	Quality Accreditation at Institutional level	MOET
2007	Quality management certification	ISO 9001
2011	External Assessment of TVET in EEE	MOET
Mar. 2016	AUN-QA Assessment at Programme level: - Automotive Engineering Technology - Electrical and Electronics Engineering Technology - Mechatronics Engineering Technology	AUN-QA
Nov. 2016	Quality Accreditation at Institutional level	MOET
Dec. 2016	AUN-QA Assessment at Programme level: - Construction Engineering Technology	AUN-QA
Nov. 2017	AUN-QA Assessment at Programme level:	AUN-QA

Year	Programme/Institution	Assessed/ Accredited by
	- Environmental Engineering Technology - Thermal Engineering Technology - Electronics Communication Engineering Technology - Machine Manufacturing Technology	(on process)

3. Faculty of Chemical and Food Technology

FCFT was established under Decision No. 38/QD DHSPKT-TCCB/21-01-2007 *[Exh 0.2. HCMUTE decision on forming FCFT]*, on January 21st, 2007 by the President of HCMUTE, in order to perform engineering training responsibilities in three disciplines: Food Technology, Chemical Engineering Technology and Environmental Engineering Technology.

The total number of students currently enrolled in FCFT is about 700 students. Since its inception, FCFT has trained over 1,000 engineers in Food Technology and Environmental Engineering Technology.

The staff of FCFT consists of 32 official lecturers, including 01 Associate Professor, 14 PhDs, 15 Masters and 02 Engineers. FCFT's human resource structure is moving gradually towards the way which increases slowly in number but promotes the quality; the teaching staff is vigorously improving studying at doctoral level. Under the direction of HCMUTE to improve the quality of teaching staff, FCFT members also participate intensely in training courses on teaching innovation, diversification of assessment methods, English language proficiency and professional competences. FCFT is proudly said to possess the teaching staff with good qualifications, being dynamic and enthusiastic in teaching and conducting scientific research.

Vision

FCFT plays a major role in training human resources and fostering the talents; where research and application of science and technology are leading in the fields of Chemical Engineering Technology, Food Technology and Environmental Engineering Technology, on par with the prestigious universities in the Southeast Asia region.

Mission

Build up a dynamic and creative study environment in order to optimize the individual potentials.

Be an organization for training, scientific research and technology transfer.

Provide high-quality human resources in the field of Chemical - Food - Environmental Engineering Technology for the Southern provinces and Vietnam.

Core Values

The learning spirit: nurturing the desire to learn, understanding, respecting knowledge and the truth.

Creative thinking: actively exploring, creating ideas, innovations and new solutions in all activities.

Responsibility: responsibility towards themselves, their families and communities, responsible for learning, work and life.

Ethics: Listening, sharing and respecting the differences.

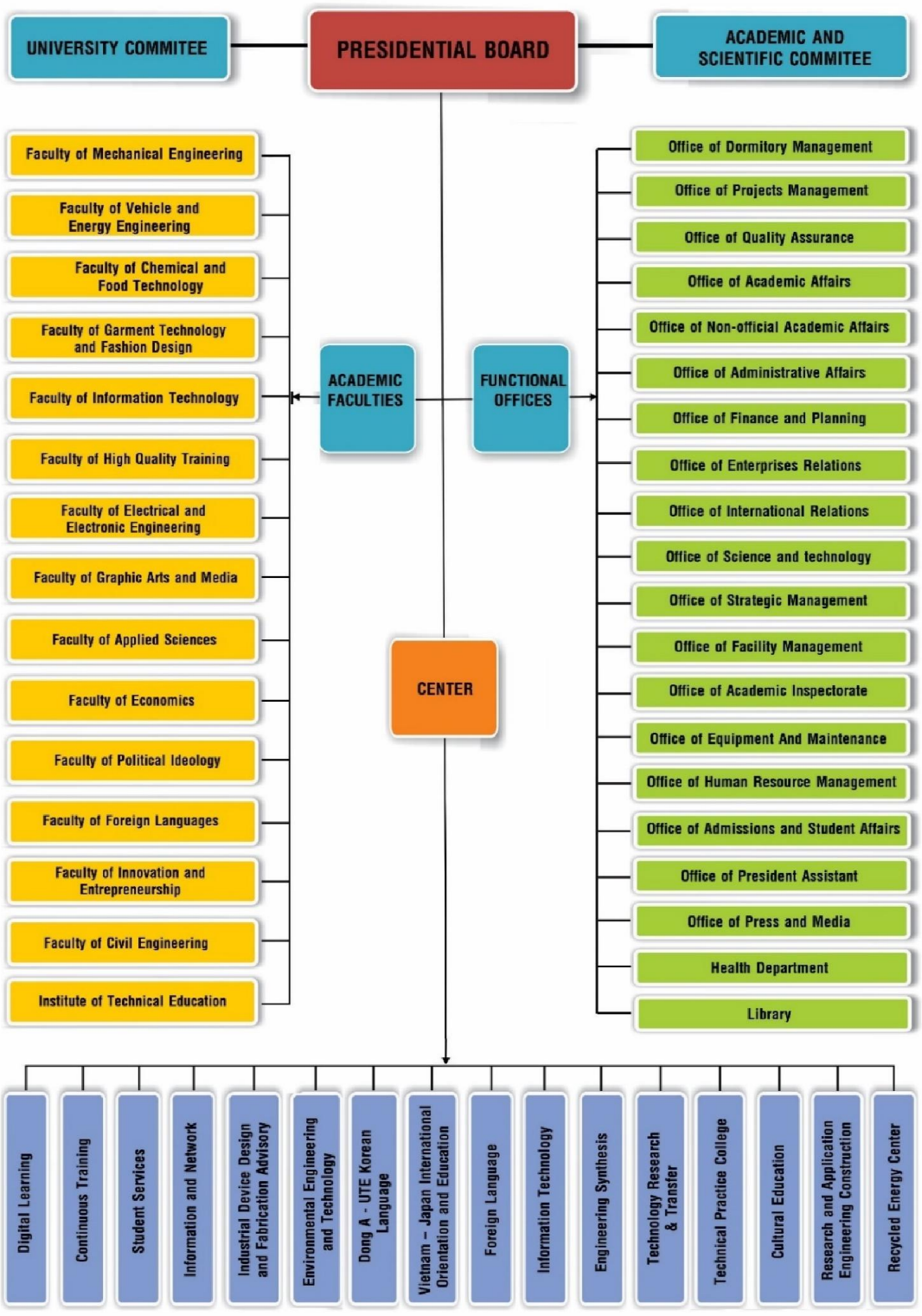

Figure 0.1. Organizational Structure of HCMUTE

Organizational Structure of FCFT

FCFT has 3 departments as shown in *Figure 0.2*. It offers 03 undergraduate study programmes:

- Bachelor in Environmental Engineering Technology
- Bachelor in Food Technology
- Bachelor in Chemical Engineering Technology.

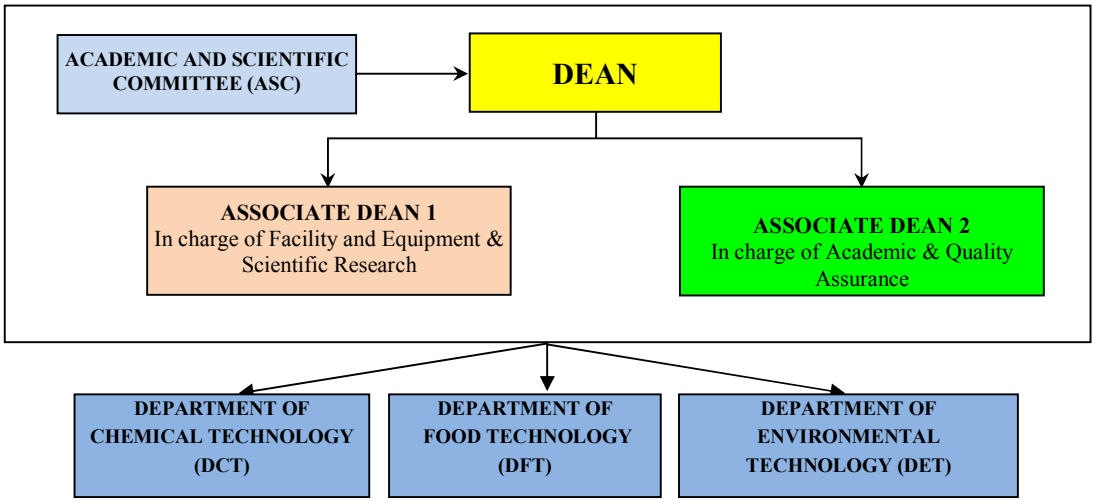

Figure 0.2. Organizational Structure of FCFT

4. The Environmental Engineering Technology (EET) Programme

The EET programme has enrolled students since 2004. Until 2016, there have been 8 cohorts with over 500 students graduating from EET programme.

Concept of the Programme

To foster the HCMUTE educational philosophy, stated shortly as "Humanity, Creativity, Integration", HCMUTE does believe that the most meaningful learning occurs when every individual is provided with opportunities for a comprehensive development of cognitive competence, social and behavioral competence and technical competence. HCMUTE also believes in the core values of lifelong learning: each learner needs to self-construct and enrich knowledge and skills by discovering, inquiring and learning by doing to improve creativeness potential to fulfill his/her own aspirations and to serve the community." *[Exh 0.3. HCMUTE Educational Philosophy]*

FCFT has constantly innovated, improved the quality of teaching and learning to give students the best conditions to build up the creative potential, enhance their knowledge, skills training to meet the needs of society.

This philosophy has been applied throughout the training process through the process of teaching and learning with the slogan "Learning to know - Learning to work - Learning to live together and to become a good person."

Programme Educational Objectives (POs)

The EET programme is to prepare students:

PO1. Graduates will be able to utilize foundational and advanced knowledge in science and engineering to achieve success in their career in the field of environmental engineering technology or related professional fields in accordance with their career goals.

PO2. Graduates will be able to become competent team leader or qualified team member who can solve practical socio-economic and environmental challenges.

PO3. Graduates will be able to participate in further education or research to pursue their professional development.

Job opportunities

The EET programme equips graduates with competences to meet various requirements of different labor markets. Environmental engineers use the principles of engineering, soil science, biology, and chemistry to develop solutions to environmental problems. They are involved in efforts to improve recycling, waste disposal, public health, and water and air pollution control. They also address global issues, such as unsafe drinking water, climate change, and environmental sustainability. Environmental engineers conduct hazardous-waste management studies in which they evaluate the significance of a hazard and advise on treating and containing it. They also design systems for municipal and industrial water supplies and industrial wastewater treatment, and research the environmental impact of proposed construction projects. Environmental engineers in government develop regulations to prevent mishaps. Job opportunities are shown in *Table 0.2.*

Table 0.2. Job opportunities

Place of work	Possible tasks
- Waste treatment plants	- Design, supervise and operate the waste treatment plant
- Environmental Monitoring Centres	- Monitor and analyze environmental parameters.
- Environmental consulting companies	- Consult and make reports on environmental protection such as Environmental Impact Assessment (EIA), Environmental Commitment (EC), Clean Development Mechanism (CDM), Cleaner Production (CP), ...
- All the factories which have environmental management and safety system	- Develop Safety-Health-Environment (HSE), International-Standard-Organization (ISO), Occupational-Health and Safety-Assessment-Series (OHSAS), ...
- Universities	- Teach on environmental fields
- Research Institutions	- Research on environmental fields
- State agencies responsible for the protection environment	- Inspect environmental issues in industries, propagandize environmental protection

PART II. AUN-QA CRITERIA

1. Expected Learning Outcomes

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

The vision and mission of HCMUTE is stated as "HCMUTE is to become a leading organization for training, scientific research and technology transfer in Vietnam. Therefore, HCMUTE continuously innovates and is creative to provide human resources and scientific products with high quality in the fields of technical and vocational education, science and technology".

The EET programme is built with the main purpose of training the Environmental engineers with deep knowledge, skills and strong professional and highly responsible attitude, meeting the requirements of employers, and being a responsible citizen in the society. EET programme objectives are related to FCFT mission and HCMUTE mission as described in *Table 1.1.*

Table 1.1. Alignment between EET programme objectives and missions of FCFT, HCMUTE.

HCMUTE Mission	FCFT Mission	Programme Objectives (POs)
Be a leading institution in training, scientific research and technology transfer in Vietnam.	Be an organization for training, scientific research and technology transfer.	PO1. Graduates will be able to utilize foundational and advanced knowledge in science and engineering to achieve success in their career in the field of environmental engineering technology or related professional fields in accordance with their career goals.
Continuously innovate to provide human resources and scientific products with high quality in the fields of technical and vocational education, science and technology to meet the demands of the economic-social development of the country and the region.	Build up a dynamic and creative study environment in order to optimize the individual potentials.	PO2. Graduates will be able to become competent team leader or qualified team member who can solve practical socio-economic and environmental challenges.
- Continuously innovate to provide human resources and scientific products with high quality in the fields of technical and vocational education, science and technology to meet the demands of the economic-social development of the country and the region.	- Provide high-quality human resources in the field of Chemical - Food - Environmental Engineering Technology for the Southern provinces and Vietnam.	PO3. Graduates will be able to participate in further education or research to pursue their professional development.

Based on the requirement of Vietnam Higher Education Law, HCMUTE mission and vision, its progrommme objectives, requirement of employers and feedback from alumni, 16 expected learning outcomes (ELOs) of EET programme were formulated. The ELOs are differentiated into 5 groups as shown in *Table 1.2.*

Table 1.2. Expected learning outcomes of EET Programme

Group of ELOs	Knowledge, skills and attitudes	Programme ELOs
General knowledge	Mathematics, natural sciences, statistics, politics, sociology, informatics, foreign language (English)	ELO1. Apply the knowledge of mathematics, sciences and society in the field of environment
Professional Knowledge	Specialized principles and techniques, problem analyzing and solving	ELO2. Apply the core knowledge of environmental engineering technology. ELO3. Apply the specialized knowledge of environmental engineering technology. ELO4. Identify, analyze and solve environmental problems.
Professional skills	Conceive ideas, model system, implement and manage projects. Design, implement, monitor and operate waste management and treatment	ELO5. Conduct experiments and evaluate the experiment results. ELO6. Possess sufficient insight on and ability to solve practical socio-economic and environmental contradictions ELO13. Conceive ideas, model systems, implement and manage environmental projects. ELO14. Design waste management and treatment systems. ELO15. Implement and monitor waste management and treatment systems. ELO16. Operate waste management and treatment systems.
Attitude and awareness	Ethics, responsibility, collaborating and sharing system.	ELO8. Exercise professional ethics, honesty, and be able to determine the professional objectives and orientation. ELO12. Practise the role and responsibility of an environmental engineer toward the society.
Generic skills	Communicating, independent and group working, managing, computer using, researching, self-studying	ELO7. Be highly aware of the need and responsibility in life-long learning. ELO9. Demonstrate the ability to work as a team leader and as a team member ELO10. Communicate effectively through written documents, electronic media, oral presentation and negotiation ELO11. Communicate effectively in English for environmental

		engineering technology

The relationships between the programme ELOs and the programme objective of EET programme is tabulated in *Table 1.3.*

Table 1.3. Relationship and alignment of ELOs and POs of EET Programme

POs	ELOs															
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
PO1	✓	✓	✓	✓	✓	✓							✓	✓	✓	✓
PO2						✓			✓	✓	✓	✓				
PO3							✓	✓				✓	✓	✓	✓	✓

1.2. The expected learning outcomes cover both subject specific and generic learning outcomes.

To transfer the ELOs into the EET programme, FCFT has analyzed the requirements of ELOs and then identified the knowledge (general and technical knowledge), skills (generic and professional skills) and attitudes-awareness (ethics and life-long learning) that should be taught to students along the EET programme *(Table 1.2).* The categorization of EET ELOs into generic and specific knowledge and skills is as shown in *Table 1.4.* The EET programme helps students to achieve its ELOs through courses and extra-curriculum activities such as field trips, practicum, seminars, technical contests, and cultural and social activities.

Table 1.4. Specific and generic ELOs of EET programme

Expected learning outcomes	Generic	**Specific**	**Attitudes/ awareness**
ELO1. Apply the knowledge of mathematics, sciences and society in the field of environment	✓		
ELO2. Apply the core knowledge of environmental engineering technology.		✓	
ELO3. Apply the specialized knowledge of environmental engineering technology.		✓	
ELO4. Identify, analyze and solve environmental problems.		✓	
ELO5. Conduct experiments and evaluate the experiment results.		✓	
ELO6. Possess sufficient insight on and ability to solve practical socio-economic and environmental contradictions		✓	✓
ELO7. Be highly aware of the need and responsibility in life-	✓		✓

long learning.			
ELO8. Exercise professional ethics, honesty, and be able to determine the proferssional objectives and orientation.	✓		✓
ELO9. Demonstrate the ability to work as a team leader and as a team member	✓		
ELO10. Communicate effectively through written documents, electronic media, oral presentation and negotiation	✓		
ELO11. Communicate effectively in English for environmental engineering technology	✓		
ELO12. Practise the role and responsibility of an environmental engineer toward the society.	✓		✓
ELO13. Conceive ideas, model systems, implement and manage environmental projects.		✓	
ELO14. Design waste management and treatment systems.		✓	
ELO15. Implement and monitor waste management and treatment systems.		✓	
ELO16. Operate waste management and treatment systems.		✓	

ELOs on soft skills and professional ethics of the EET programme are delivered not only through the active teaching and learning such as group discussion, teamwork on projects, essay, thesis, but also through extracurricular activities/social work, and internships at factories as demonstrated in *Table 1.5.*

Table 1.5. Skill matrix for contribution of extracurricular activities for ELOs

Extracurricular activities	**ELOs on soft skills and professional ethics**					
	ELO7	**ELO8**	**ELO9**	**ELO10**	**ELO11**	**ELO12**
Field trips	✓	✓	✓	✓		✓
Practicum	✓	✓	✓	✓	✓	
Seminars	✓	✓		✓	✓	
Technical contests	✓	✓	✓		✓	✓
Cultural and social activities			✓	✓		✓

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

ELOs of EET programme are revised periodically following the ISO procedure of HCMUTE which allows FCFT to review the EET programme to closely reflect the requirement of stakeholders, especially its alumni and employers *[Exh 1.1. Revision of ELOs]*. The formulation process of the EET programme ELOs follows these steps:

- Based on HCMUTE's vision and mission and the conditions to set up the EET programme as stated in Chapter IV of Vietnam's Law on Higher Education 2012, FCFT analyzed the

needs of social human resources of environmental field from the Project develop human resources in Environmental field of Ministry of Natural Resources and Environment, *[Exh 1.2. Basis for programme development]*.

- Organize workshops on to formulate programme ELOs and conduct a survey of stakeholders such as industry, state agencies, alumni, lecturers, students… about their requirements for an environmental technology engineer *[Exh 1.3. ELOs workshop]*.
- Analyze feedback from stakeholders about the knowledge, skills and attitudes that they expect from graduated students *[Exh 1.4. Stakeholder Survey about ELOs]*.
- Compare the EET programme ELOs with similar programmes of other universities such as Bach Khoa University, University of Science, University of Wincosin-Greenbay, Ohio University... *[Exh 1.5. EOLs of EET Programme Benchmark]*
- ELOs are approved by the FCFT Academic and Scientific Committee and informed to stakeholders on website, letters sent to industries and published in outdoor panel. Besides, ELOs were announced to lecturers, staffs and students in the meeting and Introduction to Environmental Engineering course which is implemented in the first semester of the Curriculum/Programme. *[Exh 1.6. Announcement ELOs to stakeholders]*.
- EET programme ELOs are translated into the curriculum in term of content, teaching and learning strategies, student assessment and resources allocated for the programme.

EET programme ELOs accommodated all the requirement from its stakeholders, from the requirement of Higher Education Law, vision and mission of HCMUTE, industry, alumni, students. From the responded results of the parties concerned, particularly employers, FCFT analyzed the requirements and ensured that all the essential requirement was covered in its programme ELOs as in *Table 1.6.*

Table 1.6. Requirements of stakeholders

Stakeholders	**Requirements/ Suggestions**	**EET fulfillment**
Employers	Design and manage the waste treatment systems such as: supply water and wastewater treatment, polluted air treatment, solid waste management.	ELO 12, ELO 13, ELO 14, ELO 15, ELO 16
	Analyze precisely environmental indicators in laboratory and proficient use of specialized software, equipment	ELO 4, ELO 5
	Communication in specialized English	ELO 11
Alumni	English specialized in environmental engineering	ELO 11
	Field trip	ELO 6, ELO12
Lecturers	Analyzing environmental problems based on fundamental and specialized knowledge of environmental technology.	ELO1, ELO 2, ELO 3, ELO 4
	Being able to self-study	ELO 7
Students	Job orientation	ELO8, ELO12

	Communication in English; soft skills	ELO 9, ELO10, ELO11
	Field trip	ELO 6, ELO12

2. Programme Specification

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

The ELOs are transferred completely into curriculum programme and courses *[Exh 2.1. Curriculum mapping]*. The EET programme specification provides important information about the programme and is standardized across HCMUTE with the following information:

1. Awarding institution
2. Name of programme
3. Training degree
4. Programme code
5. Training time
6. Admission criteria
7. Programme objectives
8. Expected learning outcomes
9. Programme structure
10. Programme content
11. Curriculum planning
12. Progression points
13. Special features
14. Job opportunities
15. Facilities and infrastructure
16. Date of issue and revision

The EET programme specification includes all the necessary information as suggested by AUN-QA. These components of programme specification is not only suggested by AUN-QA but also required by MOET. *(Appendix 1. The EET Programme Specification, refer 9c of checklist for submission)*.

The programme specification is revised as frequently as it requires once there is a need for the revision of information. One of the examples that requires the revision of the programme specification is when the EET curriculum was redesigned in 2012 that the EET programme ELOs were revised, the structure and number of credits of the curriculum changed, and the teaching and learning strategies and the student assessment changed dramatically toward outcome-based education. Other examples are once there is a new course added to accommodate the requirement of stakeholders or when courses are integrated, etc.

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

The course specification is standardized across the EET programme in the form of course syllabus. *[Exh 2.2. Syllabi of specific courses]*. The structure of detailed course syllabus follows a standard form including:

1. Course name
2. Number of credits: (theoretical periods /practical period/ self-study periods): the amount of time for self-study is twice as much as that spent in class.

3. Course lecturers
4. Prerequisites: students have to complete some required courses before applying for next courses.
5. Course description
6. Course learning outcomes (CLOs) and their alignment to the programme ELOs
7. Learning materials
8. Student assessment: Results of students' learning are assessed during the period of each course via different forms including individual homework, group exercises, presentations, quizzes, midterm and final exams. Grading structures vary by courses; general grading ranges are as following:

- Formative assessment: at least three times (presentation, project, Mid-term exam…): 50%;
- Summative assessment: 50%

9. Detailed contents of course: the necessary knowledge which students gain to achieve the course ELOs
10. Teaching and learning activities
11. Scientific ethics
12. Date of first approval
13. Authority/Person to approve the course syllabus
14. The process of updating course syllabus

Course syllabi are reviewed and revised by the teaching teams of the courses before a semester starts. The revision of course syllabi may include the modification in course content, teaching and learning strategy, student assessment to better align with CLOs. The modification may be derived from the feedback from academic staff teaching the course previous semesters, through the collection of student feedback at the end of the course, the review observations in class of other lecturers, self-reflection and minute meeting at the end of the semester. The self-reflection or suggestion by academic staff teaching the course is well documented in their course portfolios *[Exh.2.3. Teaching profile]*.

2.3. The programme and course descriptions are communicated and made available to the stakeholders.

The programme specification of EET programme and course syllabi/descriptions are communicated to its stakeholders using various means. They are available on the FCFT website *(*http://fcft.hcmute.edu.vn/Default.aspx?PageId=272eec81-a53b-46a7-91a0-cc578039a240*)* so that any stakeholders can access. The programme and course description are also included in the student handbooks which is in the online form since 2013 to help HCMUTE become paperless. Students rely on the programme in the student handbook to decide which courses they should enroll *[Exh 2.4. Student handbook]*.

Besides, training programme are communicated to students in the beginning week of the first semester *[Exh 2.5. Contents of the orientation week]*. The course syllabi containing more than just course description are discussed with students and are posted on the Learning Management System (LMS) for students to refer to *[Exh. 2.6. Sample of E-learning course]*.

3. Programme Structure and Content

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

The development of the EET curriculum was based on the its programme ELOs, the comparison and reference from other domestic and international EET programmes, such as those of HCM University of Technology (HCM-VNU), HCM University of Science (HCM-VNU), University of Wincosin-Greenbay, Standford University*... [Exh3.1. Benchmark between EET Programme and other Programmes]*

ELOs are clearly transferred into the curriculum programme through courses and other student activities as shown in *Table 3.1.* Achievement of the programme ELOs is guaranteed through the theory, practice, project courses and graduation thesis and other student activities by making sure that the design of each course constructively aligns with the programme ELOs that each course supports from its content, teaching and learning strategies to student assessment. CLOs of each course are represented in course syllabus along with the course contents, teaching methods as well as the student assessment in order to identify the CLOs students achieve after completing the course.

CLOs must align with the programme ELOs. The contents of each chapter, exercises and tests need be aligned with the CLOs *[Exh 3.2. Sample of Syllabus]*.

Teaching and learning activities are chosen based on the types of the CLOs or the level of learning. For example, to ensure students have presentation skills (both in written and verbal), group discussion and presentation in classes, writing project report, thesis, presentation for the project and thesis defense, etc… are utilized. Another example is the CLOs related to "design" would require independent study, including simulation with computer, doing research for their research project or thesis in which the product/or a procedure of testing …is required.

Assessment methods are chosen based on CLOs. For example, to achieve CLOs "Students will have communication skills", lecturers will assess through presentation and ensure that all students in group must present. For the general courses, the assessment requirement is at the level 2 (introduction) of the Bloom Taxonomy with some methods such as multiple choice; writing test, speaking. For the fundamental courses, the programme assessment is from level 3 to 4 (reinforce) of the Bloom Taxonomy with some methods such as problems questions and how to solve it. For the specialized courses, the requirement of assessment is master level using research methods; solve the practical problems at the factories. In addition, extra activities courses which require the soft skills such as team-working, self-study skills, ect, are assessed by a small projects and presentation. Each assessment method has different ways and tools to assess students through the rubric and grading report *(Table 3.2). [Exh. 3.3. Assessment rubrics]*.

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

As described in Criterion 3.1, constructive alignment between each course and the programme ELOs is guaranteed. Once the programme ELOs were formulated, the matrix of correlation between ELOs and courses was developed to ensure that each programme ELOs would be sufficiently supported by courses shown in *Table 3.1.* Based on the matrix, the course syllabus would be

designed with its CLOs, teaching and learning strategies, student assessment constructively aligned with the programme ELOs that it would support.

Table 3.1. The matrix of correlation between ELOs and courses.

