SELF - ASSESSMENT REPORT FOR AUN-QA

HO CHI MINH CITY UNIVERSITY OF TECHNOLOGY AND EDUCATION

FACULTY OF VEHICLE AND ENERGY ENGINEERING

HCMUTE

BACHELOR OF ENGINEERING
IN THERMAL ENGINEERING TECHNOLOGY

AUN-QA
A Touch of Quality

The AUN Quality Assessment at Programme Level

November 07 - 09, 2017

AUN-QA SELF-ASSESSMENT REPORT

of the Bachelor of Engineering in

THERMAL ENGINEERING TECHNOLOGY

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

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Dean

Faculty of Vehicle and Energy Engineering

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LIST OF ABBREVIATIONS

AAO	:	Academic Affairs Office
AAO	:	Administrative Affairs Office
AIO	:	Academic Inspectorate Office
ASAO	:	Admissions and Student Affairs Office
AY	:	Academic Year
DLC	:	Digital Learning Center
DM	:	Dormitory Management
DTE	:	Department of Thermal Engineering
EMO	:	Equipment and Maintenance Office
ERO	:	Enterprises Relations Office
FMO	:	Facility Management Office
FPO	:	Finance and Planning Office
FVEE	:	Faculty of Vehicle and Energy Engineering
HCC	:	Health Care Center
HCMUTE	:	Ho Chi Minh City University of Technology and Education
HRMO	:	Human Resource Management Office
INC	:	Information and Network Center
IRO	:	International Relations Office
Lab	:	Laboratory
NOAAO	:	Non-Official Academic Affairs Office
PMO	:	Press and Media Office
QAO	:	Quality Assurance Office
SSC	:	Student Services Center
STO	:	Science and Technology Office
TET	:	Thermal Engineering Technology

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PART 1: INTRODUCTION

1. Ho Chi Minh City University of Technology and Education

Established in 1962, Ho Chi Minh City University of Technology and Education (HCMUTE) is one of the leading universities in training and supplying the high-quality human resources in science and technology for the provinces in the south of Vietnam. HCMUTE is also the first university in Vietnam educating and training technical teachers for the whole country.

HCMUTE has two campuses with total area of 21 ha and 128,128 m^2 of construction areas. Figure 0.1 is the Central Building of HCMUTE. There are 15 faculties, 20 functional units, 16 institutes and centers in this school, as shown in Figure 0.2. The total number of lecturers is 571 with about 26,000 students (19,000 full-time undergraduates and 1,000 part-timestudents).

Figure 0.1: The Central Building of HCMUTE

1.1. Vision

HCMC University of Technology and Education will become a top center of training, research, creativity, innovation and entrepreneurship in Vietnam, on a par with regional and worldwide prestigious universities.

1.2. Mission

The mission of HCMUTE is to be a leading institution in training, scientific research and technology transfer in Vietnam, 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.

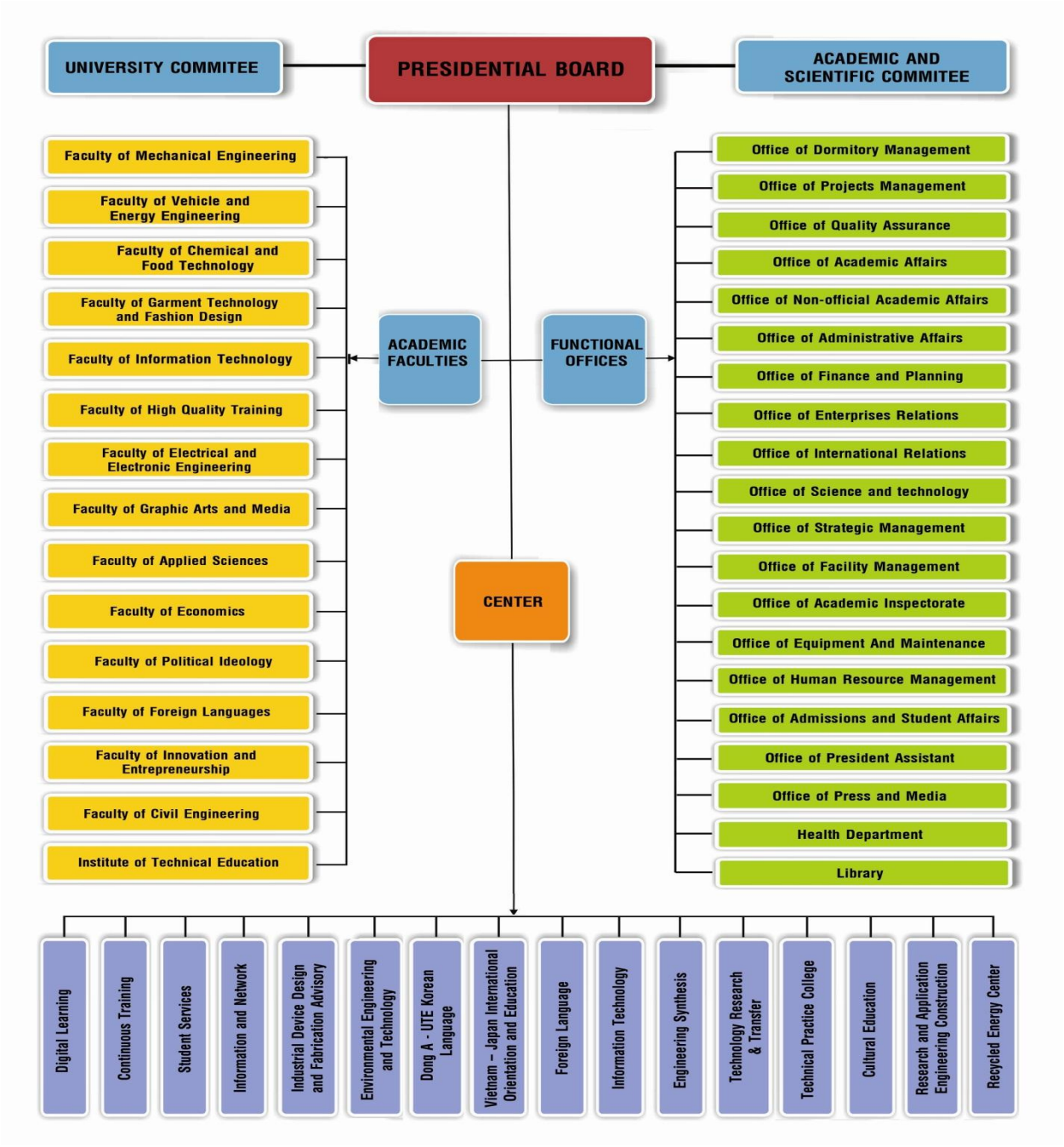


Figure 0.2: Organization of HCMUTE

2. Faculty of Vehicle and Energy Engineering

Faculty of Vehicle and Energy Engineering (FVEE), formerly Automotive Engineering Board, was established in 1962. In 1972, the faculty was renamed as the Faculty of Mechanical and Automotive Engineering of Thu Duc University of Education. Until 1987, the faculty became the Faculty of Vehicle and Energy Engineering of Ho Chi Minh City University of Technology and Education.

Over 55 years of establishment and development, FVEE has a long history and valuable experience and is one of the biggest faculties of the school in the areas of education, scientific research and other services. FVEE has established the genuine brand, high status and prestige in society.

At present, the Faculty is responsible for training postgraduate and undergraduate students in Thermal Engineering and Automotive Engineering. FVEE has applied the framework of 150-credit

curriculum for its undergraduate program and all curriculums have been renovated towards CDIO orientation and updated to meet the social demands.

FVEE - with a team of lecturers and scientists who are highly skilled and experienced in training, research and technology transfer - has trained and supplied a great number of Masters, engineers and technical teachers of Thermal and Automotive Engineering Technologies. FVEE has four departments: Thermal Engineering, Automotive Engine, Automotive Chassis, and Automotive Electricity. The academic staff is composed of 59 people (including 39 full-time staff), among whom are 03 associate professors, 11 PhD holders, 12 PhD candidates and 25 masters. The organization of FVEE is shown in Figure 0.3.

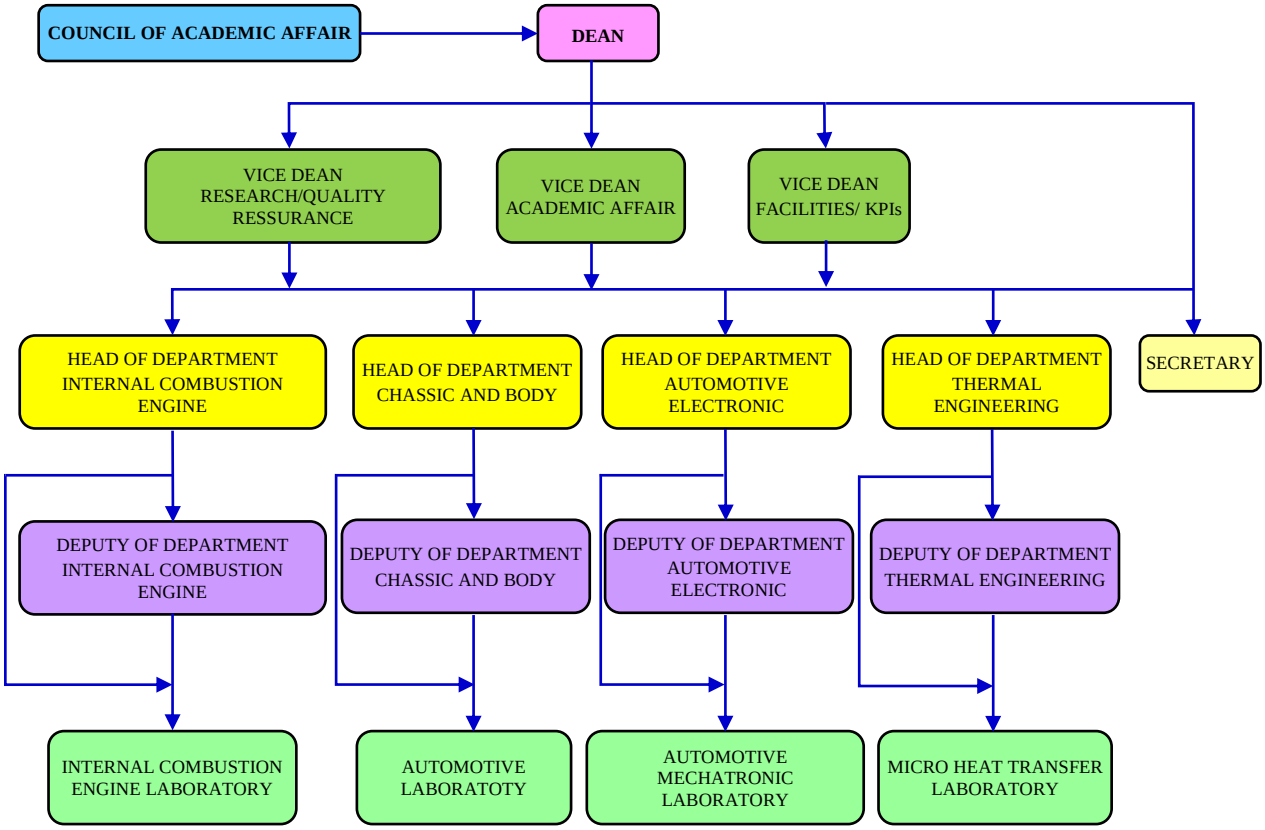


Figure 0.3: Organization of FVEE

FVEE has a system of seminar rooms, laboratories and workshops with state-of-the-art equipment which are available to meet the learning and research needs of students and staff. FVEE has five laboratories (Heat Transfer, Air Conditioning, Drying engineering, Mechatronics, Automotive engine and Automotive chassis), six workshops (Heat and Refrigeration, Gasoline Engine, Diesel Engine, Automotive Chassis, Automotive Electricity and Electronics, and Body and Painting Work), 03 specialized rooms which can facilitate sufficiently the training of Thermal Engineering Technology and Automotive Engineering Technology and one Open Lab for students' use.

FVEE has established close and efficient cooperation with a range of domestic and international organizations, universities and companies in terms of training, research, internship, job, scholarships, equipment, etc. These partners include: Hanoi University of Science and Technology, Hochiminh City University of Technology, Da Nang University of Technology, Ho Chi Minh University of Industry, University of Transport and Communication, HEEAP, Bitzer, Daikin, Guntner, Trane, Panasonic, SEAPRODEX Refrigeration Industry Corporation, Mitsubishi Electric, LG Electric, Danfoss, Toyota VN, Ford VN, etc.

With the "*Best training quality and relevance to social demands*" policy, FVEE has been providing the most ideal learning environment and conditions for the learners to fully promote their potentials and creativity, widen professional knowledge and sharpen their skills to meet the social demands. Graduates from FVEE have been highly sought after. They possess good professional expertise and skills, which enable them to meet the requirements of different employers. They have been working in all of the fields of management, teaching, manufacturing, technical services, business, etc. Engineers, graduating from the Faculty, are usually given preferences in recruitment by not only domestic but also foreign employers, taking charge of important work and holding key positions at research institutes, educational institutions, and industry. In the last 5 years, 90% newly graduate from the FVEE have succeeded in finding suitable jobs after three months of graduation.

2.1. FVEE vision

The Faculty of Vehicle and Energy Engineering – HCMC University of Technology and Education will become a center of training and applied research that will take the lead in the field of automotive technology, aerodynamics, heating – refrigeration in the national, on par with institutions of higher education in ASEAN, undertake the role in providing high-quality human resources, to meet the needs of the construction and development of the country.

2.2. FVEE mission

FVEE mission is to:

- Be an organization for training higher education and graduates with high quality, for scientific research and development, and for application of science - technology related to the majors.
- Provide high-quality human resources and scientific products in energy engineering, vehicle engineering, automotive technology, and heat – refrigeration technology to develop Vietnam.
- Develop diversified programs to meet the needs of the society.
- Build an environment of modern teaching and learning, giving students and researchers the best learning and studying conditions.
- Be proactive and active international integration in the fields of education and scientific research.

2.3. FVEE quality policy

FVEE quality policy is "Be dynamic, innovative, and integrated, providing high-quality human resources to meet the needs of society".

2.4. FVEE core values

- Preserving and promoting the traditional values of Vietnamese people.
- Nourishing talents and creativity.
- Respecting the learners' benefits , making them the center of all activities.
- Constructing a learning society.
- Appreciating the quality, efficiency and confidence of the society.

3. Academic programme of Thermal Engineering Technology

The academic programme of Thermal Engineering Technology (TET) was first established in 2001. Up to now, there have been over 900 graduate completing the programme. FVEE has always followed the "learner-centered" approach. All activities of the Faculty are to provide the best environment for students to acquire knowledge, sharpen professional skills, and strengthen morality and personalities.

3.1. Objectives of TET Programme

TET undergraduate Programme has the following objectives:

PO1. Have good generic knowledge, fundamental engineering knowledge and intensive knowledge in the field of thermal engineering and attain the ability for self-study and life-long learning

PO2. Promote their own self-study skills, problem-solving skills and professional skills of thermal engineering field.

PO3. Communicate effectively, act as a good leader and work well in teams.

PO4. Improve their ability in conceiving, designing, implementing and operating thermal systems.

3.2. Career opportunity

Jobs related to the degree include design engineers, marketing engineers, sales engineers, production engineers and supervisors, project managers in air conditioning, refrigeration, heating, drying, thermal power plants and renewable energy areas. Besides, graduates can work as teachers at universities, colleges, etc.

Based on feedback from stakeholders, TET programme is revised, assessed and renovated every two years to ensure its graduate meet the requirements of the employers. Currently, many TET alumni hold key positions in companies, plants or factories, research institutes and professional educational institutions.

PART 2: 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

Based on Vietnam's law on higher education, HCMUTE has developed its mission as illustrated in table 1.1. The undergraduate programme of Thermal Engineering Technology has the objectives (POs) aligning with the vision and mission of the university/faculty, as shown in Table 1.2.

- PO1: Have good generic knowledge, fundamental engineering knowledge and intensive knowledge in the field of thermal engineering
- PO2: Promote their own self-study skill, problem-solving skill and professional skills of thermal engineering field.
- PO3: Communicate effectively, act as a good leader and work well in teams.
- PO4: Improve their ability in conceiving, designing, implementing, operating thermal systems, attain the ability for self-study and life-long learning.

Table 1.1: Alignment between the the university's missions and the VN education regulations

Vietnamese Higher Education Law	HCMUTE missions
The goal of higher education is to educate learners of good moral and ethical qualities, awareness for people service, knowledge and competence for practicing their profession, commensurate with the level of training, health and responsiveness for building and defending the country.	- Being 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 - Meeting the demands of the economic-social development of the country and the region

Table 1.2: Alignment between the faculty's missions, the university's missions, and the thermal engineering technology program objectives

HCMUTE missions	FVEE missions	TET programme objectives
Being a leading institution in training, scientific research and technology transfer in Vietnam	Bringing learners and teachers a modern teaching-learning environment and the optimal conditions for study and research in Automotive Technology and Thermotechnics and Refrigeration	Having good generic knowledge, fundamental engineering knowledge and intensive knowledge in the field of thermal engineering and attain the ability for self-study and life-long learning.
Continuously innovating to provide human resources and scientific products with	Supplying high quality manpower and scientific products in Energy Mechanical Engineering, Automotive Engineering,	Improving their ability in conceiving, designing, implementing, operating thermal systems

high quality in the fields of technical and vocational education, science and technology	Automotive Technology, Thermotechnics and Refrigeration.	
Meeting the demands of the economic-social development of the country and the region	Taking part in international integration by means of training and research	Promoting their own self-study skill, problem-solving skill and professional skills of thermal engineering field. Communicating effectively, act as a good leader and work well in teams.

After completing the programme, graduates are able to:

- ELO 1: Apply basic knowledge of mathematics and science into engineering and acquire the ability to learn at a higher level
- ELO 2: Apply fundamental knowledge in Thermal Engineering Technology.
- ELO 3: Apply specialized knowledge in designing, calculating, testing, and diagnosing thermal systems
- ELO 4: Possess professional ethics and professional working manner in Thermal Engineering Technology
- ELO 5: Analyze, explain and reason to solve Thermal engineering problems.
- ELO 6: Experiment and discover Thermal engineering knowledge.
- ELO 7: Attain the ability to think critically and systematically about Thermal engineering problems.
- ELO 8: Have professional skills in Thermal Engineering Technology.
- ELO 9: Lead, function in teams, and communicate well in writing and speaking forms.
- ELO 10: Communicate in technical English.
- ELO 11: Conceive ideas of thermal systems.
- ELO 12: Calculate, design, and simulate thermal components and systems.
- ELO 13: Deploy systematically different activities in the field of thermal engineering technology.
- ELO 14: Operate and manage systems in the field of thermal engineering technology.

Table 1.3. The expected learning outcomes of TET programme

Group of ELOs	Expected Learning Outcomes (ELOs)
General Knowledge	ELO 1: Apply basic knowledge of mathematics and science into engineering and acquire the ability to learn at a higher level
Fundamental Knowledge	ELO 2: Apply fundamental knowledge in Thermal Engineering Technology ELO 3: Apply specialized knowledge in designing, calculating, testing, and diagnosing thermal systems

Professional Skills	ELO 5: Analyze, explain and reason to solve Thermal engineering problems ELO 6: Experiment and discover Thermal engineering knowledge ELO 7: Attain the ability to think critically and systematically about Thermal engineering problems ELO 8: Have professional skills in Thermal Engineering Technology ELO 11: Conceive ideas of thermal systems ELO 12: Calculate, design, and simulate thermal components and systems ELO 13: Deploy systematically different activities in the field of thermal engineering technology ELO 14: Operate and manage systems in the field of thermal engineering technology
Generic Skills	ELO 9: Lead, function in teams, and communicate well in writing and speaking forms ELO 10: Communicate in technical English
Attitude and Awareness	ELO 4: Possess professional ethics and professional working manner in Thermal Engineering Technology

The expected learning outcomes (ELOs) systematically cover three domains of Bloom taxonomy (knowledge, skill, and attitudes) at higher order thinking levels. Expected learning outcomes of the academic programme are firmly based on Bloom's taxonomy, including every standard in generic and specialized knowledge and skills as well as attitudes and awareness *[Exh.1.1-01: Programme specification; curriculum; ELOs]*. These are transferred into the programme, as shown in Figure 1.1

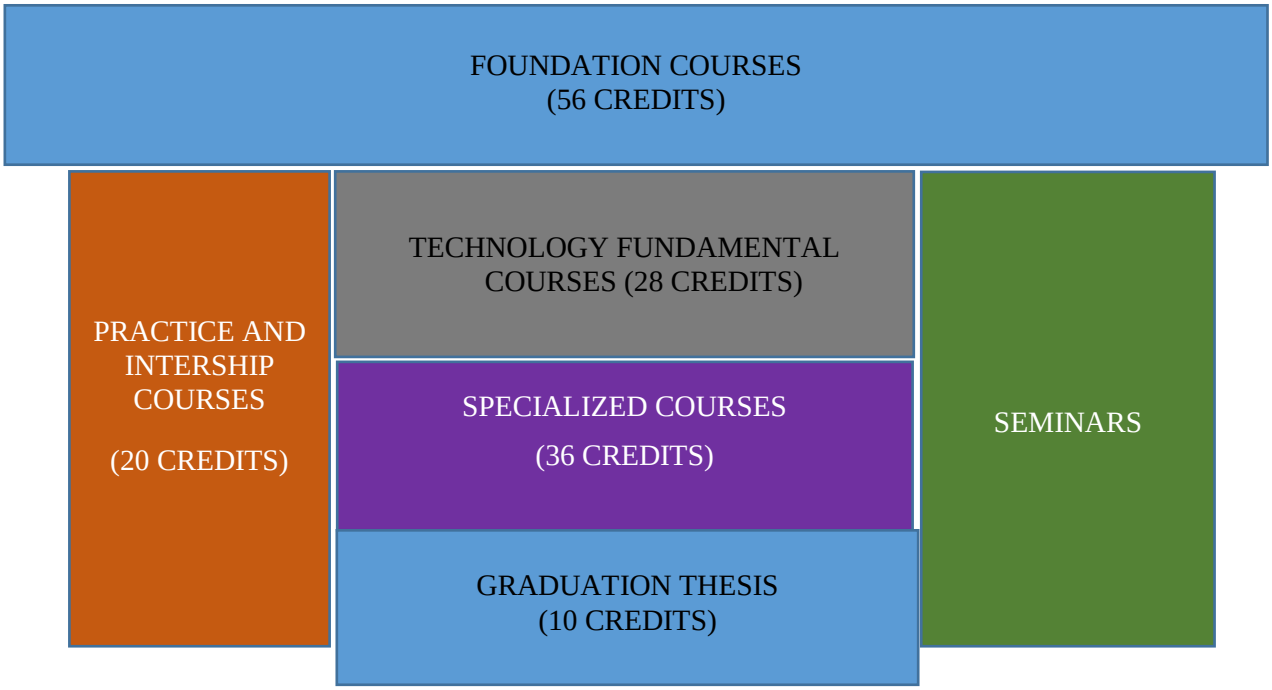


Figure 1.1: Course distribution chart

ELOs reflect program objectives. There is a complete match between objectives and expected learning outcomes of TET programme as illustrated in Table 1.3. In addition, POs reflect the missions of the university and faculty as shown in Table 1.1.

Table 1.4. Correlation and consistency between educational objectives and learning outcomes of TET Programme

Programme objectives (POs)	Expected Learning Outcomes (ELOs)
PO1. Have good generic knowledge, fundamental engineering knowledge and intensive knowledge in the field of thermal engineering and the life-long learning.	ELOs 1, 2, 3
PO2. Promote their own self-study skill, problem-solving skill and professional skills in thermal engineering field.	ELOs 4, 5, 6
PO3. Communicate effectively, act as a good leader and work well in teams	ELOs 7, 8
PO4. Improve their ability in conceiving, designing, implementing, operating thermal systems; and attain the ability for self-study	ELOs 9, 10, 11, 12, 13, 14

ELOs of TET program have been constructed according to the following process:

- FVEE has refered and engaged stakeholders such as academic managers, experts and teaching staff to design the TET programme *[Exh.1.1-02: Decision on the establishment of Faculty's Scientific Board]*. During the process, FVEE has collected feedback from current students to improve the curriculum by holding meetings between the management of the faculty or university and them once every semester *[Exh.1.1-03: Minutes on Students and faculty's leaders meeting]*.
- FVEE has engaged students, alumni of the TET program and employers to take a part in the design of the academic programme *[Exh.1.1-04: Questionnaire on curriculum development]*. With organizing conferences, the feedbacks for the curriculum development from these stakeholders are collected via questionnaire method. The feedback has been analyzed to identify the expected learning outcomes including the knowledge, skills and attitudes in more details *[Exh.1.1-05: Sample survey on the level of HCMUTE students' response to job requirements]*.
- FVEE has collected feedback from current students to improve the curriculum by holding meetings between the management board of the faculty or university and the students once every semester *[Exh.1.1-06: Students and faculty's leaders meeting]*. Over the last few years, the content of the academic programme has been consecutively improved in the way that is suitable for the new world and responds well to learners' needs *[Exh.1.1-07: Minutes on curriculum modification]*.
- Based on the feedback from the stakeholders such as employers, alumni, students and academic staff, FVEE's scientific board will evaluate and adjust the academic programme in accordance with the scientific and technological development trend of the society. FVEE can actively modify 10% of the academic programme/syllabus every semester.
- FVEE has refered to other relevant curriculums from national and international prestigious universities. Several programs from HCMUT, IUH, DUT, *[Exh.1.1-08: Several curriculums of other universities]* are chosen. The comparison between TET program of HCMUTE and those

of other universities is in good agreement. Strengths of TET student are deep theory and good practice.

The ELOs are also uploaded on the the faculty website *[Exh.1.1-09: link to website, http://fae.hcmute.edu.vn/ArticleId/efcacbec-1c4c-4978-834d-1e8592484043/thermal-engineering-technology-undergraduate-program-specification]*. Each course and lesson should clearly be designed to achieve its expected learning outcomes which should be aligned to the programme expected learning outcomes such as the course entitled "Introduction to Thermal Engineering Technology", so all staffs and students have known the ELOs *[Exh.1.1-10: Introduction to Thermal Engineering Technology syllabus]*.

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

The ELOs of TET programmes cover both general and technological knowledge, professional and generic skills such as work readiness skill, problem solving skills, team work skill, as well as attitudes and awareness, as shown at Table 1.3-ELOs *[Exh.1.1-01: Programme specification; curriculum; ELOs]*.

Both specific and generic ELOs are fulfilled by scientific research projects and many extracurricular activities such as the skill and English clubs, specialized seminars, site visits, voluntary activities *[Exh.1.2-01: Extra-curricular activities]*. These activities can support the ELOs as illustrated in Table 1.5.

Table 1.5: Relation Matrix – thermal engineering technology undergraduate programme

I – Introduce R – Reinforce M – Master

Extra curricular activities	Expected learning outcomes													
	ELO 1	ELO 2	ELO 3	ELO 4	ELO 5	ELO 6	ELO 7	ELO 8	ELO 9	ELO 10	ELO 11	ELO 12	ELO 13	ELO 14
Attending activities from FVEE Youth and Student Association,student service center									R	R				
Attending TET seminars	R	R	R	R	R		R	R		M	R	R		
Visiting enterprises	R	R	R	R		R	R		R	R	R	R	R	
Scientific research projects	M	M	M		R		R					R		

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

The feedback from employers for the ELOs of TET programme is collected annually thanks to organized conferences whose attendants are national and international enterprises, and alumni's traditional reunions. According to the university policies, a section is allowed to change 10% of the curriculum content with the approval of the faculty and university's Academic and Scientific

Committee to make the curriculum more adaptable and suitable for the requirements of the labor market *[Exh.1.3-01: Regulation on curriculum development]*. National and international enterprises have highly appreciated TET Alumni because of their good knowledge, professional skills and responsible attitudes. The alumni have met with their requirements *[Exh.1.3-02: Surveys into Employment after Graduation and Feedback form stakeholders]*.

The program contents are more relevant and informative and have self-study pert as well as soft skills, so the programme meets with the requirements of the labor market *[Exh. 1.1-01: Programme specification; curriculum; ELOs]*. Besides, the 2008 curriculum did not include electives. Not until the 2010 curriculum were specialized elective courses added. During the design of 2012 curriculum, when analysing alumni and their employers' feedback, FVEE realized that the system of electives must consist of social and specialized subjects to ensure learners' further education as well as their adaptability to fluctuations in social demands *[Exh.1.3-03: Thermal Engineering Technology Curriculums applied in the years of 2008, 2010, 2012]*.

The learning outcomes are measurable via the testing and assessment systems of courses. At the beginning of the semester, the academic staffs in charge of each course will discuss and agree on testing and assessment methods and those agreements are recorded in that course syllabus *[Exh. 1.3-04: Syllabi]*.

To ensure fairness for the students, the courses such as the special topics in refrigeration technology, the special topics in heating technology, and graduation thesis are scored based on Rubrics, which indicate terms such as knowledge, skills and attitude. Besides, to have a connection with the business, The Department of Thermal Engineering has invited experts from enterprises in the defence of graduation thesis *[Exh.1.3-05: Photo and name lists]*.

The ELOs' details and methodology to achieve the expected learning outcomes are clearly described in each course syllabus with a view to ensure the validity of the disclosed learning outcomes. In order to attain the expected learning outcomes, the programme is based on a Credit system. Apart from specifying the amount of self-study time via homework and self-study contents, each syllabus also includes the required amount of knowledge and skills that students must obtain in the course *[Exh.1.3-06: Student handbook]*.

The ELOs meet with the requirements of the labor market. The thermal engineers graduating from the Faculty were usually given preferences in recruitment by not only domestic but also foreign employers, taking charge of important work and holding key positions at research institutes, educational institutions, companies, plants or factories. Most students have jobs as soon as they defend their graduation thesis. A lot of recruitment letters from enterprises were posted on the FVEE website *[Exh.1.3-07: Feedback from stakeholders and HCMUTE graduates]*.

