HANOI UNIVERSITY OF SCIENCE AND TECHNOLOGY

ASEAN University Network

AUN-QA SELF-ASSESSMENT REPORT

TRANSPORT MECHANICAL ENGINEERING

June 2019

CONTENT

PART 1. INTRODUCTION

1. Executive summary of Self assessment report

The Self-Assessment Report (SAR) is written for assessment process for ASEAN University Network-Quality Assurance (AUN-QA) to evaluate the performance of Undergraduate Programme of Engineering in Transport Mechanical Engineering (TME), School of Transportation Engineering (STE), Hanoi University of Science and Technology (HUST). This SAR comprises of introduction of STE, HUST, Undergraduate programme in TME, and Self-Assessment of the TME based on AUN-QA version 3.0 criteria.

All STE staffs have been guided on all AUN-QA criteria to raise awareness and enhance quality assurance implementation according to AUN-QA guidelines. The SAR team for the academic programme TME was established and worked seriously to look analyse and examine the evaluation criteria at programme - level as stated in AUNQA guidelines. The SAR team prepares all specific parts of the SAR, collects relevant documents and evidence. After completing the SAR, STE staff self-aware know that it is necessary to strengthen the commitment to the implementation of regulations to ensure the quality of the academic programme is being executed [TME.00.01].

The TME's expected learning outcomes (ELOs) are developed based on the qualifications that graduates need after completing the study programme. The competencies include knowledge, skills and attitudes, as well as professional ethics. The goal is that graduates can meet the expectations of their employers and society. TME is developed the specifical educational objectives in accordance with the visions and missions of STE and HUST. TME has been always paid attention to improvement based on feedback and evaluation from staffs, scientists to meet the needs of society and the international integration [TME.00.02].

The structure of the TME is designed following the credit-based system. Students need to take total of 160 credits including courses, projects, internships and graduation thesis. Various teaching and learning methods including student-centered learning have been developed to ensure that the students could attain ELOs after completing the programme.

The criteria are used in determining the competence and qualifications of academic staffs: educational background, academic rank and lecturer certification. By June 2019, STE has total 71 full-time lecturers including 3 professors, 20 associate professors, 27 doctors and 01 engineer in which 50 people (70%) hold doctorate degrees from developed countries such as France, Germany, Japan, Korea, etc. The lecturer-to-student ratio of STE now is 1/13.87 meeting the requirement of Circular No. 32/2015/ TT-BGDDT dated on 16th December 2015 that stipulates the enrollment quota for institutions of higher education 1/20 (for engineering sector V).

Stakeholders of STE have important roles in the development of TME not only as taking part in educating and training but also in monitoring TME academic activities to meet the quality assurance requirements for improving the programme in terms of the curriculum, structure, and content. Graduates from TME are largely well-regarded by employers. Employers' evaluations for TME graduates in surveys are often at “satisfactory”, “very

satisfactory" and "cum laude" levels, and have superior quality as compared to different institutions in the field of Transport Mechanical Engineering. [TME.00.03]

Strengths, Weaknesses, Opportunities and Threats (SWOT) analysis based on the programme, teaching and learning process, resources, stakeholder, input, process, and output showed that the TME strength are:

- The TME programme has a transparent and informative description. The information has been made available to all stakeholders through the programme catalogue book, the academic guidebook and STE's website.
- Various teaching–studying methods are applied to achieve the ELOs of each subject.
- Academic staffs of STE are expert in the transport mechanical engineering field to meet the requirements of TME's ELO.
- STE has a plan to develop and update the curriculum periodically and sustainably. At the undergraduate level, HUST has a dedicated section to control, develop and evaluate the curriculum and the quality of teaching - studying.

However, TME has some points to be improved summarized as follow:

- ELOs are still not succinct and concise.
- STE and HUST need to upgrade labs and facilities to serve educating - training and scientific activities.
- The access to international scientific databases at the library is still negligible which influence on the quality of scientific research at HUST as well as at STE.

Plans for improvement in TME have been made for improving the current condition which considers the inputs, processes and outputs to overcome the weaknesses, thus improve the quality of the programme according to HUST's as well as STE's plan [TME.00.04].

2. Organization and Approach of Self-Assessment Report

The TME Programme of STE was assigned by HUST for quality assessment in accordance with AUN-QA. The Self-Assessment Report for TME Programme has been planned and implemented. To carry out this report, TME's SAR team was established in August 2017 to fulfil this task based on the decision of the Dean of STE. This team included eight members of the Board of STE and key staffs in the involving divisions. Each member of the implementation team has been assigned specific criteria utilizing necessary data and evidence for writing up (Table 0.1). The first draft was completed in May 2018. All STE staff members reviewed and contributed their opinions to the SAR under comments and questions relating to TME Programme. The final SAR was completed by the end of December 2018. Figure 0.1 describes in detail the process of completing the SAR from its beginning until its final version.