No.	Course	Introduce / Reinforce / Mastery — Expected Learning Outcome (ELO)															
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
1	Introduction to Environmental Technology	I								I			I				
2	General Environment		I		I					I							
3	Enviromental Analytical Chemistry	I	I		I			I				I					
4	Experiments on Env. Analytical Chemistry		I			I			I	I	I						
5	Environmental Hydraulic Engineering	R	R		I			I									
6	Environmental Engineering Chemistry	R	R		I			I		I		I					
7	Experiments on Envi. Eng. Chemistry		R			R			R	R	R						
8	Environmental Research Design	R	R		I					R	R						
9	Process and Equipment in Env. Engineering	R	R		I							I		I			
10	Environmental Microbiology		R		I					R	R						
11	Experiments on Env. Microbiology		R			R			R	R	R						
12	Environmental Hydraulics and Hydrology	R	R		R			I									
13	Environmental Law and Policy		R		R				R	R			R				
14	Environmental Toxicology			I			I		R	R			R				
15	Environmental Economics			I			I		R					I			
16	Environmental Modelling			I			I						R				
17	Environmental System Optimization	R	R		R			R						I			
18	English in Environmental Technology		R							R	R	R					
19	Experiments on Soil pollution			I		R			R	R							
20	Air and Noise Pollution Control Techniques			R	R							R		R	R		
21	Soil pollution and remediation techniques			R	M							R	R	R			
22	Experiments on Air Pollution Treatment			R		R			R	R						I	
23	Environmental project management		R							R			R	R			
24	Industrial architecture and urban planning			R			R						R				
25	Geographic Information System			R					R				R				
26	Design project on Air Pollution Treatment			R			R	R							R	R	
27	Environmental Impact Assessment			R							R		R	M			
28	Environmental Management			R					R		M		R	M			
29	Supply Water Treatment			R			R					R	R			R	R
30	Water Supply and Drainage Network			R			R						R		R		
31	Solid Waste Management and Treatment			R	M		R							M	M		
32	Awareness Visits			R				R	R		M		M				
33	Experiments on Supply Water Treatment			R		M			R	M						R	
34	Design project on Supply Water Treatment			M			R	R							M	R	R
35	Practice in Water Supply - Drainage Network			M		M			R	M							
36	Wastewater Treatment			M			R					R				R	R
37	Experiments on Wastewater Treatment			M		M			R	M						R	
38	Design project on Wastewater Treatment			M			M	R								R	R
39	Environmental Monitoring			M			M			M			M			R	
40	Practice in Environmental Monitoring			M		M			R	M						M	
41	Health, Safety and Environment			M			M		M	M	M						
42	Cleaner production			M	M					M		R		M			
43	Graduation Practice			M				M	M	M	M		M			M	M
44	Graduation Thesis			M		M		M	M		M		M			M	M

For example, in order to design a wastewater treatment plan, students are required to join a course group including Wastewater Treatment, Experiment on Wastewater Treatment and Design project

on Wastewater Treatment which have the CLOs mapped with ELOs as shown in the following *Table 3.3*.

Although some courses make contributions to similar programme ELOs, there are differences in the level of difficulty between fundamental courses and specialized courses. While the fundamental courses only require the ELOs at introduction or reinforce level, the specialized courses need students gain the master level of ELOs. The difficulty level will be increased through the content, teaching method and assessment toward the senior years of study.

Table 3.2. Some assessment methods relevant to ELOs

ELOs	Assessment methods
ELO1. Apply the knowledge of mathematics, sciences and society in the field of environment. ELO2. Apply the core knowledge of environmental engineering technology. ELO3. Apply the specialized knowledge of environmental engineering technology	- Essay - Questions and answers - Report - Pass in formative tests and summative tests (essay, multiple-choice, questions and answers, fill in blank questions, explain a procedure, draw a diagram, explain a phenomenon, etc.)
ELO4. Identify, analyze and solve environmental problems. ELO5. Conduct experiments and evaluate the experiment results. ELO6. Possess sufficient insight on and ability to solve practical socio-economic and environmental contradictions. ELO7. Be highly aware of the need and responsibility in life-long learning. ELO8. Exercise professional ethics, honesty, and be able to determine the proferssional objectives and orientation.	- Participation in discussions, - Essay - Questions and answers - Homework and project completion - Regular class attendance - Daily short report
ELO9. Demonstrate the ability to work as a team leader and as a team member. ELO10. Communicate effectively through written documents, electronic media, oral presentation and negotiation. ELO11. Communicate effectively in English for environmental engineering technology.	- Participation in discussions - In-class task completion - Homework and project completion - Participation in group activities
ELO12. Practise the role and responsibility of an environmental engineer toward the society. ELO13. Conceive ideas, model systems, implement and manage environmental projects.	- Regular factory attendance - Report: present about solving environmental in companies in real situations.

ELOs	Assessment methods
ELO14. Design waste management and treatment systems. ELO15. Implement and monitor waste management and treatment systems. ELO16. Operate waste management and treatment systems.	

Table 3.3. Contribution of a group of Wastewater treatment system design courses to the ELOs

Course	Expected Learning Outcome															
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Wastewater Treatment			X			X					X				X	X
Experiments on Wastewater Treatment			X		X			X	X						X	
Design project on Wastewater Treatment			X			X	X								X	X

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

a) The curriculum is balanced and logically structured:

The EET programme includes 3 main groups of courses: general courses, fundamental courses and specialized courses with total 150 credits in which the generic knowledge block contains 56 credits (37.3%), the fundamental knowledge block includes 28 credits (18.7%) and the specialized knowledge block comprises 56 credits including theory with 36 credits (24.0%), practice with 20 credits (13.3%), and graduation thesis with 10 credits (6.7%). The pie chart in *Figure 3.1(a) and (b)* shows a balanced curriculum between three groups of courses.

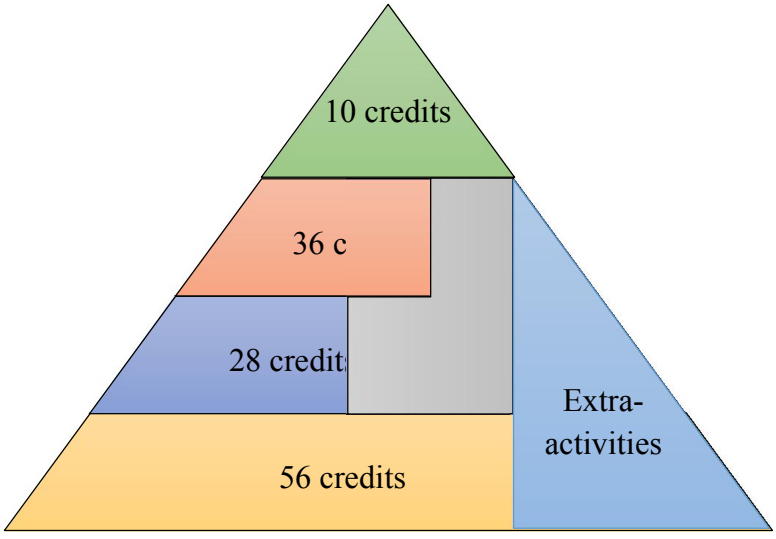

Figure 3.1(a). Credit courses distribution of programme

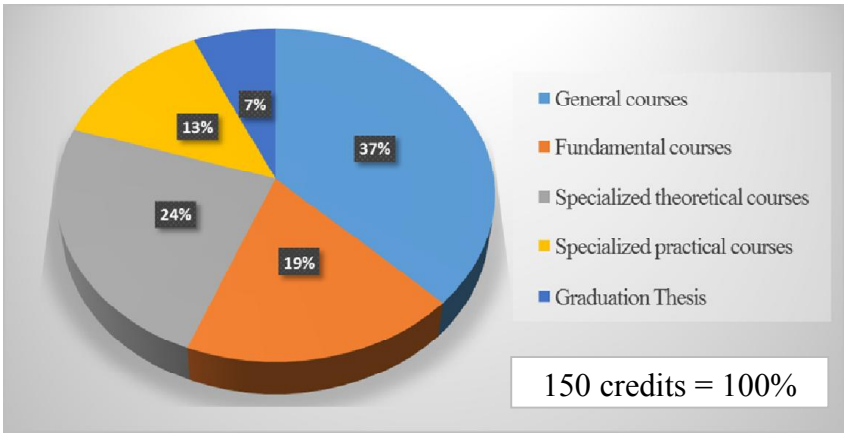

Figure 3.1(b). Percentage of general courses, fundamental courses and specialized courses

To ensure that our curriculum is balanced, logical structured and sequenced, it is benchmarked with other similar programmes both in Vietnam and overseas. The bar chart in *Figure 3.2* shows comparison between EET curriculum and Environment engineering technology programme from Hanoi National University (HN -VNU), HCMC University of Technology and HCMC University of Science (HCM - VNU)

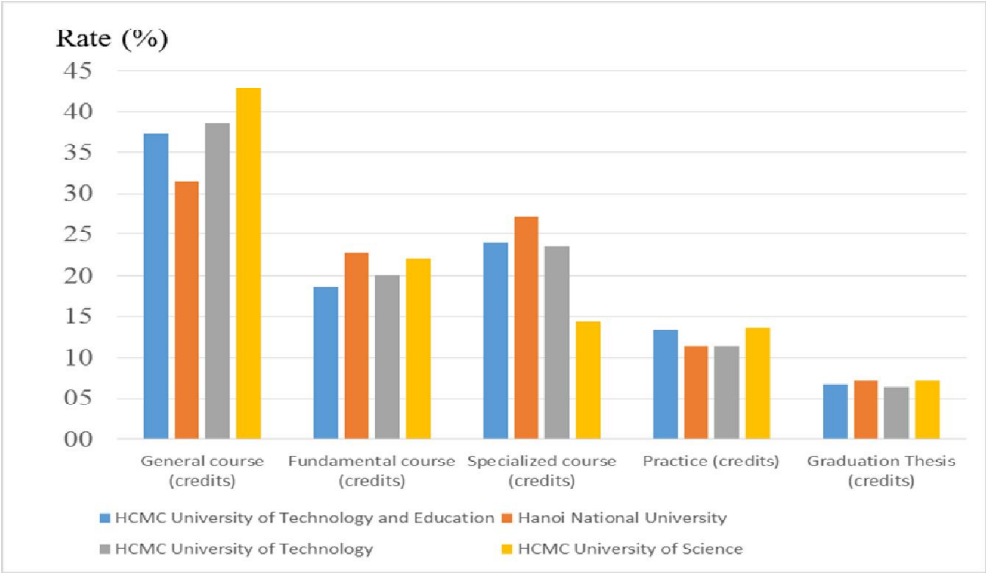

Figure 3.2. A comparison with other similar programmes

The general courses block provides students with the fundamental knowledge of natural and social science to be the background to study the professional knowledge.

The fundamental courses block provides the background knowledge in environmental engineering technology which students can apply and use to study the professional courses as well as apply to solve basic environmental problems.

Finally, the specialized courses block provides the core knowledge of EET, applying to solve the practical problems. Moreover, there are some other courses which help students to gain their soft skills such as English, computer, Auto CAD ….The goal of graduation thesis course is select suitable professional knowledge for designing the pollution treatment/ management system, defining technological solutions, judging the impact of design solutions and choosing appropriate

methods under the realistic challenges of environment, economic and society. This course gives students an opportunity to participate in a major design experience in environmental engineering. Using knowledge and skills acquired in earlier courses of the EET programme, the students are required to design a real-world environmental project under the realistic challenges of environment, economic and society such as designing waste treatment system (water supply, wastewater, solid waste, air pollution), study a new and modern method applied in waste treatment or in environmental management. Depending on the project's complexity, students will work individually or in small teams on a problem statement.

b) The curriculum is logically sequenced:

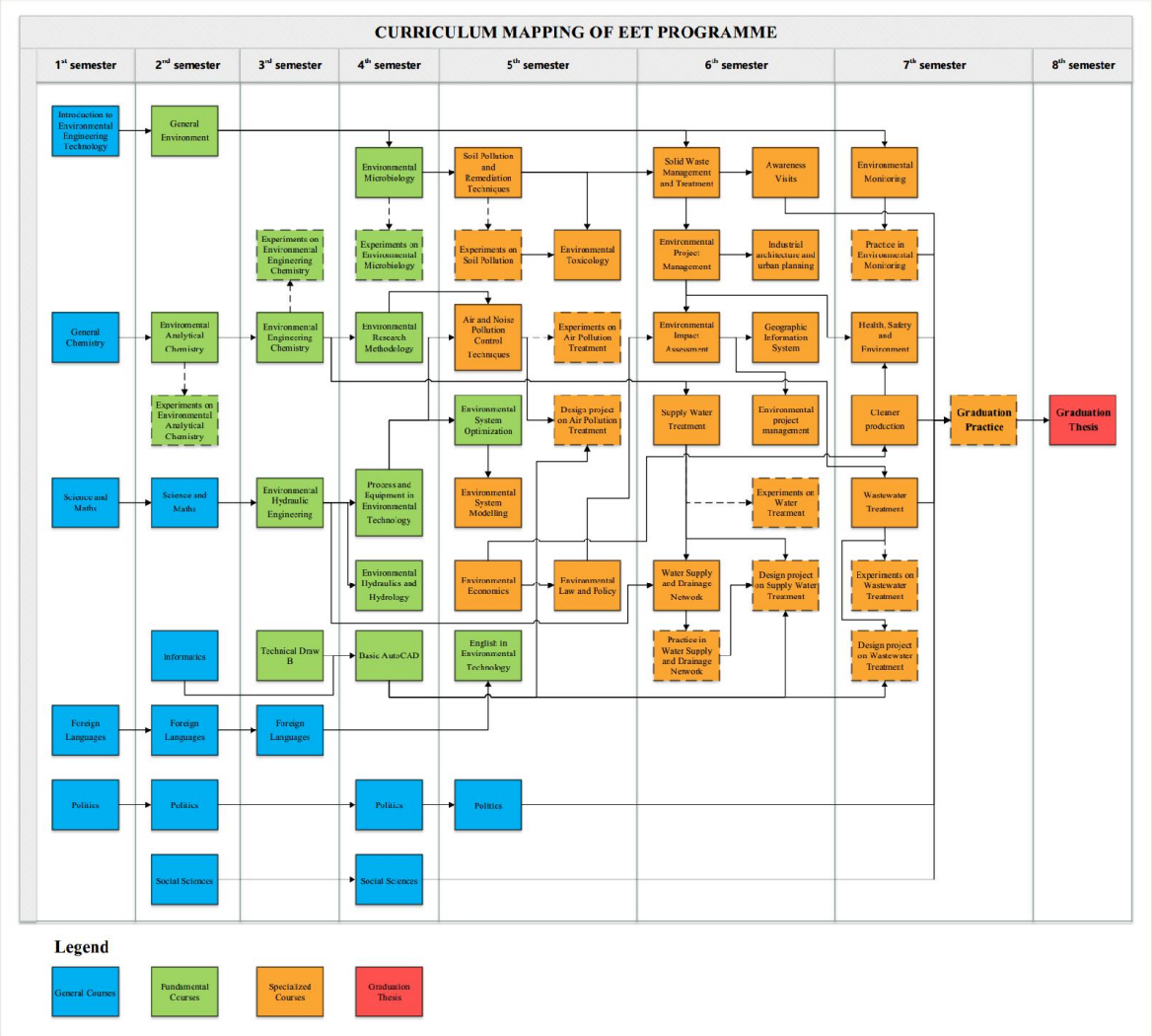

Figure 3.3. Curriculum sequence

Figure 3.3 shows the sequence of the curriculum across 4 year of study. The EET programme's structure with 150 credits is logically divided into 8 semesters. Courses are arranged following the increasing level from 1st semester to 7th semester among which knowledge is linked in order to align with the POs *[Exh 3.4. Alignment between POs and Courses]*. In the first two semesters, students learn the general courses and the oriented course in order to provide them the basic knowledge before learning the specialized courses in future along with the self-study and life-long learning

abilities. After the 3rd semester, students begin to learn the fundamental courses which provide enough knowledge and skill to adapt to the various working environments and follow the specialized courses. The specialized courses are divided into many practical fields which help students to orient their future career after graduating. The final thesis is in the last semester with a requirement to solve practical problems of EET. *[Exh: 2.1 Curriculum map]*

EET programme was designed to enhance the self-learning and self-researching abilities of students through Design project on wastewater treatment, supply water treatment and polluted air treatment. By those courses, the life-long leaning skill is built and support students in the graduation thesis and self-study to improve their knowledge after graduation *[Exh. 3.5. Sample of a graduation thesis]*.

c) The curriculum is logically integrated and up-to-date:

Based on the ISO procedure of HCMUTE for curriculum development and review, each programme has to be reviewed periodically every four years. This process is aforementioned in *Criterion 2.1. The information in the Programme specification is comprehensive and up-to-date.* EETs has been improved by times (2004, 2008, 2012 and next 2017) such as the decreased credits, integrated knowledge and courses. There was a big change in 2012 after receiving the response from stakeholders about the soft skill of graduated students such as presentation, solving problem, self-researching and English. Therefore, the training programme was redesigned to reduce the total credits in order to help students have more time to improve their soft skills.

The current curriculum has 150 credits whereas the curriculum before 2012 had 176 credits. To accommodate for the decreasing credits while soft skills were required to be enhanced, many courses were integrated to eliminate overlapped contents and soft skills were integrated to all the courses in term of teaching and learning and student assessment.

In 2015, FCFT conducted evaluation of the programme to improve some course content as well as other conditions to ensure the quality of training and after 4 years periodically, the programme will be revised in 2017. *[Exh 3.6. The comparison table of the EET revised programmes (2004, 2008, 2012, 2015].* Course syllabi and content of some courses are also revised and updated annually with the technology development.

4. Teaching and Learning Approach

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

To achieve the HCMUTE's educational philosophy stated as "**Humanity, Creativity, Integration"**, the EET programme is built with the main purpose of training the Environmental engineers to have deep and strong professional and fundamental knowledge, skills and high responsibility to meet the requirements of employers, and become useful citizens for society development. This educational philosophy is noticed on the website of HCMUTE and FCFT. All lecturers deeply understood the philosophy through the meeting minutes with the faculty and board. For freshman, the educational philosophy is noticed by lecturer in Introduction to Environmental Engineering Technology course *[Exh 4.1. Activities to articulate HCMUTE's educational philosophy]*.

To embrace HCMUTE's philosophy, teaching strategies of EET focus on learning activities that aim to promote independent study or "self-and genuine learning" through the diversity of teaching and learning activities *[Exh 4.2. Activities to encourage independent study]:*

(1) Enthusing students' passion and exploration which is stimulated through some courses.

(2) Promoting learner-centered teaching methods which use a variety of teaching methods to build a strong knowledge foundation and develop learning skills and self-awareness.

(3) Combining theoretical with practical activities or field trips in order for students to acquire and use/resolve basic problems of EET knowledge academically.

(4) Coaching students in analyzing problems and widening knowledge through the technical problem-solving process from simple to complex levels and developing their abilities in teamwork, solving problems through assignment, laboratory experiments, and students' project in some courses.

(5) Instructing and creating learning environment that motivates students to take responsibility for their own learning and life-long learning

To improve the teaching methods, lecturers participate in many pedagogical courses which are hosted by HCMUTE or international corporation programmes (mostly funded by USAID and Intel Vietnam) such as Higher Engineering Education Alliance Programme (HEEAP), Vocational University Leadership Innovation Institute (VULII), Connecting the Mekong through Education and Training (COMET) or Build University-Industry Learning and Development through Innovation and Technology (BUILD-IT). Lecturers can update the new teaching methods which promote independent study or "self-and genuine learning" to achieve the HCMUTE's philosophy *[Exh 4.3. List of workshops for Pedagogical Methods and Quality Assurance]*.

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

As described in 3.1 and 3.2, the teaching and learning activities are chosen to constructively with the CLOs which are to support students to achieve the programme ELOs. A variety teaching and learning activities are deployed depending on the types of learning outcomes.

(1) From the first semester, the course "Introduction to Environmental Engineering Technology" introduces students to the career orientation, job opportunity and roles of EET engineers in society, active learning methods. This helps them find out the way to learn in the university including teamwork, discussion, presentation, searching documents on the internet, presenting data and documents, and writing email, etc.. In this introductory course, students will learn how to learn, i.e, they will experience how the active learning and teaching should be. They are required to actively engage in group discussion, to design simple models in a team to experience the design process and teamwork, presentation, report… They are introduced to how to make a good presentation, how to work effectively in a team, how to make a good report…Those knowledge and skills be will applied and enhanced throughout the programme *[Exh 4.4. Activities in Introduction to Environmental Engineering Technology course]*.

(2) General knowledge helps students have good foundation to learn professional knowledge. Generic knowledge blocks contain 56 credits (37.3%) including Mathematics, General Chemistry, Politic or Social courses (Introduction to Quality Management, General Economics) and management course (Presentation Skill, Scientific and Technical Documents Writing). In addition, English courses help students be able to search document, read major books in English which are the main reference books in EET *[Exh 4.5. Syllabus of general knowledge courses]*.

(3) Fundamental knowledge and specialized knowledge are provided for students from basic to advanced, about environmental management, solid waste, polluted air treatment, water treatment

or wastewater treatment. Students increase the document searching skill and apply basic knowledge to solve problems by themselves following the guideline of lecturers. Besides, learning through course projects is a process of problem-based learning, trial and error. Lecturers also encourage students to find out the actual problems through urgent demand of society *[Exh 4.6. Sample reports of course project]*.

(4) Practical courses require students to take sample in order to test in labs. Field trips are often combined with theory courses for students to be able to apply knowledge in real situations, with the guidance of the lecturers. From the first year, students visit Can Gio Mangrove Biosphere Reserve to be aware of general environmental protection. In Practical Visiting course of 7th semester, students visit some waste treatment plants to connect the theory in general with actual knowledge. As a part of the EET programme, students must practice in companies for a month where they apply the fundamental principles and theories learned in class to actual work. They also get to know and work with professionals in real problem-solving situations before doing graduation thesis *[Exh 4.7. Activities of practice/experimental courses]*.

(5) Lecturers stimulate second-year students' passion in experiment and exploration through Environmental Research Methodology subject. From the projects they propose or work in this course, they can continue to do the scientific research by joining research teams with other senior and junior students under the supervision of lecturers. Students have access to laboratories to do research with modern equipment, instruments and models that are widely used in industries. Moreover, they can be also supported one part or full cost for doing research by the scientific research fund of HCMUTE. By doing the research, students develop independent thinking and reflective learning. Furthermore, to increase students' learning motivation and promote their curiosity beside research in the university, lecturers also guide students to participate in National contests such as Holcim prize, Eureka, Young Talent Support Programme "Toward Water Security" of Vietnam Brewery Limited where students' creative thinking are stimulated and fostered *[Exh 4.8. Prizes of students' competent contests]*.

(6) From all experiences, EET students have ability to form ideas to do scientific research or graduation thesis (10/150 credits) in order to solve environmental problems of the society. Students are encouraged to contact companies through referrals of HCMUTE or FCFT to do thesis at the companies *[Exh 4.9. Sample of a graduation thesis]*.

To promote students more actively in approaching knowledge, HCMUTE gives students supportive environment. Thanks to the diversity of equipment and teaching media such as blackboards, projectors, loudspeakers and micro, etc., lecturers flexibly combine blackboard with projector presentation for students to easily understand the lessons. Computers in computer room are installed with such applied software as AutoCAD, Access, Excel, ArcGIS, Epanet, etc., which are necessary for student to study fundamental and specialized knowledge in environmental technology. Classes hold in Central Building of HCMUTE and Library are set up with free wifi for students and lecturers to search information or to transfer data through email or Google drive. In addition, self-study areas in the Library with a variety of Vietnamese and English books as well as e-books would help students easier to self-study. Students also study in group in self-study areas in 5th floor and basement of the center building or open areas in building A and B. Laboratories are equipped with equipment and instruments for students to study and do research, graduation thesis and scientific playground. Students are also supported by teaching assistants through lecture notes, doing

exercises and checking the learning process *[Exh 4.10. Activities support teaching and learning processes]*

The teaching and learning strategies promote 'independent study' or 'self-and genuine learning' through some activities:

(1) Active learning in class increases the skills of students as lectures, class discussion, group discussion, teamwork, problem solving, etc. Students are grouped in two to five for class activities (such as assignment, laboratory experiments, students' project), which provides an ideal condition for collaborative learning *[refer Exh 4.2]*.

(2) Blended learning through the use of online lectures and resources through LMS system *(https://lms.hcmute.edu.vn/)* helps students access the lectures faster and more effectively as well as easily interact with teachers and classmates. Students can submit assignment or download documents through e-mail and LMS and receive the responses from lecturers about learning through phone, email, LMS *[Exh 4.11. Activities of consultancy team]*.

(3) Students are encouraged to do research with scientific research fund to stimulate and foster creative thinking by HCMUTE or local and external funds from the companies. Workshop and social contests as mentioned above are held annually in order to help students not only better understand different applications of learned environmental knowledge but also collect new information which is useful for their future learning and working. Furthermore, guest lecturers from environmental companies or foreign professors give a speech and provide continuing updates about environmental problems and advanced technology *[Exh 4.12. Activities to support research]*.

(4) Students are encouraged to do experience in real environment through practicing in company and some exchange student programme. In graduation pratice, supervisor of the company helps student find out some environmental problem and propose solution. Student have to adapt in new environment with multinational company *[Exh 4.13. Activities adapting to multicultural environment]*.

(5) EET lecturers build teaching profile following to course syllabus with suitable teaching and assessment methods. The cycle of "teaching, analyzing, evaluating and improving" is always done continuously in "reflective teaching" process to achieve better teaching efficiency through some activities such as observation of lecturers in class, the students' feedback survey, teaching visit of colleagues, teaching method seminars, etc. After the teaching method evaluation from students and colleagues or by themselves, lecturers collect all feedbacks and review to edit teaching profile and syllabus as well as teaching methods *[Exh 4.14. Evaluation of teaching and learning processes]*.

4.3. Teaching and learning activities enhance life-long learning

The teaching and learning strategies is 'independent study' or 'self and genuine learning' in order to promote life-long learning including professional and soft skills.

The learning passion through orientating career, introducing job opportunity and roles of EET engineers in society at the beginning of first year helps students find out the necessity of life-long learning. In the first two years, students study basic knowledge from Mathematics, Physics, Chemistry and Social science which help them solve environmental technical problems in the future. Soft skills such as teamwork, searching documents in internet, presenting documents, and writing email, etc. are supplied in Presentation Skill, Writing Scientific and Technical Documents subjects and after that applied in class seminar, research or graduation thesis, etc. Besides, English

capacity of the students is improved through three English courses and enhanced through English in Environmental Technology course. They can use these skills to read and write the English scientific paper or books in their major. Students can improve communication skill by joining English club in the university or faculty *[Exh 4.15. Activities of English club]*.

To develop ability in digital competence, EET programme is built with some applied software (AutoCAD, Access, Excel, ArcGIS, Epanet…) which help student approach actual modeling to solve management and technical problems. In addition, almost courses are combined on class with online. This blended learning method through the use of online lectures and resources through LMS system *(https://lms.hcmute.edu.vn/)* helps students increase self-study and manage their time effectively. Therefore, students are skillful in searching information from internet and can be confident to join online courses for higher education after they graduate *[Exh 4.16. Activities to apply IT in teaching method]*.