2. Programme Specification

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

The TET programme specification has been constructed based on the framework of MOET, the vision of the university. The TET programme ELOs are clearly stated in the programme. The TET program has the total credit number of 150 (excluding Physical Education and National Defense Education credits). Details are described in the curriculum. The TET programme specification indicates Institution, Programme name, Major code, Types of training, Degree, Training time, Prospective students, Admission Criteria, Credit distribution for knowledge areas, Graduation

conditions, ELOs, Benchmark, Programme structure, Training schedule, Assessment methods, and Date for writing and revision. After being approved, the programme specification is made available to lecturers, students and stakeholders through different channels: Website of HCMUTE and FVEE, leaflets delivered on Open Day, Admission Consultancy Day, etc. *[Exh.2.1-01: Programme specification; curriculum; ELOs; The correlation matrix; Student handbook 2012-2017, FVEE website]*.

Based on the contributions of the faculty's academic staff, and feedback from companies and enterprises employing the faculty's graduates, the TET program is reviewed and modified every two years. HCMUTE has an ISO procedure on curriculum development (Planning to develop the curriculum, Organizing conference, Sending survey to stakeholders, Improving the programme). According to the university policies, a section is allowed to change 5-7% of the curriculum content with approval of the faculty and university's scientific boards to make the curriculum more adaptable and suitable for the requirements of the labor market. The programme is reviewed regularly and frequently (especially in 2012 and 2015). The revision has been conducted not only internally but also externally via the feedback of employers and successful alumni who are working at different companies *[Exh.2.1-02: Evidence group on Revision and Regulation on curriculum development]*.

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

The courses in the programme are clearly integrated and make evident contributions to achieving the expected learning outcomes. The course content is up-to-date to meet the need of enterprise. In teaching, teachers always add new technology in their lectures. Sometimes, lecturers and engineers from companies teach the same course for students. Besides, the expected learning outcomes of the courses obviously reflect the expected learning outcomes of the program. The ELOs are clearly indicated in each course' syllabus. Every course in the programme has its own course specification/ syllabus which includes the information about: Course name, Course code, Credit, lecturers, Required course, Course description, Course goals, Expected learning outcomes, Textbooks, Assessment, Course content, Classroom rules of conduct, Approved date, Approvers, Syllabus update *[Exh. 2.2-01: Evidence group on Syllabi and portfolios]*.

Based on the feedback from the stakeholders such as employers, alumni, students and academic staff, FVEE can actively modify about 5-7% of the academic programme/syllabus every semester. For example, the programme was thoroughly revised and improved in 2012, based on the contributions of the faculty's teaching staff, and feedback from companies and enterprises employing the faculty's graduates. At that time, all the courses of TET proramme had been checked and updated. Since then, it has been frequently revised, evaluated, adjusted and supplemented by the faculty's scientific board, teaching staff and stakeholders *[Exh.2.2-02: Evidence group on workshop/meeting at FVEE]*.

In addition, even on the first day of class, teachers have clarified all the contents of the syllabi to students. The syllabi fully reflect the information about the timeline, methods, regulations, weight distribution, rubrics, et. In the course specifications, the assessment method is chosen in alignment with the ELOs of the courses, including formative and summative assessments. Weight distribution is 50% for formative assessment and 50% for summative assessment. The formative assessment is fulfilled at least twice with many methods, usually a combination of the exercises, quizzes, group reports, tests, and homeworks. For the course with many classes, the summative assessment has the same questions *[Exh.2.2-03: Evidence group on websites]*.

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

On FVEE website, the programme and course specifications have been published. Stakeholders can access the websites of Academic Affair Office or the faculty's, and download the programme and course specifications as well as expected learning outcomes. From information above, lecturers will prepare lecture portfolios. Students make references and sellect courses accordingly. Enterprises can refer to recruit as well as pupils from High School know about majors to apply. Besides, the information from internal and external assesment time (such as AUN) made the programme specification published and known to stakeholders *[Exh.2.2-03: Evidence group on websites]*.

3. Programme Structure and Content

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

The TET curriculum is designed based on the ELOs. The programme content is indicated in all the courses of the training curriculum *[Exh.3.1-01: Evidence group on the programme specification, curriculum, ELOs, Curriculum map and correlation matrix]*. The programme ELOs are conveyed into the course ELOs. Each course has a syllabus which details information about prerequisite course, course objectives, course description, ELOs, reference, assessment, course content, written date, and revised date. The course content and teaching method have to constructively align with ELOs, as indicated in the correlation matrix *[Exh.3.1-02: Correlation matrix]*. With TET programme, assessment methods are aligned to ELOs. They are presented in the course syllabi. Each course has to have a course portfolio which includes items such as: List assigned Lecturer, The list of ELOs of the course, Syllabus, Teaching content and plan, Teaching methods, Assessments, Documentation for teaching and learning guides, and the final report. ELOs are assessed with the reference to the Bloom Taxonomy at high level. Lecturers have to complete their course portfolios and ensure that the teaching methods and assessments are aligned with course ELOs.

The course ELOs are achieved through suitable teaching and learning methods designed for each course. The teaching and learning methods are indicated in more detail in Criterion 4. Beside the face to face instruction mode, a Learning Management System (LMS) is used to enhance students' interaction. The soft skills of the ELOs are achieved by team work, projects, presentation, etc. For school year 2016-2017, 100% courses in TET programme used LMS.

The constructive alignment of the curriculum with the ELOs is also indicated by assessment methods. Many assessment methods are applied to assess the learning progress of students. The methods are indicated in more detail in Criterion 5.

For example, one of ELOs of the course "Energy Economics" is good communication, therefore, the teaching methods and assesments for this course must be relevant to the communication skills *[Exh.3.1-03: Evidence group on Syllabi, test samples and portfolios]*.

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

The contribution made by each course in achieving the ELOs programme is shown in the correlation matrix. The correlation matrix shows the support of each course on the ELOs of the

training programme. There are three levels such as Introduce, Reinforce, and Master used in the correlation matrix. The contribution level of the courses increases gradually, which is also shown in the correlation matrix and flowchart. For example, if students want to study the course "Air conditioning Engineering", they must know about the first law, the second law, thermodynamic processes which were taught in the previous course called "Thermodynamics".

Once the correlation matrix was developed, course syllabi were designed to support the programme ELOs. The course contents are mapped with course ELOs and programme ELOs. These requirements are described clearly in each course. The assessment of the subsequent courses is also more demanding than the previous ones *[Exh.3.1-02: Correlation matrix]*.

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

The TET programme includes 150 credits (including 124 required credits and 26 elective credits), in which general knowledge occupies 56 credits, fundamental knowledge accounts for 28, specialized knowledge includes 36 and 10 of them are for graduation thesis, exclusive of Physical Education and National Defense Education. The link of knowledge is indicated in mapping of TET core courses.

The TET programme is flexible. Training time of TET programme is four years. Based on their ability and conditions, students can diminish or extend their training time. Besides, students can choose to take another course on pedagogical knowledge and skills so that they can apply for a teaching position at vocational schools after graduation. Normally, students study TET programme in four years. When they decide to study for the pedagogical certification for one semester, they can get a bachelor degree and a teaching certificate *[Exh.3.1-02: Correlation matrix]*. In addition, the TET programme is flexible with elective courses. The elective courses help students promote their own interests in the related study and research. When students study specialized courses, students can select from elective courses regarding two subject matters: (1) Heating industry and power; (2) Refrigeration and air conditioning industry.

The TET programme shows a good balance between generic and specialized skills and knowledge as shown in Figure 3.1. The general courses help students to be able to learn the fundamental courses and the fundamental courses help them to learn specialized courses *[Exh.3.1-02: Correlation matrix]*. For example, if students want to study the course "Refrigeration Engineering", they must know about the thermodynamic processes which are supposed to be taught in the previous course called "Thermodynamics". To study the "Thermodynamics" course, students have to stake the "Physics" course first. The graduation thesis (also called the capstone project) allows students to demonstrate their knowledge, skills and attitudes. This thesis is assigned as the final test before students graduate. During the training process, the lecturers test knowledge of students with suitable levels.

The TET programme is conducted in eight semesters. The courses for each semester are clearly divided. Students will be learned knowledge from general, fundamental to specialized knowledge. Awareness level also increases from Introduce, Reinforce, and Master. The objective of general knowledge courses is to help students study fundamental courses of their majorsas well as offer students with possibilities to transfer to other majors. Besides, general knowledge also supports students to develop their lifelong learning. Fundamental knowledge helps students to obtain enough knowledge to learn their major.

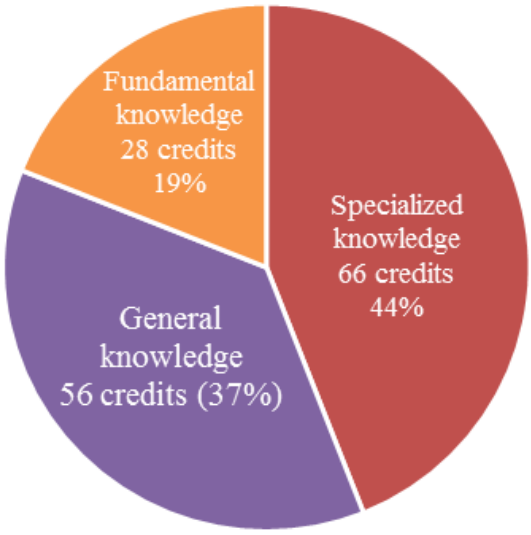


Figure 3.1: The programme contribution

The TET programme is logical; it expresses between courses through relevant flow chart. Sequence of each course is also indicated such as required courses, prerequisite courses, and parallel courses. In TET programme, almost courses require prerequisite courses. Prerequisite courses mean that students have to learn this course in order to move onto the next course (however, they are not required to pass the prerequisite courses). The required courses are the core and typical subjects of the major The elective courses help students promote their own interests in the related research *[Exh.3.3-01: Curriculum map]*.

Based on the contributions of the faculty's teaching staff, and feedback from companies and enterprises employing the faculty's graduates, the TET programme is reviewed and modified every two years.The feedbacks for the ELOs of TET programme from employers are done annually by organizing conferences whose attendants are national and international enterprises, and alumnus traditional reunions. According to the university policies, a section is allowed to change 5-7% of the curriculum content with approval of the faculty and university's scientific boards to make the curriculum more adaptable and suitable for the requirements of labor market *[Exh.3.3-02: Evidence group on Revision and Regulation on curriculum development]*. The procedures of preparing and adjusting the academic programme have been done according to ISO quality assurance procedures issued by HCMUTE *[Exh.3.3-03: Setting up and revising curriculum procedure]*.

Due to the development of science and technology as well as social requirements, TET programme was announced in 2003 with 240 credits, and in 2004 the program was adjusted down to 228 credits (including the national defense Education and physical Education); in 2008, the number of credits was 176 credits and the training programmes in 2012 was fixed with 150 credits, as shown in Table 3.2.

Table 3.1: Comparison the credits between two years

Year	General knowledge	Fundamental knowledge	Specialized knowledge	Total
2008	59 (33.5%)	58 (33%)	59 (33.5%)	176 (100%)
2012	56 (37%)	28 (19%)	66 (44%)	150 (100%)

In 2012, FVEE started to develop the 150-credit-programme, being suited to the framework of Ministry of Education and Training and the vision of the university. In this programme, several courses were integrated, soft skills were embedded, and self-learning competency became a focal point. There are not contents which are repeated in courses.

In December 2015, the university assessed all programmes. The TET programme is highly consensus with the assessment results *[Exh.3.1-02: Correlation matrix]*. Based on these assessment results, the TET programme adjusted several courses and course content. With the rapid development of new technologies, the courses in the programme are updated each year; this is done through electives. Several courses which are always updated with new knowledge are "Special topics in thermal technology", "Renewable energy", etc.

4. Teaching and Learning Approach

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

Key statement of HCMUTE Educational Philosophy: HUMANITY, CREATIVITY, INTEGRATION. HCMUTE believes in the core values of lifelong learning: each learner needs to self- construct, 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. HCMUTE does not only provide students with an excellent educational background, but also encourages students' creativity and assists them in realizing their ideas through practice.

As "student-centeredness" and "genuine learning and professionalism" are the core educational values of HCMUTE, our faculty has adopted our learning and teaching approaches in line with constructivist way. "The learning process only takes place when learners study actively. Learners construct their own understanding and knowledge of the world through active study, experiencing things, and reflecting on those experiences". The TET curriculum has been developed basing on this educational philosophy by which students are not only well-equiped with theoretical knowledge but their practical skills are also reinforced. In addition, all stakeholders have been well-informed of the adoption of this philosophy. Discussions among involved parties, including academic staffs and students have been conducted to clarify the roles of teachers and learners using the curriculum:

- The teachers of the Thermal Engineering Technology Programme are supposed to guide students through "experimental learning", thereby facilitating the students' self-discovery of knowledge. In this way of teaching, a teacher is no longer a presenter but a facilitator instead.
- The students take the main responsibility in their learning process. They are provided with opportunities to study independently, to experiment new things by themselves, and finally construct new knowledge.

Various teaching and learning methods are applied such as Lectures, Class discussion, Recitation oral questions, Discussion groups, Presentation, etc. The methods have been selected in order to promote "independent learning" and "reflective learning" as well as to fit with the learning outcomes of the courses. The results of teaching methods are shown in lecture portfolios and teacher observation *[Exh.4.1-01: Lecture portfolios of some courses]*.

The teaching strategies applied for TET aim at developing "independent learning" and "reflective learning" competencies for students. Details are as follows:

- Students are encouraged to experiment and discover new things, thereby motivating them to learn actively and nourishing their passion in learning and creating things *[Exh.4.1-02: Introduction to Thermal Engineering Technology syllabus]*.
- Students are taught how to apply the theory into solving technical problems. In TET, theory is closely combined with practice, which is successfully proved by the graduation internship in which students are sent to lots of companies to work in real-life contexts.
- Students are provided with opportunities to solve technical problems from simple to complex levels, thanks to which their analytical and problem-solving skills are enhanced and their knowledge is widened.
- Independent thinking and critical thinking are initiated and nutured through actions.

It is certain that this educational philosophy can be successfully achieved since HCMUTE has offered training courses or international partners of HCMUTE have introduced co-operation programs such as HEEAP, COMET or BUILD-IT to train lecturers with pedagogical methods and assessment tools which are substantially useful *[Exh.4.1-03: List of courses for pedagogical methods]*.

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

Expected learning outcomes of the programme are specified into specific expected learning outcomes of the courses or subjects from low to high levels *[as shown in Table 4.1]*.

Table 4.1: Correlation matrix of learning outcomes

I – Introduce R – Reinforce M – Master

No.	ELOs	1	2	3	4	5	6	7	8	9	10	11	12	13	14
	Courses														
1	Introduction to Thermal Engineering	I	I	I	I	I	I	I	I	I	I	I	I	I	
2	Applied Fluid Mechanics	R	R	R		R	R	R							
3	Thermodynamics	R	M	R	I	M	R	R							
4	Heat transfer	R	M	M	I	M	M	R							
5	English for Thermal Engineering		R	R	I					R	R				
6	Refrigeration Engineering		M	M	R	M	R	R		R	R				
7	Optional fundamental subjects (1-2)		R	R		R	R	R							

8	Pump, Fan and Compressor		M	M		R		R		R					
9	Steam boiler		R	M		M		R		R		R	R	R	R
10	Drying technology and distillation		R	M		M		R		R		R	R	R	R
11	Compressors and refrigeration equipments		R	M		M		R		R		R	R	R	R
14	Air Conditioning Systems		R	M		M		R		R		R	R	R	R
15	Thermal power plants		R	M	R	M		R		R		R	R	R	R
16	Optional specialized subjects (1-5)		R	M		R		R							
17	Heat/Refrigeration Project	R	R	M	R	R	R	R		R	R	R	R	R	R
18	Refrigeration Technique Practice 1-4			R	M		R		M	R					
19	Boiler Practice			R	M		R		M	R					
20	Drying Practice			R	M		R		M	R					
21	Graduation Internship		R	M	M	R	R	R	M	R	R	R	R	R	R
22	Capstone Project	R	R	M	M	R	R	M	M	M	R	M	M	M	M

The correlation between the ELOs of the program and those of the TET's core courses has been presented above. The academic staff is well aware that the achievement of program's ELOs can only be done by fulfilling the ELOs of each course. A group of lecturers who are in charge of each course are assigned to determine the relevant teaching and learning methods. The ultimate goal is to choose the most suitable methods to obtain the course' learning outcomes. Teaching methods are varied, ranging from Lectures, Class discussion, Recitation oral questions, Discussion groups, Presentation to Project, which are clearly described in the course syllabus. Academic staffs are responsible for delivering the syllabus to students on the first day of the course. By doing this, students are well-informed of the content as well as the teaching and assessment methods applied.

The following is the description of a number of teaching strategies and methods applied for each group of courses, from foundation to specialized courses:

- The course of Introduction to TET in the first semester gives students an overview of the TET programme and job profile, and guidelines of soft skills including self-study through talks with

professional engineers, model design, field trips. These teaching and learning activities help students to understand deeply, promote interest, develop competencies for life-long learning, and orientate professional passion during the learning process *[Exh.4.2-01: Activities in Introduction to TET course]*.

- Lectures: First year students are offered with courses in mathematics and natural sciences. The methods with real examples are chosen to help equip students with background knowledge of mathematics and basic sciences which are the foundation for them to learn effectively the courses related to technology fundamental knowledge or specialized courses in the following semesters. These foundation courses are also essential for their life-long learning in the future.
- Lectures followed by practical sessions: In the first two years of the programme, technology fundamental knowledge courses are offered to students. The chosen teaching strategy involves theoretical lectures in combination with practice. With this teaching and learning strategy, students are given guidance to obtain the ability to apply knowledge in different situations, from simplicity to complexity. Normally, students are given a situation, then they do some research, discuss in group and reach an agreement before presenting their findings in class.
- Learning by doing: This approach is chosen to teach third-year and fourth-year students in the specialized courses of thermal engineering technology. Students are required to show their problem-solving competency in projects, graduation project and applied scientific research *[Exh.4.2-02: Products of projects]*.

The teaching provided by other departments is suitable for TET program. Lecturers from the Faculty of Foundation Sciences are in charge of teaching generic knowledge. Lecturers from the FVEE are in charge of teaching specialized knowledge *[Exh.4.2-03: Feedback form student survey]*. With the teaching aids such as overhead projectors and COMSOL MultiPhysics, a system-design platform, teachers are encouraged to apply integrated teaching methods, using PowerPoint presentations and videos in their lectures as well as showing demonstrations of complex technical models and systematic structures to students. These methods help students gain better understanding of the technical systems *[Exh.4.2-04: Lecture portfolios of some courses applying simulation tools]*.

Besides, the E/M learning system (website: www.lms.hcmute.edu.vn) helps students access lectures faster and more effectively as well as interact with teachers and classmates *[Exh.4.2-05: Some online lecture videos]*. Apart from well-equipped laboratories and modern facilities, students have a chance to get access to some of the most popular machines and equipment used in the industry *[Exh. 4.2-06: Photos of the laboratory with state-of-the-art equipment-CO_2 air conditioner]*.

Normally, each theoretical class has about 50 – 60 students and practical class has 25 students. Besides, the faculty has good material infrastructure as well as good lecturers. So, the teaching and learning methods are used suitably *[Exh.4.2-07: Photos of class and workshop]*. With teaching strategy "action learning", the TET programme includes 150 credits in which workshop practice and graduation internship occupies 20 credits (13.3%), so that students achieve understanding and know how to apply the theory into solving technical problems *[Exh.4.2-08: 150-credit TET curriculum]*. The TET academic program has met with requirements of enterprises.

In order to obtain precise assessment results of the process of knowledge, skills, and attitude learning and acquisition, our section always requires each lecturer to employ different assessing methods and clearly show in the specific course syllabus or teaching portfolio *[Exh.4.2-09:*

Statistics of different assessment methods and corresponding weights]. Depending on typical contents and characteristics of each practical subject, the assessment methods are criterion-referenced. Specifically, those assessing methods can be:

- Regular class attendance, participation in discussions, in-class task completion
- Practice on the devices.
- Participation in group activities.

To increase students'learning motivation and promote their curiosity, students are guided and funded to participate in related technical contests such as the Fabricating Model Contest *[Exh.4.2-10: Skill Examinations 2015, 2016]*, *[Exh.4.2-11: Photos of model contest]*. Scientific research is also encouraged among students *[Exh.4.2-12: Students are co-authors in scientific papers]*. These contests and research activities enhance the students' ability to apply the knowledge learnt in the program. Besides, workshops and seminars are regularly held. The information that industrial enterprises and organizations present in the workshops and seminars is considered very useful for their future learning and work *[Exh.4.2-13: Photos of seminars and workshops with enterprises and organizations]*.

Students of FVEE have many opportunities to take part in technical projects and produce technical products. One of the most effective places to do so is the open laboratories. Students can go there to study, do projects and conduct scientific research or graduation research together *[Exh.4.2-14: Student products from lab work]*. There are many scientific papers being published basing on the experimental results from these open labs *[Exh.4.2-12: Students are co-authors in scientific papers]*. The results from scientific research were embedded the academic program via the courses and seminars *[Exh.4.2-15: Lecture notes of the special topic course]*. During the capstone project, students work in group under supervision of lecturers. Upon completion, they have to take part in a thesis defense session in front of a panel who will assess the project according to a set of criteria announced in advance.

The teaching and learning methods are evaluated for each semester. The methods were chosen to fit with the learning outcomes of the courses. The faculty secretary collects feedback for teaching improvement and collects data from multiple sources (triangulation: teachers, students, and enterprises). The faculty board observes the teaching procedures of lecturers as well as course portfolios *[Exh.4.2-16: Lecture porfolios of some courses]*, *[Exh.4.2-17: Schedule of section's observations]*, *[Exh.4.2-18: Teacher observation procedures]*.

4.3. Teaching and learning activities enhance life-long learning

Teaching and learning activities of TET programme are aimed at developing 8 key competences of life-long learning based on Common European Framework of Reference – CEFR:

1. Communication in the mother tongue;
2. Communication in foreign languages;
3. Mathematical competence and basic competences in science and technology;
4. Digital competence;
5. Learning to learn;
6. Social and civic competences;

7. Sense of initiative and entrepreneurship;
8. Cultural awareness and expression.

The academic programme ensures the requirements of stakeholders are satisfied by a system of electives. The 2008 curriculum was not inclusive of electives. Not until the 2010 curriculum were specialized elective courses added. During the design of 2012 curriculum, when analysing alumni and their employers' feedback. FVEE realized that the system of electives must involve social and specialized subjects to ensure the further education of learners as well as the adaptability to fluctuations in social demands *[Exh.4.3-01: Thermal Engineering Technology Curriculums applicable in the years of 2008, 2010, 2012]*.

Every syllabus in the curriculum includes clear instructions for self-study, self-discovery of knowledge via practice, experiments, projects and graduation thesis. Accordingly, students can observe, analyze, diagnose problems, then search for and study related documents for solutions. It has been shown that learning becomes more efficient via communication. Therefore, in every subject, they are always given opportunities to work in groups, through which they learn how to communicate ideas and learn from others *[Exh.4.3-02: Pictures of student group discussions]*. Besides, foreign languages and computing courses, which occupy 10% of the curriculum, are useful tools for learners in their search for diverse resources serving life-long learning.

During the teaching process, FVEE lecturers usually hold seminars to introduce to students new rapid scientific and technological developments in thermal industry *[Exh.4.3-03: List of seminars]*. As required in the curriculum, students are also taken to or do internships at manufacturing factories *[Exh.4.3-04: Decision and list of internships]*. These activities are expected to provide students access to real working environment, to learn from and be given guidance by skilled engineers. Accordingly, they not only have chances to practice what they have learnt but also become aware that the knowledge taught in the university is very basic while it is variable and complicated in the reality. Furthermore, with the fierce selection and competition in the job market, it is imperative that an thermal engineer must learn persistently to develop their professional competence.

Noticing that the happiness in creating scientific and technical products is a big motive for students to passionately study and to develop directions for their life-long learning, FVEE has always encouraged, supported them to realize their creative ideas and helped them to take part in different institutional, national and regional competitions *[Exh.4.2-12: Students are co-authors in scientific papers]*.

The learning process of students majored in Thermal Engineering Technology at HCMUTE is shown in Figure 4.1. After graduating from high school, passing the national entrance exam, they have to pursue a 4-year academic programme. After gaining the Bachelor's degree for engineers, and if they wish, they can continue with a Master programme of closely related majors: Mechanical Engineering, Vehicle and Energy Engineering Technology, Education, Teaching and Learning Theory and Methodology. Upon completion of Master's degree in Vehicle and Energy Engineering Technology, they can continue taking part in doctoral programme of the majors, such as: Mechanical Engineering, Vehicle and Energy Engineering Technology and Education.

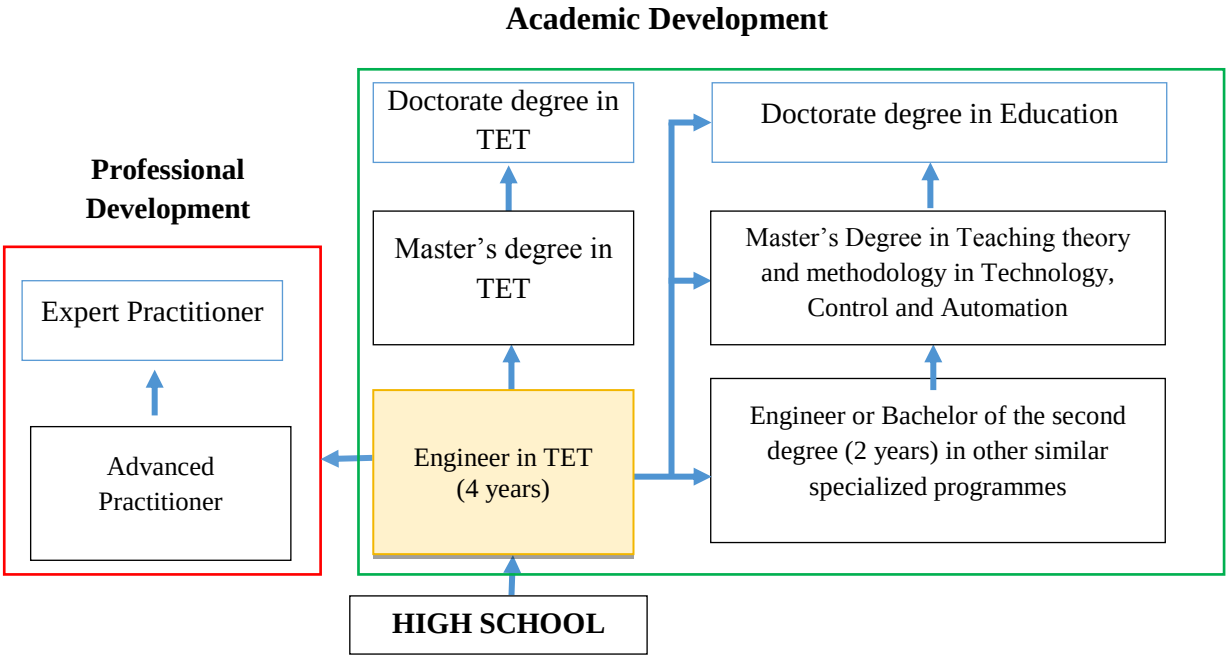


Figure 4.1: Flowchart of further education of Thermal Engineering students

5. Student Assessment

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

The assessment process consists of three phases: entrance, progress, and exit. The entrance exam is held annually in July in accordance with the regulations of the Ministry of Education and Training (MOET). The first students will pass the entrance exam with some compulsory subjects depending on the discipline. Each programme will have different standard grades depending on the enrollment targets approved by the MOET *[Exh.5.1-01: Evidence group on entrance exam]*.

The freshmen will have to participate in the English exam at the beginning of the school year. The purpose of the English exam is to place students into the right groups of relevant English proficiency. In the case of students who do not meet the English requirements, students must participate in some additional classes to improve their language skills. The placement tests help students recognize their ability, as well as adjust the learning methods in the future *[Exh.5.1-02: Evidence group on English exam for freshman Students]*.

Formative assessment is carried out to ensure students achieve the course learning outcome through each course. Weight distribution is 50% for formative assessment and 50% for summative assessment. Assessment methods are presented in the course syllabi. The evaluation methods are guaranteed for constructive alignment. The methods are aligned with ELOs, content, teaching methods. Formative assessment is divided into multiple parts corresponding to the multiple assessment methods *[Exh.5.1-03: formative assessment]*.

Summative exams are held in various forms such as written examinations, orals, essays/reports, presentations, modeling, etc. In theory examination, the course learning outcomes are presented in accordance to the questions and followed the ISO procedure *[Exh.5.1-04: Procedure for planning and organizing examination]*.

The regulations for the final project are clear. From 2012, with application of 150-credit programme, students must complete 140 courses credits and 10 graduation thesis credits. Students have to participate in graduation internship in the last semester to accumulate more practical experience in the enterprises for future work *[Exh.5.1-05: Summative assessment and final project]*.

The final project (graduation thesis/capstone projects) requires students to demonstrate their knowledge and skills and their ability to manipulate the knowledge in a new situation; consisting of content, research methods and skills. The final project is assessed in terms of structure, overview, main content, and soft skills. The final project is perfomed in the final semester after students have accumulated enough required credits and is advised by a supervisor. Reviewing time and methods are informed by FVEE. The content of the project must be consistent with the knowledge that students have learned and students must defend this thesis before an academic board assigned by the Department of Thermal Engineering Technology. Based on the written project and presentation skill, the academic board will assess students about knowledge, skills, and attitude. In order to improve the quality and applicability of the project, the Department has invited Daikin engineers and other enterprises to participate in the assessment board as well as taken students out to do internships and gainaccess to practical problems through seminars from the enterprises. The graduation projects fulfill most of the learning outcomes of the programme. The soft skills of students are assessed by team work, presentation, oral defence, etc. Based on the surveys from students, the level of the final project is very highly satisfactory *[Exh.5.1-04: Summative assessment and final project]*.