Table 0.1: Members of SAR team

No.	Name	Department	Mission/ criterion	Remarks
1.	Assoc. Prof. Dr. Duong Ngoc Khanh	Vice Dean, In charge of education	Team Leader	
2.	Dr. Hoang Cong Liem	Assistant**,** In charge of education	Secretary	
3.	Assoc. Prof. Dr. Tran Quang Vinh	Internal Combustion Engine Department	3, 4	08/2017-09/2018
4.	Assoc. Prof. Dr. Tran Thi Thu Huong	Internal Combustion Engine Department	1, 2	08/2017-09/2018
5.	Dr. Trinh Minh Hoang	Automotive Engineering Department	10, 11	
6.	M.Sc. Truong Dang Viet Thang	Automotive Engineering Department	8, Introduction	
7.	Dr. Tran Xuan Bo	Department of Fluid Power & Automation Engineering	5, 9	
8.	Dr. Truong Van Thuan	Department of Fluid Power & Automation Engineering	6, 7	
9.	Dr. Nguyen The Luong	Internal Combustion Engine Department	3, 4	09/2018 - present
10.	Assoc. Prof. Dr. Khong Vu Quang	Internal Combustion Engine Department	1, 2	09/2018 - present

This SAR is comprised of four main section I - Introduction, section II - Description (as required by the AUN-QA Criteria), section III - Strengths and weaknesses analysis and section IV - Appendices. Part I introduces the overview and organization structure of HUST and STE. Part II is the major part of the SAR describing the 11 criteria according to AUN-QA Standard for TME programme. The next part aims to analysis strengths and improves weaknesses for the development of the programme. The appendices, the last part of this SAR, provide key examples of evidence/documents to support the criteria stated in SAR. Additional evidence or documentation, if needed, should be provided during the on-site assessment by the AUN-QA assessors.