With 20 credits on practice/experiment courses, students solve basic problems and then find out EET knowledge academically. Therefore, students know how to apply knowledge in different situations, from simplicity to complexity, from breath to depth, with the guide of the lecturers. Learning through projects is a problem-based learning, trial and error process. When doing tasks or exercises given by their lecturers, students often receive instant feedbacks or recommendations. During course attending period, the cycle of "defining problems, analyzing, evaluating, system thinking and proposing possible solutions, estimating results, recommendation and applying new solutions" is often done. HCMUTE encourages students to do research or do project with scientific research fund from HCMUTE or local and external funds to stimulate and foster creative thinking. Their experiments in scientific are good motivation to pursue higher education as in *Figure 4.1 [Exh 4.17. Activities in scientific research]*.

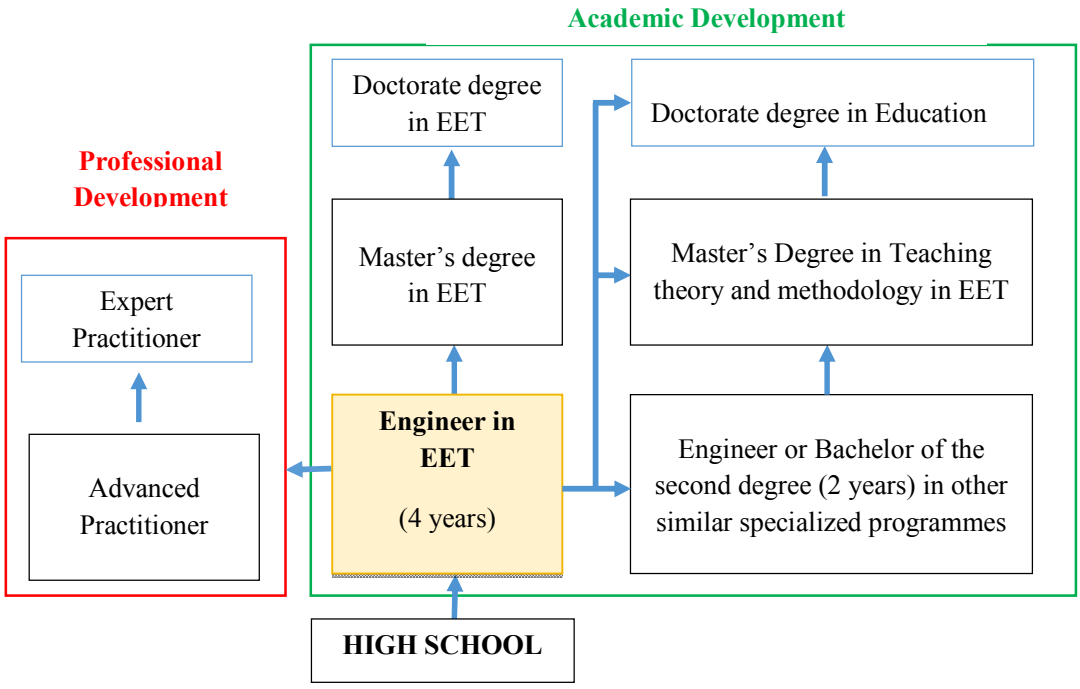

Figure 4.1. Higher education diagram of EET

Interpersonal and social skills of students are assessed through social activities. The Youth - Student Association (YSA) holds some activities such as Green Summer Volunteer Campaign, National University Entrance Exam Support Campaign, Blood Donation, contributing to the Fund supporting students/ children with difficult circumstances, and supporting people in natural calamity/ flood places… Students are also encouraged to join in some social contests to adapt to some social problems such as Green Environment – Clean Food, Design of recycled materials. Admission and Student Affairs Office (ASAO) evaluates students' service scores based on their activities in each semester. In order to encourage students to actively participate in those activities, the total score of all activities of every student combined with the accumulated GPA are used for evaluating the scholarships after each semester as well as considering graduation conditions later. In addition, students have to finish social activities per year such as Green Sunday, planting, helping high school pupils in university accessing, etc. *[Exh 4.18. Activities for interpersonal and social skills of students]*.

5. Student assessment

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

Assessment processes on EET students begin from the entrance exam, continue to formative and summative assessment in every course and finish with graduation thesis in order to ensure that the ELOs of EET programme are achieved. With entrance exam, EET students are selected annually in the National Upper Secondary Graduation Examination with the subjects including Mathematics, Physics and Chemistry (group A00); Mathematics, Biology and Chemistry (group B00); Mathematics, Chemistry and English (group D07). Besides, candidates graduating from High school from 2016 are considered to take a direct offer if satisfying the criteria *[Exh 5.1. Student enrollment scheme]*.

After being admitted to HCMUTE, fresh students are assessed for their English capacity at the beginning of the first semester and will be re-assessed at the end of the final year. Depending on their English capacity, the students are arranged to have suitable classes with English 1, English 2, or English 3. If English levels of freshmen are lower than HMCUTE standard, they have to attend some extra classes or learn by themselves before attending English courses. On the other hand, freshmen obtaining international English Certificates (such as IELTS, TOEFL iBT, TOEIC, etc.) or English certificates from organizations approved by HCMUTE will be permitted to pass two English courses of EET programme and register for English 3. In addition, the results of the English entrance placement also help student recognize exactly their English level; therefore, they could set up strategies for English studying at the beginning by themselves in order to get the English requirement graduation *[Exh 5.2. Activities to assess English ability]*.

To ensure the students can achieve the programme ELOs, CLOs of every course are designed consistently to match the expected learning outcomes of the EET programme. All lecturers in charge of each course discuss and give a unified conclusion on testing and assessment methods which are suitable for CLOs at the beginning of the semester. After that, the meeting of department is held to get the correlation between assessment methods and the ELOs of every course *(Table 3.2)*. The contents of each chapter, exercises and tests need to be in line with the CLOs. Furthermore, the diversity of assessment methods is also considered every semester in order to

ensure the ELOs achievement of EET programme. For example, assessment methods such as constructed-response test, presentation, essay, multiple choices, interview, project, etc. are used in different courses. To ensure the course objectives and ELOs coverage of examination, the Head of DET will revise the examination to ensure that knowledge and skills adapted to CLOs corresponding to course syllabus after the discussion among lecturers of the same course *[Exh 5.3. Activities to satisfy course learning outcome]*

DET send students to the companies/ factories for students' one-month practice to improve their professional attitude and awareness. The supervisor in the company and reviewer of DET will evaluate students through their work by rubric *[Exh 5.4. Assessment of graduation practice]*. To check all ELOs of EET programme, students apply all knowledge and skills to solve a real environmental problem through graduation thesis. The thesis score is evaluated based on the average scores of instructors, reviewers and the assessment council using predefined rubrics. Rubrics are intensively applied for CLOs about professional or general skills; attitudes and awareness *[Exh 5.5. Assessment of graduation thesis]*.

Social activities are also enhanced students' attitude and awareness. Admissions and Student Affairs Office (ASAO) evaluates students' service scores basing on their activities in each semester. The total score of all activities is calculated by the admission and student affairs. Students have to accumulate enough social day according to the regulation of HCMUTE for graduation *[Exh 5.6. Assessment of interpersonal and social skills of students]*.

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

For every course, lecturers announce timeline, formative assessment and summative assessment methods, rubrics, weight distribution, regulations in class in the first day of the course through subject's syllabus and LMS. *[Exh 5.7. Notification of student assessment]*.

DET gives three assessment type: diagnostic, formative and summative assessment which are discussed by lecturers of DET at the beginning of every semester and at workshops and seminars for teaching and learning, student assessment and quality assuarance. Lecturers evalute students' knowledge and skills through 15 weeks with diagnostic assessment such as 5-minutes papers, questionaires, multiple choice questions, attendances, etc. The formative assessment of experimental or practical courses are measured by rubrics according to attendance, participation in group activities, daily short report, obeying safety regulations, etc. Assessment of all courses for presentation, report or questionnaire is unified in rubric samples which are noticed in class and on website of FCFT. These assessments also follow the regulation of university and college in credit system. A 10.0 scale for grading the achievement of students is used in the courses and results of students' studies are classified into GPA *(Table 5.1) [Exh 5.8. Regulation of assessment processes]*. Marks with feedback are given individually to students through our website *(https://online.hcmute.edu.vn/)*

Table 5.1. Grade point average (GPA) for classification of student' studying results

Cumulative GPA	Equivalent of GPA scale of 4	Classification
8.50 – 10	3.4 – 4.0	Good

7.00 – 8.4	2.8 – 3.3	Fair
5.5 – 6.9	2.2 – 2.7	Average
4.0 – 5.4	1.6 – 2.1	Weak
Below 4.0	Below 1.6	Too weak

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

To evaluate fairly and accurately for all student to meet the CLOs after finished the course, grading weight is distributed 50% for formative assessment and 50% for summative examination. Formative assessment divides into many sub-tests with clear proportional weighting during a semester to ensure faithful *[Exh 5.9 Assessment of formative examination]*. Assessment methods of theoretical, practical course or thesis are presented in syllabus or teaching portfolio (Table 5.2). Rubrics are designed suitably for experiment, practice, presentation, report, internship and project to ensure the reliability and fairness and to unify the correlation among courses. Guidelines for graduation thesis are clearly described about the procedure, format, contents, assessment methods and rubrics which are announced on website of FCFT. *[Exh 5.10. Rubric assessment in assignment and graduation thesis]*.

Table 5.2. Assessment methods of formative assessment and summative assessment

Assessment objects	**Diagnostic assessment**	**Formative assessment**	**Summative assessment**
Theoretical courses	- Regular class attendance, - Participation in discussions, - Quiz test, 5 minute test, non-marking test	- Presentation - Essay - Questions and answers - In-class task completion - Homework and project completion - Participation in group activities - Report	Essay, multiple-choice, questions and answers, fill in blank questions, explain a procedure, draw a diagram, explain a phenomenon, etc.
Practical courses	- Regular class attendance, - Participation in discussions,	- Participation in group activities - Daily Short report	Report (final tests): calculate the data which is collected from experiments, explain the data and compare to the standards
Graduation practice	- Regular factory attendance		Report: present about solving environmental issues in companies.

Assessment objects	Diagnostic assessment	Formative assessment	Summative assessment
Course project	- Regular factory attendance	- Supervisors assess students through: Regular attendance; attitude in doing research - Assessors assess students through: solving problems; report (and drawings, etc.)	
Graduation thesis	- Regular factory attendance	- Supervisors assess students through: Regular attendance; attitude in doing research - Assessors assess students through: solving problems; report (and drawings, etc.) Assessment council assess students through: Presentation; dressing style, answering questions	

The feedback about evaluation is done: (1) by students; (2) by lecturers (self-evaluation); and (3) peer-review of other lecturers every semester. As a result, lecturer will change or update his teaching portfolio to utilize the cycle of 'teaching, analyzing, evaluating and improving' approach and use the suitable assessment to match the CLOs. Adjustment of rubrics is also done regularly with more criteria and details in scale grade to ensure the reliability and fairness *[Exh 5.11. Improvement in assessment methods]*.

To ensure validity, reliability coverage of summative examination, procedure for composing and keeping the test confidential, replicating writing test; delivering, receiving the test and grade is set up. In this procedure, the Head of DET or the authors of the examination ensure that knowledge and skills of course matched to CLOs which are mentioned at the end of examination paper. The scale grade of 0.25 for the answers of examination is discussed among lecturers in order to reduce the difference between students of the same course but different lecturers. After that, Head of DET will revise the examination *[Exh 5.12. Regulation and procedure of assessment]*. The security of examination copying, delivery and test scores are tightly regulated. The process of exam supervising is guaranteed by number of officers per the student (2 supervisors / 48 students) inside the room and one inspector outside the room. The process is taken seriously and fairly. Process of remark regulation permits students to request the check of the results of exams in a week after announcement of exam results. Teaching portfolio, examination, answer, result of final examination are kept with the form of documentation in 2 years in DET; mid-term tests are kept in 2 semesters by lecturers *[Exh 5.13. Procedure of monitoring and examination]*.

Besides assessment in courses, interpersonal and social skills of students are assessed through social activities. ASAO evaluates students' service scores basing on their activities in each semester. The total score of all activities of every student combined with the accumulated GPA are used for evaluating the scholarships after each semester as well as considering graduation conditions later *[refer Exh 5.6]*.

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

Feedback of student assessment on time is extremely important for students to timely improve learning methods and for lecturers to adjust teaching methods *(Table 5.3)*. In every lesson, diagnostic method is suitable for quickly assessment the comprehensive level of students such as 5-minute papers, quizzes, questions and answers, etc. *[Exh 5.14. Example of Diagnostic assessment]*

The results of some sub-tests in formative assessment are noticed to students timely within 1 week. According to the result, lecturers will adjust their teaching methods to make sure all students understand the lesson while students realize whether their learning methods are suitable or not. Therefore, students can change their studying methods to improve the quality at the end of the semester. Students also are assisted by teaching assistants under lecturers' guidance *[Exh 5.15. Activities of teaching assistants]*. If not, students can withdraw that course 3 weeks before the summative examination *[Exh 5.16. Course withdrawing regulations]*.

For summative examination, the diversity of assessment methods are unified at the beginning of every semester to ensure the knowledge and skills matched to ELOs. The examination and answer must be published on the website of FCFT within 2 days and the results must be announced in 1 week. Marks are given individually to students through our website *(https://online.hcmute.edu.vn/) [refer Exh 5.13]*. For the graduation thesis, students have to write a detailed proposal that is corrected by lecturers of DET and approved by the Head of DET. The feedback of detailed proposal evaluation timely helps students orientate the work in graduation thesis. During graduation thesis, instructor will feedback some comments in progress tracking notes every week *[refer Exh 5.14]*.

5.5. Student have ready access to appeal procedure

Appealing procedure regulation is designed by HCMUTE and rigidly controlled by Academic Inspectorate Office (AIO). After announcement of exam results, re-assessment can be done with the help of the faculty secretary within one week if students are not satisfied with these results based on the answers of the exam. In addition, HCMUTE has a clear remarking procedure in which AIO is responsible for dealing with letters of complaint. The re-grading process is done by other examiner with the monitoring of Head of DET. The results of re-grading will be informed to students in a week later. Students can also complaint about the assessment in class, on the online assessment every semester or in the meeting between students and representatives for FCFT and HCMUTE. In case those students are not satisfied with the solutions given by FCFT, they can complain to AIO to solve their problem. *[Exh 5.17. Appealing procedure regulation]*.

Table 5.3. Regulation of time for feedback of student assessment

Assessment method	Feedback frequency
Presentation	After presenting and answering questions
Sub-tests	≤ 1 weeks
Experiment	Results after every experiment. Students can repeat to get the correct results; the results will be submitted after lessons
Graduation thesis	Feedback every week on their essay, drawing, presentation (supervisors), feedback at the end of course on their essay, drawing (assessors) and feedback at the final oral presentation (assessment council)

6. Academic Staff Quality

6.1. Academic staff planning is carried out to fulfil the needs for education, research and service

The University develops its strategic plan for medium-term, implements and evaluates the plan every 5 years. The strategic plan starts with Strengths, Weaknesses, Opportunities, Threats (SWOT) analyses, summarizes the achievement of its previous strategic plan and planning for the next 5 years with vision up to 10 to 20 years later. Likewise, FCFT developed its latest strategic plan in 2014. This included the planning in education and research, human resource development, facilities, finance, external outreach.

For human resource planning, the faculty has planned for recruitment, succession and promotion for its academic staff in academic ranks (PhD, Associate Professor and Professor) and management positions (Head of Department, Vice Dean and Dean). The number of newly recruitment was based on the strategies in education and research (i.e., the number of students that will be enrolled, the new programmes to be launched, the strategies in research), and also the number academic staff that were going to retired.

HCMUTE conducts academic staff and support staff recruitment annually to ensure the staff number to meet the faculty's needs as planned in its Strategic Planning. *[Exh 6.1. Human resource development planning for academic staff]*.

Beside increase in number of academic staff, HCMUTE and FCFT also improve competence of academic staff by long-term planning and short-term planning. HCMUTE and FCFT not only encourage but also require academic staff with a master degree to obtain the PhD degree *[Exh.6.2. Regulation on competence improvement]*. For Short-term planning, following the academic year title/ annual quality targets and the needs of academic staff, HCMUTE and FCFT require academic staff to take part in the training courses held by HCMUTE or other organizations.

For the future human resource developments for academic staff, the working period is taken account of the academic degree or rank that lecturer obtained such as doctorates, professors, and associate professors/assistant professors. And with retirement age of 60 year-old for male and 55 year-old for female now it is considered to be extended; e.g. working time for PhD can be extended 5 years more, for Associate Professor is 7 years and for Professor is 10 years if HCMUTE has demand. In addition, working regulation and social welfare for the lecturers are determined by HCMUTE's regulations on working-hour, resting time and compassionate leave *[Exh.6.3. Regulations on working]*.

Manpower of DET has been improved in quality from 2014 to 2017, with 01 Assoc. Prof., 4 Doctors and 4 Masters at present. Most of these lecturers obtained PhD degree in foreign countries such as: Belgium, Korea and Taiwan... After graduating from abroad, the staff will be re-deployed quickly. For academic staff structure, the average age of lecturers (both payroll and contract) is 35, more than 77% of whom are senior lecturers and have more than 10 years of teaching. This proved that the academic young staff's quantity is more dominant; nevertheless, they have enough work experiences to meet teaching competence and research requirements.

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

According to MOET's regulation, the student to staff ratio must not exceed 20:1 EET programme complies with this requirement by ensuring manpower and workload norms to achieve the suitable student/academic staff ratio ranging from 15.2 to 24.2 with the number of full-time academic staff in DET of 9 since 2016 and 10 before 2015 *(Table 6.1* and *Table 6.2).*

Table 6.1. Number of academic staffs and full-time equivalent (FTEs) till August, 2017

Category	Male	Female	Total		Percentage of PhDs
			Head-counts	FTEs	
Associate/assistant Professors	1	0	1	1*1=1	100%
Full-time Lecturers in DET	1	7	8	8*1=8	50%
Full-time Lecturers in FCFT	2	3	5	5*0.3 = 1.5	100%
Full-time Lecturers in Other Faculties (Fundamental, Society, Economic, Informatics)	10	7	17	17*0.21 = 3.6	50%
Visiting Professors/Lecturers	6	1	7	7*0.28 = 1.96	50%
Total	20	18	38	16.06	

HCMUTE has a workload monitoring mechanism through its KPIs software. The KPIs software embedded in the University portal is used to evaluate and manage staff achievement in key performance areas which are teaching, research and services. *[Exh.6.4. HR and KPIs software].* The workload of every lecturer is regulated by MOET and modified by HCMUTE to meet its strategies as described in *Table 6.3.* Through KPIs, Faculty Dean and Head of Department know the working performance of the staff in faculty so that the lecturers themselves or Faculty Dean/Head of Department can adjust the suitable working load for lecturers.

Table 6.2. Ratio of students and academic staffs

Academic year	Total FTEs of academic staff	Total FTEs of academic student	Staff-to-student ratio
2012-2013	18.06	274	1/15.2
2013-2014	18.06	283	1/15.7
2014-2015	17.06	271	1/15.9
2015-2016	16.06	326	1/20.3
2016-2017	16.06	323	1/20.1

Table 6.3. Normalized working hour per year for academic staffs

Academic title	Teaching hour	Research hour	Other services' hour	Total
Senior lecturer, Professor	270	240	20	530
Associate Professor	270	210	30	510
PhD	270	195	60	525
Senior lecturer – Master	270	189	70	529
Lecturer – Master	270	177	80	527
Unofficial lecturer	270	75	180	525
Probating lecturer	135		400	535

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

Recruitment and promotion criteria of academic staff are established based on regulations, training and retraining plans to improve their professional quality. HCMUTE also has a clear recruitment process to employ the staff openly and intelligibly. The recruitment notice is published on the media such as Nguoi Lao Dong (The Laborers), Tuoi Tre (The Youth), Giao Duc va Thoi Dai (Education and Age)... also on the university website and Facebook ... in which the notices clearly indicate criteria for the recruitment positions. Results are publicly informed to candidates via a variety of means: HCMUTE's website, media and also by mail directly to the applicants. The applicants need to have the suitable professional degree, English capacity, scientific research ability and teaching experiences, and the applicants need to have a trial-teaching period with the department. Besides that, they also need to have a good appearance and also some special requirements from Faculty/Department. For example, currently with DET, the applicants should be preferably PhD holders or with master's degrees graduated from English speaking countries and at least 2 years-working experience in industry *[Exh.6.5. HCMUTE recruitment procedure]*. The English capacity and PhD holders are preferably criteria for recruitment to help HCMUTE and FCFT to achieve its vision in research and integration.

Before becoming an official lecturer, every lecturer needs to spend 01 year as probation. A competent staff with experience and prestige is assigned to be an instructor of this probating lecturer. Probating lecturer must follow rules and conditions for probation. After the probation period, if he/she performs well and meets all the aforementioned requirements, FCFT Dean will recommend them to HCMUTE to appoint them as a lecturer. However, to become an official lecturer, these new recruits need to pass the promotion exam according to the requirements of the functions and duties of the specific titles *[Exh.6.6. Probation period policies]*.

The promotion is based on professional qualification/ capacity (suitable major), management capacities/ experiences, achievement of research and teaching and credibility of staffs in the faculty and the department. There are two types of promotion: academic and management. Academic promotion is the promotion to the rank of lecturer, senior lecturer, associate professor and professor which is regulated by MOET and Viet Nam Laws of Higher Education. For the appointment of qualified staff at the faculty, the process of appointing Dean and Vice Dean of the faculty and Head

and Deputy Head of the department is issued. Dean and Vice Dean of FCFT and Head of DET must have professional qualification, teaching experience and scientific research capacity, and management capacity *[Exh.6.7. Decision on functions, tasks, authorities' definition]*. This process is conducted democratically and publicly through polls of staff credibility *[Exh.6.8.Decision on appointment statutes, re-appointment, resignation and dismissal of administrators]*. Promotion in career is salary increase and working contract. Lecturer with good working performance has a head of schedule salary increase, besides that, HCMUTE also sign the contract with longer time, e.g. three-year contract or indefinite contract.

6.4. Competences of academic staff are identified and evaluated

Academic staff competence and qualification for their job are specified in the documents such as academic staff standard, labor contract, job description *[Exh.6.7. Decision on functions, tasks, authorities' definition]*. An academic staff has to fullfil perform well in 3 areas, those are teaching, research and services.

For teaching, an academic staff in DET should be able to design and deliver a the curriculum, apply a range of teaching and learning methods and select the most appropriate methods to align with CLOs, using suitable assessment methods to ensure students achieve the ELOs. Furthermore, they also develop and use a variety of instructional media, monitor and evaluate their own teaching performance and evaluate courses they deliver and reflect upon their own teaching practices based on the evaluation. Teaching load also includes the supervision of student thesis and research.

For research, academic staff has to fulfill the research load as shown in *Table 6.4.* Research activities can be: (i) Taking the role of principle and collaborative investigator of a research project funded by university, department of science and technology of provinces, MOET, (ii) Publishing research papers in national and international journals, (iii) Giving talks at national and international conferences.

For services, academic staff can be student advisors, help the department, faculty or university with outreach activities such as providing consultancy to potential students in high schools, linkages with alumni and employers for student field trips and internships, scholarships…

Competences of staff are evaluated for raking promotion, decision of continuing contract and their performance related to each areas is supervised and evaluated using Key Performance Indicators (KPIs) *[refer Exh.6.4.]*. The performance of teaching is evaluated based on number of teaching hours, annual self-evaluation performance report, the quality of teaching evaluated by students at the end of each course and the assessment of department heads. The performance research is evaluated mainly based on the equivalent working hours generated from research work with a bigger weight for SCI/SCIE/ISI research papers and research projects from the provincial and ministerial levels that brings funding for the university. And lastly the performance in services is evaluated based on the hours devoted to activities such as training, student counseling, collective services, social activities, linkages with employers and alumni etc.

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

For qualification improvement, FCFT gives the annual plan in which each lecturer will register by themselves the advanced studying plan (doctoral or master programme) or professional academic as

well as English skills improvement. After receiving the plan of each lecturer, FCFT collects and has a proposal to the university. HCMUTE will decide to appoint the lectures to participate *[refer Exh 6.1]*.

Moreover, HCMUTE often holds some courses/ training courses/ seminars such as IoT (Internet of Things), LMS, English, Pedagogical course, etc. for the lecturers to improve computer skills, English skills and teaching competences *(Figure 6.1)*.

To implement the manpower training and development, HCMUTE promulgates internal expenditure rules in which there is support cost norms for postgraduate. Besides that, HCMUTE also reduces the teaching hours loading from 50% to 100% for lecturers taking part in master and doctoral course depending on concentrated (full-time) studying or non-concentrated (part-time) studying, in Vietnam or in foreign countries. Statistics of financial needs to 2020 in development strategy plan 2011-2015, vision to 2020 listed funds for training activities, in which proposed spending for doctoral degree is 17 billion VND, for master is 1.7 billion VND, for improving foreign language capacity is 5 billion VND and for short-term training is 2.5 billion VND. In addition, HCMUTE also gives funding for lecturers to join seminars or conferences by giving registration fee, travel cost or accommodation expense

Beside sending lecturers to external conferences, HCMUTE regularly organizes national and international conferences and workshops to create opportunities for lecturers to exchange experiences in scientific research among scientists, and also provides Springer account to access database of international academic journals. In addition to the scientific research activities of university, FCFT and DET also hold seminars each semester through the Key Scientific Research Team named Chemical – Environmental – Food Technology (CEFT) *[Exh.6.9. The list of CEFT seminars]*.