With the graduation internship, students have to work at enterprises about six weeks. The practical results are supervised by engineers from the company and the advisor. Internship requirements are clearly indicated in this course syllabus which are also aligned with ELOs of the programme *[Exh. 5.1-06: Assessment of graduation internship]*.

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

The teaching regulations of the school are clear, especially in the assessment. The teaching chart of school year (for all subjects) shows the schedule of the whole semester and the timeline for final examination. Each course has to have a portfolio which includes such items as: List of assigned Lecturers, list of ELOs of the course, Syllabus, teaching content and plan, teaching methods and assessments, documentation for teaching and learning guides, and the final report. Regarding the timeline, teaching content of theoretical courses should be done in 15 weeks, including time for midterm tests and a final exam. With project courses and graduation thesis, the timelines for progress reports and project approval date are shown on FVEE website and Faculty information board. On the first day of the class, academic staffs have to announce the syllabi to students. . Besides, students can achieve syllabi via FVEE website and Digital learning system. Syllabi fully reflect the information about the timeline, methods, regulations, grade weight, rubrics, etc. Lecturers also inform criteria of the rubrics in detail. The university supervises these assessments through student surveys on teaching activities of teachers *[Exh.5.2-01: Teaching plan for school year, Syllabi, portfolios and surveys]*.

The assessment method is suitably chosen with the course ELOs. Grade weight is 50% for formative assessment and 50% for summative assessment. The formative assessment is fulfilled in multiple times (at least twice) with different methods, usually a combination of the exercises,

quizzes, group reports, tests, and homework. For courses that have many classes in a semester, the final examination has the same questions. Rubrics are applied to assess knowledge and skills such as essays, presentations, lab/internships, graduate internships, project course, graduation thesis, etc. *[Exh.5.2-02: Formative assessment, summative assessment and final project]*. Answer sheets are applied for the courses such as theory design, calculation, theory principles, etc. Therefore, students must be active and use new active learning methods to meet these requirements.

The grading scale in all courses and project courses are clearly regulated both in syllabi and in teaching portfolios of each course. On each examination paper, the grading scale is indicated *[Exh. 5.2-01: Teaching plan for school year, Syllabi, portfolios and surveys]*.

The assessment system of TET ELOs is clear and transparent. Each lecturer and student is aware of the method, knows how to assess the subjects. If there is anything unclear, lecturers can easily search for all information which the department has sent to each teacher. Particularly, students can refer the student handbook or the FVEE website.

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

In order to accurately assess the results of the learning process, the department always requires each teacher to use many different assessment methods which must be clearly shown in the syllabus or course portfolios. Assessment methods are aligned with the course ELOs and programme ELOs. The assessment system is based on criterion – reference such as Rubrics and Answer sheets being applied for the courses. Attitude and ethic assessments of students are indicated via social activities. The faculty secretary will import their points when they attend these events. Knowledge and skill assessments are shown via syllabi and teaching portfolios. Criteria for assessing student results consist of Ethics, Knowledge, Generic skills, Professional skills, and responsibility.

From 2012, the formative assessment accounts for up to to 50% with different evaluating methods. Based on the ELOs of the courses, assessment methods are selected suitably. For example, the diagnostic test is used to assess ELOs with reference to the Bloom Taxonomy at high level. The knowledge comprehension of students after each chapter is assessed by using LMS. Lecturers ask for comprehension; the students are required to do quizzes, survey of each chapter in the LMS, 1 minute paper, etc. The presentation method is used to assess both knowledge and skills of the students *[Exh.5.3-01: LMS website]*.

When the expert group agrees that the exam questions are aligned with the course ELOs, these exam questions are then approved by the head of department to ensure validity. Testing process is supervised by two invigilators. The documentation is used to ensure the validity of the assessment methods. Documentation consists of teaching portfolios, exam questions, answers, tests and products of formative and summative assessment. The course portfolio has the final report. Based on the feedback from students, lecturers who are teaching the same courses have a meeting to discuss and improve training quality. The documentation is stored more than two years, which is stipulated as in the university policy *[Exh.5.2-02: Formative assessment, summative assessment and final project]*.

The cross check by other teachers or evaluation by other methods also makes the results of students reliable. The lecturers have a week for grading after the students have finished their final exams; the department has to publish the answers for students 01 day after the final exam has finished *[Exh.5.2-02: Formative assessment, summative assessment and final project]*.

The examminations of TET programme follow the ISO proceure of examination issued by the university to ensure fairness, equity and diversity. During the course learning, students are clearly informed by lecturers of the evaluation criteria as well as scoring methods *[Exh.5.1-05: Procedure for planning and organizing examination]*.

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

The purpose of the assessment and timely feedback are to help teachers promptly adjust the teaching content and methods, students promptly adjust their learning activities. The feedback is to help students understand the lessons and offer possibility to improve than to check the right and wrong. For example, based on timely feedback from lecturers, students can understand the course deeply. In some cases, students can not attend the class or are unable to keep up with the course, students are advised to withdraw the course three weeks before the final exam. The university also requires the lecturers to notice scores to students immediately after the exam week so thatstudents can look back on their learning process and teachers review their teaching methods to meet the teaching and learning demands. One day after the final exam, the department has to publish the answers with a scale of 0.25 point. The rubrics must be aligned among the courses of the programme to ensure transparency and consistency between courses *[Exh.5.1-05: Procedure for planning and organizing examination; Exh.5.2-02: Formative assessment, summative assessment and final project]*.

With formative assessments, the lecturers are encouraged to give feedback to students and suggest solutions to improving student learning. The scores are announced timely to students, so students can adjust their learning. With timely feeback for theoretical courses, teachers issue scores after the formative assessment from 1-2 weeks. Teachers also give feedback to students in LMS page when students hand in their tests. Immediate feedback is applied for presentations so that other subsequent groups can avoid the same mistakes. With timely feeback for experimental courses, the teachers guide students directly on the machine. For graduation thesis, the timelines are clear. The teachers give feedback on a weekly basis on the report paper for students, or feedback on the design drawings, etc. Besides, the teaching assistants help lecturers to check Quizzes and Homeworks to ensure timely feedback for larger classes. The teaching assistant has a plan to support students to improve their learning process *[Exh.5.2-02: Formative assessment, summative assessment and final project]*.

5.5. Students have ready access to appeal procedure

FVEE applied the procedure for student appeal. The re-assessment is followed ISO procedure at HCMUTE. If there is any dissatisfaction with the grades, students also have one week to check their grades and they can suggest for a re-assessment. To ensure the objectiveness and fairness, those exam papers have to be re-checked by another lecturer who is also in charge of teaching the subject. The result of re-assessing process is informed to students in one week. If the students still do not satisfy with these results, they can suggest seeing their exam papers and discussing with the examiners *[Exh.5.1-05: Procedure for planning and organizing examination]*.

6. Academic Staff Quality

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

Based on the HCMUTE strategic plans for the period of 2011-2015 with the vision up to the year of 2020, FVEE has developed its own short - term and long-term strategic plans that include: demands, development orientation, and personnel planning for the next 5 years. These strategic plans have been developed based on working staffs faculty and goals in terms of quality and quantity that FVEE would like to achieve in the future *[Exh.6.1-01: FVEE's strategies and plans for manpower for the year period of 2013-2018* with the vision up to the year of *2020]*.

The faculty's full-time academic staff includes 39 academic staffs, including 03 Associate Professor, 11 Doctors, 25 Masters. Currently, 12 candidates are either PhD students (both in Vietnam and abroad). The leaders of the faculty's management board are the Dean and three Vice Deans. The Dean is responsible for all of the faculty's general activities and is also the representative of the whole faculty in diplomatic events. Three Vice Deans are in charge of three different fields, including scientific research, teaching and learning, and facility management. There is also one secretary who assists in the faculty's administration and management. The organizing framework of the faculty is divided into 4 department, namely Automotive Engine department, Automotive Chassis department, Automotive Electricity department, and Department of Thermal Engineering (DTE). There is one department Head and one Deputy Head who are responsible for managing and orienting activities and supervising professional activities of their own department *[Exh.6.1-02: http://fae.hcmute.edu.vn]*.

Every year, academic staff is trained for improving professional skills and specialized knowledge by courses, seminars, workshop, and training at factories with a view to increasing the staff quality. The TET Department suggests the plan based on staff's aspiration, ability, etc. which will then be examined by the faculty *[Exh.6.1-03: Planning list for professional and specialist knowledge training for lecturers]*. HCMUTE and FVEE have a preferential and efficient policy to attract potential lecturers and different strategies to develop the faculty's personnel are firmly focused; therefore, our faculty has many lecturers with Master or Doctor degrees. FVEE encourages young lecturers, who hold Master, apply PhD programs and young academic staffs have PhD degrees will encourage to achieve professor title for improving the quality of staff *[Exh.6.1-04: Some recruitment policy regulations about for PhD and Professor lecturers; Academic staff plan]*.

The retirement ages of male and female staff are 60 and 55 respectively as regulated by the government. In case the office or faculty has a demand and the lecturer is still enthusiastic about devoting to teaching career, doctoral lecturers are invited to extend their working time for 5 more years. Professors and associate professors are invited to continue their work in 7 more years *[Exh. 6.1-05: Regulating in details and giving guidelines on the implementation of some articles of Higher Education Law]*. If the staff wants to resign, he or she needs to submit a letter of resignation to the Human Resources Management Office at least 1 month before ending the tenure of office and clarify the reasons for resigning from the position. On the other hand, the university also has the right to end the contract with lecturers due to some certain reasons such as staff's inability to satisfy working demands or making serious misconduct, and this also has to be informed to employees 1 month in advance *[Exh.6.1-06: The issuance of regulations on appointing, re-appointing, resigning,*

dismissing managers and leaders at the offices and faculties of HCMUTE].

Every semester, FVEE and department plan and evaluate the quality and quantity of academic staff such as: their ability, amount of retirement, recruitment and resignation staffs, etc. FVEE will suggest strategic plan (long-term and short term) to university for recruiting, training for professionaland specialist knowledge. DTE evaluates the number of staffs at present and the number of recruitments needed and suggests the number of academic staffs for the advancement of specialist knowledge and professor tile in the future (for the period from now up to 2020). The data in table 6.1 show that in 2010 -2015, DTE has 2 associate professor and 6 PhD lecturers and that it will planned to have 9 PhD lecturers in future. DTE also encourages PhD lecturers to apply for professor title. It is estimated that 3 lecturers will hold professor title in 2020.

Table 6.1: Number of Academic Staff in DTE

Years / Personnel	2011-2016	2016-2020
Retired staff	03	0
New recruits	0	03
Master lecturer	03	04
PhD lecturer	06	09
Associate Professor lecturer	02	03
Total	**14**	**19**

The faculty has a team in charge of the laboratory and workshop. The support staff timely helps management, maintenance, usage and repairs of equipment in workshop and laboratory. In order to improve efficiency, the school has annual training courses about fire prevention and equipment.

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

DTE has a high number of PhD holders and often encourages the academic staffs to increase their knowledge by achieving higher education certification i.e. PhD or Associate Professor title (which is currently held by 25% of DTE's lecturers). Currently, there are 06 lecturers (accounting for 50%) who are either PhD students (both in Vietnam and abroad) as shown in Table 6.2. Lecturers who are in charge of teaching in the thermal engineering program are all competent and well-qualified for their duties. Lecturers often present at international conferences and DTE often holds academic seminars to Vietnam and overseas researchers for academic exchange.

Table 6.2: Number of academic staff and their FTEs (As of Jan 06th, 2017)

Title	Male	Female	Total		Percentage of PhDs
			Number of staff	FTEs (*)	
Professors	0	0	0	0	0
Associate/assistant Professors	2	0	2	2*1=2	100%

Full time lecturers	12	0	12	12*1=12	50%
Part time lecturers	10	1	11	11*0.2=2.2	
Visiting Professors/lecturers	0	0	0	0	0
Total	**24**	**1**	**25**	**16.2**	

** FTE stands for Full-Time Equivalent. This is a unit to calculate the investment of time. 1 FTE is equal to about 40 hours per week (full-time employment). A staff member with a weekly appointment of 8 hours is 0.2 FTE.*

Based on the quality and number of teachers in the faculty, the university will determine the number of student admissions each year order to ensure the teacher / student ratio according to the MOET regulations. MOET requires the student/teacher ratio should be lower than 25. This also ensures the quality of education as shown in the below table:

Table 6.3: Student-to-Staff Ratio

Academic year	Total FTEs of Academic Staff	Total FTEs of Students	Student-to-Staff Ratio
2016-2017	16.2	255*1=255	15.74
2015-2016	16.5	249*1=249	15.10
2014-2015	17.8	276*1=276	15.50
2013-2014	18.4	290*1=290	15.76
2012-2013	18.2	304*1=304	16.70

Lecturer workload in one year is stipulated for various titles based on MOET and HCMUTE regulations as well as teaching demand, qualifications of academic staff, number of intake students and readiness of the lecturers *[Exh. 6.2-01: Regulations of workload for various titles in university]*. Every year, the real workloads are reckoned up including teaching, scientific research, articles published on magazines, textbook writing, service activities in order to clarify each individual's workload in each subordinate unit in the university for the basis of later possible recruitment *[Exh. 6.2-02: Statistics of teaching staff's workload (teaching, research and service)]*. HCMUTE uses Key Performance Indicators (KPIs) for evaluating the staff performance. Staff can select the percentage of teaching and research in order to promote their strengths *[Exh.6.2-03: Key Performance Indicators]*. There are descriptions of each job title which specifically clarify related responsibilities. Depending on those working responsibilities, administrators will release target indices to evaluate the working efficiency of that title *[Exh.6.2-04: Forms of KPIs (individual evaluation)]*. The university also uses the software for education administration, teaching of academic staff management and supervision. This software also allows student to register courses online, evaluate lecturers andconsult his/her grades easily *[Exh.6.2-05: http://online.hcmute.edu.vn]*. In addition, HCMUTE uses Dashboard software for managing learners, training programs and training courses of different levels, etc. This software shows the number of intakes and graduate students for every faculty, the number of students (male and

female) per faculty and total students. It also helps students check their study progress, follow the training program, as well as register for or withdraw from courses, etc. *[Exh.6.2-06: http://dashboard.hcmute.edu.vn]*.

Table 6.4: The required workload of lecturers

Academic titles	Teaching workload/year	Research workload/year	Community service/year (No. of activities/year)
Assoc. Prof.	320 hours	110 hours	4
PhD/Senior lecturer	320 hours	110 hours	4
Master	280 hours	90 hours	4
Engineer	280 hours	90 hours	4

Teaching staff is totally satisfied with the workload presented in Table 6.4. The staff satisfaction is measured by the annual survey conducted by QA office *[Exh.6.2-07: Staff's satisfaction survey]*. Community service activities include instructing students to take part in contests, guiding students to visit factories or do internship at industrial factories such as Daikin, solar power plant, etc. *[Exh. 6.2-08: List of lecturers who instruct students for internship and visiting industrial]*.

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

FVEE suggests to HCMUTE about annual recruitment plan based on staff planning in faculty strategic plan for short and long terms (year period of 2013-2018 until 2020). Applicants who hold PhD degree, Professor Title and high skills will be given incentives by the university. These candidates are not required to go through multi-tests such as IQ, English, professional knowledge and pedagogical skill test but will be interviewed directly by the University president for selection.

As a member of HCMUTE, FVEE must follow the recruitment process of the university. Academic staff is recruited according to the explicit competentcriteria and this recruitment process applies to every faculty/school within the whole university. All recruitment information has been announced publicly on the university's website and other social media. Candidates must take some tests on IQ, English and informatics. Besides, candidates have to pass a test about professional knowledge and pedagogical skill by the university and faculty management board *[Exh.6.3-01: Academic staff recruitment procedure]*. Depending on academic staffs' quality, quantity, research fields, FVEE also has some of their own requirements for candidates. For example, the candidates must have highly practical skills, teaching skills or research abilities,etc. After recruitment, the academic staff needs to go through a probation period of 1 year. During this time, probationers are guided by an experienced and highly qualified lecturer and they have to carry out their duties which are regulated by the university. Based on the evaluation of the supervisor, the department and faculty on the performance of the probationers, the university makes decision on contract extention *[Exh.6.3-02: Probation period of academic staff and examination process]*.

The university has changed and adjusted some criteria of recruitment for meeting the global integration trend and increasing the quality of academic staff. Since 2014, candidates have been required for holding PhD degree or Master degree obtained from international universities based in

English-speaking countries. The university also promulgates regulations to encourage lecturers with PhD degrees, associate professor or professor titles to apply for a post at HCMUTE, such as: awarding 10 million VND for PhD holding candidates or increasing salary for lecturers with associate professor and professor titles, etc. *[Exh.6.3-03: Regulations to encourage lecturers with PhD degrees and professor titles]*. Additionally, the university also encourages lecturers in teaching and researching by means of research grant, financial suppor for conference presenters, awards for published papers, etc. Especially, of the University President also gives out annual awards to excellent lecturers, faculty managers and support staff *[Exh.6.3-04: Encourage regulations for publishing paper]*.

Academic staff can be promoted to senior lecturers. Academic staff who holds the "lecturer" title in 9 years and meets some requirements about pedagogical skills will have to enter an examination organized by MOET to become a senior lecturer. Academic staff with PhD degree can be advanced to obtain Associate Professor title if they satisfy some requirements that are regulated by MOET such as: scientific research scores, number of papers published, experience in acting as an advisor for Master or PhD students, seniority index. This title is examined by the government for proposed candidates *[Exh.6.3-05: Examination procedure for main lecturer and Associate Prof title]*. Lecturers are arranged to teach according to their majors. To ensure the teaching and evaluation efficiencies, at least two lecturers with relevant professional knowledge teach each subject. Lecturers who hold doctoral or master degree usually teach the theoretical subjects while the practical subjects are given to experienced lecturers who have high vocational skills. Every semester, lecturer is assigned to guide capstone projects for senior students. The quantity of projects depend on the lecturer title. Apart from teaching and doing scientific research, another common work of lecturers is taking part in curriculum development and revision, syllabus development, improving the teaching method including digital learning on LMS, reviewing textbooks, writing or compiling textbooks and improving lesson plans, etc. These are considered as frequent duties that are brought into emulation targets and the annual evaluation of workload completion level through KPIs system. Lecturers in FVEE, who have a good relationship with companies, are encouraged to take students to field trips. Currently, DTE has sent students to do internships at companies such as Daikin, Hasaka, Mitsubishi, Reetech, Nam Thinh Refrigeration ... and DTE also regularly organizes conferences with presenters who are experts from the company. FVEE has mobilized an annual scholarship for excellent students *[Exh.6.3-06: Academic report of the company and the list of students received scholarship from the company]*.

HCMUTE has regulated the specific documents which define the rights, duties and responsibilities of all academic staff. This regulation has been defined clearly and announced to all personnel through websites of the university and faculty, or e-mails, etc *[Exh.6.3-07: Email for rights, duties of lecturer]*. All sections are concerned about sharing academic knowledge and teaching methods. Associate professors, doctors and experienced lecturers are assigned to give guidance to young colleagues in order to share valuable experience in teaching and doing scientific research that they have gained after many years of teaching and doing research. The rights and duties of a lecturer at a university are defined by Higher Education Law issued by the government. Therefore, each lecturer is responsible for his or her own performance. According to the law, the lecturer takes full responsibility for teaching contents, has academic freedom to attend conferences, academic exchange or doscientific research domestically and overseas. MOET also regulates the conduct and ethics of faculty staff *[Exh.6.3-08: Higher Education Law]*, lecturers are protected by copyright, intellectual property law, honesty, professional ethics in the activities of lecturers' teaching. They

are free to design lessons for students as long as the content is aligned with the ELOs in the syllabus. However, they have to take responsibility for their teaching content via students' feedback on the course and the department's observation for assessment. In addition, the students' feedback also reflects lecturers' teaching ethics, which teachers have to take full responsility for, according to Vietnam's law on education.

The faculty's management board are the Dean and three Vice Deans. The Dean is responsible for all of the faculty's general activities and is also the representative of the whole faculty in diplomatic events. Three Vice Deans are in charge of three different fields, including scientific research, teaching-training and facilities. There is also one secretary who assists in the faculty's administration and management. Duties and authority of each management staff are regulated explicitly in documents approved by their direct supervisors *[Exh.6.3-09: Chart of Faculty personnel]*.

6.4. Competences of academic staff are identified and evaluated

Competences of academic staff are defined and evaluated in three main aspects: teaching, scientific research and services. Each lecturer is regulated with different workloads that depend on their position and title. Lecturers, who would like to take part in teaching, must have pedagogical certification. The important scientific research is assigned for PhD lecturers, young lecturers under 35 years old are given priority to conduct scientific research. Every year, each lecturer has to support and join activities with students and do community services. These activities depend on lecturer's ability and aspiration. Different management boards at different levels are in charge of checking the progress and results of implementing these activities. The completion of these duties is the base for personnel appraisal *[Exh.6.4-01: KPIs, Evaluation results]*.

There are specific regulations on teaching preparation and implementation for lecturers who are in charge of teaching courses in the program. Each lecturer has to prepare a teaching portfolio in which they have to clearly show the correspondence between course ELOs and program ELOs, course contents, teaching methods, teaching plans and student assessment. Finally, lecturers have to write a report on their teaching at the end of the semester and submit to the faculty when the course ends. All kinds of teaching portfolios are brought into discussion to ensure the consistency of teaching as oriented by the curriculum with assessing students for the ultimate goal of helping students achieve the program ELOs.

Lecturers' competence is refeclted in three areas, i.e. teaching, doing research and serving (including serving students and the community). As regards teaching, they have to teach enough hours as regulated in the laws and are assessed by the department and students on their teaching quality. By doing research, it is meant doing scientific research projects at all levels, having research papers published in national and international journals, etc. Services include taking students for a tour to factories, contributing to students contests, donating blood, etc. At the beginning of the semester, each lecturer has to prepare an action plan and submit it to the head of the department and faculty. The performance of the lecturer will be evaluated by the end of the semester. The assessment results are the basis to awarding and ranking employees *[Exh.6.4-02: Teaching activity monitoring]*.

Research and services also are a measurement unit of lecturer's competencies. Most FVEE's lecturers have conducted many research projects at different levels, for instance, city level projects, Ministry level projects, department level and university level projects *[Exh.6.4-0.3: List of scientific*

research projects]. In addition, FVEE lecturers also support students in community activities like enrolment consultancy, open day, supporting students online or face to face, organizing students for field trips, internships, guiding students to attend competitions such as: Robot, Eco shell, IoTs, Intelligent house model *[Exh.6.4-04: Service activities of FVEE]*.

At the end of each semester, based on the lecturers' action plan, the department will evaluate them via the KPIs system, in which the evaluation criteria are regulated and defined very clearly. The evaluation results are then sent to the faculty for approval, and serve as the basis for classifying lecturers' competence *[Exh.6.4-01: KPIs, Evaluation results]*.

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

Academic staffs plan, enroll and implement their own plan for professional development (English, teaching methods, pedagogy skill, etc.) in accordance with the departmental plan and proposals to faculty. This registration depends on the situation of the department, lecturer's aspirations, and the annual academic theme of the university such as international integration, IoT in teaching, improving assessment in teaching. Teachers register to join appropriate seminars, workshops and trainings. In addition, young lecturers who wish to register and improve their profession, are also encouraged to apply for the PhD, Master program (department and Faculty long-term plans) in order to improve the quality of the academic staff. Short, medium and long-term strategic plans of FVEE have been developed based on the current situation, title, aspirations as well as a specific process including:

- The faculty collects the learning and training demands of its academic staff such as: short-term training for improving teaching and professional skills, English, assessment seminars, EM-learning seminar, IoT seminar, capstone project ...and send them to Human resource office *[Exh 6.5-01: Seminars, training]*.
- The HRO makes the training plans based on the Faculty's suggestions such as English classes, management courses, training in factories, etc.
- Training contents are determined in accordance with the university mission and vision such as improving professional skills for lecturers by training at companies and factories, enhancingteaching methods.
- Lecturer has to report the training result after finishing the courses. Faculty and human resource office check and make changes to the content or training methods to improve the training quality throughout the years.

Every year, the university will provide funding for the faculty to carry out training and retraining activities, such as pedagogical skill training, improving English for staff locally and abroad (the Philippines). Additionally, HCMUTE also supports lecturers to participate in conferences, training courses overseas (HEEAP, India, Thailand..).

The University and Faculty also contact factories and companies to improve lecturer's skills through training courses such as Toyota dealers in the south, Toyota company in the North, Europe Motor, Isuzu, Honda, etc*[Exh.6.5-02: Training and retraining courses in factory]*. Especially, DTE organized successfully the professional skill test for thermal engineers in Hochiminh city in 2016 *[Exh.6.5-03: Professional skill test for Hochiminh city]*. Each teacher has a training plan for him/herself to improve their professionalism and skills through the Faculty's plans and goal. The

faculty and university always encourage and reward lecturers who can complete their doctorate or master's degree *[Exh.6.5-04: Encourage regulations for graduating PhD degree]*.

Academic staffs are encouraged to improve their teaching efficiency, teaching and assessment methods through seminars, training and short-term courses in co-operation with foreign universities such as the HEEAP (Arizona State University), India, Build-It, Seameo, etc *[Exh.6.5-05: List of lecturer attended HEEAP, BUILD-IT]*. The university also supports academic staffs to carry out scientific research projects by offering provincial level, departmental level training sessions or introducing topics to the lecturers who are eager to do research *[Exh.6.5-06: List of lecturers' scientific research project]*.

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

HCMUTE has issued a suitable policy on performance management to motivate and encourage education, scientific research and service. The workload of education and scientific research has been regulated according to the lecturer's titles. These requirements are described in KPIs *[Exh. 6.2-04: Forms of KPIs (individual evaluation)]*. This policy is announced clearly on the university website and to every staff. At the end of each school-year, each individual in the faculty will write a report on their working results during the year, and it should base on the section's report and voting result. The faculty' emulating and awarding board will process the staff assessment and vote for staff emulation and awarding for each academic year *[Exh.6.6-01: Faculty's evaluation for academic staff]*. Since 2016, the university uses KPIs for assessing the lecturer competency. In this process, the lecturer makes the self-evaluation report, the faculty management board then evaluates lecturers and classify lecturers based on their performance *[Exh.6.6-02: Lecturer competency results]*.

The university's emulating and awarding board will then take all recommendations from the faculty into consideration and announce the official decisions afterwards. Annual emulation awards include "Excellent Staff" at three levels, namely institution, ministry and government. Each staff needs to meet some certain requirements in order to be considered for these awards *[Exh.6.6-03: Manual awards of President]*, mainly having high working achievements, being chosen by the university's emulating and awarding board, having scientific research published on academic magazines or presented at conferences or workshops, making no mistakes at work during the year as well as attending all academic meetings and professional development workshops held by the university and the faculty.

Normally, every staff will have a salary rise after three uninterrupted working years. However, staff with outstanding achievements and contribution can have their salary raised in advance *[Exh. 6.6-04: Decision on pay rise prior to schedule]*. According to the government's current regulation, staff can register for consideration for higher emulation titles such as Government's Certificate of Merit, the Labour Medals (First, Second or Third Class by the State), and other noble titles such as Meritorious Teacher or People's Teacher. These titles are only given to individuals and groups who have deserving achievements.

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

The university manages the scientific research topics at all levels through the ISO procedure which provides guidance on the registration and implementation of scientific research projects at all levels:

university project level, young lecturer project level, and so on *[Exh.6.7-01: Scientific research at university level procedure]*.

The value of research grants varies depending on the significance of projects which is assessed by the project results and products (published papers on: ISI, SCI, SCIE, journal and conference ...*)* *[Exh.6.7-02: Regulations of research grant for projects]*. Scientific research is essential and consistent with the university and faculty's missions and visions. Some of the DTE's lecturers are leading experts in thermal engineering technology, whose research reports have been published on prestigious domestic and international scientific journals *[Exh.6.7-03: List of paper publish]*.

Table 6.5: Number of publish paper in FVEE

Academic Year	Types of publication		Total	No. of publications per academic staff
	National/Regional	International		
2011	4	8	12	0.33
2012	4	10	16	0.44
2013	7	11	18	0.50
2014	7	13	20	0.55
2015	18	14	32	0.88
Total	**40**	**56**	**98**	**2.70**

Additionally, the total number of scientific research is increasing and the quality of the studies also reaches higher level. More and more quality research projects have been done in the last years, including three ministerial level projects, three city-level projects, and 12 university-level key projects *[Exh.6.7-04: List of research projects]*.

Table 6.6: Number of FVEE lecturer's research project

Year	2011	2012	2013	2014	2015
Student research projects	13	29	10	02	10
University-level research projects	21	22	30	21	17
University-level key research projects	8	2	4	6	8
Ministerial/provincial level research projects	1	2	2	3	2
Ph.D. students/Young lecturers	0	1	1	1	2
Total	**43**	**56**	**47**	**33**	**39**

The department always encourages lecturers to enhance their research competence by usually inviting enterprises to present in faculty academic conferences and urging them to take part in

experienced lecturers' significant projects such as ministerial and city-level ones. Besides, those who have articles published on prestigious national and international journals or present in international conferences will be considered and nominated for higher titles such as Ministerial and Grassroots-Level Emulation Fighter, etc.

7. Support Staff Quality

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

HCMUTE has built a 5-year medium-term strategic development plan for the period between 2011 and 2015, with vision to 2020 *[Exh.7.1-01: HCMUTE medium-term strategic development plan for 2011-2015 and visions to 2020]*. In this plan, the university has presented its development plan and targets to be achieved until 2020, focusing on the development of the support staff. Moreover, it has also built a procedure for training and developing human resources in which duties, functions and working position of each support staff in offices, centers and faculties are clearly shown *[Exh.7.1-02: Procedure for training and developing human resources]*. Besides, special policies are also released by the university to assist the support staff in their path to enhance professional expertise, computer skills and language competence, as well as in their post-graduate education. This enables higher efficiency and professionalism in their jobs at each subunits of the University *[Exh.7.1-03: Plan for enhancing HCMUTE support staff's professional expertise]*. To examine the quality of the support staff, the university also asks students to give feedback on the services they provide. Most of the students stated that they were satisfied with the support staff's services *[Exh.7.1-04: Survey results report on HCMUTE support staff's services]*.