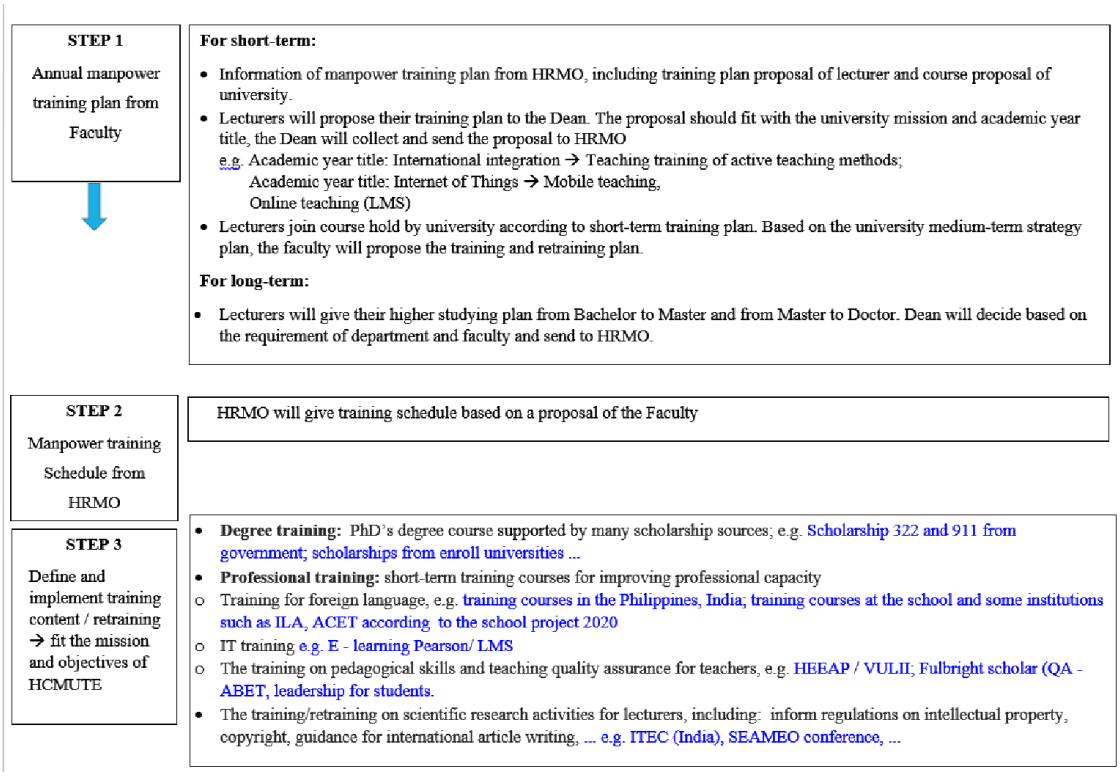

Figure 6.1. Training and developmental process of academic staff

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

Before 2016, the performance report was produced in paper documentation. Since 2016, the university has implemented KPIs system which is used to evaluate academic staff each semester *[refer Exh.6.4]*.

With the results of performance assessment, the procedure for staff wage increase is implemented through circular on guidance for the implementation of staff usual wage increase and early (ahead of time) wage increase based on individual achievement in teaching, researching and service *[Exh.6.10. Regulations on staff wage increase]*. Assessment results are used to consider to increase salary depending on the rank categorized A, B, C, D, E, F. There are 02 types of salary increase: planned salary increase and early (ahead of time) salary increase. Moreover, these results are also used to determine whether academic staff can get a title of Excellent staff of HCMUTE/ MOET/ Prime minister, have promotion by increasing ranking, or get rewards in cash and honored title *[Exh.6.11. The official statement of guidance for emulation - bonus]*.

Besides regular rewarding, HCMUTE also gives academic staff financial reward and recognition for their outstanding contributions to education, research and service *[Exh.6.12. List of rewards and recognition for lectures with their outstanding contribution]*. To encourage research, academic staff with research papers published on national and international journals will receive bonus with a big bonus will be given to SCI/SCIE/ISI publications. Bonus for SCI papers is equivalent to 60 million VND (around 2800 USD), SCIE papers 45 million VND (around 2100USD). Funding is also provided for conference participation.

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

The University has constantly revised its policy to attract academic staff with PhD degrees and good performance in research *[Exh. 6.13. Policy to encourage research – Academic staff handbook]*. Thanks to its policy in research and human research, the quality and quantity of published articles of DET in prestigious national and international journals annually increases as shown in *Table 6.4. [Exh.6.14. Statistics on Scientific publication 2012-2016 of DET]*

Table 6.4. Scientific publication statistics of DET from 2013 to 2016

Academic year	Types of Publication		Total	No. of Publications per Academic Staff
	National	International (SCIE papers)		
2012	1	3	4	4/11 = 0.36
2013	2	4	6	6/11 = 0.55
2014	2	4	6	6/10 = 0.6
2015	0	7	7	7/9 = 0.78
2016	0	6	6	6/9 = 0.67

Since HCMUTE has regulation on academic workload in which research output is a main component, research output of academic staff is monitored and academic staff can adjust their plan to fulfill their KPIs. For example, if an academic staff does not meet the requirement of research in the first semester, he/she will have to spend more time for research to publish in the second semester.

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

As described in sub-criterion 6.1, HCMUTE strategic plan for the period of 2011-2016 and the current one for the period 2017-2022 with vision to 2030 covered the strategic plan for human resource development whereas support staff planning was carried out. The support staff planning was based on the plan of the university in terms of projected number of students, number of units/offices, the newly introduced services… and the demand of support staff from units/offices. The support staff planning also included the type of training that need to be provided for support staff so that they can fulfill ever increasing requirement of their jobs *[Exh.7.1. Human resource planning for support staff]*. HCMUTE has an increase in number of support staff such as technicians for laboratories, library, IT facility services and staffs in other offices to ensure the needs for education, research and service.

At present, HCMUTE has 181 support staff in different units/offices. Most of the services for students are centralized at university level, supplemented by the faculty levels. The number and qualification of support staff are described in *Table 7.1.*

Table 7.1. Number and qualification of support staff of HCMUTE

Support staff	Highest Educational Attainment					Total
	High School/ College	Bachelor's	Master's	Doctoral	Associate Professor	
Laboratory Personnel in FCFT		2	1			3
FCFT Advisory Group	3		5			8
Library Personnel	2	9	2			13
IT Personnel	3	2	2			7
Student Services Personnel		3	2			5
Youth and Student Associations	12			1		13
Academic Personnel		8	3	1	1	13
Health Care Personnel	2	1				3
Administrative Personnel	2	4	2			8

Support staff	Highest Educational Attainment					Total
	High School/ College	Bachelor's	Master's	Doctoral	Associate Professor	
Admissions and Student affairs Personnel		7	3	1		11
Public Relations Personnel		5	1			6
Science and Technology Personnel		3	2		2	7
Academic Inspectorate Personnel		3	3			6
Quality Assurance Personnel		2	4			6
Equipment and Maintenance Personnel	5	5	2	1		13
Facility Management Personnel	2	4	2			8
Human Resource Management Personnel		6	2		1	9
Finance and Planning Personnel	1	11	2			14
International Affairs Personnel		1	1	2		4
Digital Learning Personnel		1	2			3
Guard Team's Personnel	21					21
Total	53	77	41	6	4	181

FCFT builds the development strategy plan based on HCMUTE's development strategy plan for human resource development. Every year, FCFT also proposes the quantity of support staffs (secretary, lab technician/manager) to the HRMO based on the number of laboratories and student enrolled. The number of actual and proposed support staff is shown in *Table 7.2*

Table 7.2. Number of actual and proposed support staff in FCFT

Year	2013	2014	2015	2016	2017	2018
Master	0	1	2	2	2	2
Bachelor	3	2	1	2	2	2

Total (Proposed data)	3	3	3	3	4	4
Total (Actual data)	3	3	3	4	4	

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

HCMUTE has an ISO procedure for recruitment. Information and recruitment criteria for each position are clearly defined and informed on HCMUTE's website and as well posted on the newspaper and online presses such as Nguoi Lao Dong (The Laborers), Tuoi Tre (The Youth), Giao Duc va Thoi Dai (Education and Age). The process of staff recruitment describes detailed instructions with step by step from: planning; recruitment notification; receiving applications; reviewing applications; testing of the professional qualifications, foreign language, information technology, and IQ; interviewing at the faculty and at Admission Council; informing recruitment results, and lastly signing contract for the first time... *[Exh.7.2. Procedure of recruitment and human resource development training]*.

Support staff also need to pass the probation period (one year) before becoming an expert. The instructor assigned to guide these support staff and will verify their performance before passing the probation period *[Exh.7.3. Probation period policies and procedures]*.

Selection criteria for the deployment are based on staff qualifications and working experience. The Faculty Dean/ Unit Head arranges the suitable positions depending on the employee's tasks and job descriptions. *[Exh. 7.4. Competences and Job description]*. For the appointment of qualified staff at the Office, Centre; HRMO issued appointment process of Head and Deputy Head of Centre, Office. This process is taken democratically, openly and transparently through steps including: taking letters of recommendation and polling the credibility of staff and key staff in the unit *[Exh.7.5. Decision on appointment statutes, re-appointment, resignation and dismissal of administrator(s)]*.

Manpower plan has been actively established on management staff sources for HCMUTE. This management staff source has an increase in quality to meet the requirements of HCMUTE in the development of management team. Staffs appointed to the management position are adequately ethical and professionally competent in accordance with standards and criteria of the Viet Nam Laws of Higher Education and the Charter of the University to ensure completion of the assigned work.

With working performance, support staff will have a promotion in career which will result in increasing salary, continuing to sign the contract from 1 year, 3 years or indefinite contract as well as getting a higher position.

7.3. Competences of support staff are identified and evaluated

The competences of support staff are clearly defined in the announcement of recruitment. The specific competences required for each job position are identified by the corresponding unit/offices. The university also requires support staff to have general competences in English and IT *(Table 7.3)* shows the competences required for support services within FCFT. The competences and job descriptions are detailed for each job position *[Exh. 7.4. Competences and Job description]*.

Table 7.3. Competency of support staff in FCFT

Support staff	Job responsibility	Qualification	Number

Secretary	- Support students the university regulations, administrative works. - Manage ISO documents and KPIs documents.	Bachelor's or Master's	1
FCFT Consultant team	-Be in charge of academic matters about choosing and registering courses each semester; learning methods, in-debt credits, and credits accumulation for graduation; how to do thesis project, scientific research… through direct ways of consultation such as phone, email, website, Facebook,... -Consult student in supporting policies, psychology.	Bachelor's or Master's	8 Including: 1 FCFT Vice Dean 3 Lecturers 1 Secretary 3 Students
Laboratory	- Manage the laboratory following teaching plan. - Handle the chemical risk in the Lab. - Assist lecturers teaching in the Lab. - Check the asset inventory related to laboratory to make a maintenance plan and purchasing equipment and chemicals.	Bachelor's or Master's	3

Competences of support staff are evaluated monthly using a Key Performance Index system which is online (www.kpis.hcmute.edu.vn). The evaluation includes self- evaluation by the support staff and the evaluation of their immediate supervisors.

To get the information of service quality, student service quality is surveyed through a survey on undergraduate students that has items about student service quality and through annual meeting with students and conversation. The competencies and expertise of the support staff are adequate. Annually, QAO has organized a survey about the university service quality presenting the preliminary results of the assessment and improvement activities to evaluate the competences of support staff. Besides university's survey, every semester, the Head of Consultant Team in FCFT also evaluates the service quality of consultant team with 3 levels (excellent, good, fair) and proposes reward for active and effective staff. *[Exh.7.6. Survey on service quality of staff and student]*.

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

Training of support staff arises from the theme of the academic year/annual quality targets, where HCMUTE requires support staffs to attend training courses organized by the university or other institutions based on job requirements. Support staffs need to propose which course they would like to attend at the beginning of the academic year *[Exh.7.7. Training and development plans for support staff]*

Based upon FCFT's staff development plan for the support staff training requirements and development, support staff will be required to undergo one-year probation to be considered the expiration of this period before becoming full-time employees. During this process, the university

always focuses on the training/retraining of personnel and related activities. HCMUTE often open the English classes, management classes or send the support staff to attend training course on how to operate the equipment in the lab, and fire protection training course *[Exh.7.8. List of report and certificate of training courses]*. Therefore, the training activities for support staff per year meet the needs of the team aspirations.

HCMUTE also encourages and facilitates staffs or technicians to take graduate programmes in National institutes to improve the qualification *[Exh.7.9. Regulation on qualification improvement]*. Support staff's training expenditure is based on the HCMUTE budget *[Exh.7.10. Internal Cost Norms]*.

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

The performance management system is described through some activities such as paper self-report (before 2016) and KPIs system *[Exh.7.11. KPIs system and Paper self-report]*. By paper self-report, support staff is evaluated at the end of academic year, however, at present with KPIs, the performance is assessed monthly so that support staff can adjust or improve their working style. Gaining good performance assessment, the support staff has motivation to work more effectively. The criteria for performance evaluation are quality and productivity, quantity, and compliance with regulations. HCMUTE has evaluated the working staff effectiveness by officially classifying at the levels A, B, to E each month, as well as by the total results of classification in the annual competition *[Exh.7.12. The official statement of guidance for emulation - bonus]*.

At the end of academic year, the appellation of "Character of Year", "Primary Competitor", "Progressive Laborer" is polled. From that, reward and recognition for staff is determined and implemented by giving the appellation, increasing salary additionally, and giving a productivity bonus. In addition to the regular rewards, the reward with money and salary increase ahead of schedule for emulative titles at HCMUTE and MOET levels, or the rewards from the HCMUTE President for guiding students winning the prizes at competitions… *[Exh.7.13. List of rewards and recognition for support staff]*.

8. Student Quality and Support

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

The admissions process applied at HCMUTE is based on the regulation of MOET and HCMUTE's enrollment scheme. There were a lot of changes in HCMUTE's enrollment scheme since 2016 compared to 2015. The EET programme is allowed to enroll students in three schemes:

- Enrolling students based on their high school academic achievement (maximum 40% of the total enrollment).
- Enrolling students based on their result of National High School Certificate Examination.
- Students with award in research or Olympic Competition at National level for high school students and students graduated from gifted high schools with academic transcripts meet the threshold scores announced by HCMUTE.

EET programme targets at high school students with STEM competence so Mathematics, Chemistry, Biology and Physics scores either in high school academic transcripts or National High

School Certificate Examination are the admission criteria. The programme also enrolls students with good scores in English since English competency is important for student success in their study and career. Students can use their scores in groups of Mathematics, Physics, Chemistry (A00), or in groups of Mathematics, Chemistry, English (D07) or Mathematics, Chemistry, Biology (B00) to apply for admission to the programme.

HCMUTE has many programmes and policies to attract talent students such as financial scholarship for freshman, free and discount tuition fee for female students, priority for admission for high school students with research or Olympic awards organizing for high school students at National levels. HCMUTE also gives priority to students from remote areas, ethnic minority groups, and war valid family by adding bonus marks based on the regulation from MOET. Besides, HCMUTE also provides scholarships (100% tuition fee) for students who apply for "Technical teacher" programme. Especially, HCMUTE has scholarships for pupils in many high schools called "HCMUTE potential students". There were 400 scholarships awarded to the potential students in high school since 2016 *[Exh 8.1 HCMUTE's admission procedure]*. The other policy to attract talent pupils is to give scholarships to students who have achieved total scores greater or equal to 24 out of 30. The scholarship is equivalent to 3 years of tuition fee (for cohort before 2017) and 2 years for cohort 2017.

This policy is popularized by multiple forms and mass media. Not only the policy but also documents which support the admission process is published and posted on the official website *(http://tuyensinh.hcmute.edu.vn)*. Moreover, there are many direct or online consulting activities used to propagate our policy. These activities are Job orientation fair – Open day, Online consultation on UTE – TV Channel, Direct consult, Hotline and Consultation in the local via the volunteer network, Café with the HCMUTE President. Besides, via media channels such as newspapers, online newspapers, broadcast, HCMUTE's admission policy is publicized officially in brochures, flyers and posters *[Exh 8.2 Approaches to inform the HCMUTE student intake policy and admission criteria]*.

HCMUTE's admission policy is adjusted and updated every year to reflect the changes in admission policy and criteria.

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

There are 3 methods to select students with the criteria as follow:

- For candidates using the result from their National High School Certificate Examination, the total score of three subjects belonging to one of 3 groups A00, B00, and D07 as described in sub-criterion 8.1 will need to be higher than the threshold decided by MOET. The total scores including the bonus points for disadvantage students regulated by MOET based on their ethnics, area of living…For those potential students, they will be selected if their total scores are above the cut-off scores for a particular programme. The cut-off scores for HCMUTE programmes in general and EET programme in particular are much higher than the threshold score decided by MOET and relatively high compared with similar programmes of other universities in Ho Chi Minh City. This scheme could enroll a minimum 60% of the total enrollment.
- For candidates using their high school academic transcript, their total scores in either groups A00, B00, or D07 must be higher than the threshold scores announced by HCMUTE. This enrollment scheme was just introduced since 2016 when MOET allowed universities to enroll

students using this method. Students in this enrollment scheme are elected if their scores are above the cut-off scores. This scheme could enroll a maximum 40% of the total enrollment.

- Candidates graduated from gifted high schools with academic transcript of subjects in groups A00, B00, or D07 meeting the threshold announced by HCMUTE, or candidates with award in research or Olympic Competition at National level for high school students will be admitted to the programme.

The number of admission to the programme is restricted by the training capability and labor market's need. Therefore, cut – off score is determined highly enough for EET to choose candidates in the top. Although the quantity of applied students always reached over the target, the quality of input students has improved stably. *[Exh 8.3. EET programme's cut-off scores].* Additionally, the checkpoint graph of EET in four universities from 2012 to 2016 is shown in *Figure 8.1.* In general, the checkpoint of EET at HCMUTE is the second highest point in comparison with the other universities which are Nong Lam University (NLU), HCM University of Technology (HCMUT), Industrial University of HCMC (IUH). In addition, it moves upwards stably and steadily in the 5-year period. This result reflects exactly what the advantages of policy bring back.

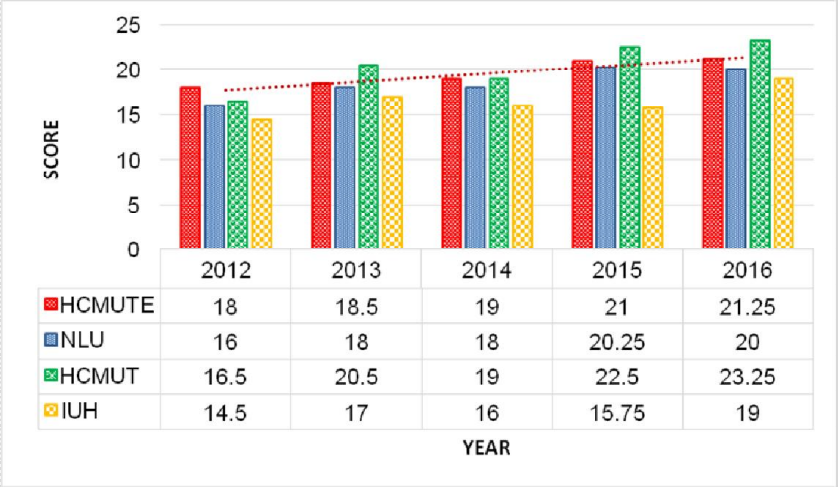

Figure 8.1. Checkpoint Graph of EET in 4 universities 2012 – 2016

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

FCFT has appropriate systems to monitor learning progress, achievement and academic load of study. On HCMUTE's web pages *(https://online.hcmute.edu.vn/),* lecturers can manage their classroom through access data on student lists, progress grade entry, final exams grade; students can sign up courses, track schedule, the schedule of exams, the notification of the university, academic monitoring through the average-grade statistical graphs on the semester. On the LMS web pages *(https://lms.hcmute.edu.vn),* lecturers can manage the teaching process, updated lessons, exercises, to keep track of the student's feedback on coursework. *[Exh 8.4. E/M learning activities]*

From the monitoring and warning-system which is given by the AAO, FCFT and students can track the training grade and a list of students under academic warning at the end of the semester. The AAO has sent the statistical grade-system, number of students enrolled and graduated, the warning-study to FCFT every year. Besides, the Dashboard system, which was established by AAO in 2015,

is also used for monitoring and managing the student's academic results. This system is now being improved. The team of consultants can directly contact warning-study students by phone, email to solve their trouble. Besides, these students also can directly ask the consultant team via FCFT's website, email, social network, phone-line *[Exh 8.5. Student's online training management system]*.

The load of study has been distributed suitably in each semester and full training programme *(Table 8.1).* There are 150 credits in 8 semesters corresponding to 18 - 22 credits per semester, 10 credits for the graduation thesis in the final semester. This knowledge including general and professional education is distributed to ensure flexibility, adaptability, updating with practical needs and the needs of the student. Students can ask the advisors about the information of the courses in detail, the benefits of attending these courses and then enroll for the study load accordingly. Furthermore, these students can study accumulatively more interesting courses which are not provided by FCFT.

Table 8.1. Number of credits per semester

Semester	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**
No. credits	17	20	21	23	21	21	17	10

FCFT uses the indicators as course grade, progress grade, total course grade to monitor the learning outcomes of students for each course; and uses GPA of semester and cumulative GPA to monitor the academic progress of students. Students register and withdraw courses more or less than the study plan depending on their competence by using the portal system. However, HCMUTE supervise student workload in each semester from 15 credits to 30 credits. Moreover, some functional units of HCMUTE, such as SSC, SAO or YSA, support student on extra curriculum activities, morals, ethics to achieve the social scores, ever since updated academic and social scores on the monitor system *[Exh 8.6. Regulation on monitoring students' extra curriculum activities]*.

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

FCFT pays special attention to the training of first year students. At the beginning of each academic year, FCFT organizes the Introduction to Environmental Technology course, the Freshmen Welcome Ceremony to communicate with alumni, exhibition of scientific research products, training to use the Library. These activities aim to present the purpose and significance of career, create the link between the students and society, create the passion for learning orientation for students, and introduce about HCMUTE and FCFT. *[Exh 8.7. Activities in Orientation week]*

The freshmen are delivered with a Student handbook which contain full of information about the learning outcomes, EET programme, progress training, graduation requirements. FCFT introduces about some English clubs and other clubs to enhance foreign language and soft skills for the first year students. *[Exh 8.8. FCFT's English club]*

Lecturers participate in consulting the students in orientation and course registration. The lecturers encourage students to practice self-learning, take the initiative in problem solving. Besides teaching theory, doing experiments on laboratory, guiding the implementation of project work, thesis, the actual working-place visiting, lecturers also guide students to perform scientific research and participate in creative competition from scientific research funding of HCMUTE and the technology transfer activities.*[Exh 8.9. Creative competition from scientific research funding]*

To improve learning and employability, FCFT lecturers and the students participate in competitions as well as extracurricular activities such as Green Environment & Clean Food Competition, Environment festival date, career orientation sessions and seminars on how to write curriculum vitae (CV) and soft skills, the equipment exhibitions, short-term training courses which are organized by enterprises. In these competitions, students of HCMUTE and other universities showed their eco-friendly products and knowledge about the environmental protection. *[Exh 8.10 Student's competitions and extracurricular activities]*

With the support of FCFT and functional offices in finding the source of part-time employment, participation in social activities, short-term training courses on soft skills, students are equipped with professional skills to easily find a job after graduation and follow favorite training programme. DET and ERO also have a link to organize job fairs to create opportunities for graduates and students. At the job fairs, the students are interviewed by the employers. *[Exh 8.11. Job support services and careers guidance]*

Before 2014, HCMUTE organized the academic advisors who are lecturers for every class. After that, HCMUTE established a team of consultants who are staffs from functional offices, lecturers and students, supporting students in regulation, policy, academic, research, psychology,… *[Exh 8.12. FCFT 's team of consultants]*

Through the career orientation seminars, factory visiting tours, graduation practices in enterprises the students understand clearly the promising career opportunities and FCFT is supported scholarship, sponsor, practice or recruitment information,… from enterprises.

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

HCMUTE has infrastructure for the learning of students (study room, library, laboratory, self-study session with free wifi coverage almost study areas; for arts and cultural activities (hall, school yard,…); and for the sport activities (sport fields for volleyball, basketball, football, Karate,…). HCMUTE supports the accommodation for students with 2 dormitories (311 rooms accommodating 2,416 students) along with 04 cafeterias-canteens and supermarkets which ensure safe eating foods with essential shopping and good price for students. *[Exh 8.13. FCFT's physical environment]*

Besides, HCMUTE encourages students in organizing and joining clubs for soft skills and entertainments, such as music clubs, dance clubs, sport clubs, soft skill clubs,… or activities which organized by YSA.

Students participate in charities with many topics associated with social work, community cohesion (20 programmes/ year) such as a gift for the baby exposed to Agent Orange, Mid-Autumn Festival, art performance in the remote regions, free lunch for children and the homeless. Students also participate in volunteer activities such as blood donation, visiting orphans. Through these social activities, students will gain practical knowledge, develop good personality and have sense of responsibility to society. FCFT really cares about the safety aspects of all student activities. *[Exh 8.14. FCFT's social environment]*.

The counselors from functional offices or from FCFT are enthusiastic in academic advising as well as life advising. Students can present their trouble; relieve psychological pressure with the experts from HC or SSC. After the stressful study, students can join the open-air tours, sightseeing

practicing or activities of physical education or sport game. Beside consolidating and improving knowledge, students will have more time for fun relaxation from these activities. Furthermore, the counselors from FCFT also help students to search for the scholarships, to overcome the economic difficulties with these supports. For the concerns as well as the difficulties of student's life, ASAO also has the financial support policy as giving students a loan. On the campus, HC has supplied the health care services such as medical insurance and regular-full health care for students, initial medical examination for students at the time of admission,. *[Exh 8.15. FCFT's psychological environment]*.

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

HCMUTE has 2 campuses with the total area of over 21 ha. The head campus (campus 1) is located in Vo Van Ngan str., Thu Duc district and the campus 2 located in Le Van Viet str., district 9, Ho Chi Minh City. It takes approximately 15 minutes to go to Campus 1 from Dormitory No. 2 (in district 9) by bus. Since 2007, the university has completed 4 new infrastructures: Hi-Tech Center, Complex building, Central Building and Dormitory 2. Besides, HCMUTE also has renovated some blocks such as A,B,E because the demand increases rapidly. At the first glance, HCMUTE has totally 256 classrooms, 1 digital teaching center, 01 library, self-study spaces and 158 laboratories, practice workshops etc. Most classrooms are fully-equipped with multimedia system which includes cameras, microphones, televisions, projectors and free wifi. Moreover, learning and working space of students and lecturers is expanded to be environmentally friendly, where users are supplied with tables and chairs, chargers for devices, free wifi connection to meet the demand of group working or self - studying.

At the beginning of 2017, HCMUTE continues to launch the building F1 which will locate the laboratory of EET major. In 2017, the drainage system in HCMUTE campus had been started implementing. This is also a very useful place for students to visit and study. Every year, the equipment is repaired and replaced with a budget of up to approximately 300,000 USD depending on the annual investment plan. IT applications and infrastructures are also upgraded through a sum of 900,000 USD. *[Exh 9.1 HCMUTE campus information]*

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

The Library is located on an area of 1,430 m^2 on the 1st and 2nd floor of building A. In the Library, students and staffs can borrow the number of books including textbooks, references, technical standards, thesis, etc. In particular, there are more than 66,000 books related to EET field. In 2012, a digital library was designed in order to provide infomation and electronic documents for readers. Particularly, digital library serves in searching information of students and lecturers during 24 hours per 7 days (*http://thuvien.hcmute.edu.vn/)*. Each reader is provided with an account to sign into the digital library. By this way, users can look up and download free ebooks from the e-resources. Besides the available resources, the digital library also provides lecturers with accounts of other digital libraries around the world. *[Exh 9.2 Library resources]*

With the aim of creating an open space, the Library is designed with 2 self - study areas on the 1st and 2nd floor in building A, which attracts many students to join and study. In 2017, HCMUTE expands the Library areas to serve for the need of students and lecturers. The whole area of 1,700 m^2 at the basement of Central Building was designed to become a modern self – serviced area. *[Exh 9.3 High quality Library]*

In recent years, HCMUTE has had many preferential policies for the authors who are HCMUTE' lecturers by cash, cash prize and publication fundings. Since the number of books, textbooks and leaning materials have increased significantly, the creativity and motivation of lecturers is enhanced significantly. Until 2017, DET has 4 books and texbooks that have been published *[Exh 9.4 List of curriculum and textbooks written by the faculty of the Department of Environmental Technology]*.

Moreover, the Library also invests in more resources. There are a lot of companies and organisations to accompany with the Library by funding many softwares, donating books. Every year, lecturers and students have more opportunities to participate in a lot of activities which have been organized by the Library, such as book fairs, book fair exchange, seminars, training and so on. Especially, at the beginning of semester, new students are introduced about the infomantion of operation and guidance method about library resources *[Exh 9.5 Annual events in the Library]*. When readers have complaint about quality of service in the Library, they can send their feedbacks by mail – boxes or e – mail. Besides, the Library often conducts online surveys which are sent to users to improve the quality of service *[Exh 9.6 Feedback about quality of service]*.

9.3. The laboratories and equipment are adequate and updated to support education and research

DET has 04 laboratories, such as Environmental Analysis, Environmental Microbiology, Advanced Technology and Waste Treatment Pilot. Here, students can study, do scientific research and experiment. In addition, students of DET can experience their studying better via computer systems and other laboratories in FCFT. In particularly, DET received a project of Advanced Technology laboratory with an investment of more than 200,000 USD from the goverment budget. According to the results of observation, the number of machines managed by the department is nearly 40 categories. With the investment from high - tech laboratory, many analyzing equipment with high accuracy, greater sensitivity (HPLC, UV/VIS etc.) help students make intensive experiments and bring good value for scientific research results. *[Exh 9.7 DET laboratories]*

Quality status of the equipment is updated and reported to the manager daily through operating record. Furthermore, Equipment and Maintenance office responds to control and sort them twice a year. In addition, based on the analysis of equipment efficiency, DET has plans for use, maintenance and additional purchasing. Since then, the investment plan is submitted to the HCMUTE President. Every year, the total expense invested in equipment for DET is from 100 million to 150 million VND. *[Exh 9.8 Financial plan for facilities and equipments]*

In the laboratory, the safety of people (lecturers, students, visitors) is protected through: panels, guidelines, document management system, manager, training programme, personal protective equipment. Each lab has enough the on-site fire-fighting equipment (fire extinguishers, hammers, fire alarms), first - aid kit, personal protective equipment (blouses, safety glasses, masks, gloves etc.). Everyone has to record their personal information in the laboratory diary kept by the manager if they want to enter the laboratory. Contact information to the lab manager is announced on the

main doors to all of students and staffs. The missions of the laboratory staff are managing equipment and activities within the room, preparing for lessons. Machinery and equipment are always in a state of operational readiness. Over 100 chemicals also have Material Safety Data Sheet – MSDS. All hazardous wastes generated from the labs are classified, collected, stored and treated in accordance with current legal requirements. *[Exh 9.9. Health Safety Environment Security management system in LABs – HSESMS]*

In 2017, Building F1 has been started and built. This will be the new location of the laboratory system of FCFT *[Exh 9.10. Building F1 project]*. In parallel, the drainage system has been also started. One of the important items of the project is the head quarter in the drainage system, in which all operations of the treatment plant are controlled. Therefore, this becomes a good place of learning and practice for EET students to see the real operational conditions. *[Exh 9.11. Drainage system project]*

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

Here and now, almost all education management activities are administrated based on IT system which includes specific softwares and website to raise the effective usage.The University has developed specialised software system PSC managing information about unviersity's operation including education management, marking multiple choice examinations, asset management, library management, human resource management, getting feedbacks from students and staff via surveys. This software is designed to store and manage database systematically to provide convenience and efficiency to the university's management. Every staff and every student has an account ending in the HCMUTE domain name (@hcmute.edu.vn and @student.hcmute.edu.vn) to sign in this system on the HCMUTE's website (http://hcmute.edu.vn). For instance, staffs can query e-records via http://eoffice.hcmute.edu.vn and manage learning information such as http://online.hcmute.edu.vn. Students can register for units, access their learning results, check exam timetable and receive other information related to studying on, make online course registration via https://dkmh.hcmute.edu.vn, search and download materials from http://thuvien.hcmute.edu.vn and access to online courses via https://lms.hcmute.edu.vn. Besides the University's main webpage, all departments have their own websites to promote and offer their specific information.Wifi covers in Central Building, classrooms and self - study areas. Lecturers and students are allowed to use the free wifi through login accounts that have been granted. Data transfer speed is high enough for users to study online on LMS without interruption. *[Exh. 9.12. HCMUTE Information technology system]*

In 2015, Digital Learning Centre (DLC) was established at HCMUTE. This is the first studio with many modern equipments in the South of Viet Nam. The digital learning studio is a 300,000 USD co-investment between HCMUTE and the HEEAP Alliance partners, specifically Arizona State University (ASU), Intel and Pearson. The classroom has a capacity for 50 people arranged in 7 work stations. Each group is equipped with multimedia tools and supported to connect to lecturer by virtual collaboration. The DLC allows users to make video conference, workshop, online counseling with other higher education institutions or learners everywhere via internet connection. *[Exh. 9.13. Digital Learning Centre]*.

All teaching and learning activities are recorded by 3 cameras, transmission rate of Internet is sufficiently high not to lag in connection process. At this moment, there are 100% theory courses

which are sponsored by DET designed on LMS System. Students are allowed to sign in their courses to complete all of tasks before the final examination. Besides, LMS usually operates fulltime 24/7 (24 hours and 7 days/week). All of video lectures are produced in DLC by professional editing softwares. *[Exh. 9.14. List of EET online courses]*

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

HCMUTE is a non-smoking university. Since 2000, HCMUTE has promulgated regulations that ban smoking in university campuses and impose strict sanctions on disobedience. Moreover, campuses have high green density that help to allow for air circulation and control the environment temperature. Besides, each floor in the buildings has at least one toilet which is seperated into two areas for women and men. Sanitation workers are required to work hard to ensure that classrooms and offices are clean. Furthermore, students have awareness of maintaining sanitation quality level and faculties usually clean their facilities on Sundays. Additionally, the Central Building has elevator system to support people with disabilities and oldsters. In the Building B, there is a way for wheelchair. *[Exh 9.15. Working environment at HCMUTE]*.

The HC is responsible for healthcare and first aid service delivered to people in HCMUTE campuses. Every year, staff are supplied health insurance and healthcare service packages in hospitals. Furthermore, all records of heath test is also kept secret at HC. Students are health examined in the campuses as a requirement included in admission process. Furthermore, students are offered psychology advices by SSC and HC. *[Exh 9.16. Health care]*

Security is an aspect that is strictly controlled at HCMUTE. Even an outsider who just enters and visits the university should be protected from hazards. In classrooms, all equipments must be checked and maintained regularly 2 times per year. Before each class time, staff is required to come earlier to open doors and start machines for tria, especially classes in the laboratories, because there are many machines and related hazards including chemicals and easily inflammable substances, and so security controls must be put as the first priority. The entire campus is monitored by security camera system connected to a security center. 22 staffs of the security center divided into different groups are responsible for protection of property and security in the campus during their shift (24/7). *[Exh 9.17. Security and safety at HCMUTE]*

The other important point is the activities for student after the time on class. Student can play football in the sport field in the Campus 1 and the Dormitory 2. Morever, there are total 3 playfields for volleyball and 1 tennis court. Furthermore, students can relax themselves in self – studying area (the Central Building A1). *[Exh 9.18. Infrastructure for supporting physical development]*

10. Quality Enhancement

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

The curriculum is designed and developed based on the stakeholders' needs. HCMUTE had developed a procedure to develop and revise the curriculum in which requirement and feedback of stakeholders are an important component of the process. *[Exh 10.1. The curriculum design and development procedure]*

The current curriculum was first redesigned in 2012 using CDIO approach. CDIO (Conceive – Design – Implement – Operate) was a curriculum designed and implementation approach,

especially for engineering programme, first initiated by Massachusetts Institute of Technology (MIT) and is currently applied in many other universities around the world (www.cdio.org). Before formulating the programme ELOs, the FCFT conducted the consultation of stakeholders such as academic staff, experienced academic staff from other universities, industry, alumni and students through workshops, alumni meetings, and faculty meetings as shown in *Table 10.1*

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

The procedure of setting up and revising curriculum was built in 2005, then it was updated in 2009 and 2014 *[Exh.10.6. Setting up and revising curriculum procedure]*. The design and development of curriculum always base on the stakeholders' needs and feedback, and is reviewed each two years. Following this process, the EET curriculum is undergone frequent and periodical evaluations. The feedback of the stakeholders recommends FCFT ASC to evaluate and adjust the EET programme in accordance with the needs of labor market. Furthermore, FCFT improves the EET programme by referencing other environmental technology programmes in Vietnam and oversea *[Exh.10.7. Meeting minute of Scientific Board]*.

In 2012, the revision of the EET programme from 176 credits to 150 credits (see *Table 10.2*) followed to the first procedure established in 2005. In 2015, the second procedure was applied to adjust the academic programme which was less than 10% of total programme and satisfied the demands of the stakeholders after the survey on the CDIO curriculum evaluation in 2015. Moreover, FCFT can actively modify up to 5-7% of the academic programme every year. In general, the academic programme is systematically evaluated. The teaching quality of each course is assessed by the students at the end of every semester. There are two different forms to evaluate lecturers who teach theoretical or practical subjects *[Exh.10.8. Course-by-course evaluation of lecturers]*. The programme content are publicly updated on the FCFT website. The results from teaching quality evaluation are informed to the lecturers and the Faculty Dean.

Table 10.1. Proposals from stakeholders for adjustments of the programme

Academic year	Requirements/ Suggestions	Stakeholders	Fulfillments	Evidence
2012	Need to increase the English skill of newly graduated student in order to meet the requirement of work	Alumni, Students, Employers	Upgrade the quality of English courses. Focus more on 4 basic skills and boost up English criterion for graduation	*[Exh.10.2. Curriculum change 2012]* *(see Table 10.2)*
	Students want to be clearly orientated to Environmental engineering technology for freshmen in the beginning	Students	Add the course "Introduction to Environmental Engineering Technology"	
	Enhance students' capacity to design and manage the waste treatment systems	Lecturers, Alumni,	Increase the number of credits for the capstone project from 7 to 10	

	Enhance the students' professional skills to do experiment and have more time to practice	Lecturers Employers	Increase the number of credits for the experimental, practice courses from 13 to 20	
	Reduce the number of credits: - Inherited knowledge among related courses - Create the continuous of knowledge. - Enhance self-study ability	Lecturers	Integrate the content of courses related knowledge: General Microbiology and Environmental Microbiology; Environmental Ecology and Human – Environment; Air pollution treatment and Noise pollution and treatment technique. *(See Table 10.3)*	
	Enhance graduates' career opportunities	Students, Alumni	Add the elective courses	
2013	Give suggestion for teaching assistance scheme	Lecturers	Designing regulations on teaching assistance	*[Exh.10.3. Decision on TA]*
2014	Students have to do social activities during the programme	University	Add community service and social work as an obligation for graduation	*[Exh.10.4. Decision on Social activities]*
2015	Improve students' ability in technical English	Alumni, Employers	Use lecture in English or bilingual for technical courses, especially in 3rd and 4th year.	*[Exh.10.5. Curriculum change 2015]*
	Enhance students' research ability	Lecturers, Students	Add the courses "Environmental Research Design" and "Environmental Monitoring"	

Table 10.2. Comparison between structures of 176- and 150-credit programmes

Clusters	176–credit curriculum (applied from 2008 -2011)	150–credit curriculum (applied from 2012 to present)
General courses	***58***	***56***
Politics	12	10
Social Sciences	4	8
Foreign Languages	12	9
Science and Mathematics	25	23
Introduction to Environmental Engineering Technology	0	3
Informatics	5	3
Fundamental course	***51***	***28***
Specialized course	***47***	***36***
Practice course	***13***	***20***
Experiment	9	14
Practice project	0	2
Internship	2	2
Practical Visiting	2	2
Graduation Thesis	***7***	***10***
Total	**176**	**150**

Table 10.3. Some integrated courses in EET programme applied since 2012

No.	176-credit curriculum (applied from 2008-2011	Credit	150-credit curriculum (applied from 2012 to present)	Credit	Note
1	General Microbiology	2	Environmental Microbiology	3	Integrated
2	Environmental Microbiology	3			
3	Environmental Ecology	2	General Environment	2	Integrated
4	Human and Environment	2			
5	Air Pollution Treatment	3	Air and Noise Pollution Control Techniques	3	Integrated
6	Noise Pollution and Treatment Technique	2			

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

The QAO and AAO are responsible to the President for quality assurance in HCMUTE. They develop a teaching and learning assessment process and conduct student opinion surveys to ensure the quality of training. *[Exh.10.9. Function of QAO and AAO]*

Each semester, they conducted the survey of teaching quality as well as methods of assessment and evaluation of lecturers through http://online.hcmute.edu.vn during the teaching process. The feedback from students will be sent to faculty members at the end of the semester to help them improve the quality of instruction and also ensure that teaching and assessment methods are appropriate for ELOs *[Exh.10.10. Teaching and learning processes evaluation]*. The academic staff teaching the course will also evaluate the teaching and learning activities as well as student assessment based on their observation and assessment result. They will reflect the process in their course portfolio where they suggest for enhancement for the next semester, either the revision of course content, or teaching and learning activities and student assessment methods that should be used *[Exh.10.11. Sample of Course portfolio]*.

The Vice Dean in charge of training is responsible for the quality assurance of FCFT, appointed by the Dean. She and the department leaders plan to assign each faculty member each semester and request improvements in their teaching from the student feedback. Lecturers are required to register online courses and integrated learning applications, multimedia techniques ... in articles with slides, videos in English or bilingual. These improvements simultaneously improve the student's English proficiency and fit the EET ELOs. *[Exh.10.12. Online teaching and English or bilingual courses]*

Assessment methods contribute to the fairness and quality of teaching and learning activities. From 2012, the rate of formative assessment: summative assessment has been increased from 30: 70 up to 50:50 in all courses to more accurately assess the entire learning process of students and to enhance their self-study. In order to fairly and accurately evaluate the learning process of the student, lecturers flexibly apply different assessment methods, using rubrics in modules to assess students' academic ability. The FCFT held meetings to share assessment experiences among lecturers. Gathering comments, suggestions from colleagues and students on evaluation forms contributed to improve the process. In addition, annually FCFT lecturers participate in workshops on teaching and evaluation methods developed by HEEAP, VULII, COMET, BUILT-IT or Fulbright *[Exh.10.13. Assessment Amelioration]*.

10.4. Research output is used to enhance teaching and learning

In the university, scientific research always improves education quality through producing qualified manpower, teaching material and practical model. Therefore, HCMUTE issued policies to encourage academic staffs to join research projects along with teaching work. FCFT formed a Key Scientific Research Team (CEFT) which performs scientific research and shares the results in workshops participated by lectures and students.

The scientific research solving specific problems in environment field or designing some waste treatment models brings realistic material for teaching and improve effectively the learning process. Lecturers, who perform scientific research, gain more knowledge and practical experience to

improve the courses and guide the students to do research. *[Exh.10.14. Research output application]*.

FCFT lecturers attach importance to guide students to do research. Through doing research, students can learn methods to solve problems in research as well as real life, which support them to build active learning and working skills. Under supervisor of FCFT lecturers, a great number of students have participated in scientific research projects and won a number of awards such as Holcim Prize, Towards Water Security, Eureka, etc. *[Exh.10.15. Students research topics and prizes]*.

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

Every year, HCMUTE conducts a survey on student satisfaction for services and facilities. Also, the dialogue between faculty and university and students is held periodically in order to collect ideas to update and improve. Different support services and facilities have different type of evaluation. For examples:

- The Library is evaluated by students and academic staff using both online and paper survey. *[Exh 10.16. Library's enhancement]*
- Every semester, the FCFT's Dean, Vice Deans and Heads of Departments meet with students to listen to their feedback and request in different areas from academic issues to support services or facilities. Then the HCMUTE management board including the President and Vice Presidents and Heads of support offices would meet with students in the University Hall to listen to students' feedback and request. Based on the students' opinions the President requests the corresponding offices to solve the problems, such as how to improve the wifi access, how to ensure students can enroll online smoothly without network disruption due to a big number of access to the university server, how to make the process of some services faster, etc. *[Exh.10.17. Student feedback on support services and facilities]*.
- Graduating students evaluate the support services and facilities when they come back for the Graduation Ceremony which is usually 3 months after the thesis defenses. In this survey, they also evaluate all areas of the programme, from ELOs, curriculum, teaching and learning style, student assessment, support services, facilities, etc. *[Exh.10.18. Graduates feedback]*

In the last 5 years, significant enhancement on support services and facilities has been made. Some examples are:

- The SSC was separated Student Affair Office (SAO) since 2013 and staffing to provide students with various student services, such as supporting students English clubs, soft skill clubs, providing student counseling, helping students to do community services*...[Exh.10.19. Student service centre enhancement]*
- The ERO was separated from SAO since 2013 to focus more on career services such as inviting experts from companies to talk to students about careers in a particular field, help them to prepare CV and job interview, train students soft skill such as problem solving, teamwork, communication, organizing job fairs twice a year, organizing field trips, connecting with industry for internship, sponsorship both in equipment and scholarship. *[Exh.10.20. ERO's activities]*

- Classrooms are frequently repaired and upgraded with LCD screens, projectors, cameras. A digital learning studio with modern multimedia facilities was built to assist online learning as well as developing materials.
- In 2014, HCMUTE invested one million USD to upgrade internet servers. Thanks to the innovation of IT facilities, the teaching staff can make online courses through the LMS website. The upgraded wifi system covers the entire campus with high-speed access to meet the need of searching information on internet of students and lecturers. In addition, students and lecturers can access their personal page at http://online.hcmute.edu.vn/ to update new information from university. Students can know the schedule, transcripts and receive announcement from lecturers, faculties and related departments. Students can send feedback on teaching activities on this website as well. Lecturers can send notifications to students as well as input the scores into the system. In addition, lecturers can learn about the students' feedback on their teaching activities and teaching methods which will be adjusted by the end of each semester *[Exh.10.21. Renovation, repairs and acquisition]*.
- HCMUTE has started building a new F1 Building which will be allocated for FCFT classrooms and laboratory. The cost of the new building will be 60 million USD.
- To provide more comfortable spaces for students to read book and study or just to have a rest, apart from the HCMUTE Library in Building A, it is equipped with modern facilities, spacious reading rooms and professional librarian staff in the basement of the Central Building. The open hour, regulations and guidelines are published on the website of Library. The Library often conducts surveys of students' satisfaction with their activities to continually improve in order to give the best service. In 2017, HCMUTE has built a modern self-study area to meet the learning needs of students at fifth floor of the Central Building.

- Every year, laboratory equipment is checked and repaired periodically. The measuring instruments are calibrated according to an approved process. In addition, the purchase of additional equipment is planned and implemented at the end of each semester in advance to prepare for the next semester *[Exh.10.22: Calibration, maintenance and repair equipment]*.

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

The stakeholder's feedback mechanisms are systematic: QAO made a plan for periodically collecting information from the specific partners with different survey frequencies *(Table 10.4).*

Table 10.4. Types of quality survey

No	Name of survey type	Object	Frequency Times / year	Survey time	Implementation methods
1	Students' satisfaction survey on service quality at HCMUTE	All regular students	1	January	Online http://danhgia.hcmute.edu.vn/
2	Teaching quality survey	All regular students	2	1st survey: November	Online online.hcmute.edu.vn

No	Name of survey type	Object	Frequency Times / year	Survey time	Implementation methods
				2nd survey: May	
3	Newly graduate survey	Students graduate after 3 months	2	1st survey: May 2nd survey: November	Online http://danhgia.hcmute.edu.vn/
4	Alumni survey	Students graduate after 1 year	1	October	Online Google form
5	Workplace satisfaction of HCMUTE's staff survey	HCMUTE's staff	1	November	Online Google form
6	Employer's survey	Companies	1	December	Online Google form

These stakeholders contributed to the curriculum design and development. They are lecturers from FCFT, relating managers, employers, alumni and students. After workshop as well as the survey, their feed-backs are recorded in the reports or the minute of meeting. The treated information will be sent to concerning units for the considering and proposing of the improvements. These improvements will be approved by the Board of Presidents. Then, the Head of Units will implement the changes. *[Exh 10.23. Feedback mechanisms]*

HCMUTE established the mechanism to evaluate students' satisfaction on the course procedure and evaluate stakeholders' satisfaction with curriculum procedure. FCFT follows these procedures for the gathering feedback from stakeholders.

QAO makes surveys and does the reports about the information of student employment after graduation, reviews of graduates about learning outcomes, objectives of the curriculum and other information of graduates twice a year. FCFT also has the annual survey of students, alumni, the satisfaction of stakeholders about the curriculum, teaching and learning quality, self-assessment about lecturer's teaching in Faculty annual meeting, analyses the results after each survey and records various statistics. These surveys are carried out in various forms such as paper survey, online survey, face to face meeting minutes, online dialogue and have been improved over the past 5 years. The questionnaires are updated frequently. *[Exh 10.24. Student survey form]*

To achieve the better efficiency in the stakeholder's feedback mechanisms, the HCMUTE and the FCFT realized many enhancements. The meeting between university, faculty leaders and students was shifted from face to face meeting to online dialogue, through which change, the participation is also open to the students' parents and the other stakeholders. To promote the feedback of alumni and employers, the HCMUTE and the FCFT also organize the seminars, the conferences on the

curriculum, the ELOs and the job profile with the participation of alumni and employers. The FCFT also sends via email the survey's questionnaires to the stakeholders. Moreover, the FCFT established the alumni association, made relationship with the employers to bring more opportunities for students, such as: internships, scholarships *[Exh.10.25. Feedback mechanisms enhancements]*.

11. Output

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

To guarantee the training quality as well as control the study of students, since 2005, HCMUTE has built up a regulation along with a procedure to observe and statistic the training data.

At the end of each year, AAO and ASAO have responsibilities to statistic the graduated rate, the pass/fail rate and drop out rate by training management software to report for the leader staff and other faculties. This supported FCFT in monitoring and evaluating the learning process of the students as well as having an overview of students' learning ability, identifying causes and proposing solutions immediately to help students achieve better results. Based on those data, FCFT analyzes the result, makes plan and gives solution to improve related things in the next year. Specifically, there are following steps:

- Based on the statistic result of the previous year, FCFT sets up the goal to increase the graduation rate, reduce the quit university rate and announce for all teaching staff in the meeting at the beginning of each academic year to discuss and give solutions.

- The Board of the Faculty and Heads of Departments has a responsibility to observe this process.

- The analyzed and evaluated report will be announced to all the teaching staff by the end of the school year.

In 2014, HCMUTE applied the Dashboard system to manage and follow the data in order to improve the pass/fail rate as well as the graduation rate of students *[Exh 11.1 The training quality assurance]*.

This system allows the Dean, Vice Deans and the Heads of the Departments to monitor the pass, dropout rates every semester, the percentage of graduates at the end of each year. Thanks to this system, FCFT reports results and plans action plans to provide innovative solutions at the end of each year. Some plans will be included in the FCFT's annual quality objectives to ensure feasibility, such as raising the proportion of scientific researchers, increasing the number of students who have jobs after graduation. *[Exh11.2. Faculty Quality Objective]*

According to the training regulations, students must complete the total number of credits of the programme with an average grade of 5.0 or higher to graduate, in addition to attaining the level of foreign language equivalent TOEIC 500.

Based on the statistic result from functional offices (AAO and ASAO), FCFT analyzed the average pass/fail rate in the recent 7 years as shown in *Table 11.1.* The results indicate that the average pass rate was 89.3%, and the average dropout rate (after 4 years) was 10.7% from 2006 to 2012. The reasons for dropout were identified as follows: most quit university students are freshman who find

out not suitable major, some other cannot complete all the courses within the training time or cannot pass the required English certificate tests. *[Exh.11.3. FCFT training plan and report]*.

Table 11.1. Pass and dropout rates of EET students in last 7 cohorts

Academic Year	Cohort size	% completed first degree in			% dropout during			
		3 years	4 years	>4 years	1st year	2nd year	3rd year	4th year & beyond
2006-2007	43	0	67.4	18.6	4.7	2.3	7.0	-
2007-2008	72	0	72.2	20.8	1.4	1.4	1.4	2.8
2008-2009	60	0	70.0	21.6	5.0	1.7	-	1.7
2009-2010	52	0	69.2	19.3	5.8	-	1.9	3.8
2010-2011	79	0	65.8	24.0	8.9	-	1.3	-
2011-2012	92	0	77.5	17.0	1.1	2.2	2.2	-
2012-2013	49	0	55.1	20.4	4.1	2.0	2.0	-

By conventional meeting in the beginning of each school year, FCFT announces to all lecturers and staff the quality objectives and training plans of the Faculty as well as the means to achieve the quality goals *[Exh 11.2. Faculty Quality Objective]*

The implementation of the 2006-2011 training programme is shown in *Table 11.2.* The results show that the pass rate and the dropout rate are in fact almost identical to the plan. Despite slight fluctuations over the years, compared to other Programmes of some faculties in HCMUTE such as MMT, MET and CET, the EET's the average rate of pass and quit school is slightly better *[Exh 11.4. SAR reports for AUN-QA]*.

To reduce the dropout rate for students, HCMUTE and FCFT already have practical support measures as shown in *Table 11.4. [Exh 11.5. Solutions for enhancing pass rate and graduate rates on time]* That is, the dropout rate is clearly reduced in the 2011-2012 and 2012-2013 academic years.

Table 11.2. Planned and actual rate of pass and dropout 2006-2011

Year	2006		2007		2008		2009		2010		2011	
	Plan	Actual	Plan	Actual	Plan	Actual	Plan	Actual	Plan	Actual	Plan	Actual
Pass rate (%)	90.0	86.0	90.0	93.0	90.0	91.6	90.0	88.5	90.0	89.8	90.0	94.5
Dropout rate (%)	10.0	14.0	10.0	7.0	10.0	8.4	10.0	11.5	10.0	10.2	10.0	5.5

Note: From 2013 year and beyond are not yet graduated

Table 11.3. Comparison of average pass and dropout rate between Programmes 2006-2011

Programmes	EET	MMT	MET	CET
Pass rate %	90.56	80.61	78.51	85.3
Dropout rate %	9.44	15.11	12.28	14.6

Table 11.4. Enhancement and measures to increase pass rate and dropout rate

Reason for improvement	Solution
Students have difficulties in study, in private life, in doing research, future career orientation, how to choose suitable courses...	Set up a consultant board to help students solve their problems.
Students fail many courses	Open some classes in extra semester for students to complete the courses.
Students have many credits left or high capability to be dropped out of HCMUTE	Make name list of those students whose studying progress is low by each semester, send for consultant board to support for student in time.
The amount of students in one class effect the concentrate ability of some students who cannot follow the lecture.	Set up the teaching assistant team to instruct how to do the exercises out of class time.
Ability and knowledge of students are not met the requirement of training programme	Transfer those students who are not qualified within training time to the lower training programme.
One of major duties of HCMUTE is to reduce the dropout rate	Hold some periodic meeting to figure out the reasons of high dropout rate
The companies require graduated students have good soft skills such as English, team working, computer skill…	Open some skill clubs, English club to have students improve their soft skills. Integrate soft skills in all subjects
Students who have illness or family problems have to absent over the limit times.	Set up the regulations to delay to save the study progress. HCMUTE has made a policy to reduce and support tuition fee for low -income students. Also, HCMUTE issued a regulation for student loan with low interest rate.