Based on such strategic plan of HCMUTE, FVEE itself has also built a strategic plan for the period between 2013 and 2018, with a vision to 2020, in which specific objectives to develop FVEE are established. Among them is to encourage the development of the support staff in the faculty, including laboratory managers, workshop managers, faculty secretaries and lecturers *[Exh.7.1-05: FVEE's strategic plan]*. Every year, based on the work demands and development stages of FVEE, the faculty proposes the number of support staff needed to the HRMO, who will consider and announce the recruitment scheme to the public *[Exh.7.1-06: FVEE's recruitment plan]*. In addition, FVEE always has training schemes to improve their support staff's professional expertise, computer skills, language competence, etc. in order to increase their service quality and meet the word demands *[Exh.7.1-07: Plan for enhancing FVEE support staff's professional expertise]*.

Each support staff's ability is assessed on how well they fulfil their tasks, which is carried out monthly according to KPIs. Based on the level of their task fulfilment, a pay raise can be considered in compliance with the university regulations. Besides, the support staff can also receive other benefits such as pension, health insurance, and unemployment insurance. At the end of each year, the faculty and its inferior sections usually have a review meeting to choose the best employees for such titles as Progressive Labourer, Grassroots-Level Emulation Fighter, etc. Those who receive these titles will be rewarded and considered for a premature pay raise *[Exh.7.1-08: Policies related to support staff]*.

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

At HCMUTE, the ISO staff recruitment procedure includes necessary steps: planning the recruitment scheme, getting the plan approved, announcing the recruitment scheme, establishing a recruitment council, testing applicants' professional expertise, computer skills and language competence, etc, recruitment council's interviewing the applicants, announcing the results, signing the first contract *[Exh.7.2-01: Staff recruitment procedure]*.

To make the procedure clear, fair and effective, the university has established recruitment criteria for each working position at each subunits of University. Such recruitment information is widely spread on the university's and the faculty's websites as well as facebook pages, and on such national newspapers as Youth newspaper, Education and Modernity newspaper, etc. *[Exh.7.2-02: Recruitment information on websites and facebook pages 2017]*.

The recruitment criteria for support staff are different from those for lecturers in the way that support staff is not required to have teaching skills and research ability or hold a Master's Degree. They mainly focus on the applicants' professional competence and working experience in each vacant position. The applicants must hold a Bachelor's Degree in the right specialization and pass all the IQ, English, and computer skills tests. They also need to succeed in the face-to-face interviews with the university recruitment council *[Exh.7.2-03: Support staff recruitment]*. Once employed, they have to spend one year on probation and can be considered "probation accomplished" if they have obtained enough qualifications including certificates of English proficiency, computer skills, and other specializations. After finishing the probation period, they have to take an exam to be assigned to a proper rank with corresponding specific functions and duties. Based on each working position's functions and duties at FVEE, the Dean arranges jobs for the newly employed support staff *[Exh.7.2-04: Procedure for probation period accomplishment]*.

In addition, the procedure for appointing staff at faculty and equivalent levels is also based on appointed staff's ability and virtue. It is conducted openly by collecting recommendation letters and vote of confidence from the unit's staff members *[Exh.7.2-05: HCMUTE appointment and re-appointment regulations]*. The faculty also takes the initiative to plan and create sources of managing staff of different positions. As those staff members are regularly trained to improve their managerial professional specialization, the increasing working demands at FVEE are usually timely met. Moreover, the appointed staff members are those who have great virtue and excellent professional expertise. Every year, based on the level of their task fulfilment, the faculty sections usually have a review meeting to choose the best individuals for such titles as Progressive Labourer, Grassroots-Level Emulation Fighter, Ministerial-level Emulation Fighter etc. Those who receive these titles will be rewarded and considered for a premature pay raise. In addition, support staff who has enough seniority is also considered to be assigned to Specialist or promoted to Senior Specialist rank *[Exh.7.2-06: FVEE Emulation Rewards and Pay raise in AY 2015-2016]*.

7.3. Competences of support staff are identified and evaluated

As support staff's ability plays an essential role in the training and researching process at HCMUTE, the university has issued policies and regulations to identify and assess their competence during the recruitment process and working period. In order to become an official staff at HCMUTE, they have to pass the recruitment examination including a test on professional specialization, an IQ test, a test on computer skills and a language test, followed by a one-year

probation period and the probation accomplishment process at FVEE and HCMUTE. Each support staff's working position and duties are clearly identified and assigned by the unit management in a way that is appropriate for its daily activities *[Exh.7.2-01: Staff recruitment procedure; Exh.7.2-04: Procedure for probation period accomplishment]*. By support staff, it is meant library staff and others at faculties, centers and offices as illustrated in table 7.1. As shown in the table, those who hold a graduate and post-graduate degree account for more than 50% and 30% respectively.

Table 7.1: The number of support staff (Reference date: 30.07.2017)

Support staff	**Highest Educational Attainment**					**Total**
	High School/ College	**Bachelor's**	**Master's**	**Doctoral**	**Associate Professor of Ph.D.**	
Library Personnel	2	9	2			**13**
Laboratory Personnel		1	5			**6**
IT Personnel	3	2	2			**7**
Student Services Personnel		3	2			**5**
Faculty Advisory Group		1	3	1		**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**
Admissions and Student affair's 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 Affair's Personnel		1	1	2		**4**
Digital Learning Personnel		1	2			**3**
Guard team's Personnel	21					**21**
Total	**50**	**75**	**35**	**6**	**4**	**181**

The library itself is a support place for HCMUTE staff and students in their training and researching process. As a result, the university has attached special importance to establishing a group of library staff with adequate ability and qualification who work in the right expertise. Currently, the library at HCMUTE has 17 staff (table 7.2), of which young members make up a very high percentage of approximately 80%. They were all trained in Library and Information Science as required *[Exh.7.3-01: The number of library staff]*. With the aim of successfully performing its duties and functions, the library management always pay great attention to the improvement of its staff's professional specialization. One example of this is to organize training sessions and seminars to enhance its staff's service quality and ability. Additionally, the library staff can join in short training courses to enhance their professional qualification, keeping up with the development of the university *[Exh.7.3-02: List of training sessions and seminars at HCMTE library]*. Also, Library has conducted surveys exploring users' satisfaction level in order to improve its service quality. Together with that, at the beginning of each academic year, the library usually organizes some training sessions for freshmen where they are equipped with necessary skills to search for materials and information (refer to https://www.facebook.com/hcmute.lib?fref=ts) *[Exh.7.3-03: Survey on students' satisfaction level towards service quality of the library]*.

Table 7.2: The total number of library staff

Qualification	Total number of staff (total: 17)
Vocational School Graduate	1
Collecge Graduate	5
B.A	9
Master	2

As laboratory staff directly support the studying and researching of FVEE students, they are considered highly important by the faculty. Currently, FVEE has six laboratories and six academic workshops with a total number of seven staff who are specialized in the academic majors (Table 9.3: Laboratory and workshop staff). Every year, HCMUTE and FVEE usually have purchase plans for new equipment to cater for students' needs of studying and doing research. Moreover, the Thermal Engineering Technology Section also receives some equipment as a kind of sponsorship from big corporations such as Mitsubishi Electric Vietnam, Hanbell Company, Daikin Air Conditioning(Vietnam) JSC, etc. *[Exh.7.3-04: DTE list of sponsored equipment]*. Here at DTE laboratories, students are always facilitated to do scientific research and work on their final bachelor theses. They can borrow some pieces of equipment from the laboratories or do research during daytime and night-time, as long as they comply with the laboratory safety regulations. The important aspect is that the FVEE laboratory staff members employed are those who were trained with the right professional specialization and who have suitable ability to work efficiently. Furthermore, HCMUTE has established the INC whose function is to plan a scheme for infrastructure development and information technology application in line with the university's development strategies. Most of the INC support staff were trained and qualified as information technology specialists who are divided into such groups as network administrators, technicians, website administrators, computer and phone specialists, etc. As a result, they also meet the work demands at HCMUTE.

In addition to those support activities, HCMUTE also has a big group of support staff from other functional offices, such as AAO, ASAO, SSC, ERO, DM, HCC, who as well assist students in different aspects as in table 7.3.

Table 7.3: Support services

No.	Field of activities	Supporting Units	Services
01	Academic	Academic affairs	Giving students advice on learning activities such as course registration and timetable adjustment.
			Providing students with information on MOET's Education laws and HCMUTE regulations.
			Giving students advice on how to open, choose and withdraw a course, and how to conduct grade complaints.

			Giving students advice on their graduation, in-debt credits, and other matters related to graduation certificates and qualifications.
			Conducting consulting activities for international students.
		Faculty	Guiding students on their personal learning scheme.
			Giving students advice on choosing and registering a course each semester.
			Guiding students through learning methods and solving difficult problems on their learning process.
			Giving advice and guiding students through their doing scientific research.
02	Social	Admissions and student affairs	Organizing activities to get across the university's regulations to first-year students.
			Providing students with information about the regulations of student activities, student training assessment, and social work scheme.
			Supporting and consulting with faculties in HCMUTE entrance exam.
			Consulting with HCMUTE youth union to organize social work activities for students and assess them.
			Giving students advice on documents, pausing learning temporarily, re-entrance, dropping out, or transferring to another university.
			Giving students advice on rewards and disciplines
		Student service center	Supporting facilities, providing a learning environment, and organizing extracurricular activities for students.
			Organizing student skill clubs and others for students to develop necessary skills.
03	Physical	Health and Medical service	Giving students advice on health, disease prevention and health insurance fees.
04	Psychology	Student service center	Giving students advice on how to solve difficult life problems, family problems, and sexual problems.
			Giving students advice on educational and social psychology and student life.

05	Career	Public relationship and Enterprises	Seeking for job opportunities for students and graduates (full-time and part-time)
			Seeking for scholarships for students
			Contacting with companies or enterprises to gain students' experience.
			Organizing seminars to train students soft skills.
		Student service center	Seeking for job opportunities for students and graduates (full-time and part-time)
			Organizing short-term technical training classes and soft skill classes for students.
06	Finance	Admissions and student affairs	Giving students advice on living allowance, school fees, social work allowance, and reduced tuition documents.
			Giving students advice on tuition and scholarship documents.
			Giving students advice in difficult situations to loan an amount of money for tuition supported by the government.
07	Others	Student service center	Meeting students daily to connect students with faculty consultants
			Organizing international student festivals and international student exchange activities
		Library	Introducing HCMUTE library to students
			Guiding students to search for and use the materials online and offline, and related services.
		Dormitory	Supporting students to register into the university's dormitory and working on internship regulations

Additionally, FVEE has also established an advisory group of 5 consultants as in Table 7.4. They are FVEE lecturers and secretaries who are knowledgeable about the curricula, doing research, student affairs, policies and regulations, etc. in order to offer advice to students *[Exh.7.3-05: List of FVEE advisory staff AY 2016-2017]*. The advisory group can do their job in person or on the phone, or via email, FVEE website and facebook fan pages of the group itself, the faculty and FVEE youth union. At the end of each semester, their performance is reviewed and reported to the faculty and the university. The aim is to timely adjust the consulting activities in order to meet the students' demands *[Exh.7.3-06: Consulting activities at FVEE]*.

Table 7.4: List of FVEE advisory staff AY 2016-2017

No.	Full name	Qualifications	Consulting aspects
1.	Nguyen Van Trang	Ph.D	General consulting activities
2.	Nguyen Trung Hieu	M.A	Learning methods, Doing research in Automobile Engineering Technology
3.	Vu Dinh Huan	M.A	Youth Union activities, Social work activities
4.	Nguyen Le Hong Son	M.A	Learning methods, Doing research in Thermal Engineering Technology
5.	Mai Thi Lai	B.A	Managerial work, Student academic affairs, Administrative affairs

Every year, HCMUTE and FVEE usually conduct surveys to explore the level of students' satisfaction with its support staff's efficiency, continuously improving the quality of its services. Moreover, at the end of each semester, an in-person dialogue with the university and faculty management was organized, in which students' feedback on the university activities is collected. These opinions are considered to enhance the efficiency of HCMUTE activities and support students better in their study and doing scientific research. In the following semester, there is always a report to evaluate the effectiveness of the improvement based on the feedback *[Exh.7.3-07: Investigation into students' satisfaction with HCMUTE service quality; Exh.7.3-08: Reports on dialogues between FVEE Management Board and students]*. What's more, FVEE support staff members also have to submit an annual report on their personal performance to DTE and FVEE, based on which they are assessed and a level of task fulfilment is indicated. This assessment result is then used for emulation process, premature pay raise consideration and other rewarding processes of HCMUTE and MOET *[Exh.7.3-09: Assessment of support staff performance; Exh.7.3-10: Emulation and rewards for support staff]*. Along with self-evaluation and assessment at faculty level, HCMUTE QAO also carries out some surveys to collect feedback on HCMUTE service quality and working environment *[Exh.7.3-11: Staff satisfaction survey on working environment]*.

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

To better foster the support staff, HCMUTE has issued a procedure for staff recruitment and human resources development. It always has plans to improve the staff's computer skills, language competence and other professional specialisations, as well as encourage them to study and develop themselves, meeting the increasing work demands. Based on the quality objectives and the AY theme, HCMUTE requires lecturers and office staff to take part in training courses hosted by the university or sends them to train in other educational institutions. Moreover, based on FVEE's training and development scheme and each individual's needs of professional development, FVEE also sends its staff to training courses inside and outside HCMUTE such as English courses, IT training classes, professional skills classes, etc. Some of the staff members are sent to foreign countries for higher education (Master's and Ph.D degrees) *[Exh.7.4-01: Training procedure and Activities for support staff]*. DTE also takes the initiative to connect with such enterprises as Panasonic, Daikin, Mitsubishi, Bitzer, Shinsung Eng Vietnam, etc. to send lecturers and laboratory

staff to learn new technology used in their jobs. Some of the staff members are also sent to training courses organized by partner universities *[Exh.7.4-02: List of training courses and Staff's Certificates at FVEE]*.

Annually, the university always spares budget for support staff's training activities, which is indicated in HCMUTE internal spending regulations *[Exh.7.4-03: HCMUTE Internal Spending regulations 2016]*.

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

At HCMUTE, an effective procedure for performance assessment has been established and implemented fairly and openly in order to improve work efficiency, which enables best assistance for training, doing research and community service activities.

As mentioned before, the support staff members have to submit an annual personal performance evaluation for emulation process at DTE. The reports are then considered again at the FVEE annual review meeting for higher assessment. Further more, the support staff's efficiency is also assessed via the university's KPIs system. This is the ground to vote for such titles as Progressive Labourer, Grassroots-Level Emulation Fighter, etc. and the base for a pay raise consideration. Besides, the best support staff member of the year is also rewarded in cash and in kind.

More importantly, the support staff at HCMUTE can also give some feedback or contribute their opinions by meeting in person, talking on the phone or sending emails to Section Heads, Deans and Vice-deans, HCMUTE or FVEE Trade Union, Board of People's Inspectorate, etc. If HCMUTE staff members need to work with the Presidential Board, they can arrange to meet the President in person. This kind of reception is held once a month to help lecturers, office staff and students give some feedback to the President.

Along with this, HCMUTE QAO also carries out some surveys to collect feedback on HCMUTE working environment from the staff. The findings of such investigation help HCMUTE enhance the working efficiency and make good its shortcomings *[Exh.7.5-01: HCMUTE Emulation and Rewarding Regulations; Exh.7.3-09: Assessment of support staff performance]*.

8. Student Quality and Support

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

Annually, HCMUTE establishes an Admission Committee who will develop an admission proposal and announce the university's admission policies to the public. These policies are based on both MOET's regulations and HCMUTE's admission criteria, with a nationwide admission scale. The underlying principle of the policies is to stabilize the quantity and to enhance the quality of the input students. For this reason, the admission policies are very diverse to attract excellent students from specialized high schools and students who were awarded in national academic contests and technical design contests. Besides, the policies are constructed in such a way to increase the number of female students and students who come from ethnic minorities and families under preferential treatment policies. High school students who have high English proficiency are given great priority as well.

List of policies to encourage talents at HCMUTE:

- Awarding scholarships to 02 successful enrolled candidates who have the highest marks in the national high school graduation exam for each major at HCMUTE; rewarding 100% of the first semester tuition to successful enrolled candidates who come from specialized and gifted high schools and who are directly granted admission from the high schools under HCMUTE's contract programs.
- Rewarding 50% of the whole program's tuition to female students who are majoring in engineering and technology; adding priority admission marks for candidates who come from ethnic minorities and priority regions (normally rural and remote areas) in accordance with MOET regulations.
- Since 2016, HCMUTE has issued some policies on awarding scholarships (1million VND/student) to excellent students at high schools where there are a large number of current students at HCMUTE. The aim is to encourage students to study better and to attract more potential high school students to HCMUTE.

The admission process at FVEE is based on candidates' marks in the national high school graduation exam, according to each admission group such as A (Mathematics, Physics and Chemistry), A1 (Mathematics, Physics and English) and D1 (Mathematics, Literature and English). The total marks of the three subjects in each admission group have to meet the MOET's requirements. Moreover, HCMUTE offers direct admission to some students as prescribed in MOET's regulations. In addition, the university itself also spares at most 20% of the target student intake to grant direct admission to candidates who come from specialized and gifted high schools, high quality high schools nationwide, and high schools which have signed a contract to cooperate with HCMUTE in career orientation, admission, training and doing scientific research *[Exh.8.1-01: HCMUTE student intake policy and admission criteria]*.

Those admission policies are widely informed via a great number of channels such as the university's website, news agencies, HCMUTE facebook fan pages, and online admission consulting sessions. Every year, HCMUTE and FVEE usually organize Open days when high school students can visit the campus and consult with career advisory groups in order to choose a major they are interested in, as well as to be well-informed about the university's newest admission policies *[Exh.8.1-02: HCMUTE and FVEE Open Day Plans and Photos]*.

More than that, 6 months before the annual admission time, HCMUTE usually conducts on-site admission consulting sessions in the local areas where high schools are situated. Online consulting sessions are also carried out on HCMUTE and FVEE websites (http://tuyensinh.hcmute.edu.vn , http://fae.hcmute.edu.vn/). Furthermore, detailed admission information such as target intake of each major, admission modes, tuition, scholarships, dormitory vacancies and registration and other support activities is announced openly on its websites and facebook fan pages, as well as via news agencies. Twice a year, all the faculties' leaders at HCMUTE join the admission consulting festivals hosted by MOET and other news agencies such as Youth newspaper, Education and Modernity newspaper, etc. *[Exh.8.1-03: Admission columns and photos on newspapers]*. In 2016, the HCMUTE Press and Media Office was established to timely provide admission information and introduce the university's daily activities to the candidates, enterprises and the community. A Youtube channel namely UTE-TV was also set up to promote HCMUTE's activities to online society *[Exh.8.1-04: HCMUTE UTE-TV youtube channel]*. To have more channels for admission consulting, ASAO also assigns an admission advisory group who are responsible for daily

counselling online on the university websites http://tuyensinh.hcmute.edu.vn/ and on the phone. To keep up with the development of HCMUTE in particular and the society in general, HCMUTE admission policies are always updated in accordance with MOET's regulations. In this integration era, English is regarded as a vital criterion; therefore HCMUTE also takes priority to accept candidates who have high English language proficiency. For example, in some majors, candidates who have IELTS Certificate ranked 5.5 or above are granted direct admission to HCMUTE.

Apart from that, AAO, ASAO and FVEE share the same educational management software which enables them to supervise, analyse and compare the enrolment rates of students every year *[Exh-8.1-05: Admission data analysis software]*.

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

In line with the university admission modes and policies, TET students must meet the requirements from HCMUTE and MOET. For example, they need to sit the national high school graduation exam and the total marks of the three subjects in each admission group have to be equal or above the MOET's admission threshold. In details, TET students are chosen based on the following measures and policies:

- HCMUTE grants direct admission to candidates who have won national and international excellent student contests, as well as national and international science and technology contests.
- The university itself also spares at most 20% of the target student intake to grant direct admission to candidates who come from specialized and gifted high schools and high quality high schools nationwide (as listed by HCMUTE). These candidates need to have the GPA of the last 5 semesters from 7 or above.
- At most 5% of the target student intake can also be used to grant direct admission to students from 200 high schools which have signed a contract to cooperate with HCMUTE in career orientation, admission, training and doing scientific research, as long as the mark of each admission subject in their high school academic transcript is 8 or above.
- The remaining of the target student intake is applied for candidates who use their results in the national high school graduation exam. Candidates who have highest marks will be chosen until the number of accepted candidates reaches the target figure (70 students).

The underlying principle of the policies of TET is to stabilize the quantity and to enhance the quality of the input students (table 8.3). Thanks to such reasonable admission and talent encouraging policies, the quality of input students has been increasing recently. As illustrated in table 8.1, TET cut-off marks have been increasing and always exceeded greatly the MOET's benchmarks in the past years *[Exh.8.2-01: TET programme's cut-off scores]*.

Table 8.1: Cut–off scores of TET programme (2012-2017)

	2012	2013	2014	2015	2016	2017
Group A	14	17	18	29.5(*)	21.75	23.5
Group A1	13.5	17	18	29.5(*)	21.75	23.5
Group D1	-	-	-	29.5(*)	21.75	23.5

MOET benchmark for groups A, A1	13	13	13	15	15	15.5
MOET benchmark for group D1	13.5	13.5	13	15	15	15.5

(*): In 2015, Mathematics score was multiplied by 2

As shown in table 8.2, the TET input student quality has been gradually upgraded during the period. TET cut-off scores at HCMUTE are among the top in the southern area in comparison with Industrial University of Ho Chi Minh City (IUH), Nong Lam University (NLU) and Van Lang University (VLU) *[Exh.8.2-02: Cut-off scores of TET programmes at other universities]*.

Table 8.2: Comparison of the admission scores of the TET programme at HCMUTE with those from other prestigious universities from 2012-2017

	2012	**2013**	**2014**	**2015**	**2016**	**2017**
HCMUTE	14	17	18	29.5(*)	21.75	23.5
IUH	13	14	14.5	19	18.75	17.5
NLU	13	15	16	19.5	19.5	18.5
VLU	13	13	13	15	15	15.5

(*): In 2015, Mathematic score was multiplied by 2

Table 8.3: Student Intake (2012-2017)

Academic year	**Number of Applicants**		
	Applied	**Offered**	**Admitted/Enrolled**
2017-2018	397	77	72
2016-2017	424	81	78
2015-2016	376	77	50
2014-2015	342	72	59
2013-2014	466	86	53
2012-2013	339	97	84

Students' academic results are always checked and evaluated by HCMUTE, FVEE and DTE. It can be seen from table 8.4 that the dropout rates of TET programme in recent years have been gradually fallen to a very low figure. This proves the effectiveness of the school's admission policies, the efficiency of advisory group and the increasing quality of the TET programme. Another reason is that students who have financial difficulties are constantly supported by the scholarships from the university, ensuring that they do not drop out *[Exh.8.2-03: List of scholarships for underprivileged students]*.

Table 8.4: Total number of students (2012-2016)

Academic Year	Students					Total
	1st year	2nd year	3rd year	4th year	>4th year	
2016-2017	78	50	56	47	24	**255**
2015-2016	50	57	48	76	18	**249**
2014-2015	59	50	79	66	22	**276**
2013-2014	53	81	67	69	20	**290**
2012-2013	84	69	71	59	21	**304**

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

HCMUTE has equipped itself with a Dashboard academic management software and supervision system (http://dashboard.hcmute.edu.vn). This is a synchronized system linking the university, functional offices and faculties, as well as lecturers and students on the website http://.online.hcmute.edu.vn *[Exh-8.3-01: A photo of the Dashboard]*. The faculty management, the advisory group, the TET Section Head and Vice heads always check students' progress, such as their number of credited accumulated, GPA, etc. to give notice to students who haven't accumulated enough credits or who have too low GPA in time. Moreover, a warning from ASAO and AAO about students' academic progress is also sent to students, faculty leaders and the advisory group. For those who receive such warning, the faculty and its advisory group will send another notice to them and meet them in order to find a solution to improving their academic perforamce. Those who have difficulties in their study can raise a question in the dialogue meeting between the faculty and DET leaders and students, so that their problems can be solved promptly.

Each DET lecturer was given an account on the website www.online.hcmute.edu.vn to manage their assigned classes and retrieve the needed data from the database. They can also discuss with students through the message system and receive the feedback from students on their teaching and class activities. The website is also the platform for them to import students' on-going assessment and final marks into the system *[Exh.8.3-02: A screenshot of the website of academic staff]*. The academic ranks of students, which are also included in student's handbook with more details, are illustrated as in table 8.5 *[Exh.8.3-03: Student handbook]*.

Table 8.5: The academic ranks of students in the scale of 10, 4 and their equivalent letter marks

Rank	10-mark scale	4-mark scale	
		Letter mark	Numeral mark
Excellent	From 8.5 to 10	A	From 3.4 to 4.0
Good	From 7.0 to 8.4	B	From 2.8 to 3.3
Average	From 5.5 to 6.9	C	From 2.2 to 2.7
Below Average	From 4.0 to 5.4	D	From 1.6 to 2.1
Poor	Below 4.0	F	Below 1.6

Each student is also given an account on www.online.hcmute.edu.vn to check their study plan, enrol into courses, check their exam schedule and the number of accumulated credits, etc. and receive the announcements from the university as well as discuss with their lecturers. In addition to this website, the learning management system https://lms.hcmute.edu.vn/ is also employed to check students' marks for each course *[Exh. 8.3-04: Screenshot of the learning management system]*.

The indicators used to check TET students' academic progress include GPA, the number of accumulated credits, academic rank, training marks and training rank, and the number of social work days accumulated *[Exh.8.3-05: Screenshots of students' academic and training indicators]*, *[Exh-8.3-06: sample of students' academic transcript]*.

As regards students' compliance with the university's regulations, citizen's virtue, participation in political, social, cultural and sports activities, and participation in extracurricular events to serve the community, FVEE Youth Union and Student Association have the responsibility to supervise students during their time at university.

Since 2001, DTE has conducted the credit-based education and training. Each theoretical credit is composed of 15 periods, while each practical and experimental credit makes up 45 and 30 respectively. In TET curriculum, with the total study time of 4 academic years, 8 semesters and a total of 150 credits, the number of credits allotted for each semester is equal to approximately 20, except for the final semester, which has only 12 credits, as students have to undertake their internship in a company for 4 weeks and conduct their final project at the same time. With such distribution, even students who have average academic ability can definitely complete the program on time. Depending on their ability, they can flexibly register into many courses, as long as the number of credits in each semester is between 15 and 35. During summer semester (3rd semester), FVEE also opens some classes for students to do a course in advance or retake a course.

However, there are still some students who have to take more time to finish their programme than expected. One of the reasons is they have financial difficulties and have to work to earn a living. To solve this problem, scholarships are usually granted by the university to help students have peace of mind and focus more on their study. Another solution is that FVEE and DET also take the initiative to call for funds and scholarships from big corporations like Daikin, Mitsubishi, Dansfoss, Panasonic, Shinsung Korea, Unicons, Bitzer, Hanbell, Gunter, etc. for students and help them find a job *[Exh.8.3-07: List of students who receive scholarships]*. One more measure is to establish the Compassion Corner where students in need can come and receive free books and notebooks, food, clothes and other services. This will be described in more details in criteria 11 *[Exh.8.3-08: A photo of compassion corner]*. Another reason is that some students do want to study and work for companies at the same time to gain practical experience. As a result, they have to expand their study time at university.

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

HCMUTE, FVEE and DTE have carried out many activities to improve learning and employability as follows:

During the Orientation Week, HCMUTE and FVEE conduct some activities to introduce the university, faculty, library, and subunits of University where students can contact if needed. The university policies and regulations are also presented in these events. Also at the beginning of the academic year, FVEE and DTE cooperate to organize an Welcome ceremony for freshmen, with

such activities as camping, research products display, meeting alumni and enterprises, etc. This event helps the first-year students better understand FVEE and DTE's normal activities. During their time at university, students can have a chance to visit big companies to have a vision of their future career. Some other events are also carried out by FVEE Youth Union and Student Association to help freshmen integrate to university environment. Since AY 2012-2013, the Introduction to TET course has been added into the programme, which well informs students about TET curriculum, ELOs, expected career and working positions for graduates, learning styles, information research skills, teamwork skills, professional ethics and how to form and develop students' ideas *[Exh.8.4-01: Activities in the orientation week]*.

During the Orientation Week, students can consult with the advisory group, FVEE secretary and DTE lecturers about their study and research plan, TET curriculum and other activities. From the second semester of the program, the information and other announcements will be sent to students via email, or on AAO and FVEE websites. Students enrol themselves into courses online and can check their on-going assessment and final marks on http://online.hcmute.edu.vn. Also on this website, they can check their current GPA and other academic announcements. Otherwise, the FVEE advisory group will help students to access the information and other details about short courses *[Exh.8.4-02: Students' GPA on the school website]*.

Lecturers play an important role, which is teaching and guiding students to do scientific research and join in design contests hosted by the university, enterprises and other social organizations. TET students have participated in several contests, including Panasonic New Ideas for Energy Saving Contest, Eureka, etc. Another job lecturers can do is to join in consulting sessions via emails, facebook, phone or on the website www.online.hcmute.edu.vn. Students can also meet the advisory group in person at the faculty, department or lecturer's office or in the open self-study areas of FVEE. Moreover, FVEE lecturers usually support students in youth union's clubs and English speaking clubs. They also give direct instructions when students pay a visit to companies and factories *[Exh.8.4-03: Photos of consulting activities at FVEE]*.

To foster students' self-study, the courses in TET programme are all conducted on the learning management system of the school https://lms.hcmute.edu.vn/. A group of teaching assistants is also established in order to help students improve their self-study sessions. Every year, TET Section collaborate with big corporations in the field of thermal and refrigeration engineering such as Daikin, Panasonic, Shinsung, Bitzer, Mitsubishi, Unicons, LG Electronic, etc. to organize specialized seminars and on-site visits to manufacturing factories of Heniken, Showroom Daikin, Thủ Đức thermal power plant, etc. In the meantime, DTE also invites enterprises to HCMUTE to train students about designing, consult students with new technology and enrich their knowledge in the field *[Exh.8.4-04: List of seminars, scholarships, company and factory visits of TET students; Exh.8.4-05: the course entitled "Installing Daikin Air conditioner 2017"]*.