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

With an average of 04 years of training, students can complete their undergraduate studies at HCMUTE, and can study up to 08 years. According to HCMUTE regulations, students must complete 150 credits within 04 years to be considered graduated in time, and those who complete the programme more than 04 years are considered late graduation. *[Exh 11.6. Regulation of*

academic programme lasting]. The EET average rate of graduation in time shown in *Table 11.5* displays that the graduation in the term of 2006 - 2011 was 70.35% higher than the target, however there is a fluctuation of the graduation rate in 2012, which can be explained as follows: from Cohort 2012 onwards, students study under the new 150 credit programme with higher requirements for English proficiency, self-learning, as well as problem-solving skills, are required at a high level, students are still upset to be equipped with the knowledge and skills necessary for them, resulting in a gradual decline in graduation rate, but still higher than the annual plan.

Table 11.5. Planned and actual rate of average graduation time 2006-2011

Year	2006		2007		2008		2009		2010		2011	
	Plan	Actual	Plan	Actual	Plan	Actual	Plan	Actual	Plan	Actual	Plan	Actual
Within 4 years (%)	65.0	67.4	65.0	72.2	65.0	70.0	65.0	69.2	65.0	65.8	65.0	77.5
More than 4 years (%)	25.0	18.6	25.0	20.8	25.0	21.6	25.0	19.3	25.0	24.0	25.0	17.0

Note: Year 2013 intake and beyond are not yet graduated

Based on the results of the annual survey, periodic meetings between lecturers and students, as well as information provided by the counseling team, most students graduating later than 4 years are economically disadvantaged. They have to work part time, so there is not enough time to concentrate on learning. Other causes include sickness, family problems, or some hard-to-pass subjects, etc., which can lengthen their graduation. *[Exh 11.7. Student dialogue]*

A comparison of EET's average graduation rate with that of other programmes of some faculties in HCMUTE is shown in *Table 11.6*. As seen, there is difference among programmes, the average graduation rate of EET is higher then other programmes. *[Exh 11.4. SAR reports for AUN-QA]*

Many different ways to support students have been developed by HCMUTE and the FCFT to help them improve their learning and reduce the overdue graduation rate as shown in *Table 11.7. [Exh 11.8. Solutions for enhancing rate of graduation]*

Table 11.6. Benchmark of average on-time graduation among Programmes 2006-2011

Programmes	EET	MMT	MET	CET
Within 4 years (%)	70.35	42.2	56.91	61.23
More than 4 years (%)	17.86	38.4	21.6	24.15

Table 11.7. List of solutions to ensure on-time graduation

Reason for improvement	Solution
Students have difficulties in register courses by paper.	HCMUTE set up a register system online.
Students fail courses and cannot register for the old programme's courses.	Release a regulation for alter-courses, equivalent courses, help students to complete the required

Reason for improvement	Solution
	knowledge.
Students register course late because of no training programme.	Announce early the annual study and training plan on website and send email directly-to student's address.
Students who fail one course many times need more chance to complete the course.	Open the summer semester.
The occupation trend as well as the ability of each student is different, it is need to have the suitable subjects for their abilities.	There are groups of elective courses and related courses in the training programme.
Students have difficulty in finance for University fee.	Open the ASAO to search and provide part-time job for students after University time. HCMUTE has made a policy to reduce and support tuition fee for low -income students. Also, HCMUTE issued a regulation for student loan with low interest rate.
Courage students to study hard.	Offer the scholarship for students whose good at study or support budget for poor students from study promotion Fund of Faculty.
Some other difficulties students need help from faculty and teaching staff.	Create a consultant staff to support students in each faculty.

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

The percentage of students who have jobs after graduation is collected by ASAO through paper survey which was developed on ISO-based surveying process, collecting information on HCMUTE graduate. The implementation process consists of: employment status after three months of graduation, duration of the survey consists of two batches per year for two graduation examinations per year of HCMUTE, each lasting about 1 month. *[Exh 11.9. Survey graduated student]*. However, since 2014, QAO has conducted online surveys. Survey times are set in June and December each academic year. Survey results from 2011 -2016 of HCMUTE are shown in *Table 11.8.*

Table 11.8. Employability rate of HCMUTE graduates 2011-2016

Graduation time	Mar 2011	Sep 2011	Mar 2012	Sep 2012	Mar 2013	Sep 2013	Mar 2014	Sep 2014	Mar 2015	Sep 2015	Mar 2016	Sep 2016
Survey time	Jun 2011	Dec 2012	Jun 2012	Dec 2013	Jun 2013	Dec 2014	Jun 2014	Dec 2014	Jun 2015	Dec 2015	Jun 2016	Dec 2016
Number of graduates	1569	1230	1585	1749	1802	1917	1264	2138	994	2214	927	1283
Number of surveyed graduates who were employed	1066	779	1092	1072	1205	1015	878	1516	744	1973	708	1078

Rate (%)	*68.0*	*63.3*	*68.9*	*61.3*	*66.9*	*68.9*	*62.5*	*60.0*	*48.0*	*64.0*	*53.0*	*77.0*
Average rate *(%)*	**63.48%**											

The analysis result of HCMUTE survey *(Table 11.8)* shows that, on average, the proportion of students employed three months after graduation from 2011 to 2016 was 63.48%. While that, the survey result of FCFT *(Table 11.9):* average rate of employability within 3 months after graduation is 58.9%, being approximate to HCMUTE survey result.

Table 11.9. Employability rate of FCFT graduates 2014-2016

Survey time	Jun 2014	Dec 2014	Jun 2015	Dec 2015	Jun 2016	Dec 2016
Graduation time	Mar 2014	Sep 2014	Mar 2015	Sep 2015	Mar 2016	Sep 2016
Immediately after graduation (%)	7.1	9.1	0.0	7.1	0.0	23.8
Within 1 month after graduation (%)	14.3	18.2	25.0	7.1	16.7	23.8
Within 3 months after graduation (%)	35.7	24.2	37.5	42.9	41.7	19.0
Unemployed (%)	42.9	27.3	37.5	38.1	41.7	14.4
Pursuing another plan in future (%)	0.0	21.2	0.0	4.8	0.0	19.0
Average rate within 3 months after graduation (%)	**58.9%**					

However, the results of the Alumni Surveys after one year of graduation have been made available online at FCFT and the paper shows that this percentage is significantly increased in *Table 11.10,* which may explain the uncertainty of the unstable work at the beginning of the newly graduated students. Graduates have many opportunities to choose the right job then change to another work during the first year after graduation. *[Exh 11.10. Alumni Surveys after one year of graduation by FCFT]*

Compared to the average job-to-Univesity rate after one year of Univesity-wide graduation in *Table 11.10,* there is a similarity. The unemployment rate after one year of graduation is very low, averaging at 5.3% from 2013-2015.

Table 11.10. Employability rate of FCFT graduates 2013-2015

Survey Unit	**FCFT***			**HCMUTE**
Survey time	Oct-Nov 2014	Oct-Nov 2015	Oct-Nov 2016	Mar 2016
Graduation time	2013	2014	2015	Sep. 2014 & Mar. 2015
Employability / samples (number)	43/45	54/58	61/64	2344/2491

Within 1 year after graduation (%)	95.6	93.0	95.3	94.1
Average Rate (%)	**94.7**			**94.1**

Note: (*) The survey was conducted by FCFT

The EET is one of the popular majors in the current development trend of the society, but the resources so far, according to MOET statistics, have not met the demand for human resource development of state management agencies in particular and the whole society in general. *[Exh 11.11. Statistical report on environmental human resources]*. However; this is a vast occupation field. There are many different career directions and many job positions; it is both an opportunity and a challenge for candidates who unclearly defined job they desire. Besides, due to severe economic conditions, poor environmental protection and lack of attention and strict management of the specialized management agencies, enterprises needn't concern to recruit human power in this field or just recruit a few people. This is a significant obstacle for students not only in HCMUTE but also in other universities in Vietnam.

According to the statistics of the Ministry of Science and Technology based on the reports of 100 universities, colleges and vocational institutions in the period 2010 - 2014, the average employability rate after 03 months of graduates was about 50% *[Exh 11.12. Rate of Employment in Society]*. Compared to that employment rate, that of HCMUTE (63.48%) and that of FCFT (58.9%) are highlights.

To assess objectively about the quality of training, every year, the FCFT surveys enterprise feedback on the level of satisfaction on the job performed by graduates. In addition, the FCFT also conducts a business survey on students' internships. The survey results show that most enterprises assess student's knowledge, skills and attitudes towards good practice (78% and above). In addition, some comments of the enterprises have helped the Faculty to evaluate the overall status of students and provide solutions to meet more of their requirements. *[Exh 11.13. Survey to enterprises on internship of student]*.

The goal of improving graduates employment rates is fully documented in the Quality Objective Plan and clearly communicated to stakeholders *[refer Exh 11.2.]*. HCMUTE and FCFT have taken the following actions: Maintaining good relationships with outside businesses as well as state management agencies in the form of sharing work experience, collecting comments on contribution to programme, taking feedback from the employment of graduates from HCMUTE; improve soft skills for students through extra-curricular activities, organize skills training for fourth-year students: problem solving skills, planning skills, writing skills or interviews. Feedback from employers and alumni also helps to adjust the programme more and more in line with the social trends of the employers; organize field trips to bring students to the business, access to the real work environment ... These activities have helped graduates have better job opportunities. Some measures to improve the employment rate for students are presented in *Table 11.11. [Exh 11.14 Solutions for improving the rate of employment]*

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

Training and scientific research are two key tasks of HCMUTE in general and individual in particular. In parallel with the annual training plan developed and implemented, scientific research activities for students are also planned based on a number of practical conditions such as a number of subjects given by lecturers, a number of students applying for scientific research, budget for research or time to do a research project ... The process of conducting scientific research is based on the regulations promulgated by the Science and Technology Office. The process includes such content as type of research, participants, research conditions, quantity, budget support and reward policy. *[Exh 11.15. Scientific research of student]*

Table 11.11. Solution for improving the rate of employment

Reason for improvement	Solution
Improve the English ability and soft skills to meet the requirement of employees	Open and hold some activities of skill clubs and English clubs, teaching the specialized courses in English or the lecture in English at least.
Students who still do not have clear orientation about career in future	The Introduction to Environmental Technology course is taught at first year. Organize some programmes to orient for last year students with employees,
Many students are not good at making CV and interview skill	Invite companies to train for students writing a CV. Organize a competition about "Try Interview-Real Success " for the 3rd year and last year students to improve their writing CV and interview skill
Many students do not know how to search the job	Organize the Annual Job Fair to help students have more opportunity to get jobs
Students need to apply the knowledge in class in companies	Enhance more field trips to companies and increase the internship time from 3 weeks to 4 weeks

According to the statistics from the science and technology office, types and numbers of students in the past years are shown in *Table 11.12*. Some of the subjects registered for the contest and won prizes of competitions such as Eureka, Vifotec, Holcim Prize ... as presented in *Table 11.13*. Besides, students also carry out big projects and receive financial support from companies, like the VN Brewery.

Table 11.12. Number of research topics for FCFT students 2011-2016

Level of projects	Number of research projects						Total
	2011	2012	2013	2014	2015	2016	
University level students'	10	7	6	16	26	6	71

research project							
Company level students' research project			1	1	2	1	5

Table 11.13. Student Prizes

List of Prizes	Number	Year
"Scientific Research Student" of MOET	1	2016
Eureka	2	2014
Holcim Prize	2	2015
Vifotec	2	2013

The target of research is to set up in the Quality Objective Plan *[refer Exh 11.2.]* of FCFT annually and declared to each department. Research topics are based on professional knowledge aimed at helping students develop more in-depth knowledge, soft skills, especially self-learning and lifelong learning skills, ensuring standardized outputs of programme, meeting the vision and mission of FCFT.

To encourage students to do research and to create a useful playground for students, FCFT established a Key Scientific Research Team called CEFT in 2012. Each year, there are 2 to 4 workshops organized for FCFT lecturers and students, visiting participants to report and share of research results. *[Exh 11.16. CEFT Workshop]*

Students conduct research topics for a period of one year, students must report on the progress of each period to ensure the workload as well as implementation progress *(refer Exh 11.15.)*

Compared with other Programmes of some faculties in HCMUTE, the type and number of research topics are shown in *Table 11.14*. The results show that the percentage of students participating in the research is 6%, which is on average among other programmes. *[Exh 11.4. SAR reports for AUN-QA]*

Table 11.14. Number of students' research projects 2011-2016 among Programmes.

Programmes	Number of enrolled students	Number of research projects						Average rate
		2011	2012	2013	2014	2015	2016	
EET	210	10 (4.8%)	7 (3.3%)	6 (2.9%)	16 (7.6%)	26 (12.4%)	10 (4.8%)	12.5 (6.0%)
AET	300	13 (4.3%)	29 (9.7%)	10 (3.3%)	12 (4.0%)	11 (3.7%)	29 (9.7%)	17.3 (5.8%)
MET	300	19 (6.3%)	40 (13.3%)	20 (6.7%)	10 (3.3%)	25 (8.3%)	11 (3.7%)	20.8 (6.9%)

EEET	360	29 (8.0%)	10 (2.8%)	27 (7.5%)	13 (3.6%)	45 (12.5%)	8 (2.2%)	22.0 (6.1%)
CET	180	10 (5.6%)	8 (4.4%)	11 (6.1%)	12 (6.7%)	12 (6.7%)	4 (2.2%)	9.5 (4.9%)

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

In order to assess the satisfaction of stakeholders, HCMUTE has developed an online survey system with clear guidelines to conduct surveys involving lecturers, employers, staffs, alumni, and enterprises, constantly improving the quality of training and service of HCMUTE provided to the stakeholders.

a) Staff feedback

Surveys are sent to all the stakeholders annually through a variety of content suitable for each subject. Survey results will be collected and sent to HCMUTE leadership by the QAO. The results of the satisfaction survey from 2015 to indicate that the satisfaction of all criteria is above 72% (for salary policy, the work process policy, the opportunity for further study, the satisfaction with the direct management level, the distribution of teaching schedules and especially current job position). The ratio 96.5% for all staffs satisfaction about current work is strong point of HCMUTE. Some criteria need to improve for quality assurance such as equipment in classroom and lab room. *[Exh11.17. The satisfaction survey of staffs]*

In order to improve the level of satisfaction of the criteria, HCMUTE organizes annual summer staff meetings to summarize the activities of the year, comment on the achievements and failures of the policies, set the direction of action for the next year, sharing, contributing ideas to help HCMUTE in growing. In addition, HCMUTE implemented a KPIs system to assess the level of individual work accomplishments. In addition, since 2016, HCMUTE has held a dialogue between President, lecturers and staffs to take full note on the aspirations as well as recognize the initiatives proposed.

b) Student feedback

The online survey system provided by QAO is often used to record students' feedback on the curriculum, output standards, instructional activities of each course, test assessments as well as attitudes of service staffs at the end of each semester. *[Exh11.18. The satisfaction survey of student]*. Survey results will be collected, analyzed and uploaded to the HCMUTE website and sent to the department heads. The survey data from 2014 to present showing the quality of teaching, capacity and service attitudes, the facilities as well as the quality of services have been rising over the years.

Teaching quality has improved considerably in recent years thanks to the exchange of experience and the sharing of active teaching methods among lecturers. The results of the evaluation by students were compared to those of the other departments, as shown in *Table 11.15*, showing that the lecturers were evaluated as good performance. *[Exh 11.4. SAR reports for AUN-QA]*

Student feedback was recorded through student-to-faculty dialogues with faculty and students each semester. Comments are aggregated by FCFT (Faculty dialogue) or ASAO (University dialogue) and report to HCMUTE leaders.

Table 11.15. Comparison of student feedback on teaching quality among Faculties

Year/Faculties	FCFT	FVEE	FME	FEEE	FCE
2015	83.4%	85.2%	84.8%	85.8%	84.3%
2016	86.6%	87.1%	86.6%	86.6%	86.8%

At the Faculty dialogue, the Board of Faculty is responsible for answering all the questions of the students in their jurisdiction, the issues that are not within the jurisdiction will be recorded in the minutes to report to the University leaders. ASAO will bring together all the reports from faculties to carry out University dialogue, where the Board of University has to answer all issues from faculty dialogues.

Through the results of the report, HCMUTE instructs FCFT to give feedback to students as well as take measures to overcome and improve for the next semester. In addition to quickly grasp the comments of students, HCMUTE leaders have a fixed schedule of students on the last Thursday of each month and are notified via HCMUTE's web calendar. *[refer Exh 11.7]*

Students can also send their comments via mail, facebook of each Faculty and the Univesity. In particular, in the first semester of 2015-2016, HCMUTE performed online system to acknowledge the aspirations of parents, students and faculties to improve the Univesity's operations.

At the end of each semester, students respond to the online survey to assess the teaching quality of each lecturer in 03 criteria: teaching method; teaching content, examimation and assessment; and pedagogy style. The results shown in *Table 11.16* show that teaching quality is increasing in all three categories. None of the lecturers has a score below 72 points (average). Based on the results of students' evaluation and data analysis, the Department has solutions to improve the quality of teaching. *[Exh 11.19. Student survey on teaching quality]*

Besides, the Library has conducted a survey about the satisfaction of students in the service as well as other activities of the Library. Moreover, along with the quality objectives and non-stop improvement, the Library always receives the response information of readers through the survey as well as the periodic meeting between the board of HCMUTE and students to estimate the satisfaction of readers. *[Exh 11.20. The satisfaction survey about Library]*

The AIO is the place to receive all student complaints about the activities of the HCMUE, review the content of the complaints, work with the parties and respond to the complaints. Students who are not satisfied with the results of the course assessment can apply for re-examination at the faculty office. The instructor will nominate 2 teachers to revise the question and report the result within seven days.

c) Alumni Feedback

As mentioned above, ERO conducts a survey to get feedback from graduates on the Graduation Ceremony. The main content of the questionnaire focuses on evaluating the suitability of the

programme, the level of satisfaction on the courses, the employment status of the alumni. The survey results will be collected and sent to the FCFT Leaders. There are suitable improvements.

The survey process is conducted by FCFT for alumni after 1 year of graduation by online forms. In addition to the annual alumni meeting, paper survey is also conducted to collect the comments.

Table 11.16. The FCFT average rate of student's assessment on teaching quality in each criterion and average of 3 criteria.

Semester/Year	Criterion 1 (%)	Criterion 2 (%)	Criterion 3 (%)	Average (%)
I/2014-2015	81.5	82.7	83.9	82.7
II/2014-2015	83.5	84.1	84.5	84.1
I/2015-2016	83.9	85.2	85.9	85
II/2015-2016	85.8	86.6	87.3	86.6
I/2016-2017	86.6	87.5	88.3	87.5
II/2016-2017	86.3	87.2	87.8	87.1

Note: Criterion 1: Teaching method; Criterion 2: Teaching content, examination and assessment; Criterion 3: Pedagogy style.

The results of the alumni survey for 2015-2016 are shown in *Table 11.17* suggesting that more than 88% of alumni are happy with the training programme and they think that the training programme looks good for their capabilities. In comparison with other departments in HCMUTE are similar. *[Exh 11.4. SAR reports for AUN-QA]* However, there are still some ideas to help improve the programme recommended by alumni, and on that basis, FCFT has timely corrective curricula to meet the needs of society. *[refer Exh 11.10]*

Table 11.17. Comparison of satisfaction level of graduates among Programmes.

Year	Satisfaction levels of Programmes				
	EET	AET	MET	EEET	CET
2015	90.2 %	89.1%	87.8%	88.4%	87.7%
2016	88.9 %	90.2%	86.9%	89.6%	88.2%

Periodically, in November, the FCFT organizes Alumni Meeting Day, thereby creating a bridge between FCFT, current students and alumni to share their curriculum and student support, information about internships, job... Through this, the FCFT can get opinions on the curriculum from the alumni to support for the improvement of the programme. *[Exh 11.21. Survey Alumni about periodic curriculum]*

d) Employers Feedback

ERO and FCFT conduct surveys every year to get feedback from outside businesses on the quality of students from 2010 through conferences, seminars or job fairs. Summary of comments is shown in the Exh 11.22 *[Exh 11.22. Enterprise survey]*

In addition, through field visits, internships at the factory, the FCFT also received a lot of ideas from businesses about the programme, the number of courses or credits in the programme, knowledge and soft skills. Satisfaction of trainees of FCFT in 2015-2016 is shown in the *Figure 11.1,* showing that 78.2% satisfied with the quality of students, only 3.1% not satisfied with soft skills and English *[refer Exh 11.13]*

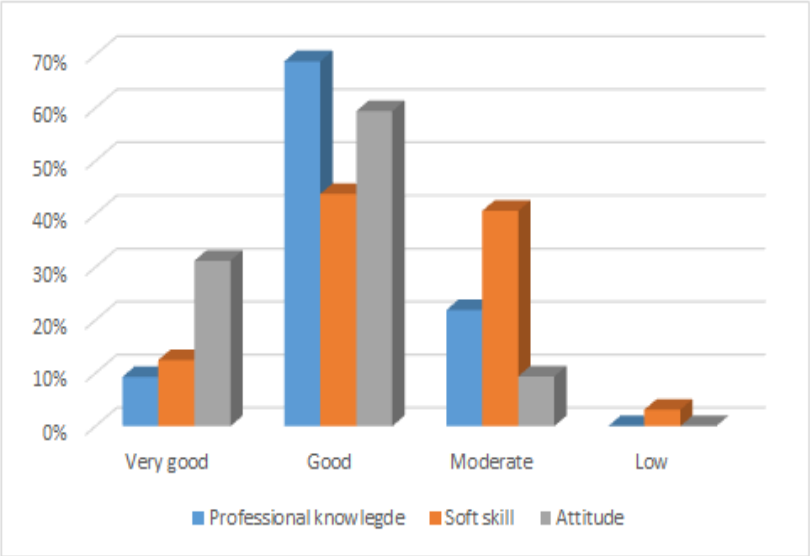

Figure 11.1. Results on survey of trainees

To improve the level of satisfaction of the stakeholders, HCMUTE has issued many solutions and policy improvements. For lecturers and staff, issue KPIs to evaluate the workload and volume of each individual, provide a payroll incentive for good people by the end of the academic year, build an LMS that helps lecturers interact with students more easily, promulgates regulations on teaching assistants using good students to support lecturers to solve problems in class, promulgate policies encouraging lecturers.*[Exh 11.23. Solutions for improvement based on stakeholder feedback]*

PART III. STRENGTHS AND WEAKNESSES ANALYSIS

1. Criterion 1. Expected learning outcomes

Strengths:

ELOs are based on MOET standards, the need for human resource development of MONRE, stakeholders' feedback, and in compliance with the development strategy as well as the vision of the HCMUTE, FCFT and goals of the EET.

The ELOs are clear and compatible with the mission of both HCMUTE and FCFT; goals of the EET. ELOs are publicly available to all stakeholders through the website as well as other channels

ELOs are built with five main groups: general knowledge, professional knowledge, professional skills, soft skills and attitude and awareness. ELOs are logically mapped to the goals of the EET and are transferred into the curriculum, delivered to learners through subjects, through teaching and learning activities, through scientific research activities, extra activities to develop self-learning and lifelong learning.

ELOs are evaluated and further refined through extensive discussions and cooperation among related stakeholders.

Possibilities for improvement

Feedback from companies and alumni needs to be more frequent and diverse.

2. Criterion 2. Programme specification

Strengths

The programme is clearly described and disseminated to relevant stakeholders through the FCFT website, posters hanging in the office of lecturers and at the bulletin boards of the FCFT; Open days; hard copy. The EET programme is periodically reviewed and evaluated according to the ISO procedures, adapted to meet labor market and social requirements, promptly updated to the website and published to the relevant stakeholders.
The EET description clearly shows the programme objective as well as the ELOs of the programme, the semester-timetabled curriculum, and the teaching and assessment strategies.

Possibilities for improvement

Promptly update stakeholders on the changes of the programme.

3. Criterion 3. Programme structure and content

Strengths

The curriculum is clearly structured, demonstrating the general courses, fundamental courses and specialized courses. All subjects have a detailed syllabus which describes prerequisites, goals, student achievement, summary content, and reference materials.

EET is designed to consist of both wide and specialized knowledge to help students easily adapt to the actual work environment, expanding more career opportunities.

Teaching methods and assessment in each subject are set up to achieve the ELOs

EET is regularly updated, meeting the requirements of the stakeholders and consistent with the trend of international integration.

Possibilities for improvement

Increase electives by advanced knowledge block; design additional elective subjects for start-up.

Increase the internship time at the factory to help students get more experience with practical work.

4. Criterion 4. Teaching and learning approach

Strengths

EET's teaching strategy helps students understand and successfully apply the knowledge in practical work.

Access to positive learning, project-based learning, self-learning, and learner-centered learning are delivered through all the courses.

HCMUTE, FCFT and department have a quality assurance system for the training process.

Possibilities for improvement

In order to improve the quality of education, FCFT plans to reinforce its online classes, teaching bilingual and full English. However, it may take time to carry out the plan because of the student's limited English proficiency.

It is also difficult to implement positive teaching methods in crowded class

5. Criterion 5. Student assessment

Strengths

The quality of students' input is quite better compared to that of other universities; therefore, it is possible to recruit good students.

The assessment method used for the process and midterm and final assessment is announced to students in the first week of the course. Rubric is used for tests such as project design subjects, graduation thesis, presentation skills, teamwork, and experiments.

The methodology of assessment and assess the quality of the course and aiming to improve the quality of programme.

Possibilities for improvement

Strengthen the rubric assessments often; diversify the soft skills evaluation method.

Continue to make question bank for specialized subjects.

6. Criterion 6. Academic staff quality

Strengths

The teaching staff are young, well-qualified, and well-equipped with specialized knowledge as well as modern teaching methods, ensuring to undertake the whole training programme. The scientific research of FCFT grows well with the number of international articles. Lecturers can improve their professional skills thanks to the encouraging policies of HCMUTE and FCFT.

Possibilities for improvement

Improve practical experiences of teaching staff.

7. Criterion 7. Support staff quality

Strengths

Supporting staff are well-qualified and chosen thoroughly. They are efficient and willing to help students in both academic and administration activities.

The performance of supporting staff is periodically evaluated by students. Based on these feedbacks, necessary actions will be implemented to improve the quality of supporting services.

Possibilities for improvement

Along with the development of the University, the standard of supporting services may need to be improved. Thus, HCMUTE has planned to expand number of supporting staff.

8. Criterion 8. Student quality and support

Strengths

Much strategy has been employed by the University to attract excellent students and ensure student input quality in which open day and online direct consulting are highlighted. Therefore, the input quality of FCFT's students is annually improved

HCMUTE has a Dashboard system on which lecturers and counselors base to keep track of student progress, and to report timely to the administrators of the Department and Faculty.