On the one hand, cooperating with SSC and ERO, and FVEE, DET holds a great number of seminars and conferences, such as Training sessions on writing a good CV, Integration at workplace, Job Application Skills, Presentation skills, etc. to enhance students' soft skills. On the other hand, the faculty also works with Bezone foreign language center to set up an English club which has a regular meeting on Thursday mornings to help improve TET students' English competence *[Exh.8.4-06: Photos of FVEE English club's activities]*.

To support students' financially, FVEE and DET usually work with SSC to seek for part time job opportunities for students. They also run student clubs and groups such as Student Experiencing

Club, Event Organization Group, Taekwondo Club, Community Connection Group, etc. which are excellent educational environments for students to train their own life skills *[Exh.8.4-07: List of students who found a job introduced by SSC]*. Besides, PRO always look for recruitment information from companies and cooperate with them to organize job fairs twice a semester, helping students and graduates get a job before and after finishing the programme. The recruitment information is sent to FVEE and announced openly on PRO's website http://pr.hcmute.edu.vn/, FVEE's and Youth union's fan page *[Exh.8.4-08: ERO's activities]*.

To satisfy students' needs, HCMUTE has set up 3 self-study areas on the fifth floor of the center building, at SSC and at FVEE. Furthermore, FVEE cooperated with HCMUTE Youth Union to build a Motorbike-Car Wash Shop for students to work part time after class *[Exh.8.4-09: Photos of the Self-study area and the Motorbike-Car Wash Shop]*.

There is also a big group of advisors who are the staff of functional offices such as AAO, ASAO, SSC, etc. They are responsible for supporting students in their study, doing research and social activities when needed (Table 7.3: The number of support staff (Reference date: April 30, 2016)). FVEE itself has an advisory group composed of lecturers, Youth Union and Student Association. Before 2014, the advisors were assigned to each class. However, since 2014, each advisor has been appointed a field of consulting *[Exh.8.4-10: List of FVEE advisors]*. Besides, a group of teaching assistants has been established to help students in their study and doing research *[Exh.8.4-11: List of teaching assistants at FVEE]*. There is always a dialogue meeting with leaders of FVEE and HCMUTE each semester, so that every question from students can be answered in time *[Exh.7.3-07: Investigation into students' satisfaction with HCMUTE service quality]*.

Excellent students who have high achievements at DET are facilitated to join in scientific research projects with lecturers or to do their own research at the TET's laboratories. For those who are working on their final projects, their supervisors will meet them every week to give some guidelines. If they have any difficulties in their internship or final project, they can make an appointment with their lecturers or the advisory group to solve the problem.

Apart from that, FVEE and DET also take the initiative to look for job opportunities by cooperating with such corporations as Daikin, Mitsubishi, Panasomic, Bitzer, Dansfoss, Shinsung, etc. and inviting them to HCMUTE as guest speakers sharing about job opportunities with students. Some design and construction consulting companies are also invited to DET to train students how to use soft wares to calculate thermal load or design an air conditioning system. Currently, DTE has some internship programs in which students can work in a company from 2 to 4 months in order to enrich their knowledge, sharpen their skills and enhance their employability after graduation *[Exh.8.4-12: Internship Plan and photos of students in their internship at companies]*.

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

HCMUTE is considered to have one of the best learning environments in the south of Vietnam. It has a modern library with a great number of various English specialized books. The library also cooperates with other big libraries in the world. Moreover, HCMUTE has invested in the construction of a new dormitory to meet the increasing demand of students' accommodation. Similarly, in 2017, the university invested and put into use a modern high quality library, responding well to students' needs of doing research. As for the physical environment, HCMUTE possesses an airy and spacious campus with a great number of trees. There are some large self-study

areas equipped with convenient tables and chairs such as the self-study area on the fifth floor of the center building, the self-study area at the Student Service Center, etc. Besides, the university also spares space for extracurricular activities. For instance, lecturers and students can use the football fields and volley ball, tennis, basketball and badminton courts inside the campus. At faculty level, FVEE and DTE also take the initiative to call for investment from enterprises to build a self-study area and a flower garden for students to study and relax *(See Figure 8.2)*.

Figure 8.2: HCMUTE's main campus

Recently, HCMUTE has opened a Compassion Corner where students who are underprivileged can come and receive such free items as clothes, books and notebooks, bicycle and food. Students can also learn a job they want in the Compassion Corner, for example sewing or hair dressing, which can improve their life skills in the future *(See Figure 8.3)* *(https://www.flickr.com/photos/99829933@N07/sets/72157681954539990)*

Figure 8.3: HCMUTE's compassion corner

What's more, HCMUTE, SSC, FVEE and DTE usually organize annual student practical activities, including seminars, Vietnamese laws contest, HCMUTE solo singing festival, etc. A great number of clubs and groups are also established to help enrich the students' experience at HCMUTE. Among them are Student Experiencing Club, Martial Arts Club, Community Connection Group, Guitar Club, Dancing Club, MC club, just to name a few. In the same way, HCMUTE youth Union runs some other activities for students to train and relax, such as Skills Club, English Speaking

Club, Social Work Team, etc.

As annual activities, such events as Singing and Dancing Festivals, Sports Tournaments, Student Camps, etc. are held in the campus by HCMUTE, Youth Union, Trade Union, Student Association and FVEE in cooperation. Also, there are some other useful activities like Volunteering Spring Campaign, Blood Donation Campaign, Green Summer Campaign, National University Entrance Exam Support Campaign, and visits to orphanages. Additionally, HCMUTE pays great attention to students' health. They have to undertake a health check at admission and buy school health insurance packages during their study time. They can also come to the school Medical Center where health consulting and medical tests are usually provided. For other life and school consulting, students can visit the SSC of HCMUTE *[Exh.8.5-01: List of extra-curricular activities]*. When it comes to psychological difficulties, TET students can come to two teams of consultants: One is the psychological consultants of HCMUTE, who are chosen among experienced psychology lecturers and the other is the consultants of FVEE who are willing to listen and share social and psychological problems with students.

Figure 8.4: Social activities of TET students

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 two campuses with total area of 21ha and 128,128m^2 of construction area. The main campus is located at 01 Vo Van Ngan Street, Thu Duc District and another is situated at 484 Le Van Viet Street, District 9. The average area of property per student is 3.95m^2, which definitely meet the requirements. Since 2007, HCMUTE has implemented the construction of the high technology building, the multipurpose building, the center building and the second dormitory with a total area of 54,000m^2.

Thanks to the investment from the HCMUTE budget and fund raised from the national target programs, the University has totally 339 offices, 256 rooms for theoretical courses , 01 digital learning room and 156 workshops and laboratories.

Along with that, the university regularly buy additional equipment with the total expense of around 6 billion VND/year *[Exh. 9.1-01: Report on facility and infrastructure of HCMUTE]*.

The university has developed plans at both campuses, including a medium-term strategic plan for 2011-2015 period, with vision to 2020; and the developing orientation for 2018-2020 period, with vision 2030. Moreover, as an annual activity, the university usually operates investment schemes to erect new buildings, as well as to upgrade and renovate its existing constructions. The spacious

classrooms and laboratories are well equipped with sufficient modern facilities, fulfilling the requirements of advanced and innovative teaching and learning. In addition, the annual facility maintenance and replacement is constantly performed in the campus *[Exh. 9.1-02: Projected expenses on renovation, repairs and acquisition]*.

Especially, in 2012, a new 12-storey building (i.e. the center building) was put into use, including an administrative center and four classroom areas with the capacity of thousands of students. The whole building, even the self-study areas for students, is equipped with good Wi-Fi system *[Exh. 9.1-03: HCMUTE Campus Information]*.

The improvement of service quality is deployed frequently. Surveys on working environment and the quality of service are conducted periodically (every year/semester). These comments were reviewed and reflected for improvement . For many years, survey results have always been highly appreciated by students *[Exh 9.1-04: Staff survey about working environment]*.

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

With an area of 1,430 m^2, the library is located at the center of the campus and closely linked to teaching and learning areas. The library resources are just sufficient, including Vietnamese books, foreign language reference books in English, textbooks, dictionaries, references and technical standards, scientific research reports, and graduation theses. Among them, the number of reference books in Vietnamese reaches 117,079 titles; the number of copies of reference materials mentioned in the curriculum reaches 459,788. Besides, lecturers and students are given free access to CSDL SpringerLink for their teaching, learning and researching purposes (http://dbonline.cesti.gov.vn/login?url=http://link.springer.com/).

Table 9.1: Types of available documents in the library

No.	Type	Number of items
1.	Vietnamese books	34,574
2.	English books	6,664
3.	French books	317
4.	Germany books	93
5.	Chinese books	10
6.	Bachelor Theses	2,984
7.	Master Theses	4,019
8.	Reports	450
9.	Standards	298
10.	Textbooks	336,112
11.	Reference books (Vietnamese)	117,079

12.	Dissertations	4,607
13.	Scientific researches	1,420
14.	Journal article extracts	900 catalogues
15.	Newspapers, magazines, journals	137 types

To enhance the ability of cooperation and information exchange, the library has actively joined in professional organizations and associations such as Vietnam Library Association, University of Sciences' Library Association, Southern region (2007-2012), the Library Union of technical universities, STE Library, Library Union of multidisciplinary universities. To create convenience for readers, the library also has a computer system serving lookups in the reading room and loans of reference books and textbooks. Besides, the library has collaborated with partners outside the school systems to provide a full coverage of wireless network. Furthermore, the library can also offer a very comfortable reading environment with modern facilities, an airy spacious reading room and librarians with professional service manner. Its working hours, regulations and guidelines are fully shown on the library website *[Exh. 9.2-01: Library resources]*.

To supply enough materials for students, the HCMUTE library and faculties investigate students' need for additional materials based on the current number of students and the specific subjects taught each semester. Thus, library's resources are always in line with the curriculum and students' study. Since 2002, the library has been equipped with a modern software to manage book loans, book returns and materials lookups through a networked computer system. By 2015, the library had been upgraded the library management software with higher technology platform, matching the trend of the application of mobile technology and meeting the strong demand in the use of electronic documents on the mobile devices. By so doing, HCMUTE has bettered its service for readers using electronic documents and responded promptly to their needs. As a result, readers now can look up information, check the availability of materials in stock, and register to borrow a book when it is ready *[Exh. 9.2-02: Library infrastructure]*.

Moreover, the library was soon connected to the internet, satisfying its users' needs of searching for information. The e-resources which have been collected and put into use come from three sources: the free/paid e-database www.cesti.gov.vn; e-resources downloaded from the Internet and stored at the library; and e-textbooks compiled by the university's teaching staff. For the sake of convenience, these e-resources have been uploaded and shared on the library website at http://lib.hcmute.edu.vn/. They include reference books, textbooks, project reports, dissertations, scientific research, journal article extracts, and the Open Course Ware from Massachusetts Institute of Technology (MIT Open Course Ware). There are now a total of 123 e-textbooks which learners can access on such pages as: http://sachweb.com, http://ybook.vn, http://m.alezaa.com, http://sachbaovn.vn, and http://libnet.vn. Any update of e-textbooks or new materials is immediately announced to students via individual emails and on the library website. The library also organises such activities as old books in exchange for new books, book fairs, seminars, specialized reports, introduction to e-book list, and introduction to online applications *[Exh.9.2-03: E-resources]*.

To continuously improve service quality, the library regularly receives feedback from readers through the surveys, assessing its users' satisfaction. The comments about the library through dialogue meetings between HCMUTE and FVEE leaders and students, which are organized

regularly each semester, are also collected. After receiving comments and complaints (if any) from the users, the library will handle and perform improvement activities to enhance the quality service *[Exh.9.2-04: Survey for library service]*.

In May 2017, HCMUTE opened a high quality library (HQL) with a total area 1,300 m2 and capacity of 500 persons. It includes many different function areas such as: English speaking club, relaxation area, and a start-up room. It is equipped with a modern look-up system, Wi-Fi, air conditioners and nearly 8,000 English books. The library not only responds well to the demand of learning - teaching – doing scientific research but also serves students effectively in other extracurricular activities *(https://www.flickr.com/photos/99829933@N07/sets/72157681954539990/)*.

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

To satisfy the demand of learning, teaching and scientific research, FVEE has 06 practical workshops, 06 laboratories and 03 specialized rooms which can facilitate sufficiently the training of Thermal Engineering Technology and Automotive Engineering Technology *[Exh.9.3-01: List of FVEE workshops and laboratories]*.

Table 9.2: List of FVEE workshops

No.	Name	Area	Section-in-charge
1.	Heat and Refrigeration Workshop	670 m^2	Heat and Refrigeration
2.	Gasoline Engine Workshop	803 m^2	Automotive Engine
3.	Automotive Electricity and Electronics Workshop	200 m^2	Automotive Electricity
4.	Diesel Engine Workshop	268 m^2	Automotive Engine
5.	Automotive Chassis Workshop	670 m^2	Automotive Chassis
6.	Body and Painting Workshop	450 m^2	Automotive Chassis

Table 9.3: List of FVEE laboratories

No.	Name	Area	Section-in-charge
1.	Heat Transfer Lab	50m^2	Heat and Refrigeration
2.	Air conditioning Lab	30 m^2	Heat and Refrigeration
3.	Drying engineering Lab	50 m^2	Heat and Refrigeration
4.	Mechatronics Lab	56m^2	Automotive Electricity
5.	Automotive Engine Lab	112m^2	Automotive Engine
6.	Automotive Chassis Lab	30m^2	Automotive Chassis

Table 9.4: Laboratory and workshop staff

No.	Laboratories and workshops	Person in charge	Qualification
1.	Heat Tranfer Lab	Nguyen Phu Duc	Engineer
2.	Air conditioning Lab	Truong Huu Sang	Engineer
3.	Drying engineering Lab	Nguyen Thanh Son	Engineer
4.	Mechatronics Lab	Le Quang Vu	Master
5.	Automotive Engine Lab	Chau Quang Hai	Master
6.	Automotive Chassis Lab	Dương Tuan Tung	Master
7.	Heat and Refrigeration Workshop	Nguyen Le Hong Son	Master
8.	Automotive Chassis Workshop	Thai Huy Phat	Master
9.	Body and Painting Workshop	Thai Huy Phat	Master
10.	Automotive Electricity and Electronics Workshop	Le Quang Vu	Master
11.	Gasoline Engine Workshop	Nguyen Tan Loc	Engineer
12.	Diesel Engine Workshop	Nguyen Tan Loc	Engineer

The laboratory staff plays an essential role in providing good services for students' learning and doing scientific research to ensure the curriculum's learning outcomes. Currently, FVEE has six laboratories and six academic workshops with a total number of nine staff who are specialized in the academic majors. Moreover, there are many other staff members working in material experimenting laboratories and bench work practices of other faculties. They are also involved in the academic programme.

To conduct the maintenance work and device repairing, FVEE also receives support from the staff of Equipment, Maintenance and Facility Management Office. As an annual activity, the university often invests in programs for equipment, as well as upgrades and renovates the existing equipment. Moreover, the equipment in the workshops and laboratories are regularly checked and repaired. The specialized equipment has instruction and measuring tools are also periodically tested and adjusted under an approved procedure *[Exh 9.3-02: Procedures for calibrating the measurement devices]*. As a result, the equipment utilization in the FVEE's laboratories and workshops is highly efficient *[Exh. 9.3-03: Report on efficiency of equipments]*.

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

The application of information technology has been implemented widely throughout HCMUTE. In 2013, the university invested 22 billion VND to equip IT systems for the entire campus. At present, the information communication among the university management, functional offices, faculties and other units is completely done using information technology. Similarly, all the FVEE's computers for managerial and administrative use are connected to the internet, and the faculty's academic staff

can use the academic management software to work every day*[Exh 9.4-01: IT facilities]*.

Table 9.5: The number of computers at FVEE

No.	Section-in-charge	Number of computers
1.	Heat and Refrigeration	13
2.	Automotive Engine	16
3.	Automotive Chassis	3
4.	Automotive Electricity	15
5.	Office	6

In the same way, the teaching staff at FVEE can employ specialized software such as LabVIEW and AUTOCAD to support calculation and stimulation, guaranteeing the accuracy and efficiency in teaching and doing research *[Exh.9.4-02: Software: LabVIEW, AUTOCAD ...]*.

HCMUTE has also developed specialized software namely PSC to support academic affairs, facility and equipment management, library administration, human resources management, collecting surveys, etc. It helps reduce time and money in printing and storing documents, as well as enables faster and thorough information exchange. Due to the improvement of network architecture and the complete application of information technology, forms of blended learning such as mobile learning and online learning can presently be conducted at the university. This is sponsored by Pearson Company and supported by the Digital Learning Center.

Also, the university website (http://online.hcmute.edu.vn/ or http://hcmute.edu.vn/) and the faculty website (http://fae.hcmute.edu.vn) are now the common virtual environments where the information collection and communication between the university and students takes place. In March 2015, with the cooperation between HCMUTE and HEEAP Alliance, a distance learning classroom was built. It is equipped with the most modern equipment for videoconference and hardware with a total investment of about US $300,000. The classroom has a capacity for 50 people arranged in 7 workstations; each person is equipped with a virtual collaboration support tool. The digital learning room allows the connection between the HCMUTE, Arizona State University (ASU) and other institutions of higher education around the world to create a channel of interaction between faculty and students.

With a new teaching approach where interactivity is optimized, the center has supported the development of important skills for today's labor force, such as teamwork, problem solving, and project planning. This modern digital center also encourages lecturers to use more blended learning and e/M learning, because the successful application of information technology through the deployment of complete network infrastructure helps employ new forms of teaching, such as mobile learning and online learning. In addition, the exchange and discussion between the teacher and students now becomes faster, easier, and more convenient than ever before *[Exh. 9.4-03: Digital learning]*.

Until now, there have been more than 10,000 lectures that are performed and uploaded on the learning management system of HCMUTE. To help conduct such teaching and learning activities, a full Wi-Fi system is covered in the center building, the high-tech building, a number of outdoor

learning areas for students, and the student service center. FVEE also self-equipped a free Wi-Fi system for teachers and students to use in their learning and doing research *[Exh.9.4-04: Application of IoT in education and management]*.

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

HCMUTE is a green, clean and beautiful environment. Since 2000, the university has prohibited smoking on campus. Among the university's functional units, the Medical Center has to work on primary health care and manage the health records; manage and raise people's awareness about environmental sanitation, epidemic disease prevention, occupational and social diseases, and industrial hygiene; and do work related to health insurance and accident insurance for the university staff and students. Accident and health insurance for teachers, staff and students is provided annually, and medical examinations for all HCMUTE staff are performed once a year. Students, on the other hand, take a medical test only once at admission.

The Medical Center also cooperates with internal or external functional organizations to conduct both regular and unscheduled inspection of food sanitation in the canteens, making sure that the university's staff and students are safe to eat their food. Besides the annual raising-awareness activities on health and sanitation, the Medical Center also counsels the university management to spray insecticides in order to prevent epidemics like dengue fever. The staff and students usually are offered psychological counselling on insurance and preventive treatment methods through direct advice or via email *[Exh. 9.5-01: Health care]*.

To ensure the safety of teaching and learning, the fire prevention and fighting regulations are strictly followed in workshops and laboratories. Pieces of fire-fighting equipment are arranged throughout the campus. In FVEE workshops and laboratories, a medicine box (i.e. a first aid kit), an evacuation safety plan, and the workshop and laboratory regulations are put where students can notice easily. To ensure the implementation of regulations, there is a security group which consists of 22 members. They are responsible for protecting properties and keeping things in order inside the campus. They can also remind teachers and students to obey the school rules; promptly handle violations of regulations or tackle thefts of properties. They work 24 hours a day, without holidays or weekends. To perform its functions better, the security team is equipped with uniforms and support tools. They regularly join in professional training courses and are well-informed with reports on local security.

In the center building, an automatic fire alarm system and CCTV (Closed Circuit Television) system was installed to help the team check security status easily. Besides, the escape instruction boards with emergency telephone numbers are hung in easily-noticed and necessary locations *[Exh. 9.5-02: Fire prevention and security]*. Moreover, the equipment in the workshops and laboratories is regularly checked and repaired, using measuring tools which are also periodically tested and adjusted under an approved procedure *[Exh.9.5-03: Procedures for Maintaining and calibrating devices]*. Any upgrade or supplementation of equipment carried out is a part of the plan made at the end of the previous academic year following the same procedure throughout the university *[Exh. 9.5-04: FVEE annual equipment purchase and maintenance plan]*.

Besides, the fire prevention and fighting regulations are strictly followed in workshops and laboratories. Inside the workshops, there is always at least one person who has been trained about fire and explosion prevention, and high quality fire extinguishers which are located at the prescribed

positions and checked regularly. During the practicing and learning at the laboratories and workshops, students must wear protective equipment (clothes, boots and goggles) *[Exh.9.5-05: Laboratory-Workshop regulations and Fire prevention]*.

10. Quality Enhancement

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

In 2012, the new TET programme was constructed based on the framework of MOET and the vision of HCMUTE. This academic programme of TET has a total of 150 credits. The system of 150 credits was also applied for all majors at HCMUTE. FVEE has consulted and engaged stakeholders such as academic managers, experts and teaching staff to design the TET programme. During the process, FVEE has collected feedback from current students to improve the curriculum by holding meetings between them and the management of the faculty and university once a semester *[Exh.10.1-01: Feedback of students]*.

FVEE has engaged students and alumni of the TET major and employers to attend conferences on the design of the academic programme. By organizing such conferences, the feedback on the curriculum development from these stakeholders is collected via questionnaires. This feedback is then analyzed to identify the expected learning outcomes including the knowledge, skills and attitudes in more details *[Exh.10.1-02: Sample survey on the level of HCMUTE student's response to job requirements*, *Exh.10.1-03: Questionnaire on curriculum development]*. After that, FVEE has translated the stakeholders' reasonable requirements into the ELOs of TET programme. Based on the feedback from the stakeholders, FVEE's scientific board will evaluate and adjust the academic programme in accordance with the scientific and technological development trend of the society.

At the end of each semester, lecturers have to hand in their course portfolio in which they reflect and give advice on curriculum changes, then the departments hold meetings and gather the opinions to improve and innovate the academic programme.

The ISO management procedures have been applied by HCMUTE in the stakeholders' survey on how much they are satisfied with the academic programme and in the students' survey on their satisfaction during university time. HCMUTE currently has two ISO management procedures for stakeholders' survey on the curriculum and for the students' survey on their satisfaction. The collection of feedback on the ELOs of TET programme from stakeholders is done annually by organizing conferences, attended by the employers from national and international enterprises, and annual alumnus traditional reunions, attended by a large number of FVEE alumni *[Exh.10.1-04: Meeting between students and faculty's leader]*.

Thanks to the procedures, feedback from students on how much they are satisfied with the curriculum and the ELOs of the programme has constantly been collected; as a result, reasonable and timely adjustments can be performed before the students enter to the business community. They have dedicated to a part of the programme development through their learning, studying and giving feedback. Furthermore, after each course, students can evaluate their lecturers, the courses and the assessment method of the courses by filling in an online questionnaire on the school website http://danhgia.hcmute.edu.vn and providing additional evaluating information. The results from the surveys which are analyzed and synthesized before being delivered to the faculty staff are used as a reference for lecturers to evaluate themselves and for the programme team to improve the syllabi. Thereby, more revisions and adjustments will be made to the programme in the following

semester, which helps enhance students' learning quality and lecturers' teaching quality *[Exh.10.1-05: Students' survey into course evaluation and assessment]*.

Each semester, TET Section conducts a meeting and collects ideas to enhance and update the academic programme from lecturers *[Exh.10.1-06: Workshop on the curriculum]*. At the beginning of each semester, there is at least one meeting between the faculty management, lecturers and students. During this meeting, students can have a voice in the revision of the programme's content, ELOs, courses, etc. Since the second semester of academic year 2015-2016, the meeting has been completely innovated to online dialogue form. A dialogue in the form of phone calls is carried out live on the university's website and facebook fan page. During this meeting, students can share their opinions on the revision of the programme's content, ELOs, courses, etc. *[Exh. 10.1-07: Regulation on curriculum development]*.

Furthermore, the TET programme was thoroughly revised and improved in 2012, based on the contribution of the faculty's teaching staff, and feedback from companies and enterprises employing the faculty's graduates. Since then, it has been frequently revised, evaluated, adjusted and supplemented by the faculty's scientific board, teaching staff and stakeholders. In addition to feedback from undergraduates and alumni, comments and opinions from employers and companies are also very valuable for FVEE members to ameliorate the curriculum to provide qualified and professional engineers to the labor market *[Exh.10.1-08: Opinions of stakeholders on TET programme]*.

The revision has been conducted not only internally but also externally via the feedback of employers and successful alumni who are working in different companies *[Exh.10.1-09: Syllabus modification]*, *[Exh.10.1-10: ISO quality assurance procedures at HCMUTE]*.

Table 10.1: The comparison between structures of 183- and 150- credit programs

Clusters	183-credit curriculum (applied from 2001 to 2011)	150-credit curriculum (applied from 2012 to present)
General courses	**62**	**55**
Introduction to TET	1	3
Mathematics and natural sciences	27	22
English	12	9
Information technology	5	3
Human sciences	5	6
Political education and General laws	12	12
Fundamental courses	**46**	**28**
Theory	38	27
Course projects	0	0

Experiment, Practice	8	1
Specialized courses	**68**	**57**
Theory	46	30
Course projects	3	8
Experimental, Practice	18	17
Internship	1	2
Capstone project	7	10
Total	**183**	**150**

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

The TET programme is reviewed and modified every two years. The collection of feedback on the ELOs of TET programme from employers is done annually by organizing conferences whose attendants are national and international enterprises, and by holding alumnus traditional reunions. According to the university policies, TET Section has been allowed to make a 5%-7% change to the curriculum content with an approval of FVEE's and university's scientific boards in order to make the curriculum more adaptable and suitable for the requirements of labor market *[Exh.10.2-01: Regulation on curriculum development]*. Many important changes to the programme have been made, as mentioned in Table 10.2

Table 10.2: The proposals from stakeholders for adjustments of the programme

Academic year	Requirements/ Suggestions	Stakeholders	Fulfilments	Evidence
2011 - 2012	Improve students' ability in English communication	Alumni, students, fresh graduates	Improve the quality of English courses and English criteria for graduation Announce the ELOs of Thermal Engineering Technology	*[Exh.10.2-02: Curriculum change 2012]*
	Separate theory and practice parts in former integrated courses	Students Lecturers Employers	Integrated political subjects to reduce the number of credits	
	Enhance students' ability to design	Lecturers, Alumni, Employers	Increase the number of credits for the graduation thesis from 7 to 10	
	Reduce the number of credits	Lecturers	Integrate the content of welding practice, burning	

	Inherit knowledge among related courses		theory, turbine, safety working and industrial environment	
2012 -2013	Propose teaching assistance scheme	Lecturers	Design regulations on teaching assistance	*[Exh. 10.2-03: Decision on TA]*
2013 -2014	Set community services and social work as a requirement for graduation	Employers Alumni Fresh graduates	Set community service and social work as a requirement for graduation	*[Exh. 10.2-04:Decision on Social activities]*
2014 - 2015	Enhance students' English ability	Students, Alumni, Employers	Use lecture notes in English for technical courses.	*[Exh. 10.2-05:Curriculum change 2015]*

Based on the contribution of the faculty's teaching staff and feedback from companies and enterprises employing the faculty's graduates, the curriculum is reviewed and accepted by the Scientific Board, Head of Academic Affairs Office and FVEE Academic and Scientific Committee through internal meetings guiding the implementation of the new curriculum. The evaluation results of the curriculum are informed to enterprises, lecturers, students and stakeholders through FVEE website.

TET programme has been improved and revised several times over the past period (from 2001 to 2011, from 2012 to present) with a decrease in number of credits and an integration of courses which share knowledge and skills *[Exh.10.2-06: Minutes on curriculum modification in the years of 2010, 2012]*. The TET programme was first announced in 2001 with 183 credits, In 2012, it was reduced from 183 credits to 150 credits. Thanks to this process, the TET curriculum is reconsidered periodically to make sure that it is up-to-date. For each period, the academic programme undergoes frequent and periodical evaluations. Besides reducing the number of credits based on the integrated courses, the programme has been added more elective courses and adjusted the ratio between general, fundamental, and specialized modules. A balance between theoretical knowledge and practical skills has also been made to meet the needs of the labor market based on the stakeholder's feedback.

Based on the feedback from the stakeholders such as employers, alumni, students and academic staff, FVEE's scientific board will evaluate and adjust the academic programme in accordance with the scientific and technological development trend of the society and ensure that the innovation and renovation of academic programmes is always the key missions. In parallel, the faculty updates and improves the academic programme by referring to other academic programmes from national and international schools as well the enterprises *[Exh. 10.2-07: Minute of Scientific Board - Programme adjustment]*.

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

In December 2015, the university assessed all the programmes to check if they are aligned with

ELOs. After the evaluation, TET programme was considered in good agreement with the assessment results *[Exh.10.3-01: ELOs results assessment]*. Based on these assessment results, the TET Section has adjusted the content of several courses to catch up with the world such as AFTA, etc. Generally, there is a systematic evaluation for the academic programme in teaching and learning. Each course is assessed by the section-in-charge every year and by the students at the end of every semester. The university also established different regulations to evaluate lecturers who teach theoretical and practical subjects *[Exh.10.3-02: Course-by-course evaluation of lecturers]*. The programme content and the results from course evaluation are publicly brought up to date on the FVEE website.

Examinations at HCMUTE follow the ISO process to ensure fairness and diversity. The testing process is supervised by two invigilators. After the students have finished their final exams, lecturers have a week for marking and recording their grades into the school system. Test results will be available for students on the university and faculty websites

To help checking the evaluation and ensuring the quality of the academic programmes, AAO and QAO also have to fulfil their functions. These two offices are responsible for quality assessment and assurance. One of their tasks is to advise the university Presidential Board on how to ensure the education quality of the university and implement a process of self-evaluation for quality assurance with a pre-planned schedule.