Possibilities for improvement

The input English proficiency is not as good as expected since most of freshmen come from countryside areas where English teaching and learning are limited. To address the issue, HCMUTE has offered several methods to improve their English competence such as organize further English courses, create English environment where they can practice English

9. Criterion 9. Facilities and infrastructures

Strengths

HCMUTE and FCFT are able to provide a good support for learning and teaching as well as research activities of students and lecturers with a system of modern classrooms, well-equipped and frequently updated laboratories/workshops, libraries and computer rooms.

The campus is a wide, fresh and clean area which is a healthy environment for students. Students' health is also carefully protected

Possibilities for improvement

Despite the best efforts made by HCMUTE to annually update laboratory/workshop equipment, it is still impossible to gain the most modern systems for the laboratories/workshops due to the rapid development of the technology and outside companies

10. Criterion 10. Quality enhancement

Strengths

The online feedback system for stakeholders is provided to collect ideas for improving the quality of education.

The curriculum will be annually evaluated and revised to meet the new requirements.

Student feedback of teaching activities and curriculum are conducted every semester by the QAO.

Possibilities for improvement

HCMUTE, FCFT and DET will review contents, processes and quality of activities for the continuous improvement.

11. Criterion 11. Output

Strengths

Graduated students' quality is confirmed by the labor market. The students can adapt rapidly with new working environment and thus employing companies do not need to spend more time and cost further training them.

High employability rate, over 90% of the graduated students get their job within 01 year since their graduation.

Possibilities for improvement

In order to increase the rate of graduation within 04 years, it is necessary to improve their English proficiency to meet the output requirements.

PART IV. APPENDICES

Appendix 1: The EET Programme Specification

Appendix 2: Checklist for AUN-QA assessment at programme level

Appendix 3: Supporting Documents and Evidences

Appendix 1. The Programme Specification

ENVIRONMENTAL ENGINEERING TECHNOLOGY

1. **Awarding institution: HCMC University of Technology and Education**
2. **Name of program:** **ENVIRONMENTAL ENGINEERING TECHNOLOGY**
3. **Training degree:** Bachelor of Engineering
4. **Programme code:** 52510406
5. **Training time:** 4 years (The normal period of study for a full-time bachelor's degree is four years and the maximum period is eight years)
6. **Admission criteria:**

High school graduate candidates have total score of Mathematics, Physics and Chemistry (group A) or Mathematics, Chemistry, Biology (group B) or Mathematics, Chemistry, English (group D7) in annual National High School Graduation Examination held in July by MOET higher than the cut-off score set by the HCMUTE based on the student admission quota from MOET. The cut -off score will be published in August.

Candidates, who graduated from specialized high school, have an average score of five consecutive terms of high school larger than 7.5 and are in top 10% of the HCMUTE annual admission quota.

7. **Programme objectives:**

The objectives of the EET Programme are that most graduates about 3 years will

PO1. Graduates will be able to utilize foundational and advanced knowledge in science and engineering to achieve success in their career in the field of environmental engineering technology or related professional fields in accordance with their career goals.

PO2. Graduates will be able to become competent team leader or qualified team member who can solve practical socio-economic and environmental challenges.

PO3. Graduates will be able to participate in further education or research to pursue their professional development.

8. **Expected learning outcomes**

After successful completion the CET Programme, graduates will be able to demonstrate and attain the following ELOs:

ELO1. Apply the knowledge of mathematics, sciences and society in the field of environment

ELO2. Apply the core knowledge of environmental engineering technology.

ELO3. Apply the specialized knowledge of environmental engineering technology.

ELO4. Identify, analyze and solve environmental problems

ELO5. Conduct experiments and evaluate the experiment results.

ELO6. Possess sufficient insight on and ability to solve practical socio-economic and environmental contradictions

ELO7. Be highly aware of the need and responsibility in life-long learning.

ELO8. Exercise professional ethics, honesty, and be able to determine the professional objectives and orientation.

ELO9. Demonstrate the ability to work as a team leader and as a team member.

ELO10. Communicate effectively though written documents, electronic media, oral presentation and negotiation.

ELO11. Communicate effectively in English for environmental engineering technology.

ELO12. Practise the role and responsibility of an environmental engineer toward the society.

ELO13. Conceive ideas, model systems, implement and manage environmental projects.

ELO14. Design waste management and treatment systems.

ELO15. Implement and monitor waste management and treatment systems.

ELO16. Operate waste management and treatment systems.

9. Program structure:

Name	Credit		
	Total	**Required**	**Elective**
General Education	**56**	**50**	**6**
Politics	10	10	
Social Sciences	8	2	6
Foreign Languages	9	9	
Science and Maths	23	23	
Introduction to Environmental Engineering Technology	3	3	
Informatics	3	3	
Professional Education	**94**	**88**	**6**
Funamental courses	28	28	
Specialized courses	36	30	6
Practice	20	20	
GraduationThesis	10	10	

10. Program content (name and required courses structure)

10.1. General Education (56 credits)

No.	Course Code	Course Name	Credit	Note

I		**Political Eduacation**	**12**	
1	LLCT150105	Principles of Marxit -Lenism	5	
2	LLCT230214	Revolutionary Lines of VCP	3	
3	LLCT120314	Ho Chi Minh's Ideology	2	
4	GELA220405	General Laws	2	
II		**Foreign Languages**	**9**	
5	ENGL130137	English 1	3	
6	ENGL230237	English 2	3	
7	ENGL330337	English 3	3	
III		**Introduction**	**3**	
8	ITET 130110	Introduction to Environmental Engineering Technology	3	(2+1)
IV		**Informatics**	**3**	
9	ADPR131185	MS Acess program	3	(2+1)
V		**Natural Science and Maths**	**23**	
10	MATH130101	Advanced Mathematics 1	3	
11	MATH130201	Advanced Mathematics 2	3	
12	MATH130301	Advanced Mathematics 3	3	
13	MATH130401	Applied Probability	3	
14	PHYS130102	General Physics A1	3	
15	PHYS120202	General Physics A2	2	(2+1)
	PHYS110302	Practice Physics	1	
16	GCHE 130103	General Chemistry A1	3	
17	ENSO221610	Environmental System Optimization	2	
VI		**Physical Education**	**5**	
18	PHED110513	Physical Education 1	1	
19	PHED110613	Physical Education 2	1	
20	PHED130715	Elective Physical Education 3 *(Student register)*	3	
VII		**National Defense Education**		
21		National Defense Education[(7)]	165 tiết	Ministry of Education and Training

10.2. Fundamental Courses (28 credits)

No.	Course Code	Course Name	Credit	Note

22	EDDG230120	Technical Draw B	3	
23	CADM230320	Basic Auto CAD	3	**(2+1)**
24	GREN123110	General Environment	2	
25	ENEC233210	Environmental Engineering Chemistry	3	(3+2)
26	ENHE223510	Environmental Hydraulics and Hydrology	2	
27	PEET233410	Process and Equipment in Environmental Technology	3	
28	EHAH223510	Environmental Hydraulic Engineering	2	
29	ENAC233610	Enviromental Analytical Chemistry	3	(3+1)
30	EIET223710	English in Environmental Technology	2	
31	ENMI233910	Environmental Microbiology	3	(3+2)
Total			**28**	

10.3a. Specialized Courses *(For theoritical courses-36 dredits))*

No.	Course Code	Course Name	Credit	Note
32	SPRT424010	Soil pollution and remediation techniques	2	(2+1)
33	SWMT424110	Solid Waste Management and Treatment	2	
34	ANCT434210	Air and Noise Pollution Control Techniques	3	
35	SWTR434310	Supply Water Treatment	3	
36	WWTR434410	Wastewater Treatment	3	
37	ENMA134510	Environmental Management	3	
38	WSDN424710	Water Supply and Drainage Network	2	
39	CLPR124610	Cleaner production	2	
40	HSEN125610	Health, Safety and Environment	2	
41	EIAA124810	Environmental Impact Assessment	2	
42	DSWT415010	Design project on Supply Water Treatment	1	
43	DWWT415110	Design project on Wastewater Treatment	1	
44	DAPT415210	Design project on Air Pollution Treatment	1	
45	ENMO125310	Environmental Monitoring	2	
Total			**30**	

10.3b. Specialized Courses *(For experiment and practice courses-20 credits))*

No.	Course Code	Course Name	Credit	Note

47	GRPR326010	*Graduation Practice*	2	
48	PRVI326110	*Practical Visiting*	2	
50	PWSD316210	*Practice in Water Supply and Drainage Network*	1	
51	PIEM316310	*Practice in Environmental Monitoring*	1	
52	EOWS326410	*Experiments on Water Treatment*	2	
53	EOWT326510	*Experiments on Wastewater Treatment*	2	
54	EEEC326610	*Experiments on Environmental Engineering Chemistry*	2	
55	EEAC316710	*Experiments on Environmental Analytical Chemistry*	1	
56	EAPT326910	*Experiments on Air Pollution Treatment*	2	
57	EOMI327010	*Experiments on Environmental Microbiology*	2	
58	EOSP317110	*Experiments on Soil pollution*	1	
	REES327410	*Environmental Research Methodolog*	2	
		Total	**20**	

10.4. Graduation Thesis (10 credits)

No.	Course Code	Course Name	Credit	Note
59	GRTH407210	Graduation Thesis	10	
		Total	**10**	

10.5. Elective Courses:

10.5a. General Education (*Social Sciences****)***

No.	Course Code	Course Name	Credit	Note
60	GEEC220105	General Econimics	2	(Choose 6 credits)
61	IQMA220205	Introduction to Quality Management	2	
62	PRSK320705	Presentation Skill	2	
63	PLSK320605	Planning Skill	2	
64	INLO220405	Introduction to Logics	2	
65	TDTS320805	Writing Scientific and Technical Documents	2	
Total				**06**

10.5b. Professional Education (*For theoritical courses****)***

No.	Course Code	Course Name	Credit	Note

66	GISM124910	Geographic Information System	3(2+1)	(Choose 6 credits)
67	ENPM128310	Environmental project management	2	
68	ENTO125410	Environmental Toxicology	2	
69	ENEC125510	Environmental Economics	2	
71	ENSM125810	Environmental System Modelling	2	
72	ELAP125910	Environmental Law and Policy	2	
73	IAUP125710	Industrial architecture and urban planning	2	
	Total			**06**

11. Curriculum planning (*anticipated and applied for the main semesters: from 1st semester to 8th semester)*

No.	Course Code	Course Name	Credit	Prerequisite Course Code
	1st Semester			
1	LLCT150105	Principles of Marxit -Lenism	5	
2	ENGL130137	English 1	3	
3	MATH130101	Advanced Mathematics 1	3	
4	GCHE130103	General Chemistry A1	3	
5	ITET131710	Introduction to Environmental Engineering Technology	3	
6	PHED110513	Physical Education 1	1	
	Total		**18**	
	2nd Semester			
7	ENGL230237	English 2	3	
8	ADPR131185	MS Acess program	3	
9	MATH130201	Advanced Mathematics 2	3	
10	PHYS120102	General Physics A1	3	
11	GREN123110	General Environment	2	
12	ENAC233610	Enviromental Analytical Chemistry	3	
13	EEAC316710	*Experiments on Environmental Analytical Chemistry*	1	
14	PHED110613	Physical Education 2	1	
15	**Elective**	**Social Sciences 1 (Choose 1 among 2 courses)**	2	
	GEEC220105	General Econimics	2	

	IQMA220205	Introduction to Quality Management	2	
	Total		**21**	
	3rd Semester			
16	PHYS120202	General Physics A2	2	
17	MATH130301	Advanced Mathematics 3	3	
18	ENGL330337	English 3	3	
19	EDDG230120	Technical Draw B	3	
20	EHAH223510	Environmental Hydraulic Engineering	2	
21	ENEC233210	Environmental Engineering Chemistry	3	
22	PHYS110302	Practice Physics	1	
23	EEEC326610	*Experiments on Environmental Engineering Chemistry*	*2*	
24	PHED130715	Physical Education 3	3	
25	**Elective**	**Social Sciences 2 (Choose 1 among 2 courses)**	2	
	PRSK320705	Presentation Skill	2	
	TDTS320805	Writing Scientific and Technical Documents	2	
	Total		**24**	
	4th Semester			
26	MATH130401	Applied Probability	3	
27	GELA220405	General Laws	2	
28	PEET233410	Process and Equipment in Environmental Technology	3	
29	ENRD227810	Environmental research methodology	*2*	
30	ENMI233910	Environmental Microbiology	3	
31	ENHE223510	Environmental Hydraulics and Hydrology	2	
32	ENSO221610	Environmental System Optimization	2	
34	*EOEM327010*	*Experiments on Environmental Microbiology*	*2*	
	Elective	**Social Sciences 3 (Choose 1 among 2 courses)**	2	
35	PLSK320605	Planning Skill (*)	2	
	INLO220405	Introduction to Logics (*)	2	
	Total		**21**	

	5th Semester			
36	ENSO221610	Environmental System Optimization	2	
37	LLCT230214	Revolutionary Lines of VCP	3	
38	EFET233710	English in Environmental Technology	3	
39	SPRT424010	Soil Pollution and Remediation Techniques	2	
40	ANCT434210	Air and Noise Pollution Control Techniques	3	
41	DAPT415210	Design project on Air Pollution Treatment	1	
42	EAPT326910	*Experiments on Air Pollution Treatment*	2	
43	EOSP317110	*Experiments on Soil pollution*	1	
	Elective	**Professional Theorical Course 1,2 (Choose 2 among 5 courses)**	2	
	ELAP125910	Environmental Law and Policy	2	
	ENTO125410	Environmental Toxicology	2	
	ENEC125510	Environmental Economics	2	
	ENSM125810	Environmental System Modelling	2	
	Total		**21**	
	6th Semester			
47	SWMT434110	Solid Waste Management and Treatment	3	
48	SWTR434310	Supply Water Treatment	3	
49	WSDN424710	Water Supply and Drainage Network	2	APCT424210
50	AWVI326110	*Awareness Visits*	2	
51	DSWT415010	Design project on Supply Water Treatment	1	
53	EOWS326410	*Experiments on Water Treatment*	2	
53	PWSD316210	*Practice in Water Supply and Drainage Network*	1	
54	EIAA124810	Environmental Impact Assessment	2	
	Elective	**Professional Theorical Course 1,2 (Choose 2 among 5 courses)**	4	**Choose course (*)**
55	ENPM128310	Environmental project management	2	
56	IAUP125710	Industrial architecture and urban	2	

		planning		
	GISM124910	Geographic Information System	3	**(2+1)**
	Total		**21**	
7th Semester				
57	WWTR434410	Wastewater Treatment	3	
58	ENMO125310	Environmental Monitoring	2	
59	LLCT120314	Ho Chi Minh's Ideology	2	
60	CLPR124610	Cleaner production	2	
	HSEN125610	Health, Safety and Environment	2	
61	*EOEM316310*	*Practice in Environmental Monitoring*	*1*	
62	*PWWT415110*	Design project on Wastewater Treatment	*1*	
63	*EOWT326510*	*Experiments on Wastewater Treatment*	*2*	
64	*PFGR326010*	*Graduation Practice*	*2*	
	Total		**17**	
8th Semester				
65	GRTH407210	Graduate Thesis	10	
	Total		**10**	

12. Progression points

Students must obtain a mark of 5.0 out of 10.0 for all course

In case where a student fails to accumulate a GPA (scales of 10) of 3.0 for the first year, or 3.5 for the second year, or 4.0 for the third year or 4.5 from the fourth year or over allowable study time, he or she will be required to withdraw from the programme.

13. Special features

A five-day introduction programme in the first week of the first year

A four-week internship at companies, national agencies in some sites such as supervisor/ operator/manager/designer of waste treatment system or environmental management system

The last semester for a capstone project that is orally defended

Three course's projects

Many courses related to experiments and practices

14. Job opportunities

The EET programme equips graduates with competences to meet various requirements of different labor markets. Environmental engineers use the principles of engineering, soil science, biology, and chemistry to develop solutions to environmental problems. They are involved in

efforts to improve recycling, waste disposal, public health, and water and air pollution control. They also address global issues, such as unsafe drinking water, climate change, and environmental sustainability. Environmental engineers conduct hazardous-waste management studies in which they evaluate the significance of a hazard and advise on treating and containing it. They also design systems for municipal and industrial water supplies and industrial wastewater treatment, and research the environmental impact of proposed construction projects. Environmental engineers in government develop regulations to prevent mishaps. After graduation, the graduates will be able to work in companies, factories, industrial zones, waste treatment plants, environmental monitoring stations, environmental consulting companies, universities, research institutes and local as well as state agencies.

15. Facilities and infrastructure

15.1. Laboratory : Analytical Lab; Environmental Analysis Lab; Microbiology Lab; Modeling Lab; High –Tech in Environmental Technology Lab

15.2. Librabry, website

- Sciencedirect.com
- Spigerlink.com
- Wiley.com
- http://vinacel.hcmute.edu.vn
- http://thuvien.hcmute.edu.vn

16. Date of issue and revision :

- **The programme was issued in August 2012 and revised in August 2015.**

Appendix 2. Checklist for AUN Quality Assessment at Programme 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	**5.66**						
2	**Programme Specification**	**1**	**2**	**3**	**4**	**5**	**6**	**7**
2.1	The information in the programme 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 programme and course specifications are communicated and made available to the stakeholders					x		
	Overall opinion	**5.33**						
3	**Programme structure and content**	**1**	**2**	**3**	**4**	**5**	**6**	**7**
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	**5.33**						
4	**Teaching and Learning Approach**	**1**	**2**	**3**	**4**	**5**	**6**	**7**
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	**5.66**						
5	**Student Assessment**	**1**	**2**	**3**	**4**	**5**	**6**	**7**
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**						
6	**Academic Staff Quality**	**1**	**2**	**3**	**4**	**5**	**6**	**7**
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					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 fulfil 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	**5.43**						
7	**Support Staff Quality**	**1**	**2**	**3**	**4**	**5**	**6**	**7**
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	**5.4**						
8	**Student quality and support**	**1**	**2**	**3**	**4**	**5**	**6**	**7**
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	**5.4**						
9	**Facilities and infrastructure**	**1**	**2**	**3**	**4**	**5**	**6**	**7**
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	**5.4**						
10	**Quality enhancement**	**1**	**2**	**3**	**4**	**5**	**6**	**7**
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	**5.33**						
11	**Output**	**1**	**2**	**3**	**4**	**5**	**6**	**7**
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	**5.8**						
	Overall verdict	**5.49**						

Appendix 3: Supporting documents and evidences

No	Exh.	Title of Exhibition	Category
Introduction			
1	0.1	HCMUTE decision on forming the SAR team	Decision
	0.2	HCMUTE decision on forming the Faculty of Chemical and Food Technology (FCFT)	Decision
	0.3	HCMUTE Educational Philosophy	Document
Criteria 1. - Expected Learning Outcomes			
2	1.1	Revision of ELOs	
	1.1a	Setting up and revising curriculum procedure	Document
	1.1b	Plan for revision of EET programme in 2012, 2015, 2017	Document
	1.1c	Meeting minute of DET on the ELOs in 2012	Document
	1.1d	Meeting minute of the FCFT Academic and Scientific Committee on the ELOs in 2012	Document
	1.1e	HCMUTE decision on the promulgation of EET's ELOs in 2012	Document
3	1.2	Basis for programme development	
	1.2a	Vision and Mission of HCMUTE	Document
	1.2b	Vietnam's Law on higher Education	Document
	1.2c	Project develop human resources in Environmental field of Ministry of Natural Resources and Environment	Document
4	1.3	ELOs workshop	
	1.3a	Plan for ELOs workshop	Document
	1.3b	Meeting minutes of stakeholder workshops	Document
	1.3c	Decision of HCMUTE on promulgation ELOs of Programme	Document
5	1.4	Stakeholders survey about ELOs	
	1.4a	Plan for survey stakeholders about ELOs	Document
	1.4b	ELOs survey form	Document
	1.4c	Survey result	Document
	1.4d	Meeting minute of the FCFT Academic and Scientific Committee on the ELOs	Document
6	1.5	ELOs of EET Programme Benchmark	
	1.5a	ELOs of EET Programme Benchmark	Document
7	1.6	Announcement ELOs to stakeholders	
	1.6a	ELOs posted on FCFT website	Image
	1.6b	Outdoor Panel	Image
	1.6c	Letter to Industries	Document
	1.6d	Meeting minute of the FCFT	Document
	1.6e	Contents of Introduction to EET course	Document
Criteria 2. Programme Specification			
8	2.1	Curriculum mapping	
	2.1a	Curriculum mapping	Document
9	2.2	Syllabi of specific courses	

No	Exh.	Title of Exhibition	Category
	2.2a	Syllabi of specific courses	Document
10	2.3	Teaching profile	
	2.3a	Teaching profile	Document
11	2.4	Student Handbook	
	2.4a	Student Handbook	Document
12	2.5	Contents of the orientation week	
	2.5a	Contents of the orientation week	Document
13	2.6	Sample of E-learning course	Image
	2.6a	Sample of E-learning course	Document
Criteria 3. Programme Structure and Content			
14	3.1	Benchmark between EET Programme and other Programmes	
	3.1a	Benchmark between EET Programme and other Programmes	Document
15	3.2	Sample of Syllabus	
	3.2a	Sample of Syllabus	Document
16	3.3	Assessment rubrics	
	3.3a	Rubric for individual assessment	Document
	3.3b	Rubric for group assessment	Document
	3.3c	Rubric for subject project of supervisor	Document
	3.3d	Rubric for subject project of reviewer	Document
17	3.4	Alignment between POs and Courses	
	3.4 a	Alignment between POs and Courses	Document
18	3.5	Sample of a graduation thesis	
	3.5a	Syllabus of graduation thesis	Document
	3.5b	Progress monitoring form	Document
	3.5c	Sample	Document
19	3.6	The comparison table of the EET revised programmes (2004, 2008, 2012, 2015).	Document
	3.6a	The comparison table of the EET revised programmes (2004, 2008, 2012, 2015).	Document
Criteria 4. Teaching and learning strategy			
20	4.1	Activities to articulate HCMUTE's educational philosophy	
	4.1a	Regulation No 228/QĐ-ĐHSPKT on HCMUTE Educational Philosophy	Document
	4.1b	Notification on website of HCMUTE	Website
	4.1c	Meeting minute of stakeholder workshops	Document
	4.1d	Notification for new students in Introduction to Environmental Engineering Technology Course	Document
21	4.2	Activities to encourage independent study	

No	Exh.	Title of Exhibition	Category
	4.2a	Activities to enthuse students' passion and exploration	Document
	4.2b	Activities to diversify teaching methods	Document, Images
	4.2c	Activities to combine theoretical with practical activities or field trips	Document
	4.2d	Activities to solve the technical problems	Document
	4.2e	Activities to create learning environment	Document
20	4.3	List of courses for pedagogical methods	
	4.3a	Workshops and training of active teaching and learning methods	Document
	4.3b	The pedagogical courses for lecturers	Document
	4.3c	Training for teaching Introduction to Environmental Engineering Technology Course	Document
21	4.4	Activities in Introduction to Environmental Engineering Technology course	
	4.4a	Syllabus of Introduction to Environmental Engineering Technology course	Document
	4.4b	Activities for group working to explore and solve environmental problems	Document, Images, Video
	4.4c	Sightseeing	Document, Images
22	4.5	Syllabus of general knowledge courses	
	4.5a	Syllabus of Mathematics	Document
	4.5b	Syllabus of Physics	Document
	4.5c	Syllabus of General chemistry	Document
	4.5d	Syllabus of Scientific and Technical Documents Writing	Document
	4.5e	Syllabus of English in Environmental Technology	Document
23	4.6	Sample reports of course project	
	4.6a	Design project on Wastewater Treatment syllabus	Document

No	Exh.	Title of Exhibition	Category
	4.6b	Sample reports of Design project on Wastewater Treatment	Document
	4.6c	Sample of progress monitoring form for course project	Document
24	4.7	Activities of practice/experimental courses	
	4.7a	Activities of Awareness visiting courses	Document, Images
	4.7b	Activities of graduation practice	Document
	4.7c	Activities of experimental courses	Document,
25	4.8	Prizes of students' competent contests	
	4.8a	List of the student Research in 2013-2017	Document
	4.8b	Prizes of students' competent contests	Document, Images
26	4.9	Sample of a capstone project	
	4.9a	Guideline of graduation thesis	Document
	4.9b	Example of graduation thesis task	Document
	4.9c	Example of Detailed proposal	Document
	4.9d	Example of Progress monitoring form for graduation thesis	Document
	4.9e	Drawings.	Document
	4.9f	Spreadsheets and report.	Document
	4.9g	Reviews of the instructor, reviewer and evaluation council.	Document
	4.9h	Pictures of oral defense	Images
27	4.10	Activities support teaching and learning processes	
	4.10a	Activities of teaching assistants.	Document
	4.10b	Other supporting exhibitions: self-learning space, projectors, etc.	Document Images
28	4.11	Activities of consultancy team	
	4.11a	Reception timetables of Faculty consultancy team	Document

No	Exh.	Title of Exhibition	Category
	4.11b	Final report of consultancy team	Document
	4.11c	Survey of activities of consultancy team	Document
	4.11d	Pictures of feedback for students	Images
29	4.12	Activities to support research	
	4.12a	Consulting seminar for students about career, professional seminars	Document
	4.12b	Notice of HCMUTE and external funds	Document
30	4.13	Activities adapting to multicultural environment	
	4.13a	Syllabus of graduation practice.	Document
	4.13b	Sample of graduation practice report	Document
	4.13c	International exchange student	Document
31	4.14	Evaluation of teaching and learning processes	
	4.14a	Feedback of student about teaching methods	Document
	4.14b	Statistic reports for courses evaluation of students	Document
	4.14c	Meeting of teaching visit reports of EET department	Document
	4.14d	Sample of Portfolio's courses.	Document
32	4.15	Activities of English club	
	4.15a	Activities of English club	Document Images
33	4.16	Activities to apply IT in teaching method	
	4.16a	Practice in Water Supply and Drainage Network syllabus	Document
	4.16b	Example of E-learning course	Document
34	4.17	Activities in scientific research	
	4.17a	A summary of scientific research activities year 2013-2017.	Document
	4.17b	Pictures of posters	Images
35	4.18	Activities for interpersonal and social skills of students	

No	Exh.	Title of Exhibition	Category
	4.18a	Contest of Green Environment – Clean Food, Design of recycled materials.	Document
	4.18b	Activities to evaluate the Interpersonal and social skills	Document
	4.18c	List of students join in National University Entrance Exam Support Campaign, propaganda for environmental protection	Document
Criteria 5. Student Assessment			
36	5.1	Student enrollment scheme	
	5.1a	Student enrollment scheme	Document
37	5.2	Activities of English assessment	
	5.2a	Regulations of AAO on Entrance English placement	Document
	5.2b	Assessment of Entrance English	Document
	5.2c	Assessment of English requirement for graduation	Document
	5.2d	Extra-English-class	Document
38	5.3	Activities to satisfy course learning outcome	
	5.3a	Activities in theoretical course	Document
	5.3b	Activities in Experiment course	Document
	5.3c	Activities in Design project	Document
	5.3d	Meeting minutes of methods to assess students	Document
	5.3e	Example of summative examination	Document
	5.3f	Curriculum mapping of EET programme	Document
39	5.4	Assessment of graduation practice	
	5.4a	Guideline of graduation practice	Document
	5.4b	Example of graduation practice report	Document
	5.4c	Reviews of Employers on graduation practice	Document
	5.4d	Reviews of Reviewer	Document
	5.4e	List of students in graduation practice	Document