The quality of teaching and learning at FVEE is reviewed and evaluated by FVEE and QAO. At the faculty level, FVEE has appointed a Vice Dean to be responsible for teaching and learning quality assurance. With the Department Heads, they make plans for in-class observations every semester. After the observations, they suggest some improvements for the observed lecturers' teaching. Moreover, the students' online feedback through http://online.hcmute.edu.vn and surveys on the formative assessment are delivered by lecturers at the end of each course can help the programme designers to make amendments in time, ensuring that the teaching and learning methods along with student assessment are relevant and aligned with ELOs *[Exh.10.3-03: Teaching and learning processed evaluation]*. After class observations, TET Section will make a lecturers' teaching quality report and a recommendation paper for teaching improvements *[Exh. 10.3-04: List of class observations; Teaching quality report]*.

Assessment methods also contribute to the fairness and output quality of teaching and learning activities. Since 2012, HCMUTE has applied a learning management system for lecturers to organize online learning courses. As a result, TET Section has submitted a list of lectures and online learning courses to the Academic Affairs Office *[Exh.10.3-05: List of registration for online teaching courses]*. Since these online courses were implemented, teaching and learning activities have been improved. For example, students can do some experiments in parallel with theoretical study, or they can take part in the teaching and learning online survey, and join in English bilingual courses with modern multimedia classroom environment. Moreover, for student on-going assessment, the rubrics and the assessment process are changed to suit the new grade proportion (i.e. the on-going assessment now accounts for 50%) *[Exh.10.3-06: Innovation assessment to develop learners' ability]*.

In 2015, most of the classrooms are equipped with overhead projectors, so teachers often apply integrated teaching methods, using PowerPoint presentations and videos. Complex models and technical systematic structures are demonstrated by system-design platforms like COMSOL MultiPhysics, which helps students better understand the technical systems they are learning

[Exh.10.3.-07: Lecturer portfolios of courses applying simulation tools]. The LMS learning system (website: www.lms.hcmute.edu.vn) helps students access lectures effectively as well as interact with teachers and classmates *[Exh.10.3-08: Some online videos of lecturer in teaching]*. The faculty also has good infrastructure which enables the most modern teaching and learning methods *[Exh.10.3-09: Photos of the laboratory with state of the art equipment CO2 air conditioning, Exh. 10.3-10: Photos of classes and workshop]*.

The regulations on teaching and learning are very clear, especially in testing and assessment. The teaching and learning plan of each year is informed to all HCMUTE staff and students at the beginning of the academic year. The content of each week and the final examination schedule are shown on the school system and in the syllabi, which are delivered to students usually on the first day of the course. Besides, students can obtain a copy of syllabi via FVEE website and the Digital learning system. These syllabi include complete information about the timeline, teaching and learning methods, regulations, weight distribution, rubrics for assessment, etc. of the course. Regarding the timeline, the theoretical courses are usually carried out in 15 weeks, with spare time for midterm tests and a final exam. With project courses and graduation thesis, the timeline for progress reports and project approval date are shown on FVEE website and the Faculty information board *[Exh.10.3-11: Syllabi of some courses]*. The assessment method is chosen compatibly with the ELOs of the courses. Weight distribution is 50% for formative assessment and 50% for summative assessment. The formative assessment is composed of at least 2 assessment instruments, which are among exercises, quizzes, group written reports, group oral presentations, tests, homework, etc. Therefore, students must be active and use new active learning methods to meet these requirements. The university also requires lecturers to announce the scores to students immediately after the assessment week, so students can look back at their learning process while teachers can reflect on their teaching methodology to make some suitable adaptations *[Exh.10.3-12: Several mid-term exams]*.

As regards courses which have more than 1 group of students, the same final examination is conducted for all the student groups. One day after the final examination, the department-in-charge has to publish the answer key on its website, with a scale of 0.25 point. Rubrics are applied into the assessment in the courses such as essays, presentations, lab internship, graduate internship, projects, graduation thesis, etc. The rubrics must be in line with the content and ELOs of the programme to ensure transparency and consistency between courses *[Exh.10.3-13: Rubrics of several courses]*.

10.4. Research output is used to enhance teaching and learning

HCMUTE encourages faculty members to join in research projects in addition to teaching work. Furthermore, FVEE also develops a research team and issues regulations for the team. To foster students' scientific research, FVEE in specific and HCMUTE in general have also issued some support policies. FVEE records the research activities in the research profile ever year. Many research findings can be applied in many courses *[Exh.10.4-01: TET's List of courses applying research output]*. FVEE's members sometimes discuss the application of a specific research *[Exh. 10.4-02: Minute of TET meeting on application of research in courses]*. They also organize scientific seminars where lecturers and students present their research results *[Exh.10.4-03: TET's Research Reports]*. Students are guided and funded to implement scientific research and participate in technical contests *[Exh.10.4-04: Skills contest in 2015 and 2016]*. Workshops and professional skill contests are regularly held in order to help students not only better understand different applications of knowledge being learned but also collect new information which is useful for their

future learning and working *[Exh.10.4-05: Photos of seminars and workshop with the enterprise and organization]*.

Normally, these researches derive from the requirements to resolve particular problems in the teaching and learning process in order to improve its efficiency. In addition to published articles, these research results and new knowledge can be applied and incorporated into courses by the instructors involved in the scientific research. Otherwise, lecturers who have great research experience can inspire and instruct students to do some research of their own *[Exh.10.4-06: Research output application]*.

Open laboratories established by the Faculty's lecturers are the places for students to come, study, exchange experience and carry out scientific research as well as graduation projects. The laboratories open 24/7 and students are encouraged to implement their ideas, especially seniors who are working on their final projects *[Exh.10. 4-07: Students products from lab work, Exh.10.4-08: Students as co-authors in scientific newspapers]*.

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 carries out investigations into students' satisfaction on support services and facilities. At the beginning of each semester, there is one meeting between the university, faculty leaders and students to collect opinions with the aim of enhancing and updating the support services and facilities *[Exh.10.5-01: Students' feedback on support services and facilities]*.

The HCMUTE common portal has been built to provide information and electronic documents. It has purchased the rights to use the accounts from the National Center for Scientific and Technological Information, which helps key research teams be able to have access to valuable materials and documents for all students and lecturers. It is also proposed to the board of presidents for an approval to build a learning center at HCMUTE. Especially, a new 12-storey building (i.e. the center building) has been put into use, including an administrative center and four classroom areas with the capacity of thousands of students. The whole building, even the self-study areas for students, is equipped with strong and stable Wi-Fi system *[Exh.10.5-02: HCMUTE campus information, a. plans to build the center building, b. whole campus Wi-Fi map]*.

In order to satisfy the demand of learning, teaching and scientific research, annually, HCMUTE usually invests in equipment programs, as well as upgrades and renovates existing equipment. Now, TET Section has 01 Heat and Refrigeration workshop, Heat Transfer Lab, Drying Engineering Lab, Air Conditioning Lab, 01 specialized room which are being refurbished to suit the requirements of HCMUTE. As a result, the equipment utilization of TET laboratory and practical workshop is highly efficient *[Exh.10.5-03: Report on efficiency of equipment use]*.

Generally, FVEE has performed evaluations and improvements to the following facilities:

Library: It was connected to the internet. For the sake of convenience, e-resources have been uploaded and shared on the library website. In order to figure out the needs of students, the library usually conducts a survey to explore students' satisfaction and types of most frequently borrowed books. This is also done through the dialogue meeting between leaders of UTE and FVEE and students each semester, thus the necessary books are supplemented accordingly *[Exh.10.5-04: The library's enhancement]*. The library also has some activities such as exchanging old books for new books, book fairs, seminars, specialized reports, introduction to online applications, etc. It has not

only responded well to the demand of learning – teaching – doing scientific research but also served students effectively in other extracurricular activities.

Laboratory: The laboratory staff plays an essential role in providing good services for student's learning and doing scientific research to ensure the curriculum's learning outcomes. Currently, equipment in the workshops and laboratories is regularly checked and repaired by staff members, who get involved in the academic programme. Any upgrade or supplementation of the equipment carried out is a part of the plan made at the end of the previous academic year, following the same procedure throughout the university *[Exh.10.5-05: Equipment calibration, maintenance and repairs]*.

IT facilities: The application of information technology has been implemented widely throughout HCMUTE. In 2013, HCMUTE invested 22 billion VND to equip the IT system for the entire campus. In 2015, with the cooperation between HCMUTE and HEEAP, they invested about 300,000 US dollars to build the digital learning room. Thanks to this IT facility innovation, lecturers can create e-learning courses and students can participate in these courses anywhere (at home, library…). In addition, HCMUTE lecturers themselves can access their personal page at http://online.hcmute.edu.vn/ to gain information about their salary and teaching schedules, inform make-up classes and import their students' marks into the system.

Similarly, all the FVEE's computers for managerial and administrative use are connected to the internet, and the faculty's academic staff can use the academic management software to work every day.

Table 10.3: The number of computers in FVEE

No.	Section in charge	Number of computers
1.	Thermal Engineering	13
2.	Automotive Engine	16
3.	Automotive Chassis	3
4.	Automotive Electricity	15
5.	Office	5

Health services: HCMUTE has been a green, clean and beautiful environment without smoking areas since 2000. Among the university's functional units, the Medical Center has to work on primary health care and manage the health records. For all students, health insurance is mandatory. At FVEE, all labs are provided with medical cabinets and first aid kits *[Exh.10.5-06: Health services]*. To ensure the safety of teaching and learning, the fire prevention and fighting regulations are strictly followed in workshops and laboratories.

Dormitory: The dormitory usually conducts surveys to identify students' satisfaction with the dorm's living and learning conditions, as well as leisure and sport activities. Based on the results, the dormitory's services are evaluated and enhanced *[Exh.10.5-07: Dormitory's enhancement]*.

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

HCMUTE has established systematic feedback mechanism to get feedback of the stakeholders such as support staff, lecturers, alumni, enterprises, and students at course level and curriculum level. Every year, FVEE follows procedures for gathering feedback from these stakeholders. The stakeholder's feedback has been continuously analyzed to evaluate and adjust the curriculum. Previously, to gather feedback, questionnaires are sent to stakeholders via postal mails or delivered at seminars. After improving university's infrastructure network, since 2014, the feedback mechanism has shifted to online operation thanks to the support of PSC software. Thereby, stakeholders can give their feedback by responding to the online survey.

All the procedures from designing and implementing to evaluating and adjusting the academic curriculum are always carried out with the participation of all the stakeholders, including lecturers, students, alumni, employers and consultants. Their feedback and opinions are annually gathered to improve the programme and obtain their satisfaction. HCMUTE has been applying the ISO management systems for the stakeholders' survey procedure (Table 10.4) *[Exh.10.6-01: Feedback mechanism]*.

Table 10.4: The stakeholders of survey procedure

Step	Content
1.	**Information collection** QAO and PRO conduct a plan to survey the stakeholders. They create an evaluation form which is then delivered to the stakeholders by post or email and gather the feedback on the academic programme via the online dialogue.
2.	**Information synthesis and analysis** QAO, PRO and experts then synthesize and analyze the collected data, which leads to a report of the survey findings.
3.	**FVEE's results analysis** FVEE analyzes the strengths and weaknesses and proposes the possible solutions for improvement.
4.	**Quality improvement action plan** FVEE puts the solutions into an action plan and realizes them in the following semester.
5.	**Evaluation of the enhancement results** FVEE assesses the improvement results and sends the report and the evidences to QAO.

Collecting students' feedback: AAO and QAO design a survey system to get students' evaluation of the courses and teaching activities (teaching methods, teaching content, assessment methods, and pedagogical style, etc.) on the university website, aiming to collect feedback from students about the courses they have done in each semester. From the feedback of students, QAO synthesizes the data and sends a report to the faculty, including the students' feedback on each lecturer *[Exh. 10.6-02: Students' survey form]*.

Collecting alumni's feedback: The university and faculty establish an Alumni Committee at the university and faculty level to intensify the information exchange between alumni, enterprises, the faculty and the university. Every November, the Alumni Committee organizes a meeting to bring personal information up to date. On these occasions, a detailed and well-designed survey form is delivered to the alumni. Their feedback is then gathered and reported to the faculty. As informed by the representatives of the FVEE Alumni Association, most of the alumni express their high satisfaction level with the school curriculum *[Exh.10.6-03: FVEE Alumni committee]*. The alumni's feedback is accumulated and synthesized by the Alumni Committee and submitted to the faculty for reference. Based on the report, FVEE can organize a meeting to discuss ways of renovating and improving teaching methodology and the academic programme *[Exh.10.6-04: Alumni's survey form]*.

Collecting staff's feedback: The university and faculty frequently get feedback from lecturers and support staff in the review meeting of each academic year. The meeting aims to review the previous year's work at HCMUTE and point out the key missions for the following year. Feedback from the lecturers and support staff plays an important role in improving and enhancing the quality of the programme and services of the functional units. According to the survey investigating HCMUTE staff's satisfaction with the quality of services offered by support units, the majority of these units meet the demands with qualified services and good working attitude *[Exh.10.6-05: Conferences of staff and officers]*.

Collecting feedback from the labor market: Annually, PRO, ASAO, QAO and FVEE collect and examine the feedback and comments from enterprises on the graduates' quality. The evaluation form is handed over directly to enterprises or by post. The response rate of the enterprises is 44.4%. The results are then analyzed and sent to the faculty for the purpose of having continuous programme improvement *[Exh.10.6-06: Employers' survey form]*.

The survey's questionnaires are also improved every year and survey's domains are also expanded (see Table 10.5). Besides, new types of survey have been designed to completely gather the stakeholders' feedback, for example: the survey for fresh graduates within 3 months, the survey for students' satisfaction with service quality, and the survey for recruitment companies' satisfaction.

The survey procedure is also regularly evaluated and enhanced. The current survey procedure (Table 10.4) ensures the PDCA process. To achieve better efficiency in the stakeholder's feedback mechanism, HCMUTE and FVEE have realized many enhancements. As the meeting between university, faculty leaders and students has shifted from face to face to online dialogue, the participation is also open to the students' parents and the other stakeholders. To promote the feedback of alumni and employers, HCMUTE and FVEE also organize seminars and conferences on the curriculum, the ELOs and the job profile, with alumni and employers' attendance. Besides, FVEE also sends the survey's questionnaires to the stakeholders via email. Moreover, it has also established an alumni association, invited the employers to the scientific board and signed the MOU with many companies to bring more job, internship and scholarship opportunities to students *[Exh.10.6-07: Feedback mechanism enhancements]*.

Table 10.5: The types of conducting a survey

No.	Survey's name	Object	Frequency /year	Implementation time	Implementation methods
1.	Teaching quality survey	All students	2	At the end of each semester	Online (PSC) online.hcmute.edu.vn
2.	Fresh graduate survey	Fresh graduates within 3 months	2	1st: May 2nd: November	Online (PSC) danhgia.hcmute.edu.vn
3.	Alumni survey	Graduates over 1 year	1	October	Paperwork
4.	Student's satisfaction survey on service quality at HCMUTE	All students	1	January	Online (PSC) danhgia.hcmute.edu.vn
5.	HCMUTE's staff survey on workplace satisfaction	All current staff at HCMUTE	1	October	Online (PSC) danhgia.hcmute.edu.vn
6.	Employers' survey	Companies	1	October	Paperwork

11. Output.

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

At HCMUTE, the pass rate and dropout rate have always been collected and monitored. Before 2013, it was at the end of each academic year when the management board of HCMUTE always received reports on pass and dropout rates of students from AAO and ASAO. However, from 2014 onwards, with a view to managing and supervising the data in a timely manner, HCMUTE has developed the Dashboard with the following regulations and solutions:

- At the beginning of the academic year, the faculty sets targets on pass rates and dropout rates *(as shown in Table 11.2)* based on the data of the previous years so that the new target is equivalent or better than that of the previous years. This has been done regularly and continuously according to the procedure regarding preventive and corrective actions which was issued by the QAO in 2011 *[Exh.11.1-01: Corrective and preventive action procedure]*. Based on the statistical data, the faculty will propose solutions for the improvement of the pass rate and dropout rate parameters.
- When a semester or an academic year ends, the dean, vice deans and section heads are

allowed to monitor the related information on Dashboard *[Exh.11.1-02: http://dashboard.hcmute.edu.vn]*. By doing this, the faculty's management board will be informed to take necessary actions for improvement in the coming semester or school year.

- Through the data collected on Dashboard, the faculty will issue a report in which specific solutions will be addressed. For example, a meeting will be convened in order to analyze the causes and suggest measures to be taken *[Exh.11.1-03: FVEE's meeting about deploying duties at the beginning of the year]*.

For graduating from the university, students have to accumulate sufficient number of credits, which is 150. There are normally two cases in which students dropout. One is that students quit themselves, due to the fact that students do not fit themselves into the learning environment or do not have aspirations for the major or that a number of students pass the entrance exam in the following years to be enrolled into their favorite major. The other case is when the academic performance of a student does not meet the university's requirement *[Exh.11.1-04: Student hand book]*. Below is the statistics on pass rate and dropout rate which are provided by AAO *[Exh.11.1-05: Pass rate and dropout rate]*.

Table 11.1: Pass rate and dropout rate of TET students in last 10 cohorts.

Academic year	Inta-ke year	Total number of students (by intake years	Percentage of graduates after (%)			Percentage of dropout students within (%)			
			3 years	4 years	> 4 years	1 year	2 years	3 years	4 years and > 4 years
2015-2016	2015	50	-	-	-	-	-	-	-
2014-2015	2014	59	-	-	-	3.4	1.7	-	-
2013-2014	2013	53	-	-	-	5.7	3.8	1.9	-
2012-2013	2012	84	0	60.7	-	3.6	2.4	3.6	1.2
2011-2012	2011	72	0	62.5	9.7	4.2	2.8	1.4	4.2
2010-2011	2010	76	0	60.5	25	3.9	2.6	2.6	1.3
2009-2010	2009	62	0	58.1	29.1	3.2	3.2	1.6	4.8
2008-2009	2008	69	0	59.4	30.4	5.8	2.9	-	1.4
2007-2008	2007	66	0	57.6	27.3	3.0	3.0	4.5	4.5
2006-2007	2006	51	0	54.9	27.5	7.8	3.9	-	5.9

According to Table 11.1, the pass rate of students from Course 2006 to Course 2011 was quite stable. The percentage of students who graduated on time ranged from 54.9%-62.5% and the trend was increasing. In the meantime, there was a decrease in the dropout rate which fluctuated from

7.8%-1.2%. These figures reflect the effectiveness of the university's effort to renovate the learning and teaching activities. Dropout among freshmen can be attributed to their lack of adaptiveness to a new learning environment and method, which possibly leads to boredom, dissatisfaction and leaving school without permission. The reasons for dropout of senior students generally involve the poor academic performance *[Exh.11.1-04: Student hand book]*.

During the orientation days, freshmen will be informed of the pass rate and dropout rate of the previous student cohorts. The faculty will announce the target of pass and dropout rates applied for their cohort. By doing this, the freshmen will be motivated and well-aware of the faculty's targets *[Exh.11.1-06: Orientation days]*.

Table 11.2: Planned vs. Actual rate of pass and dropout 2009-2011

Year	2009-2010		2010-2011		2011-2012	
	Planned	**Actual**	**Planned**	**Actual**	**Planned**	**Actual**
Pass rate (%)	85	87.2	85	89.5	90	72.2
Dropout rate (%)	15	12.8	15	10.4	10	12.6

Table 11.2 shows that from 2009 to 2011, the pass rate and dropout rate of TET students were close to the target. The average pass rate and dropout rate were 83.0% and 11.9% respectively. The pass rate and dropout rate of TET students are equivalent to those of other training programs at HCMUTE, ie. Automobile engineering technology, electrical and electronic engineering technology, civil engineering *(as shown in Table 11.3)* *[Exh. 11.1-05: Pass rate and dropout rate]*.

Table 11.3: Comparison of pass rate and dropout rate among academic programs from 2006-2011

Program	TET	Automobile Engineering Technology	IT	Electric and Electronic Engineering Technology	Civil Engineering
Pass rate (%)	83.7	89.1	82.5	87.41	85.3
Dropout rate (%)	13.1	10.3	14.5	10.17	14.6

With the deployment of the digital learning website *(http://www. lms.hcmute.edu.vn)*, the interaction between lecturers and learners become easier. Besides, students can self-study and watch lecture videos over. This is a breakthrough in teaching and learning. Accordingly, the pass rate and dropout rate have witnessed positive changes. Apart from the university's effort, pass rate and dropout rate have also been improved thanks to the learner feedback, a source of valuable information which allows the faculty and the university to identify the drawbacks, analyze and come to possible solutions *(as shown in Table 11.4)* *[Exh.11.1-07: Report on the meeting between FVEE board and students; Exh.11.1-08: Solutions to enhancing pass rate and dropout rate]*.

Table 11.4: List of Solutions to Enhancing Pass Rate and Dropout Rate.

No.	Reasons for improvement	Solutions
1.	Students are unable to register for the courses they have to retake.	Organizing courses that students have to retake at their request during the summer or the two main semesters.
2.	Students commit to social evils	Clubs, student association, class management team, advisors, etc. are available to help
3.	Students fail to know they are possibly forced to leave school.	Academic warning
4.	Students come from poor families	Offering scholarships and seeking scholarships and grants from enterprises.
5.	Students are required to have a certain level of English proficiency upon graduation.	Organizing English clubs and offereing incentives for making presentations of reports, assignments and graduation thesis in English.

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

A normal duration to complete the TET programme is 4 years. After having accumulated 150 credits, students will be considered for graduation. However, students can complete their program at a shorter time or extend their study up to 8 years *[Exh.11.2-01: Regulation on HCMUTE's academic programs]*.

Table 11.5: Pass rate of TET students from 2009-2011

Cohort	Total number of students (by cohort)	Pass rate (%)		
		3 or 3,5 years	4 years	> 4 years
2011	72	0	62.5	9.7
2010	76	0	60.5	25
2009	62	0	58.1	29.1

Note: Year 2012 intake and beyond are not yet to be graduated.

The figures in Table 11.5 show the percentages of students who graduated on time (less than 4 or 4 years) between 2009 - 2011 are almost identical. The average percentage was 60.4%. The average percentage of students who graduated behind schedule (more than 4 years) was 21.3%. There were no big differences in these numbers among other academic programs in the 2009-2011 *(as shown in Table 11.6)*.

Table 11.6: Comparison of average graduation time between training progamme 2009-2011.

Items	TET	Automobile Engineering Technology	Electric and Electronic Engineering Technology	Civil Engineering
Within 4 years (%)	60.1	61.9	45.9	61.2
More than 4 years (%)	21.1	27.3	41.5	24.2

In order to increase the graduation rate on schedule, FVEE and HCMUTE have collected student feedback by many ways, i.e. holding meetings with students, getting feedback from the study advisors, etc. Solutions have been proposed as in Table 11.7.

Table 11.7: List of solution to ensure graduation within 4 years

No.	Reasons for improvement	Solution
1.	Students register for the courses late .	Informing students of the course registration timeline.
2.	Students fail the course and can not re-register for the course during the 2 main semesters.	Organizing more courses during the summer every year.
3.	Students have difficulty understanding lessons or communicating with lecturers to consult about the lessons.	Developing and completing the websites, such as: lms.hcmute.edu.vn, online.hcmute.edu.vn
4.	Students have difficulty searching for learning materials.	Renovating the library, upgrading the digital library to increase the number of textbooks, reference books and updated learning materials.
5.	Students need support due to family financial matter, or students have to earn their own living at the expense of their study.	Offering a variety of scholarships, ie. scholarships to support poor students, scholarships to encourage students to study well, non-interest loan policy, compassion corner.

Both the university and the faculty have been always tried to do the things mentioned above better and better in order to give the best support to students so that they can graduate on time.

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

The university invites mainstream students to participate in surveys twice a year when students complete all the administrative procedures for graduation (03 months or 06 months after graduation). The QAO takes full responsibility to conduct surveys, collect and analyze data, makes statistical reports according to ISO. Table 11.8 reveals the number of graduate students of 2014-

2016 cohorts who are employed within 3 months. These figures are provided by QAO *[Exh. 11.3-01: Survey form and result]*.

Table 11.8 Employability rate of HCMUTE graduates 2014-2016

Graduation time	**3/2014**	**9/2014**	**3/2015**	**9/2015**	**3/2016**	**9/2016**	**3/2017**
Survey time	**6/2014**	**12/2014**	**6/2015**	**12/2015**	**6/2016**	**12/2016**	**6/2017**
Number of Graduates	1260	2130	994	2214	727	1283	587
Number of surveyed graduates who got job already	878	1516	774	1973	708	1078	486
Rate (%)	62.5	59.8	48	64	54	77	83
Average	**64.04**						

Data in Table 11.8 show that the average rate of students being employed within 3 months is 64.04%. It can be seen clearly that the number of students who graduate in September is higher than that of March. QAO's data in Table 11.9 reveal that during the period from 2014 to 2016, the average rate of TET students who can successfully find jobs within 3 months of graduation is 61.6% *[Exh. 11.3-01: Survey form and result]*.

Table 11.9 Employability rate of TET graduates 2014-2016

Graduation time	**3/2014**	**9/2014**	**3/2015**	**9/2015**	**3/2016**	**9/2016**	**3/2017**
Survey time	**6/2014**	**12/2014**	**6/2015**	**12/2015**	**6/2016**	**12/2016**	**6/2017**
Immediately after graduation (%)	2.9	6.7	4.7	10	3.4	9.1	3.9
Within 1 month after graduation (%)	17.1	24.0	17.2	21.7	13.8	27.3	16.4
Within 3 months after graduation (%)	37.1	34.7	34.4	36.7	36.2	32.7	38.7
Still looking for a job (%)	40.0	33.3	40.6	30.0	43.1	27.3	37.1
Pursuing another plan in future (%)	2.9	1.3	3.1	1.7	3.4	3.6	3.9
Accumulation for duration of 3 months (%)	57.1	65.3	56.3	68.3	53.4	69.1	59.0
Average	**61.2**						

There are no differences in the number of graduate students being employed within 3 months between TET and other academic programs of HCMUTE *[Exh.11.3-01: Survey form and result]*.

Table 11.10: Comparison of the average rate of employability between training programmes of HCMUTE after 3 months of graduation from 2014-2016

Year	TET	Automobile Engineering Technology	Electrical and Electronic Engineering Technology	Civil Engineering Technology
2014	61.2 %	60.5 %	55.9 %	62.5 %
2015	62.3 %	66.6 %	56.8 %	63.5 %
2016	61.3 %	64.2 %	58.8 %	63.5 %

After 6 months or 1 year of graduation, the employability rate of HCMUTE students in general and TET students in particular is very high at over 90%. According to Table 11.10, these figures reflect the fact that the curriculum and training quality of HCMUTE have been improved and met the human resource demand of the whole society*[Exh.11.3-01: Survey form and result]*.

Table 11.11: Employability rate of HCMUTE & TET graduates after 6 months to 1 year of graduation

Group	HCMUTE		TET	
Graduation time	9/2014 & 3/2015	9/2015 & 3/2016	9/2014 & 3/2015	9/2015 & 3/2016
Survey time	1/2016	10/2016	1/2016	10/2016
Number of graduates	2491	5000	95	115
Number of surveyed graduates who got job already	2344	4620	87	109
Rate (%)	94.1	92.4	91.6	94.8
Average	**92.7**		**93.2**	

Although the employability rate is high, the university and faculty have always made effort to increase this rate, which is shown in Table 11.12*[Exh.11.3-02: Solutions for improving rate of employment]*.

Table 11.12: List of solutions for improving the rate of employment

No.	Reasons for improvement	Solution
1.	Enterprises have not got access to students.	Prestigious enterprises are invited to attend the graduation thesis defense and make interviews with good students Every year, PRO organizes job fairs to invite entrprises with recruitment
2.	Students do not have necessary skills for job interview and show hesitation when contacting the enterprises.	

		demands to come and interview students for recruitment.
3.	Students are not well-informed of the operating fields of enterprises in the industry.	Faculty invites enterprises to present at seminars and workshops.
4.	Students do not fully understand the job positions they can apply for.	Alumni are invited to come and talk about their experience in the field.
5.	Students are not confident in communication and can not show off their abilities.	Club activities and teams are developed and expanded.
6.	Students are not proficient at English for communication.	English clubs have been expanded.

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

Scientific research is of great concern of the faculty because it can encourage and create a diversified learning and researching environment for students. FVEE has always set up plans to support students in doing research, which is divided into two separate domains:

- Students can take part in research projects or contests organized by domestic and foreign companies *[Exh.11.4-01: Students' scientific research]*.
- Students can take part in research projects initiated by the university. They can carry out the research by themselves or with the supervision of lecturers. To encourage them, their research projects can be considered as their graduation thesis.

The number of research topics to be carried out at the university depends on academic performance, the availability of supervisors and expenditure. As for external research, students are not only supported by the university and faculty but also funded by the companies. The faculty's policy is to develop practical and applied research topics. The number of research projects done by students is described in the following table *[Exh.11.4-02: List of funded equipment in 2017 of the Heat and Refrigeration Section]*.

Table 11.13: Number of FVEE students' research projects 2011-2016

Level of projects	Number of research projects					
	2011	**2012**	**2013**	**2014**	**2015**	**2016**
University-level students' research projects	13	11	10	12	11	08

Table 11.13 shows that the number of research projects throughout the years stays the same whereas the quality improves. Many of the students are co-authors of articles published on scientific journals of high prestige *[Exh.11.4-03: Students as co-authors in scientific papers]*. These figures of other faculties are the same as those of FVEE *(as shown in Table 11.14).*

Table 11.14: Number of HCMUTE students' research projects 2011-2015

Faculty	Number of enrolled student per year	Number of research projects					Average
		2011	2012	2013	2014	2015	
FVEE	300	13 *(4.3%)*	29 *(9.7%)*	10 *(3.3%)*	12 *(4%)*	11 *(3.7%)*	15 *(5%)*
FCE	180	10 *(5.6%)*	8 *(4.4%)*	11 *(6.1%)*	12 *(6.7%)*	12 *(6.7%)*	10.6 *(5.9%)*
FME	300	19 *(6.3%)*	40 *(13.3%)*	20 *(6.7%)*	10 *(3.3%)*	25 *(8.3%)*	22.8 *(7.6%)*
FEEE	360	29 *(8.0%)*	10 *(2.8%)*	27 *(7.5%)*	13 *(3.6%)*	45 *(12.5%)*	24.8 *(6.9%)*

Apart from research projects, seminars and workshops are periodically organized with the participation of enterprises. The purpose is to have students get updated with new knowledge and new technology. As a result, students will initiate ideas to do research *[Exh.11.4-04: List of seminars]*.