No	Exh.	Title of Exhibition	Category
40	5.5	Activities of teaching assistants	
	5.5a	Regulation of teaching assistants	Document
	5.5b	Sample of assignments	Document
	5.5c	List of teaching assistants	Document
41	5.6	Assessment of interpersonal and social skills	
	5.6a	Regulation of assessment of interpersonal and social skills	Document
	5.6b	Notice of Assessment of interpersonal and social skills	Document
	5.6c	Report of Assessment of interpersonal and social skills	Document
	5.6d	Example of Assessment of interpersonal and social skills	Document
	5.6e	Regulation for student scholarship	Document
42	5.7	Notification of student assessment	
	5.7a	Timetable of teaching and learning	Document
	5.7b	Notification of student assessment in course syllabus on website	Document
	5.7c	Notification of student assessment on E/M learning system	Document
43	5.8	Regulation of assessment processes	
	5.8a	Diversity of assessment methods	Document
	5.8b	Sample rubrics of assessment	Document
	5.8c	Regulation of university and college in credit system	Document
44	5.9	Assessment of formative examination	
	5.9a	Regulation of grading weight distribution	Document
	5.9b	Grading sheet of formative assessment	Document
45	5.10	Rubric assessment in assignment and graduation thesis	
	5.10a	Example of assessment by rubrics	Document
	5.10b	Guideline of graduation thesis	Document

No	Exh.	Title of Exhibition	Category
46	5.11	Improvement in assessment methods	
	5.11a	Meeting minutes of DET about modification of assessment methods	Document
	5.11b	Self-assessment of lecturer	Document
	5.11c	Adjustment of assessment of design project by rubrics	Document
	5.11d	Adjustment of assessment of graduation thesis by rubrics	
	5.11e	Feedback of student assessment	
	5.12	Regulation and procedure of assessment	
	5.12a	Procedure for composing and keeping confidentially the test, replicating writing test; delivering, receiving the test and grade	Document
	5.12b	Example of summative examination	Document
47	5.13	Procedure of monitoring and examination	
	5.13a	Monitoring summative examination procedure	Document
	5.13b	Example of summative examination on FCFT website	Document
	5.13c	Procedure of remark regulation	Document
48	5.14	Example of Diagnostic assessment	
	5.14a	Example of 5- minute test	Document
	5.14b	Example of Quizzes	Document
	5.14c	Example of Teamwork game	Document
	5.14d	Survey of the comprehensive of lesson	Document
49	5.15	Activities of teaching assistants	
	5.15a	Example of contract of teaching assistant	Document
	5.15b	Tasks of teaching assistant	Document
	5.15c	Example of assignments	Document
50	5.16	Course withdrawing regulations	
	5.16a	Regulation of MoET on course withdrawing	Document

No	Exh.	Title of Exhibition	Category
	5.16b	Notification about withdrawing date	Document
51	5.17	Student complaint resolution procedure	
	5.17a	Student complaint resolution procedure	Document
Criteria 6. Academic Staff Quality			
52	6.1	Human resource development planning for academic staff	
	6.1a	University mid-term development strategy plan in the 2011-2015, vision 2020	Document
	6.1b	Faculty mid-term development strategy plan in the 2013-2018, vision 2020	Document
	6.1c	Procedure for training and developing human resources	Document
	6.1d	Decision on staff appointment to graduate program and professional improvement	Document
	6.1e	Annual fostering academic qualifications registration list of lecturers in DET	Document
	6.1f	Annual proposal of FCFT for lecturers to participate in training course	Document
53	6.2	Regulation on competence improvement	
	6.2a	Regulation No. 274/QĐ-ĐHSPKT-TCCB of 2nd April 2009 on qualification improvement	Document
	6.2b	Procedure for training and developing human resources	Document
	6.2c	HCMUTE and FCFT's annual training plan	Document
	6.2d	List of training course	Document
	6.2e	Training evaluation report of academic staff	Document
	6.2f	Internal Cost Norms	Document
54	6.3	Regulations on working	
	6.3a	Regulation No. 1402/QĐ-ĐHSPKT-TCCB of 14th July 2015 on working, rest, and compassionate leave hours	Document
	6.3b	Joint Circular No. 36/2014/TTLT-BGDĐT-BNV on regulations and standard occupational title codes for academic staffs in the university	Document
	6.3c	Circular No. 47/2014/TT-BGDĐT on working regulation for academic staff	Document
	6.3d	Working regulation for the university academic staff	Document
55	6.4	HR and KPIs software	

No	Exh.	Title of Exhibition	Category
	6.4a	KPIs software	Document
	6.4b	The academic staff's self-assessment report on working results	Document
56	6.5	HCMUTE recruitment procedure	
	6.5a	Regulation No. 42 /QĐ-ĐHSPKT -TCCB on 9th April 2013 on academic staff standard at HCMUTE	Document
	6.5b	Recruitment announcements (Document + website)	Document
	6.5c	Summary of recruitment requirement of FCFT	Document
	6.5d	Labor contract	Document
57	6.6	Probation period policies	
	6.6a	Decisions on allocation of instructing lecturers for probation period	Document
	6.6b	Decisions on recognition of probation period	Document
	6.6c	Regulation No. 318 /QĐ-ĐHSPKT-TCCB of 17th November 2010 on the tasks and conditions of probation expiration review	Document
	6.6d	Example of probation profile of academic staff	Document
58	6.7	Decision on functions, tasks, authorities definition	
	6.7a	Decision No. 813/QĐ-ĐHSPKT-TCCB of 23rd March 2015 on defining the school functions, tasks, authorities, and organizational structure	Document
	6.7b	Description of functions and duties of department members	Document
	6.7c 6.7d	Faculty organization structure (http://fcft.hcmute.edu.vn/ArticleId/33514228-ce75-4049-9f5b-3c78ae52a0de/organizational-structure)	Image
		Academic staff's job description	Document
59	6.8	Decision on appointment statutes, re-appointment, resignation and dismissal of administrators	
	6.8a	Decision No. 475/QĐ-DHSPKT-TCCB 2013 on appointment statutes, re-appointment, resignation and dismissal of administrator	Document
	6.8b	Decide on the appointment of associate professor title for Mr. Nguyen Van Suc	Document
	6.8c	Proposal for next tenure of leaders	Document
	6.8d	Decision on announcement of Mr. Nguyen Van Suc's retirement	Document
	6.8e	Decision on announcement of appointing Ms. Vo Thi Nga as	Document

No	Exh.	Title of Exhibition	Category
		faculty dean.	
60	6.9	The list of CEFT seminars	
	6.9a	The list of CEFT seminars	Document
61	6.10	Regulations on staff wage increase	
	6.10a	Guidance for wage increase	Document
	6.10b	Decision on early raise of salary for lecturers of the faculty	Document
62	6.11	The official statement of guidance for emulation - bonus	
	6.11a	The official statement No. 25/2015/TB-ĐHSPKT of guidance for emulation - bonus	Document
63	6.12	List of rewards and recognition for lectures with their outstanding contribution	
	6.12a	List of rewards and recognition for lectures with their outstanding contribution	Document
64	6.13	Policy to encourage research – Academic staff handbook	
	6.13a	Annual announcement of registration for research topic	Document
	6.13b	Faculty's list of accepted research topics	Document
65	6.14	Statistics on Scientific publication 2012-2016 of DET	
	6.14a	Statistics on scientific publication 2012-2016 of DET	Document
Criteria7. Support Staff Quality			
66	7.1	Human Resource Planning for Support Staff	
	7.1a	HCMUTE mid-term development strategy plan 2011-2015, vision 2020	Document
	7.1b	Report on human resource situation and development	Document
	7.1c	FCFT development strategy plan 2013 – 2018, vision 2020	Document
	7.1d	Faculty, Function unit HR plan (Lib, FCFT Laboratory staff, FCFT secretary)	Document
67	7.2	Procedure of recruitment and human resource development training	
	7.2a	ISO procedure of human resource development training	Document
	7.2b	Recruitment Process of human resource	Document

No	Exh.	Title of Exhibition	Category
	7.2c	Recruitment announcement	Document
	7.2d	Recruitment statistic	Document
68	7.3	Probation period policies and procedures	
	7.3a	Regulation No. 318 /QĐ-ĐHSPKT-TCCB of 17th November 2010 on the tasks and conditions of probation expiration review	Document
	7.3b	Staff's probation profile	Document
69	7.4	Competences and Job description	
	7.4a	Function, responsibility of support staff in HCMUTE	Document
	7.4b	Function, responsibility of support staff in FCFT	Document
70	7.5	Decision on appointment statutes, re-appointment, resignation and dismissal of administrator(s)	
	7.5a	Decision on appointment, re-appointment, resignation and dismissal of administrator(s)	Document
	7.5b	Retirement regulations for support staff	Document
	7.5c	Example of Decision on announcement of support staff's retirement	Document
	7.5d	Example of Decision on appointment of support staff	Document
71	7.6	Survey on service quality of staff and student	
	7.6a	Satisfaction surveys of staff	Document
	7.6b	Satisfaction surveys of students	Document
72	7.7	Training and development plans for support staff	
	7.7a	Training and retraining development plans	Document
	7.7b	List of training courses	Document
73	7.8	List of report and certificate of training courses	
	7.8a	Notice of report submission after finishing the training course	Document
	7.8b	List of report and certificate of training courses	Document
74	7.9	Regulations on qualification improvement	
	7.9a	Regulation No. 274/QĐ-ĐHSPKT-TCCB of 2nd April 2009 on qualification improvement	Document

No	Exh.	Title of Exhibition	Category
	7.9b	Support for tuition fees for staff to enhance their education	Document
75	7.10	Internal Cost Norms	
	7.10a	Internal Cost Norms	Document
76	7.11	KPIs system and Paper self-report	
	7.11a	KPIs system	Document
	7.11b	Paper self-report	
77	7.12	The official statement of guidance for emulation - bonus	
	7.12a	Emulation guidelines for support staff	Document
	7.12b	Emulation titles for support staff	Document
	7.12c	Salary increase guideline for support staff	Document
	7.12d	Salary increase results	Document
78	7.13	List of rewards and recognition for support staff	
	7.13a	Decision on awarding support staff with outstanding achievements	Document
	7.13b	List of rewarding and recognition for support staff	Document
Criteria 8. Student Quality and Support			
79	8.1	HCMUTE's admission procedure	
	8.1a	Enrollment announcement	Document
	8.1b	Enrollment scheme	Document
	8.1c	Scholarships	Image Document
80	8.2	Approaches to inform the HCMUTE student intake policy and admission criteria	
	8.2a	Announcement via media	Image
	8.2b	Education exhibitions – consultations	Image Document
	8.2c	Open day fairs	Image Document
	8.2d	Admission brochure	Image

No	Exh.	Title of Exhibition	Category
81	8.3	EET programme's cut-off scores	
	8.3a	EET programme's cut-off scores	Document
82	8.4	E/M learning activities	
	8.4a	E/M learning activities	Image, link
83	8.5	Student's online training management system	
	8.5a	Academic warning regulations	Document
	8.5b	Student learning management system	Image
	8.5c	Students' academic warned indicators	Image
	8.5d	List of academic warned students	Document
84	8.6	Regulation on monitoring students' extra curriculum activities	
	8.6a	Regulation on monitoring students' extra curriculum activities	Document
85	8.7	Activities in orientation week	
	8.7a	Plan welcome freshmen	Document
	8.7b	Some pictures about activities	Image
86	8.8	FCFT's English club	
	8.8a	FCFT's English club	Document
87	8.9	Creative competition from scientific research funding	
	8.9a	Creative competition from scientific research funding	Image Document
88	8.10	Student's competitions and extracurricular activities	
	8.10a	Student's competitions and extracurricular activities	Document
89	8.11	Job support services and careers guidance	
	8.11a	Job support services and careers guidance	Document
90	8.12	FCFT's team consultants	
	8.12a	FCFT's team consultants	Document

No	Exh.	Title of Exhibition	Category
91	8.13	FCFT's physical environment	
	8.13a	FCFT's physical environment	Image
92	8.14	FCFT's social environment	
	8.14a	FCFT's social environment	Image
93	8.15	FCFT's psychological environment	
	8.15a	FCFT's psychological environment	Image
Criteria 9. Facilities and Infrastructure			
94	9.1	HCMUTE campus information	
	9.1a	Overview map	Image
	9.1b	Statistical report of classrooms and used area	Document
	9.1c	Statistical report of area - campus 1	Document
	9.1d	Statistical report of area - campus 2	Document
	9.1e	Media equipment in classroom	Document
	9.1f	Master plan for campus 1 in the future	Image
95	9.2	Library resources	
	9.2a	List of references – Vietnamese	Document
	9.2b	List of references – English	Document
	9.2c	Digital libraries database	Document
	9.2d	Decision No 1428 Resources addition policy	Document
96	9.3	High quality library	Document
	9.3a	Introduction	Image
	9.3b	Investment plan	Document
97	9.4	List of curriculum and textbooks written by the faculty of the Department of Environmental Technology	
	9.4a	List of curriculum and textbooks written by FCFT	Document

No	Exh.	Title of Exhibition	Category
	9.4b	Textbooks (DET)	Document
98	9.5	High quality library	
	9.5a	HCMUTE library's website	Image
	9.5b	Outside self - studying space	Image
	9.5c	Cooperation minutes (4 libraries)	Document
	9.5d	Announcement about the exchange book fair IV 2016	Document
	9.5e	Plan of 4H competition	Document
	9.5f	Announcement about Khai but competition in Tet holiday 2017	Document
99	9.6	Feedback about quality of service	
	9.6a	Feedback survey	Document
	9.6b	Report of feedback	Document
100	9.7	DET laboratories	
	9.7a	Organization structure of management	Image
	9.7b	List of machines in labs	Document
	9.7c	List of chemicals in labs	Document
	9.7d	Overview	Image
101	9.8	Financial plan for facilities and equipments	Document
	9.8a	Financial plan for facilities and equipment in 2017, 2016, 2014	Document
102	9.9	Health Safety Environment Security management system in LABs – HSESMS	
	9.9a	Health Safety Environment Quality (HSEQ) policy	Document
	9.9b	Information label	Image
	9.9c	Emergency Evacuation Map - Building B	Image
	9.9d	Procedure	Document
	9.9e	MSDS	Document

No	Exh.	Title of Exhibition	Category
	9.9f	Hazard waste	Document
103	9.10	Building F1 project	Document
	9.10a	Building F1 project	Document
104	9.11	Drainage plant project	
	9.11a	Operation center	Image
	9.11b	Treatment plan	Image
105	9.12	HCMUTE Information Technology System	
	9.12a	Inventory in computer labs in 2017	Document
	9.12b	Education management application	Image
106	9.13	Digital Learning Center	
	9.13a	Introduction	Image
	9.13b	Decision No 564-QĐ ĐHSPKT-TCCB Establish DLC	Document
	9.13c	Regulation about Function	Document
	9.13d	Organization structure	Image
	9.13e	Regulation about action plans	Document
	9.13f	Decision about support program	Document
	9.13g	Rules in labs	Document
	9.13h	Activities at DLC	Image
107	9.14	List of EET online courses	
	9.14a	Result of online courses assessment	Document
	9.14b	Plan of the LMS workshop in FCFT	Document
108	9.15	Working environment at HCMUTE	
	9.15a	Contract for landscape service	Document
	9.15b	Contract for the collectiion service of municipal solid waste	Document

No	Exh.	Title of Exhibition	Category
	9.15c	Green environment at HCMUTE	Image
	9.15d	Plan of Green Sunday	Document
109	9.16	Health care	
	9.16a	Annoucement of disease prevention	Document
	9.16b	Plan of health test annual	Document
110	9.17	Security and safety at HCMUTE	
	9.17a	Security team	Document
	9.17b	Emergency exit	Image
	9.17c	Fire protection	Document
111	9.18	Infrastructure for supporting physical development	Image
	9.18a	Infrastructure for supporting physical development	Image
Criteria 10: Quality Enhancement			
112	10.1	The curriculum design and development procedure	Document
	10.1a	Regulation on 150 credits Programme	Decision
	10.1b	Curriculum design development process 2005	Document
	10.1c	Stakeholders' feedback	Document
	10.1d	Meeting minutes of scientific board	Document
	10.1e	Meeting minutes of departments	Document
113	10.2	Curriculum change 2012	Document
	10.2a	Stakeholders' feedback	Document
	10.2b	Scientific board's meeting minutes for adjustment of curriculum 2012	Document
	10.2c	Decisions on CET ELOs and curriculum 2012	Decision
	10.2d	The curriculum 2012	Document
114	10.3	Decision on Teaching assistant	Document

No	Exh.	Title of Exhibition	Category
	10.3a	Regulation on Teaching assistant	Document
	10.3b	List of teaching assistant	Document
	10.3c	Sample of TA profile	Document
115	10.4	Decision on Social activities	Document
	10.4a	Regulation on social activities	Document
	10.4b	List of social activities	Document
	10.4c	Some pictures on social activities	Image
116	10.5	Curriculum change 2015	Document
	10.5a	Departments meeting minutes on courses' modifications	Document
	10.5b	Curriculum change 2015	Document
117	10.6	Setting up and revising curriculum procedure	Document
	10.6a	Curriculum design and development procedure 2005	Document
	10.6b	Curriculum design and development procedure 2015	Document
118	10.7	Meeting minute of Scientific Board	Document
	10.7a	Meeting minutes of scientific board on programme adjustment 2012	Document
	10.7b	Meeting minutes of scientific board on programme adjustment 2015	Document
119	10.8	Course-by-course evaluation of lecturers	
	10.8a	Students' survey form on the course content	Document
	10.8b	Minutes form of teaching visiting in practice course	Document
	10.8c	Minutes form of teaching visiting in theory course	Document
120	10.9	Function of QAO and AAO	
	10.9a	Functions and Responsibilities of AAO & QAO	Document
	10.9b	Planning and implementing teaching procedure	Document
	10.9c	Inspecting and examining the compliance with teaching statute of lecturer procedure	Document

No	Exh.	Title of Exhibition	Category
	10.9d	Class observation procedure	Document
	10.9e	Planning and implementing examination procedure	Document
	10.9f	Composing and keeping confidentially the test, replicating subjective test, delivering, receiving, the test and grade procedure.	Document
	10.9g	Monitoring final examination procedure	Document
121	10.10	Teaching and learning processes evaluation	
	10.10a	Functions and Responsibilities of AAO	Document
	10.10b	List of teaching visiting courses	Document
	10.10c	Reports on teaching recommendation	Document
	10.10d	Students' feedback_ Report of changes	Document
122	10.11	Sample of Course portfolio	
	10.11a	Sample of Course portfolio	Document
123	10.12	Online teaching and English or bilingual courses	
	10.12a	List of English or bilingual courses	Document
	10.12b	List of registration for online teaching course	Document
124	10.13	Assessment Amelioration	
	10.13a	Students' survey and feedback on assessment methods and results	Document
	10.13b	Departments reports on assessment methods	Document
	10.13c	The minutes of the conference on Investigation _ Assessment Amelioration	Document
	10.13d	List of DET lecturers participated to the training course, conference on assessment methods (HEEAP, Fulbright), and evidence	Document
125	10.14	Research output application	
	10.14a	List of research projects of lecturers	Document
	10.14b	Research reports	Document
	10.14c	Meeting minutes of departments on application of research outputs to the courses	Document
	10.14d	List of courses applied the research outputs	Document

No	Exh.	Title of Exhibition	Category
126	10.15	Students research topics and prizes	
	10.15a	Students' research prizes for 5 years	Document
	10.15b	List of research projects of students	Document
127	10.16	Library's enhancement	
	10.16a	Students' survey and feedback on library service	Document
	10.16b	Digital library and library website	Image and website
	10.16c	List of buying books of library need to buy annual	Document
128	10.17	Student feedback on support services and facilities	
	10.17a	Meeting minutes of direct conversation between FCFT and student	Document
	10.17b	Feedback report about the direct conversation between FCFT and student	Document
129	10.18	Graduates feedback	
	10.18a	Graduates feedback	Document
130	10.19	Student service centre enhancement	
	10.19a	Student service centre enhancement	Document
131	10.20	ERO's activities	
	10.20a	ERO's activities	Document
132	10.21	Renovation, repairs and acquisition	
	10.21a	Renovation, repairs and acquisition of HCMUTE	Document
	10.21b	Renovation, repairs and acquisition of FCFT	Document
133	10.22	Calibration, maintenance and repair equipment	
	10.22a	Equipment calibration, maintenance and repairs procedure	Document
	10.22b	FCFT's plan for equipment calibration, maintenance and repairs	Document
134	10.23	Feedback mechanisms	
	10.23a	Evaluating student's satisfaction in the course procedure	Document

No	Exh.	Title of Exhibition	Category
	10.23b	Evaluating stakeholders' satisfaction with curriculum procedure	Document
135	10.24	Student survey form	
	10.24a	Student survey form	Document
136	10.25	Feedback mechanisms enhancements	
	10.25a	Online dialogue link	Document
	10.25b	Online feedback of students about the teaching process	Document
	10.25c	The analysis of the strengths, weaknesses and proposition of the improving solutions of FCFT	Document
	10.25d	The results after implementation of improving solutions	Document
Criteria 11: Output			
137	11.1	The training quality assurance	
	11.1a	Regulation on training management	Document
	11.1b	Regulation on training management in Student Handbook	Document
	11.1c	Dashboard system	Document
138	11.2	Faculty Quality Objective	
	11.2a	Faculty Quality Objective in 2014, 2015, 2016	Document
	11.2b	Meeting minutes of Faculty in 2014, 2015, 2016	Document
139	11.3	FCFT training plan and report	
	11.3.a	Target and Plan during 2013-2018	Document
	11.3.b	Report of Target and Plan during 2013-2018	Document
140	11.4	SAR reports for AUN-QA	
	11.4a	SAR reports for AUN-QA	Document
141	11.5	Solutions for enhancing pass rate and graduate rates on time	
	11.5a	Meeting minute of Faculty about Suggesting solutions for Enhancing pass rate and Graduate rate on time	Document
	11.5b	Regulation about Consultant to Student	Document

No	Exh.	Title of Exhibition	Category
	11.5c	Announcement about Deploying Activities in Student Consultant	Document
	11.5d	Regulation about Consultant Team Promulgation	Document
	11.5e	Online Consultant System	Document
	11.5f	List of Warning Students	Document
	11.5g	System of Assistance, Announcement and Regulation for Assistance	Document
	11.5h	English Club for Student	Document
	11.5i	Process of Academic Pausing	Document
	11.5j	Guideline of Student Financial Aids	Document
142	11.6	Regulation of Academic Program Lasting	
	11.6a	Regulation of Academic Program Lasting	Document
143	11.7	Student dialogue	
	11.7a	Plan of Dialogue	Document
	11.7b	Report of Dialogue	Document
	11.7c	Image	Image
144	11.8	Solutions for enhancing rate of graduation	
	11.8a	Meeting minute of Faculty about First Semester Preliminary	Document
	11.8b	Regulation about Consultant to Student	Document
	11.8c	Decision of graduation Student Acceptance, List of Student in 2016, 2017	Document
	11.8d	Course registration online system	Document
	11.8e	Regulation about Equivalent Subjects	Document
	11.8f	Teaching Plan During 2013-2017	Document
	11.8g	List of Job-supported Students	Document
	11.8h	Education Program in 2015 with 6 optional programs	Document
	11.8i	Scholarship Support	Document

No	Exh.	Title of Exhibition	Category
145	11.9	Survey graduated student	
	11.9a	Survey form for 3 month-graduated and 6 month-graduated students	Document
	11.9b	Survey results of graduated students from 2011 to 2013	Document
	11.9c	Survey results of graduated students from 2014 to 2016	Document
146	11.10	Alumni Surveys after one year of graduation by FCFT	
	11.10a	Form of Survey	Document
	11.10b	Result of Survey in 2014, 2015, 2016	Document
	11.10c	Report of Result in 2014, 2015, 2016	Document
147	11.11	Statistical report on environmental human resources	
	11.11a	Statistical report on environmental human resources	Document
148	11.12	Rate of Employment in Society	
	11.12a	Rate of Employment in Society *http://thanhnien.vn/giao-duc/ty-le-co-viec-lam-dep-den-kho-tin-642012.html*	Website
149	11.13	Survey to enterprises on internship of student	
	11.13a	Form	Document
	11.13b	Result	Document
150	11.14	Solution for improving the rate of employment	
	11.14a	Meeting minute about Solution Suggestion	Document
	11.14b	English and Soft-skill Club for Student	Document
	11.14c	Lecture of Environmental English	Document
	11.14d	"Trial Interview – Real Success" Program	Document
	11.14e	Dispatches and Pictures of Awareness Visiting	Document
	11.14f	Recruitment Day	Document
	11.14g	Introduction Job Opportunity for Student	Document
151	11.15	Scientific research of student	

No	Exh.	Title of Exhibition	Category
	11.15a	Regulation about Scientific Research for Students	Document
	11.15b	List of topic research during 2013-2017	Document
	11.15c	Report/poster	Image
	11.15d	Award	Image
152	11.16	CEFT workshop	Document
	11.16a	Decision about CEFT Workshop and Report Activity Result	Document
	11.16b	Plan of Scientific Meeting	Document
	11.16c	Performance	Document
153	11.17	The satisfaction survey of staffs	
	11.17a	Form of Stuff Survey about Workplace	Document
	11.17b	Result of Stuff Survey	Document
154	11.18	The satisfaction survey of student	
	11.18a	Form of Student Satisfaction	Document
	11.18b	Report of Survey	Document
155	11.19	Student Survey on teaching quality	
	11.19a	Form survey	Document
	11.19b	Report of Survey	Document
156	11.20	The satisfaction survey about Library	
	11.20a	Form of Multiple Option about Library Training	Document
	11.20b	Report	Document
157	11.21	Survey Alumni about periodic curriculum	
	11.21a	Plan of Annual Alumni Meeting	Document
	11.21b	Meeting Minute of Annual Alumni Meeting	Document
	11.21c	Pictures of Annual Alumni Meeting	Document

No	Exh.	Title of Exhibition	Category
	11.21d	Form of Alumni Survey	Document
158	11.22	Enterprise survey	
	11.22a	Form of Enterprise Survey about level of UTE Student Response to the Job	Document
	11.22b	Result of Survey	Document
159	11.23	Solution for Improvement based on Stakeholder Feedback	
	11.23a	Decision about Assistant	Document
	11.23b	Decision about KPIs	Document
	11.23c	Regulation about E/M Learning	Document
	11.23d	Announcement about Financial Support for Scientific Research of Teacher	Document
	11.23e	Regulation about Salary and Welfare for Teacher	Document