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

Satisfaction levels of stakeholders are the most important factor in the development of the university. Therefore HCMUTE always collects information from stakeholders to make instant improvements. The data obtained by QAO are sent to the related faculties and office *[Exh.11.5-01: Procedure to evaluate satisfaction levels of stakeholders of the training program]*.

Staff: Staff can make contribution and give feedback on policies to the management board at the section meetings, faculty meetings, staff conferences, and so on. These opinions will be collected and transferred to related offices and departments. Staff conferences are organized periodically by HCMUTE, FVEE and DTE to collect feedback. The management board of HCMUTE will give directives to related departments to take corrective measures. Besides, to improve the service quality, since October 2015, HCMUTE has assigned QAO do online survey on the satisfaction levels of staff in terms of working environment. The survey with 6 criteria is conducted once a year and lasts for 02 months*[Exh.11.5-02: Staff satisfaction survey on working environment]*.

The Figure 11.1 shows the result regarding the general satisfaction of the university service.

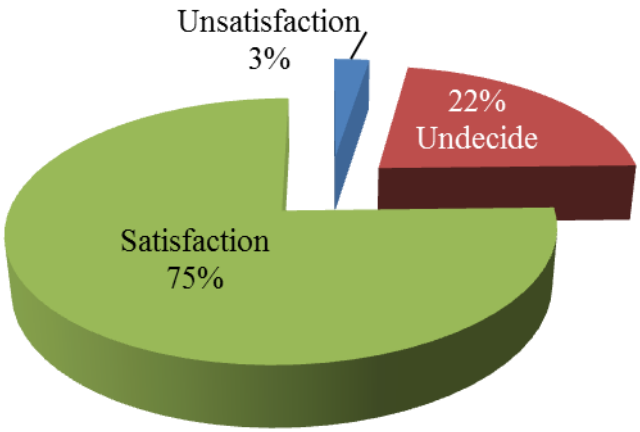


Figure 11.1: Staff satisfaction level of current job

This is a potential rate and to improve this rate, HCMUTE needs to consider the incentive policies. In recent years, HCMUTE always offers staff's satisfaction level improvement policies, particularly: increased investment in infrastructure, equipment, improved service attitudes of office staff, better incentives for staff. Besides, to create the authority in controlling and individual planning, HCMUTE has launched the system of KPIs for pilot use *[Exh.11.5-03: KPIs, evaluation results]*.

Students: The satisfaction level of students is one of the main indicators to evaluate the effectiveness of learning and teaching. Therefore, HCMUTE actively receives student feedback from different channels:

- Teaching and learning activities: Students can directly give online feedback through the 4-criterion survey at the website *http://online.hcmute.edu.vn*. At the end of each semester, the management board of the faculty will bring up the problems and discuss with each lecturer in order that the teaching and learning quality of each course will be enhanced.

Table 11.15: Classification of FVEE academic staff based on student evaluation

Type	Academic year 2014-2015		Academic year 2015-2016	
	Semester I	Semester II	Semester I	Semester II
Excellent (≥90%)	7.3%	11.2%	12%	19.2%
Very good (80% ÷90%)	70%	74.3%	74.7%	69.3%
Good (70% ÷ 80%)	22%	14.5%	13.3%	11.5%

- Other activities: Students can either directly give feedback to the team of advisors, express their opinions at the student-faculty meeting which is held every semester or send immediate feedback to the university leaders.

To solve the student appeal during their learning process, AIO has issued a procedure to resolve the student appeal *[Exh.11.5-04: Student appeal procedure]*, thereby building student confidence in the academic and other related affairs.

Alumni: To collect feedback from alumni, QAO conducts online survey every year *[Exh.11.3-01:*

Survey form and result]. The survey results are then sent to the faculty. Apart from internal meetings, the faculty also organizes seminars on curriculum development and renovation with the presence of alumni and employers. Based on the feedback, there will be modifications of the program *[Exh.11.5-05: Minutes of curriculum modification]*.

Statistics from QAO show that 94.4% of graduating students are satisfied with the training quality *[Exh.11.3-01: Survey form and result]*. This is due to the fact that the university has made constant effort to improve both the curriculum and the related activities, such as: soft skills, job hunting, volunteering, aesthetic and sporting activities. Thanks to alumni feedback, the faculty has taken effective actions. Particularly, improving the effectiveness of ESP clubs, holding contest of professional skills, sending young lecturers to intensive training courses at enterprises, etc. *[Exh. 11.5-06: Training quality improvement activities]*.

Labour market: TET has always been one of the programs highly valued and prioritized by the employers in the labor market *[Exh.11.5-07: Job announcements from employers]*. According to the training plan, TET students will have to take 4-week internship by working for a certain company of which the operating activities are closely related to their specialization. According to these companies, TET students can fulfill all the required duties during the internship *[Exh. 11.5-08: Evaluation form of interns]*. A great number of them demonstrate their competence and are accepted as official employees after the internship is over. Thanks to the special features of the training program, TET students can work in many different fields, for example: civil construction, energy, aquatic product processing, food processing, etc. It is regarded as a great advantage for TET students *[Exh.11.5-07: Job announcements from employers]*.

PART 3: STRENGTHS AND WEAKNESSES ANALYSIS

1. Criterion 1: Expected learning outcomes

Strengths:

- The TET programme ELOs have been developed based on the requirement of MOET, feedback from stakeholders like enterprises, alumni and academic staff.
- The TET programme ELOs are aligned with the objectives of the programme and the vision and missions of Faculty of Vehicle and Energy Engineering as well as of HCMUTE. The ELOs embrace necessary contents, including knowledge, skills and attitude.
- The ELOs are publicly disclosed to the students and related stakeholders via the faculty's website and the notice boards at each department.

Possibilities for Improvement:

- Some feedback from enterprises points out that the programme is currently focusing to much on meeting immediate and short-term needs of the employers. In the time to come, the faculty will conduct online surveys and hold workshops or seminars to keep updated with the current demand, to be able to anticipate the possible needs of the industry in the future. By doing so, the faculty will revise the ELOs that best fit the actual situation of the university as well as timely meet the demand of the society.

2. Criterion 2: Programme specification

Strengths:

- The programme specification clearly indicates the programme objectives, programme structure, learning outcomes (correlation matrix) and learning flowchart for each semester, from which students can have clear and detailed information to register enough courses to graduate on time.
- The programme and course specification is communicated and made available to the stakeholders. Stakeholders can access this programme from of HCMUTE and FVEE, leaflets delivered on Open Day, Admission Consultancy Day, etc. FVEE has organization and implement processes for training programs clearly.

Possibilities for improvement:

- It takes more time to update the English version of the FVEE website. Next month, FVEE will establish a team to support the translation process and upload.

3. Criterion 3: Programme structure content

Strengths:

- The TET curriculum is constructively aligned with the programme ELOs. There is a correlation matrix showing which programme ELOs a particular course will support. The constructive alignment is ensured through the course ELOs, course content, teaching and learning activities and student assessment which are clearly planned in the course syllabus.
- The programme structure and content have a good balance between generic and specialized skills and knowledge. Students will be able to learn from general knowledge, fundamental

knowledge to specialized knowledge.

- In this programme, several courses were integrated, soft skills were embedded, and self-learning competency was enhanced. Each course has to have a course portfolio which includes such items as: List of assigned Lecturers, list of ELOs of the course, Syllabus, teaching content and plan, Teaching methods, Assessments, Documentation for teaching and learning guides, and the final report.

Possibilities for improvement:

- FVEE will consider adding more elective courses in the field of management. In addition, FVEE also invites managers from enterprises to share and talk about management in the industry.

4. Criterion 4: Teaching and learning approach

Strengths:

- The educational philosophy is well articulated and communicated in the faculty.
- The teaching and learning approach applied for TET program aims at leaner-centeredness, active learning and developing competencies for individual learner.
- Online learning and project-based learning are also applied to stimulate the self-study ability, problem-solving skills during class time and outside class. This helps to improve the students' soft skills as well as provides students with opportunities to have better understanding and become capable of solving technical problems in real life contexts.

Possibilities for Improvement:

- It is necessary to improve English proficiency level among students, design assignments to evaluate the comprehension level of student.

5. Criterion 5: Student asessment

Strengths:

- A variety of student assessment has been used. The student assessment methods are chosen to aligned with the course ELOs and its content as well as the teaching and learning activities used.
- Rubrics have been developed and used to enhance the reliability of student assessment.
- In order to improve the quality, the Department has invited engineers from enterprises to participate in the assessment board, has taken students to do internships and has helped students gain access to practical problems through seminars from the enterprises.

Possibilities for improvement:

- Assessment method for soft skills and attittude should be enhanced. FVEE will consider to invite engineers from enterprises to assess soft skills as well as attitude of students.

6. Criterion 6: Academic staff quality

Strengths:

- HCMUTE and FVEE have a preferential and efficient policy to attract potential lecturers and

different strategies of staff development are firmly focused. All lecturers in faculty have been encouraged to develop their professional and pedagogical skills through higher education programs, seminar, training courses, etc. Most of the lecturers are PhD candidates in domestic and overseas institutions. All these things contribute to the quality of training and education.

- DTE often organizes seminars, conferences, city-level contests for professional skills, academic exchanges with overseas researchers. Moreover, lecturers in DTE usually present their research at intentional conferences and publish papers in large quantity.
- A clear KPIs system is used to evaluate academic staff performance and its result is used for salary bonus, rewards and promotion.

Possibilities for improvement:

- DTE will recruit more high quality academic staff in the future for compensating for the retired staff and it is planned that 50 % of faculty members will be PhD holders in 2018.

7. Criterion 7: Support staff quality

- Support staff are recruited and assigned according to their professional knowledge in functional offices, FVEE and DTE. They play an important role in supporting the teaching activities of lecturers and learning process of the students in DTE and FVEE.
- The performances of support staff are evaluated annually by DTE, FVEE, QAO and HCMUTE as well as students to improve service quality and training.

Possibilities for improvement:

- Due to the development needs of DTE and FVEE in the near future, support staff should continue to be trained as well as increased in number to meet the learning needs of TET students.

8. Criterion 8: Student quality and support

- With a clear student intake policy, besides DTE, FVEE and HCMUTE have had many consultancy activities such as open day or daily online consultancy. These activities have attracted excellent students to enroll in DTE. Therefore, the quality of TET intake students has improved. In addition, the TET program is flexible and suitable for social needs, so graduates have high employment rates.
- HCMUTE has the Dashboard monitoring system so lecturers, DTE , FVEE and the consultant team can monitor the learning process of students.
- Students are provided many services and co-curriculum actitivities.

Possibilities for improvement:

- It is necessary to improve the English ability of students such as creating a professional English environment or sending students to exchange short-term English courses in Europe or America to help students apply for scholarships in developed countries.

9. Criterion 9: Facilities and infrastuctures

Strengths:

- HCMUTE is very interesting in making investments into infrastructure and teaching

equipment.

- Information technology is used very effectively in teaching, learning, research and information communication within HCMUTE.
- The campus is a green, clean and beautiful environment which is good for students and academic staff.

Possibilities for improvement:

- The sponsorship of teaching equipment from external partners is not frequent.

10. Criterion 10: Quality enhancemnet

Strengths:

- All of relevant stakeholders are dedicated to the curriculum throughout evaluation and development which are based on their feedback. Once a year, there is a survey publicly and clearly conducted to accommodate the new strict requirements. The QAO proceeds with an activity about student's feedback of the teaching and curriculum every semester.
- All stakeholder feedback and inputs are used in curriculum development.
- The teaching and learning activities and student assessment are continuosly evaluated for improvement.

Possibilities for improvement:

- In order to obtain the highly effective teaching and learning quality, the HCMUTE and FVEE should ensure that all the contents, activities, procedures and regulations will be modified for improvement every semester. This will be done with the supervision of QAO.

11. Criterion 11: Output

Strengths:

- TET graduate students can work in many different fields, such as: construction, energy, aqua product processing, food processing, etc. This is a great advantage for TET students to find jobs easily.
- The employment rate is high. Particularly, over 60% of graduate students of TET are employed within 3 months after graduation whereas 92% obtain jobs within 6 months or 1 year.
- The satisfaction level of stakeholders to the programme is high.

Possibilities for improvement:

- Foreign student enrolls and graduates from TET of HCMUTE. One possible reason for this is that the program has not been accredited by a prestigious organization.

PART 4: APPENDICES

Appendix 1: Correlation matrix of learning outcomes

CORRELATION MATRIX OF THERMAL ENGINEERING TECHNOLOGY UNDERGRADUATE PROGRAMME

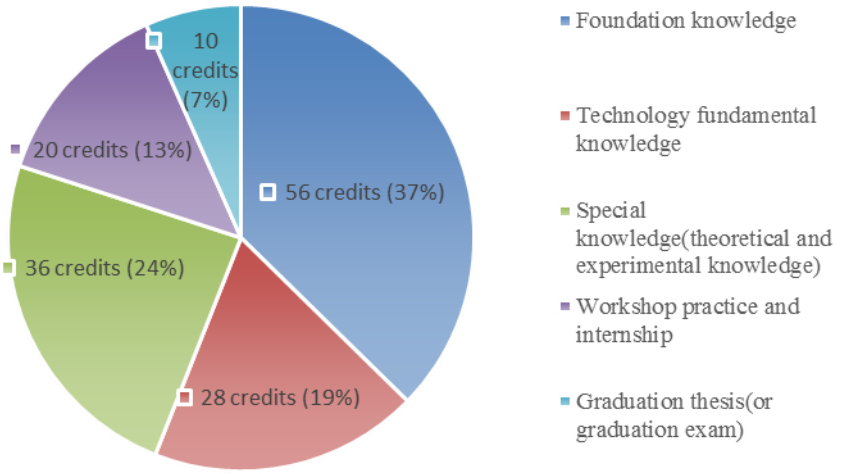
INTRODUCE: I REINFORCE: R MASTER: M

No.	ELOs	1	2	3	4	5	6	7	8	9	10	11	12	13	14
	Courses														
1.	Introduction to Thermal Engineering	I	I	I	I	I	I	I	I	I	I	I	I	I	
2.	Applied Fluid Mechanics	R	R	R		R	R	R							
3.	Thermodynamics	R	M	R	I	M	R	R							
4.	Heat transfer	R	M	M	I	M	M	R							
5.	English for Thermal Engineering		R	R	I					R	R				
6.	Refrigeration Engineering		M	M	R	M	R	R		R	R				
7.	Optional fundamental subjects (1-2)		R	R		R	R	R							
8.	Pump, Fan and Compressor		M	M		R		R		R					
9.	Steam boiler		R	M		M		R		R		R	R	R	R
10.	Drying technology and distillation		R	M		M		R		R		R	R	R	R
11.	Compressors and refrigeration equipments		R	M		M		R		R		R	R	R	R
12.	Air Conditioning Systems		R	M		M		R		R		R	R	R	R
13.	Thermal power plants		R	M	R	M		R		R		R	R	R	R
14.	Optional specialized subjects (1-5)		R	M		R		R							
15.	Heat/Refrigeration Project	R	R	M	R	R	R	R		R	R	R	R	R	R

16.	Refrigeration Technique Practice 1-4			R	M		R		M	R					
17.	Boiler Practice			R	M		R		M	R					
18.	Drying Practice			R	M		R		M	R					
19.	Graduation Internship		R	M	M	R	R	R	M	R	R	R	R	R	R
20.	Capstone Project	R	R	M	M	R	R	M	M	M	R	M	M	M	M

Appendix 2: Programme Specification

Academic program	**Thermal Engineering Technology**
Major code	**52510206**
Types of training	Full time
Degree	Bachelor's degree in Thermal Engineering Technology
Training time	4 years
Degree awarding institution	HCMUTE
Training institution	HCMUTE
Prospective students	High school graduates
Admission Criteria	- As regulated by Ministry of Education and Training - The candidate selection was based on the results of the national high school graduation examination (Three subjects: Mathematics, Physics, Chemistry (Group A); Mathematics, Physics, English (Group A1); Mathematics, Literature, English (Group D1)) together with the 3-year academic results at high school.
Total number of credits	150 credits (excluding Physical Education and National Defense Education credits) The academic program includes 150 credits (including 124 required credits and 26 elective credits), in which general knowledge occupies 56 credits, fundamental knowledge accounts for 28, specialized knowledge includes 36 and 10 of them are for graduation thesis, exclusive of Physical Education and National Defense Education.

	 The program shows a good balance between generic, fundamental and specialized knowledge. The program structure is coherent; the courses have been integrated.
Program content	Details are described in the curriculum
Training procedure	The academic program includes three main parts: Generic education, fundamental and specialized knowledge (including Graduation thesis). All of them have strong connection and are be taught by different teachers: + Lecturers from the Faculty of Foundation Science are in charge of teaching generic knowledge. + Lecturers from the Faculty of Vehicles and Energy Engineering and Faculty of Mechanical Engineering are in charge of teaching fundamental and specialized knowledge. + Specific lecturers will instruct students to do research within 6 months in graduation thesis, which is aimed to bring opportunities to enhance sharpen knowledge and skills for students. The academic program lasts 8 semesters. Excellent students are allowed to study more credits in one semester; therefore, they can graduate sooner than others. Maximum training time for program completion is 8 years.
Graduation conditions	Students who have fully completed 150 credits of the program with the minimum cumulative GPA of 5.0, are not involved in any criminal prosecution or under suspension and have had the certificates of Physical Education and National Defense Education are considered to qualify for graduation.
Extracurricular activities	Students are encouraged to take part in different activities in art, music, voluntary activities and community events.

The expected learning outcomes of TET program

Group of ELOs	ELOs
General Knowledge	ELO 1: Apply basic knowledge of mathematics and science into engineering and acquire the ability to learn at a higher level
Fundamental Knowledge	ELO 2: Apply fundamental knowledge in Thermal Engineering Technology. ELO 3: Apply specialized knowledge in designing, calculating, testing, and diagnosing thermal systems
Professional Skills	ELO 5: Analyze, explain and reason to solve Thermal engineering problems. ELO 6: Experiment and discover Thermal engineering knowledge. ELO 7: Attain the ability to think critically and systematically about Thermal engineering problems. ELO 8: Have professional skills in Thermal Engineering Technology.
	ELO 11: Conceive ideas of thermal systems. ELO 12: Calculate, design, and simulate thermal components and systems. ELO 13: Deploy systematically different activities in the field of thermal engineering technology. ELO 14: Operate and manage systems in the field of thermal engineering technology.
Generic Skills	ELO 9: Lead, function in teams, and communicate well in writing and speaking forms. ELO 10: Communicate in technical English.
Attitude and Awareness	ELO 4: Possess professional ethics and professional working manner in Thermal Engineering Technology.

Credit distribution for knowledge areas

Content	Number of credits		
	Required	**Elective**	**Total**
	(1)	*(2)*	*(1)+(2)*
Generic knowledge	**45**	**11**	**56**
Political theory	12	0	12
Social sciences and humanities	0	6	6
English	9	0	9
Introduction to Thermal Technology	3	0	3

Computing	3	0	3
Mathematics and Natural Sciences	18	5	23
Specialised knowledge	**79**	**15**	**94**
Fundamental courses	24	4	28
Specialized courses	25	11	36
Workshop practice courses	18	0	18
Graduation internship	2	0	2
Capstone Project	10	0	10

Semester 1:

No.	Course Code	Courses Name	Number of credits	
			Required	Elective
1	LLCT150105	The basic principles of Marxism-Leninism	5	
2	INAT130130	Introduction to Thermal Technology	3	
3	ENGL130137	English 1	3	
4	MATH130101	Advanced Mathematics A1	3	
5	PHYS130102	Fundamental Physics 1	3	
6	VBPR131085	Visual Basic Programming	3	
7	PHED110513	Physical Education 1 *(without accumulation)*	1	
Total			**20**	

Semester 2:

No.	Course Code	Courses Name	Number of credits	
			Required	Elective
1	LLCT120314	Ho Chi Minh's Ideology	2	
2	ENGL130237	English 2	3	
3	GCHE130103	Fundamental chemistry A1	3	
4	MATH130301	Advanced Mathematics A2	3	
5	PHYS120202	Fundamental Physics 2	2	
6	PHYS110302	General Experimental Physics	1	

7		Social sciences and humanities (1)		2
8	MHAP110127	Mechanical handywork practice	1	
9	LLCT230214	Revolution of Vietnamese Communist Party	3	
10	PHED110613	Physical Education 2 *(without accumulation)*	1	
11	GDQP008031	National defence education *(without accumulation)*	4	
Total			**20**	

Semester 3:

No.	**Course Code**	**Courses Name**	**Number of credits**	
			Required	**Elective**
1	MATH130301	Advanced Mathematics A3	3	
2		Social sciences and humanities (2)		2
3	ENGL330337	English 3	3	
4	GELA220405	General Law	2	
5	THER240232	Thermodynamics	4	
6	THME220821	Theory Mechanics	2	
7	STMA230121	Strength of Materials	3	
8	MATH121201	Numerical Method	2	
9	PHED130715	Physical Education 3 *(without accumulation)*		3
Total			**21**	

Semester 4:

No.	**Course Code**	**Courses Name**	**Number of credits**	
			Required	**Elective**
1	MAPS130401	Probability and Applied Statistics	3	
2	HEAT240332	Heat Transfer	4	
3	REEN230532	Refrigeration Engineering	3	
4		Social sciences and humanities (3)		2
5	EDDG230120	Descriptive Geometry and Engineering	3	

6	TMMP230320	Theory of machine and machine design	3	
7	FLUI220132	Applied Fluid Mechanics	2	
		Total	**20**	

Semester 5:

No.	Course Code	Courses Name	Number of credits	
			Required	**Elective**
1	PFCO330232	Pums, Fans and Compressors	3	
2	COMP340732	Compressors and refrigeration equipments	4	
3	EEEN234062	Electrical and Electronic Engineering	3	
4	ENTE220432	English for Thermal Engineering	2	
5	BOIT330632	Steam Boilers	3	
6	THMA221332	Thermal Materials	Choose 2	4
	METE320126	Metal Technology		
	OPTI423129	Optimization		
	THME221432	Thermal Measurements		
	PICE220130	Internal Combustion Engine Principles		
	PNHY320329	Hydraulic Technology and Air Compress		
	AMIC320133	Applied Microcontroller		
7	HEEX321532	Heat Exchangers	Choose 1	2
	PTPA321632	Principles of Thermal Process Automation		
	ENEC320832	Energy Economics		
	PLCT220146	PLC		
	STRT321731	Special Topics in Refrigeration Technology		
	STTT321832	Special Topics in Thermal Technology		
	STRE321931	Special Topics in Renewable Energy		
		Total	**21**	

Semester 6:

No.	Course Code	Courses Name	Number of credits

			Required	Elective
1	ACSY330932	Air Conditioning Systems	3	
2	DRYT331132	Drying Technology and Distillation	3	
3	RETP332132	Practice of Refrigeration Technology 1	3	
4	RETP332232	Practice of Refrigeration Technology 2	3	
5	RETP332332	Practice of Refrigeration Technology 3	3	
6	HEEX321532	Heat Exchangers	Choose 2	4
	PTPA321632	Principles of Thermal Process Automation		
	ENEC320832	Energy Economics		
	PLCT220146	PLC		
	STRT321731	Special Topics in Refrigeration Technology		
	STTT321832	Special Topics in Thermal Technology		
	STRE321931	Special Topics in Renewable Energy		
Total			**19**	

Semester 7:

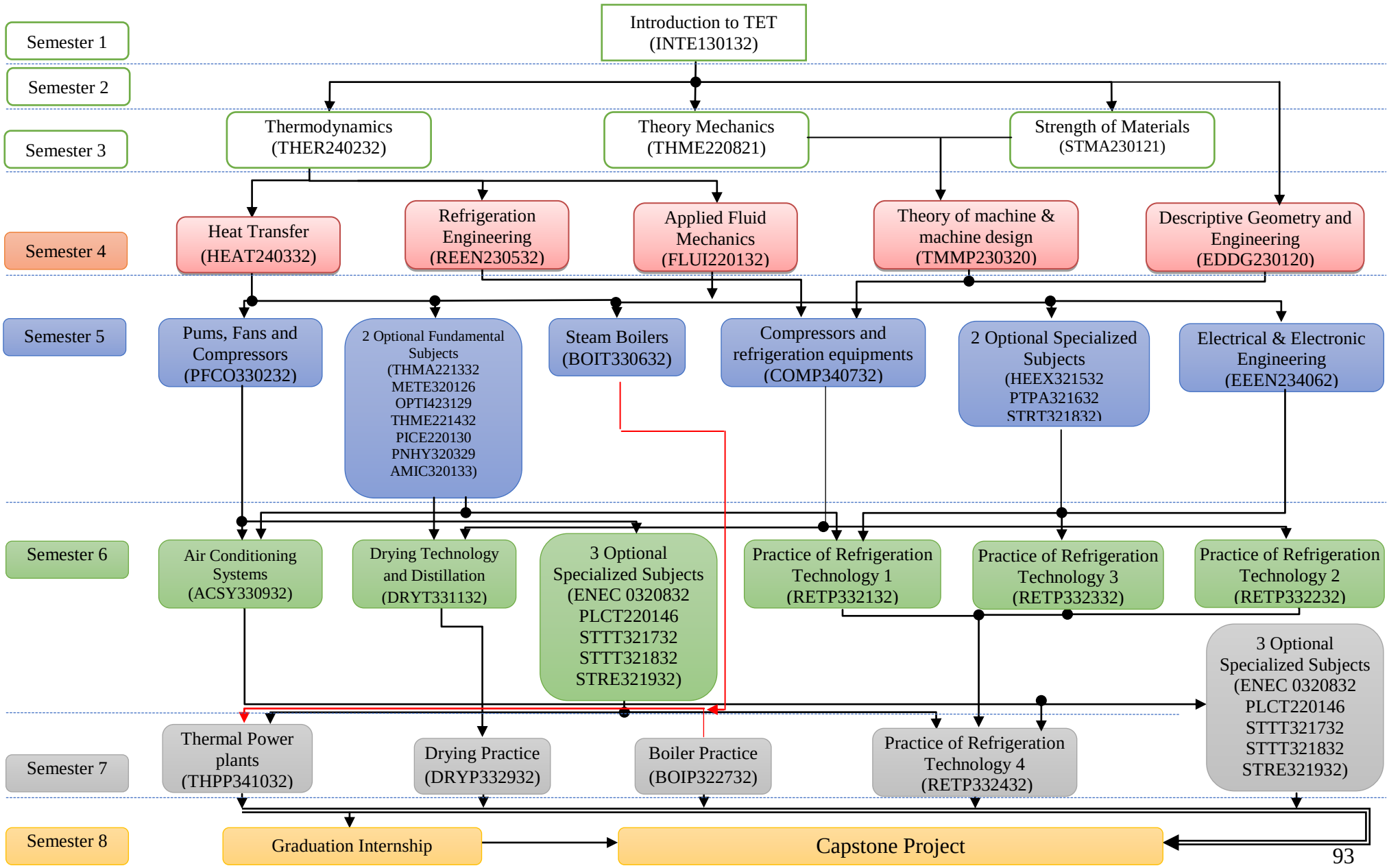
No.	Course Code	Courses Name	Number of credits	
			Required	Elective
1	THPP341032	Thermal Power plants	4	
2	RETP332432	Practice of Refrigeration Technology 4	3	
3	BOIP322732	Boiler Practice	2	
4	DRYP332932	Drying Practice	3	
5	HEEX321532	Heat Exchangers	Choose 2	4
	PTPA321632	Principles of Thermal Process Automation		
	ENEC320832	Energy Economics		
	PLCT220146	PLC		
	STRT321731	Special Topics in Refrigeration Technology		
	STTT321832	Special Topics in Thermal Technology		
	STRE321931	Special Topics in Renewable Energy		

6	REPR310132	Refrigeration Technology Projects	Choose 1	1
	THPR310232	Thermal Project		
Total			**17**	

Semester 8:

No.	Course Code	Courses Name	Number of credits	
			Required	**Elective**
1	UNTH322732	Graduation Internship	2	
2	UNTH402832	Capstone Project	10	
Total			**12**	

Appendix 3: Curriculum Map



Appendix 4: Checklist for AUN-QA 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 have been clearly reflect the requirements of the stakeholders					X		
	Overall Opinion	**5.67**						
2	**Programme Specification**							
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 description are communicated and made available to the stakeholders						X	
	Overall Opinion	**5.67**						
3	**Programme structure and content**							
3.1	The curriculum is designed base on constructive alignment with the expected learning outcomes					X		
3.2	The contribution made by each course to archive the expected learning outcomes						X	
3.3	The curriculum is logically structured, sequenced, integrated and up-to-date					X		
	Overall Opinion	**5.33**						
4	**Teaching and learning approach**							
4.1	The education 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	**5.67**						
5	**Student assessment**							
5.1	The student assessment is constructively aligned to the achievement of the expected learning outcomes						X	
5.2	The student assessments including timelines, methods, regulations, weight distribution, rubrics and grading are explicit and communicated to students						X	
5.3	Methods including assessment rubrics and marking schemes are used to ensure validity, reliability and fairness of student's 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**							
6.1	Academic staff planning is carried out to fulfill the needs for education, research and service						X	
6.2	Staff-to-student ratio and workload are measured and monitored to improve the quality of education, research and service					X		
6.3	Recruitment and selection criteria including ethics and academic freedom for appointment, deployment and promotion are determined and communicated					X		
6.4	Competences of academic staff are identified and evaluated						X	
6.5	Training and developmental needs of academic staff are identified and activities are implemented to fulfill them '					X		
6.6	Performance management including rewards and recognition is implemented to motivate and support education, research and service					X		

6.7	The types and quantity of research by academic staff are established, monitored and benchmarked for improvement					X		
	Overall opinion	**5.3**						
7	**Support Staff Quality**							
7.1	Support staff planning is carried out to fulfill 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 fulfill them						X	
7.5	Performance management including rewards and recognition is implemented to motivate and support education, research and service					X		
	Overall opinion	**5.2**						
8	**Student Quality and Support**							
8.1	The student intake policy and admission criteria are defined, communicated, published, and up-to-date						X	
8.2	The methods and criteria for the selection of students are determined and evaluated					X		
8.3	There is an adequate monitoring system (for student progress, academic performance, and workload)					X		
8.4	Academic advice, co-curricular activities, student competition, and other student support services are available to improve learning and employability						X	
8.5	The physical, social and psychological environment is conducive for education and research as well as personal well-being					X		
	Overall opinion	**5.4**						

9	**Facilities and infrastructure**							
9.1	The teaching and learning facilities and equipment (lecture halls, classrooms, project rooms, etc.) are adequate and updated to support education and research					X		
9.2	The library and its resources are adequate and updated to support education and research					X		
9.3	The laboratories and equipment are adequate and updated to support education and research					X		
9.4	The IT facilities including e-learning infrastructure are adequate and updated to support education and research						X	
9.5	The standards for environment, health and safety; and access for people with special needs are defined and implemented					X		
	Overall opinion	**5.2**						
10	**Quality Enhancement**							
10.1	Stakeholders' needs and feedback serve as input to curriculum design and development					X		
10.2	The curriculum design and development process is established and subjected to evaluation and enhancement					X		
10.3	The teaching and learning processes and student assessment are continuously reviewed and evaluated to ensure their relevance and alignment					X		
10.4	Research output is used to enhance teaching and learning					X		
10.5	Quality of support services and facilities (at the library, laboratory, IT facility and student services) is subjected to evaluation and enhancement					X		
10.6	The stakeholder's feedback mechanisms are systematic and subjected to evaluation and enhancement					X		
	Overall opinion	**5.0**						
11	**Output**							

11.1	The pass rates and dropout rates are established, monitored and benchmarked for improvement					X		
11.2	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		**5.2**						
Overall verdict		**5.4**						

Appendix 5: Supporting documents and evidences

No	Exh.	Title of Exhibition	Category
Criteria 1: Expected Learning Outcomes			
1	1.1-01	Programme specification; curriculum; ELOs	
	1.1-01a	Programme specification	Document
	1.1-01b	Curriculum	Document
	1.1-01c	ELOs	Document
2	1.1-02	Decision on the establishment of Faculty's Scientific Board	Document
3	1.1-03	Minutes on Students and faculty's leaders meeting	Document
4	1.1-04	Questionnaire on curriculum development	Document
5	1.1-05	Sample survey on the level of HCMUTE students' response to job requirements	Document
6	1.1-06	Students and faculty's leaders meeting	Document
7	1.1-07	Minutes on curriculum modification	Document
8	1.1-08	Several curriculums of other universities	
	1.1-08a	Curriculums of HCMUT	Document
	1.1-08b	Curriculums of DUT	Document
	1.1-08c	Curriculums of IUH	Document
9	1.1-09	Link to website http://fae.hcmute.edu.vn/ArticleId/efcacbec-1c4c-4978-834d-1e8592484043/thermal-engineering-technology-undergraduate-program-specification	Link
10	1.1-10	Introduction to Thermal Engineering Technology syllabus	Document
11	1.2-01	Extra-curricular activities	
	1.2-01a	Activities of skill and English clubs	Image
	1.2-01b	Specialized seminars	Image
	1.2-01c	Site visits	Image
	1.2-01d	Activities of sports	Image
12	1.3-01	Regulation on curriculum development	Document

No	Exh.	Title of Exhibition	Category
13	1.3-02	Surveys into Employment after Graduation and Feedback form stakeholders	
	1.3-02a	Survey report on graduates of HCMUTE	Document
	1.3-02b	Survey report on Company	Document
14	1.3-03	Thermal Engineering Technology Curriculums applicable in the years of 2008, 2010, 2012	Document
15	1.3-04	Syllabi	
	1.3-04a	Syllabi of Thermal Power Plants course	Document
16	1.3-05	Photos and name lists	
	1.3-05a	Image of Dissertation Defense with experts from enterprises	Image
	1.3-05b	List of Dissertation Defense	Document
17	1.3-06	Student handbook	Document
18	1.3-07	Feedback form stakeholders and HCMUTE graduates	
	1.3-07a	Survey report on graduates of HCMUTE	Document
	1.3-07b	Survey report on Company	Document
Criteria 2: Programme Specification			
19	2.1-01	Programme specification; curriculum; ELOs; The correlation matrix; Student handbook 2012-2017, FVEE website	
	2.1-01a	Programme specification	Document
	2.1-01b	Curriculum	Document
	2.1-01c	ELOs	Document
	2.1-01d	The correlation matrix	Document
	2.1-01e	Student handbook 2012-2017	Document
	2.1-01f	FVEE website	Document
20	2.1-02	Evidence group on Revision and Regulation on curriculum development	Document

No	Exh.	Title of Exhibition	Category
21	2.2-01	Evidence group on Syllabi and portfolios	
	2.2-01a	Syllabi of Thermal Power Plants course	Document
	2.2-01b	Portfolios of Thermal Power Plants course	Document
22	2.2-02	Evidence group on workshop/meeting at FVEE	
	2.2-02a	Image of specialized seminars	Image
	2.2-02b	Minute of Students and faculty's leaders meeting	Document
	2.2-02c	Minute on curriculum modification	Document
	2.2-02d	Report of FVEE for school year	Document
23	2.2-03	Evidence group on websites	
	2.2-03a	Link to home page of HCMUTE website	Link
	2.2-03b	Link to FVEE page of HCMUTE website	Link
	2.2-03c	Link to Academic Affair Office website	Link
Criteria 3: Programme Structure and Content			
24	3.1-01	Evidence group on the Programme specification; curriculum; ELOs, Curriculum map and correlation matrix	
	3.1-01a	Programme specification	Document
	3.1-01b	Curriculum	Document
	3.1-01c	ELOs	Document
	3.1-01d	Curriculum map	Document
	3.1-01e	Correlation matrix	Document
25	3.1-02	Correlation matrix	Document
26	3.1-03	Evidence group on Syllabi, test samples and portfolios	Document
	3.1-03a	Syllabi of course Energy economics	Document
	3.1-03b	Test samples of Energy economics course	Document
	3.1-03c	Portfolios of Energy economics course	Document
27	3.3-01	Curriculum map	Document
28	3.3-02	Evidence group on Revision and Regulation on curriculum development	Document
29	3.3-03	Setting up and revising curriculum procedure	Document

No	Exh.	Title of Exhibition	Category
Criteria 4: Teaching and Learning Approach			
30	4.1-01	Lecture portfolios of some courses	
	4.1-01a	Portfolios of Thermal Power Plants course	Document
	4.1-01b	Portfolios of Steam Boiler course	Document
31	4.1-02	Introduction to Thermal Engineering Technology syllabus	Document
32	4.1-03	List of courses for pedagogical methods	Document
33	4.2-01	Activities in Introduction to TET course	
	4.2-01a	Introduction to Thermal Engineering Technology syllabus	Document
	4.2-01b	Images of self-modeling works of students	Image
34	4.2-02	Product of projects	Image
35	4.2-03	Feedback form student survey	
	4.2-03a	Student survey about lecture teaching	Document
36	4.2-04	Lecture portfolios of some courses applying simulation tools	
	4.2-04a	Portfolios of Steam Boiler course	Document
37	4.2-05	Some online lecture videos	Link of video
38	4.2-06	Photos of the laboratory with state-of-the-art equipment-CO2 air conditioner	Image
39	4.2-07	Photos of class and workshop	Image
40	4.2-08	150-credit TET curriculum	Document
41	4.2-09	Statistics of different assessment methods and corresponding weights	Document
42	4.2-10	Skill Examinations 2015, 2016	Document
43	4.2-11	Photos of model contest	Image
44	4.2-12	Students are co-authors in scientific papers	Document
45	4.2-13	Photos of seminars and workshops with enterprises and organizations	Image
46	4.2-14	Student products from lab work	Image

No	Exh.	Title of Exhibition	Category
47	4.2-15	Lecture notes of the special topic course	Document
48	4.2-16	Lecture portfolios of some courses	
	4.2-16a	Portfolios of Thermal Power Plants course	Document
	4.2-16b	Portfolios of Steam Boiler course	Document
49	4.2-17	Schedule of section's observations	Document
50	4.2-18	Teacher observation procedures	Document
51	4.3-01	Thermal Engineering Technology Curriculums applicable in the years of 2008, 2010, 2012	Document
52	4.3-02	Pictures of student group discussions	Image
53	4.3-03	List of seminars	Document
54	4.3-04	Decision and list of internships	Document
Criteria 5: Student Assessment			
55	5.1-01	Evidence group on Entrance exam	
	5.1-01a	Regulation on Entrance exam	Document
	5.1-01b	Results of Entrance exam	Document
56	5.1-02	Evidence group on English exam for freshman Students	
	5.1-02a	Regulation on Entrance English placement	Document
	5.1-02b	Results of Entrance English placement	Document
57	5.1-03	Formative assessment	
	5..1-03a	Statistics of different assessment methods and corresponding weights	Document
	5.1-03b	Sample of quiz test, 1 minute test and mid-term test for formative assessment	Document
58	5.1-04	Procedure for planning and organizing examination	Document
59	5.1-05	Summative assessment and final project	
	5.1-05a	Statistics of different assessment methods and corresponding weights	Document
	5.1-05b	Sample of final test and summarize assessment table for summative assessment	Document

No	Exh.	Title of Exhibition	Category
	5.1-05c	Images of final project products	Image
60	5.1-06	Assessment of graduation internship	Document
61	5.2-01	Teaching plan for school year, Syllabi, portfolios and surveys	
	5.2-01a	Teaching plan for school year	Document
	5.2-01b	Syllabi of 01 course based on teaching plan	Document
	5.2-01c	Portfolios of 01 course based on teaching plan	Document
	5.2-01d	Student survey about lecture teaching	Document
62	5.2-02	Formative assessment, summative assessment and final project	Document
63	5.3-01	LMS website	Document
Criteria 6: Academic Staff Quality			
64	6.1-01	FVEE's strategies and plans for manpower for the year period of 2013-2018 with the vision up to the year of 2020	Document
65	6.1-02	http://fae.hcmute.edu.vn	Website
66	6.1-03	Planning list for professional and specialist knowledge training for lecturers	Document
67	6.1-04	Some recruitment policy regulations about for PhD and Professor lecturers; Academic staff plan	Document
68	6.1-05	Regulating in details and giving guidelines on the implementation of some articles of Higher Education Law	Decision
69	6.1-06	The issuance of regulations on appointing, re-appointing, resigning, dismissing managers and leaders at the offices and faculties of HCMUTE	Document
70	6.2-01	Regulations of workload for various titles in university	Decision
71	6.2-02	Statistics of teaching staff's workload (teaching, research and service)	Document
72	6.2-03	Key Performance Indicators	Document
73	6.2-04	Forms of KPIs (individual evaluation)	Document
74	6.2-05	http://online.hcmute.edu.vn	Website

No	Exh.	Title of Exhibition	Category
75	6.2-06	http://dashboard.hcmute.edu.vn	Website
76	6.2-07	Staff's satisfaction survey	Document
77	6.2-08	List of lecturers who instruct students for internship and visiting industrial	Document
78	6.3-01	Academic staff recruitment procedure	Procedure
79	6.3-02	Probation period of academic staff and examination process	Document
80	6.3-03	Regulations to encourage lecturers with PhD degrees and professor titles	Decision
81	6.3-04	Encourage regulations for publishing paper	Document
82	6.3-05	Examination procedure for main lecturer and Associate Prof title	Document
83	6.3-06	Academic report of the company and the list of students received scholarship from the company	Document
84	6.3-07	Email for rights, duties of lecturer	Document
85	6.3-08	Higher education law	Document
86	6.3-09	Chart of Faculty personnel	Document
87	6.4-01	KPIs, Evaluation results	Document
88	6.4-02	Teaching activity monitoring	Document
89	6.4-03	List of scientific research projects	Document
90	6.4-04	Service activities of FVEE	Document
91	6.5-01	Seminars, training	Document
92	6.5-02	Training and retraining courses in factory	Document
93	6.5-03	Professional skill test for Hochiminh city	Document
94	6.5-04	Encourage regulations for graduating PhD degree	Decision
95	6.5-05	List of lecturer attended HEEAP, BUILD-IT	Document
96	6.5-06	List of lecturers' scientific research project	Document
97	6.6-01	Faculty's evaluation for academic staff	Document
98	6.6-02	Lecturer competency results	Document

No	Exh.	Title of Exhibition	Category
99	6.6-03	Manual awards of President	Document
100	6.6-04	Decision on pay rise prior to schedule	Decision
101	6.7-01	Scientific research at university level procedure	Procedure
102	6.7-02	Regulations of research grant for projects	Document
103	6.7-03	List of paper publish	Document
104	6.7-04	List of research projects	Document
Criteria 7: Support Staff Quality			
105	7.1-01	HCMUTE medium-term strategic development plan for 2011-2015 and visions to 2020	Decision
106	7.1-02	Procedure for training and developing human resources	
	7.1-02a	Staff recruitment procedure	Procedure
	7.1-02b	Recruitment plans	Document
	7.1-02c	Decisions on annual personnel employment	Document
	7.1-02d	Recruitment advertisements	Document
	7.1-02e	Decision on duties and conditions to terminate probation period	Document
	7.1-02f	Procedure for training and developing human resources	Document
	7.1-02g	Announcements and summary of academic year's expertise and professional training plan	Document
107	7.1-03	Plan for enhancing HCMUTE support staff's professional expertise	
	7.1-03a	The 2011-2015 medium-term strategic development plan with the vision towards 2020	Document
	7.1-03b	Announcements and a summary of academic year's expertise and professional training plan	Document
108	7.1-04	Survey results report on HCMUTE support staff's	Document

No	Exh.	Title of Exhibition	Category
		services	
109	7.1-05	FVEE's strategic plan	Document
110	7.1-06	FVEE's recruitment plan	
	7.1-06a	FVEE' recruitment plan in 2017	Document
	7.1-06b	HCMUTE's recruitment plan in 2017	Document
111	7.1-07	Plan for enhancing FVEE support staff's professional expertise	
	7.1-07a	HCMUTE's expertise and professional training plan	Document
	7.1-07b	FVEE's expertise and professional training plan	Document
112	7.1-08	Policies related to support staff	
	7.1-08a	Methods of calculating extra salary in accordance with KPIs evaluation results	Document
	7.1-08b	FVEE's emulation vote in academic year 2015-2016	Document
113	7.2-01	Staff recruitment procedure	Document
114	7.2-02	Recruitment information on websites and facebook pages 2017	Document
115	7.2-03	Support staff recruitment	
	7.2-03a	HCMUTE recruitment statistics	Document
	7.2-03b	Recruitment announced on the homepage	Document
	7.2-03c	Support staff recruitment process	Document
	7.2-03d	Criteria checklist for a support staff candidate	Document
	7.2-03e	Decision on mentors for new support staff in probation period	Document
	7.2-03f	Required documents/qualifications to terminate support staff's probation period	Document
	7.2-03g	HCMUTE recruitment proposal	Document
	7.2-03h	The required eligibility for support staff to end the probation period	Document
	7.2-03i	Proposal submitted by subunits of HCMUTE for	Document

No	Exh.	Title of Exhibition	Category
		recruitment of support staff	
116	7.2-04	Procedure for probation period accomplishment	Decision
117	7.2-05	HCMUTE appointment and re-appointment regulations	Decision
118	7.2-06	FVEE Emulation Rewards and Pay raise in AY 2015-2016	Decision
119	7.3-01	The number of library staff	Document
120	7.3-02	List of training sessions and seminars at HCMTE library	Document
121	7.3-03	Survey on students' satisfaction level towards service quality of the library	Document
122	7.3-04	DTE list of sponsored equipment	Document
123	7.3-05	List of FVEE advisory staff AY 2016-2017	Document
124	7.3-06	Consulting activities at FVEE	Document
125	7.3-07	Investigation into students' satisfaction with HCMUTE service quality	Document
126	7.3-08	Reports on dialogues between FVEE Management Board and students	
	7.3-08a	Minutes of the meeting between the Faculty and students	Document
	7.3-08b	Minutes on the meeting between the students and the university	Document
	7.3-08c	Report on improvement of the previous semester from the results of the university' meeting.	Document
127	7.3-09	Assessment of support staff performance	
	7.3-09a	KPIs system	Decision
	7.3-09b	Support staff's satisfaction surveys	Document
	7.3-09c	Student surveys for satisfaction evaluation	Document
	7.3-09d	Self-assessment report of support staff	Document
128	7.3-10	Emulation and rewards for support staff	
	7.3-10a	Emulation guides for support staff	Decision
	7.3-10b	Emulation titles for support staff	Document

No	Exh.	Title of Exhibition	Category
	7.3-10c	Salary increase decision for support staff	Decision
	7.3-10d	Salary increase announcement for support staff	Decision
	7.3-10e	Emulation reviewing records	Document
	7.3-10f	Decision on awarding support staff with outstanding achievements	Decision
129	7.3-11	Staff satisfaction survey on working environment	Document
130	7.4-01	Training procedure and Activities for support staff	
	7.4-01a	Staff recruitment procedure	Document
	7.4-01b	Procedure for training and developing human resources	Document
	7.4-01c	FVEE's courses for professional training and enhancement and certificates	Document/ Image
	7.2-01d	FVEE's plan for professional and specialist knowledge training	Document
131	7.4-02	List of training courses and Staff's Certificates at FVEE	Document
132	7.4-03	HCMUTE Internal Spending regulations 2016	Document
133	7.5-01	HCMUTE Emulation and Rewarding Regulations	Document
Criteria 8: Student Quality and Support			
134	8.1-01	HCMUTE student intake policy and admission criteria	
	8.1-01a	The university admission board	Decision
	8.1-01b	HCMUTE's 2017 admission project	Document
	8.1-01c	Admission regulation	Document
	8.1-01d	Decision on awarding incentive scholarship for talented students	Decision
135	8.1-02	HCMUTE and FVEE Open Day Plans and Photos	Document
136	8.1-03	Admission columns and photos on newspapers	Document
137	8.1-04	HCMUTE UTE-TV youtube channel	Document
138	8.1-05	Admission data analysis software	Document
139	8.2-01	TET programme's cut-off scores	Document

No	Exh.	Title of Exhibition	Category
140	8.2-02	Cut-off scores of TET programmes at other universities	Document
141	8.2-03	List of scholarships for underprivileged students	Decision
142	8.3-01	A photo of the Dashboard	Document
143	8.3-02	A screenshot of the website of academic staff	Document
144	8.3-03	Student handbook	Document
145	8.3-04	Screenshot of the learning management system	Document
146	8.3-05	Screenshots of students' academic and training indicators	Document
147	8.3-06	Sample of students' academic transcript	Document
148	8.3-07	List of students who receive scholarships	Document
149	8.3-08	A photo of compassion corner	Document
150	8.4-01	Activities in the orientation week	
	8.4-01a	Plan for the weel of welcoming the university's new students	Document
	8.4-01b	Plan for the weel of welcoming the faculty's new students	Document
	8.4-01c	Images of welcoming faculty's new students	Image
151	8.4-02	Students' GPA on the school website	Document
152	8.4-03	Photos of consulting activities at FVEE	Document
153	8.4-04	List of seminars, scholarships, company and factory visits of TET students	Document
154	8.4-05	The course entitled "Installing Daikin Air conditioner 2017	Document
155	8.4-06	Photos of FVEE English club's activities	Document/ Image
156	8.4-07	List of students who found a job introduced by SSC	Document
157	8.4-08	ERO's activities	
	8.4-08a	The Enterprises Relations Office's website and image of activities	Website
	8.4-08b	Plans for factory visits	Document

No	Exh.	Title of Exhibition	Category
	8.4-08c	Summation report on workshops and conferences	Document
	8.4-08d	Plan and video of the Job Fair Day	Document/ video
158	8.4-09	Photos of the Self-study area and the Motorbike-Car Wash Shop	Image
159	8.4-10	List of FVEE advisors	Document
160	8.4-11	List of teaching assistants at FVEE	Document
161	8.4-12	Internship Plan and photos of students in their internship at companies	Document/ Image
162	8.5-01	List of extra-curricular activities	Document
Criteria 9: Facilities and Infrastructure			
163	9.1-01	Report on facility and infrastructure of HCMUTE	
	9.1-01a	HCMUTE's report on facilities and infrastructure sent to MOET	Document
	9.1-01b	Total amount for buy the additional equipment of HCMUTE /year	Document
	9.1-01c	List of land property, architectural objects, classrooms, and offices on the two HCMUTE campuses	Document
	9.1-01d	Statistics report on the number of classrooms by Academic Affairs Office	Document
164	9.1-02	Projected expenses on renovation, repairs and acquisition	
	9.1-02a	Decision on approval of investment project and estimates of " Developing networks servers filing and data privacy system"	Decision
	9.1-02b	Projected expenses on renovation, repairs and acquisition for the year.	Document
	9.1-02c	Report on results of student surveys on the quality of services of HCMUTE	Document
	9.1-02d	Projected expenses on renovation, repairs and acquisition for the year 2017	Document
165	9.1-03	HCMUTE Campus Information	Document

No	Exh.	Title of Exhibition	Category
166	9.1-04	Staff survey about working environment	
	9.1-04a	Staff survey about working environment	Document
	9.1-04b	Students' survey about quality service	Document
167	9.2-01	Library resources	
	9.2-01a	Exchange of information resources (Vietnamese library association, technology university university library association STE)	Document
	9.2-01b	http://thuvien.hcmute.edu.vn/	Website
	9.2-01c	Regulation on the librabry's opening time, regulation on the uses of library services.	Document
	9.2-01d	Documents related to the association with the technology university library association STE, Vietnamese library association, the College of Construction No.2	Document
168	9.2-02	Library infrastructure	
	9.2-02a	Additional documentation every year	Document
	9.2-02b	Library website: http://thuvien.hcmute.edu.vn/	Website
	9.2-02c	Require for new document	Website
169	9.2-03	E-resources	
	9.2-03a	Library websites	Website
	9.2-03b	Handbook for using library	Document
170	9.2-04	Survey for library service	Document
171	9.3-01	List of FVEE workshops and laboratories	Document/ Image
172	9.3-02	Procedures for calibrating the measurement devices	
	9.3-02a	Maintaining and repairing equipment procedure	Procedure
	9.3-02b	Procedure for calibrating the measurement devices	Procedure
	9.3-02c	FVE plan for buying new equipment	Document
	9.3-02d	Operational procedure	Procedure
173	9.3-03	Report on efficiency of equipment	Document

No	Exh.	Title of Exhibition	Category
174	9.4-01	IT facilities	
	9.4-01a	Decision on approval of investment project and estimates of " Developing networks, servers, filing and data privacy systems"	Decision
	9.4-01b	E-mails of individuals and entities of HCMUTE	Image
175	9.4-02	Software: LabVIEW, AutoCad	Image
176	9.4-03	Digital learning	
	9.4-03a	Decision on approval of investment project and estimates of " Developing networks, servers, filing and data privacy systems"	Decision
	9.4-03b	Course registration website	Website
	9.4-03c	Evidence on Pearson's sponsorship to Digital learning center	Document
	9.4-03d	Websites	Website
	9.4-03e	lms.hcmute.edu.vn/login/index.php	Website
	9.4-03f	Application of IoT in education and management	Document
177	9.4-04	Application of IoT in education and management	
	9.4-04a	All – campus wifi map	Document
	9.4-04b	https://lms.hcmute.edu.vn/login/index.php	Website
178	9.5-01	Health care	
	9.5-01a	Eridication of rats and mosquitos inside HCMUTE	Decision
	9.5-01b	Health care	Document
	9.5-01c	http://hd.hcmute.edu.vn/	Website
179	9.5-02	Fire prevention and security	
	9.5-02a	Fire prevention and fighting	Decision
	9.5-02b	The responsibilities and authority of the security team	Document
	9.5-02c	The guard schedule on holiday	Document
	9.5-02d	List of fire prevention equipment and telephone numbers of guard team firefighting	Document

No	Exh.	Title of Exhibition	Category
180	9.5-03	Procedures for maintaining and calibrating devices	
	9.5-03a	Maintaining and repairing equipment procedure	Procedure
	9.5-03b	Procedure for calibrating the measurement devices	Procedure
181	9.5-04	FVEE annual equipment purchase and maintenance plan	Document
182	9.5-05	Laboratory-Workshop regulations and Fire prevention	
	9.5-05a	Laboratory regulations; Workshop regulations of FVEE	Document
	9.5-05b	Decision on strengthening fire prevention and protection platoon of HCMUTE	Decision
	9.5-05c	Fire prevention and extinguishing layout at workshops	Decision
Criteria 10: Quality Enhancement			
183	10.1-01	Feedback of students	Document
184	10.1-02	Sample survey on the level of HCMUTE student's response to job requirements	Document
185	10.1-03	Questionnaire on curriculum development	Document
186	10.1-04	Meeting between students and faculty's leader	Document
187	10.1-05	Students' survey into course evaluation and assessment	Document
188	10.1-06	Workshop on the curriculum	Document
189	10.1-07	Regulation on curriculum development	Document
190	10.1-08	Opinions of stakeholders on TET programme	Document
191	10.1-09	Syllabus modification	Document
192	10.1-10	ISO quality assurance procedures at HCMUTE	Procedure
193	10.2-01	Regulation on curriculum development	Document
194	10.2-02	Curriculum change 2012	Document
195	10.2-03	Decision on TA	Document
196	10.2-04	Decision on Social activities	Document
197	10.2-05	Curriculum change 2015	Document
198	10.2-06	Minutes on curriculum modification in the years of 2010,	Document

No	Exh.	Title of Exhibition	Category
		2012	
199	10.2-07	Minute of Scientific Board - programme adjustment	Document
200	10.3-01	ELOs results assessment	Document
201	10.3-02	Course-by-course evaluation of lecturers	Document
202	10.3-03	Teaching and learning processes evaluation	Document
203	10.3-04	List of class observations; Teaching quality report	Document
204	10.3-05	List of registration for online teaching course	Document
205	10.3-06	Innovation assessment to develop learners' ability	Document
206	10.3-07	Lecturer portfolios of courses applying simulation tools.	Document
207	10.3-08	Some online videos of lecturer in teaching	Document
208	10.3-09	Photos of the laboratory with state of the art equipment CO2 air conditioning	Image
209	10.3-10	Photos of classes and workshop	Image
210	10.3-11	Syllabi of some courses	Document
211	10.3-12	Several mid-term exams	Document
212	10.3-13	Rubrics of several courses	Document
213	10.4-01	TET's List of courses applying research output	Document
214	10.4-02	Minute of TET meeting on application of research in courses	Document
215	10.4-03	TET's Research Reports	Document
216	10.4-04	Skills contest in 2015 and 2016	Document
217	10.4-05	Photos of seminars and workshop with the enterprise and organization	Document
218	10.4-06	Research output application	Document
219	10.4-07	Students products from lab work,	Image
220	10.4-08	Students as co-authors in scientific newspapers	Document
221	10.5-01	Students' feedback on support services and facilities	Document
222	10.5-02	HCMUTE campus information, a. plans to build the center building, b. whole campus wifi map	Document

No	Exh.	Title of Exhibition	Category
223	10.5-03	Report on efficiency of equipment	Document
224	10.5-04	The library's enhancement	Document
225	10.5-05	Equipment calibration, maintenance and repairs	Document
226	10.5-06	Health services	Document
227	10.5-07	Dormitory's enhancement	Document
228	10.6-01	Feedback mechanism	Document
229	10.6-02	Students' survey form	Document
230	10.6-03	FVEE Alumni committee	Document
231	10.6-04	Alumni's survey form	Document
232	10.6-05	Conferences of staff and officers	Document
233	10.6-06	Employers' survey form	Document
234	10.6-07	Feedback mechanism enhancements	Document
Criteria 11: Output			
235	11.1-01	Corrective and preventive action procedure	Procedure
236	11.1-02	http://dashboard.hcmute.edu.vn	Website
237	11.1-03	FVEE's meeting about deploying duties at the beginning of the year	Document
238	11.1-04	Student handbook	Document
239	11.1-05	Pass rate and dropout rate	Document
240	11.1-06	Orientation days	Document
241	11.1-07	Report on the meeting between FVEE board and students	Document
242	11.1-08	Solutions to enhancing pass rate and dropout rate	Document
243	11.2-01	Regulation on HCMUTE's education program	Document
244	11.3-01	Survey form and result	
	11.3-01a	Surveys on graduates after 3 months and 6 months	Document
	11.3-01b	Survey on satisfaction of staff and officers	Document
245	11.3-02	Solutions for improving rate of employment	

No	Exh.	Title of Exhibition	Category
	11.3-02a	Businesspeople interview students as soon as they have finished their thesis defence at section level.	Image
	11.3-02b	Job Fair activities	Image
246	11.4-01	Students' scientific research	
	11.4-01a	The contest "Panasonic idea – Discover future technology"	Document
	11.4-01b	The contest of designing products by applying IoT technology in academic year 2016-2017	Document
	11.4-01c	List of students on research	Document
247	11.4-02	List of funded equipment in 2017 of the Heat and Refrigeration Section	Document
248	11.4-03	Students as co-authors in scientific papers	Document
249	11.4-04	List of seminars	Document
250	11.5-01	Procedure to evaluate satisfaction levels of stakeholders of the training program	Document
251	11.5-02	Staff satisfaction survey on working environment	Document
252	11.5-03	KPIs, evaluation results	Document
253	11.5-04	Student appeal procedure	Document
254	11.5-05	Minutes of curriculum modification	Document
255	11.5-06	Training quality improvement activities	Document
256	11.5-07	Job announcements from employers	Document
257	11.5-08	Evaluation form of interns	Document

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