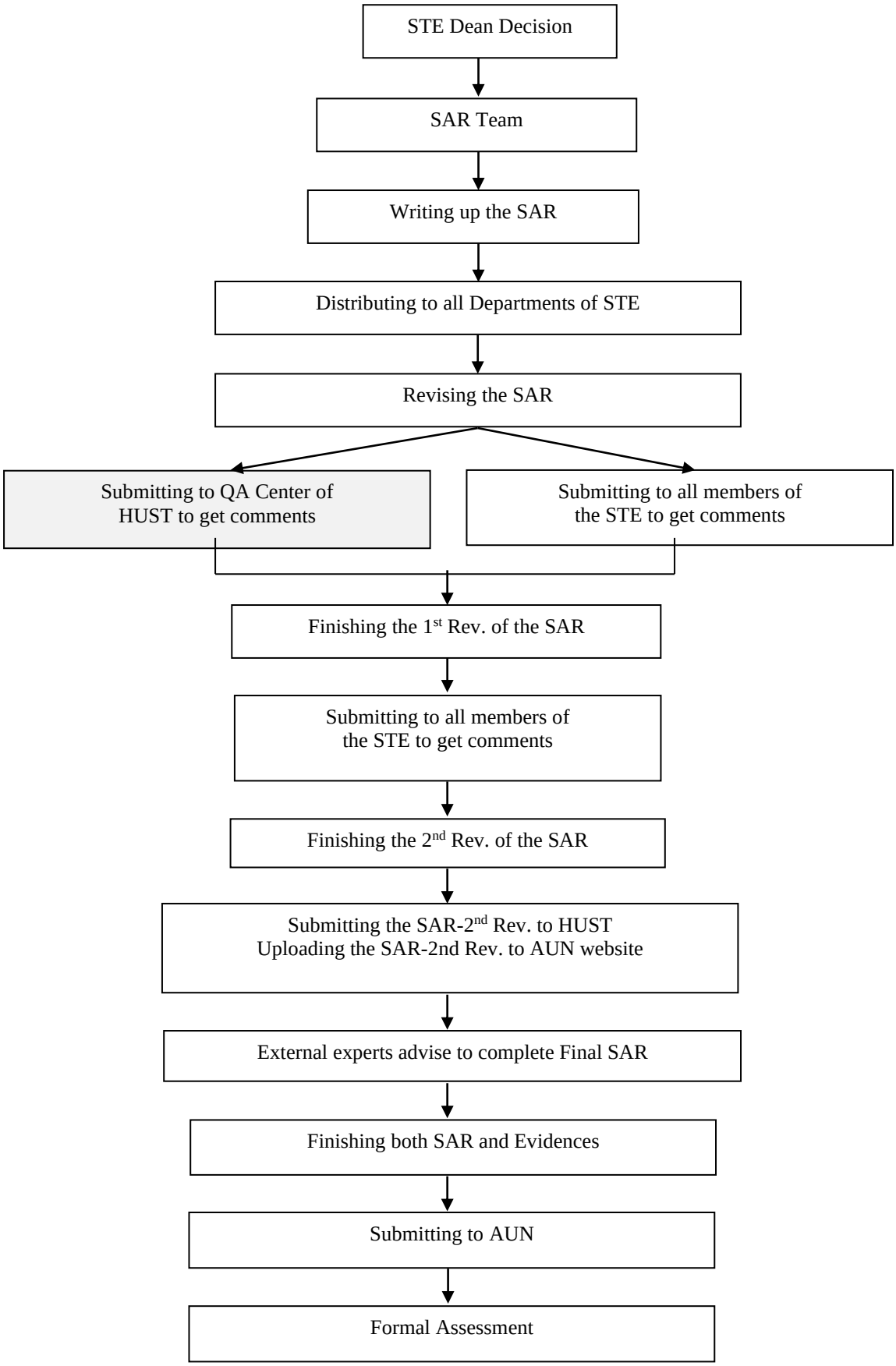

Figure 0.1: Process of making Self-Assessment Report

3. Introduction to Hanoi University of Science and Technology

HUST was established under Decree No. 147/ND on March 6th, 1956 by the Minister of Ministry of Education and Training (MOET), Socialist Republic of Vietnam [TME.00.05]. HUST is a multidisciplinary educational institution consisting of the academic departments and leading science research centres in Vietnam. Over a period of 60 years of the development, HUST is a university that leads science research and technology creation in the country, prestigious in the society and has been training tens of thousands of graduates to provide high quality technical human resources to emplyoers over years. The University has been contributing to the success of the industrialization and modernization of the country.

HUST currently includes 03 faculties and 17 training schools, 14 research institutions and centres, and 11 key concentrated investment laboratories. The University now trains about 42,000 undergraduate and graduate students with 67 undergraduate programmes, 44 graduate programmes and 39 PhD programmes [TME.00.06]. By January 2019, the number of the HUST's staffs is 1,798 including 1,113 teaching staffs, 200 teaching assistant staffs, 480 administrative staffs and 5 research staffs. The number of staffs holding PhD degree is 751, including 25 professors and 225 associate professors [TME.00.07].

HUST has a large and beautiful campus with a total area of 25.6 ha, including 241 lecture halls and classrooms, 11 conference and seminar halls, nearly 200 laboratories, 01 large library with an area of 37,000 m^2, a large student dormitory, a multifunctional sport centre, a medical centre, a security centre, etc. HUST has an internal internet system and a wifi coverage in the whole campus of the University to serve training and research activities. The training model of the University before 2009 was 5 + 2 + 3 (5 years engineer degree, 2 years master degree and 3 years doctoral degree) and now the model has been replaced by the model of 4 + 1 + 1 + 3 (4 years bachelor degree, 1 year engineer degree, 1 year master degree and 3 years doctoral degree) [TME.00.08].

At present, HUST concentrates on the development of international training and research cooperation to improve the quality and ranking position of the University. The University cooperates in training and research with more than 200 universities, research centres, research and educational institutions of 32 countries around the world and also is a member of 8 international University network organizations. Via the international cooperations, the University has sent about 500 teaching and research staffs and students abroad to study, research, and exchange, etc. HUST has had dozens of international projects on training and research which contribute to strengthen the University's facilities. HUST has been establishing a quality management system for training and scientific research in accordance with international standards ISO 9001: 2008. [TME.00.09]

The mission of Hanoi University of Science and Technology (former Hanoi University of Technology) was first announced in 1999, revised in 2017 with a vision to 2030 as follows: "A commitment to human development, high-quality workforce training, scientific research, technological innovation and knowledge transfer that serves our country and global society.". The vision of HUST is: "To become a leading research university rooted in the technical and technological fields; to make significant contributions that develop a knowledge-based economy and maintain national peace and security, and to be a pioneer in growing and sustaining Vietnam's higher-education system."[TME.00.10]

The university was given full autonomy by the Prime Minister of the Socialist Republic of Vietnam in October 2016 [TME.00.11]. Based on the autonomy rights and responsibilities, the university is rebuilding the charter of the university, restructuring each unit in the university to ensure a streamlined, efficient system to carry out the mission successfully.

4. Introduction to School of Transportation Engineering

The formation, construction, and development of STE have been linked with the history of HUST. In 1966, the Faculty of Transportation Engineering was established based on separation from the Faculty of Mechanics and Metallurgy, consisting of four departments: Internal Combustion Engines, Automobile - Tractor, Repairing Technology and Hydraulics. Then, the Faculty of Transportation Engineering was splited into the Faculty of Engine-Automobile Engineering and the Faculty of Hydraulic Machines & Automation in 1988. In 1996, the two faculties were merged into the Faculty of Mechanical Engineering. On June 27th, 2006, the School of Transportation Engineering was established under the Decision No. 3236/QD-BGDDT, inheriting the tradition of Faculty of Transportation Engineering which founded in 1966 [TME.00.12].

STE includes 05 departments and a key concentrated investment laboratory as shown in Figure 0.2. STE has 71 employees consisting of 61 teaching staffs, 7 teaching assistant staffs and 3 administrative staffs, in which includes 3 professors, 20 associate professors, 27 doctors, 20 masters, 01 bachelor and 12 employees currently studying abroad. [TME.00.13]

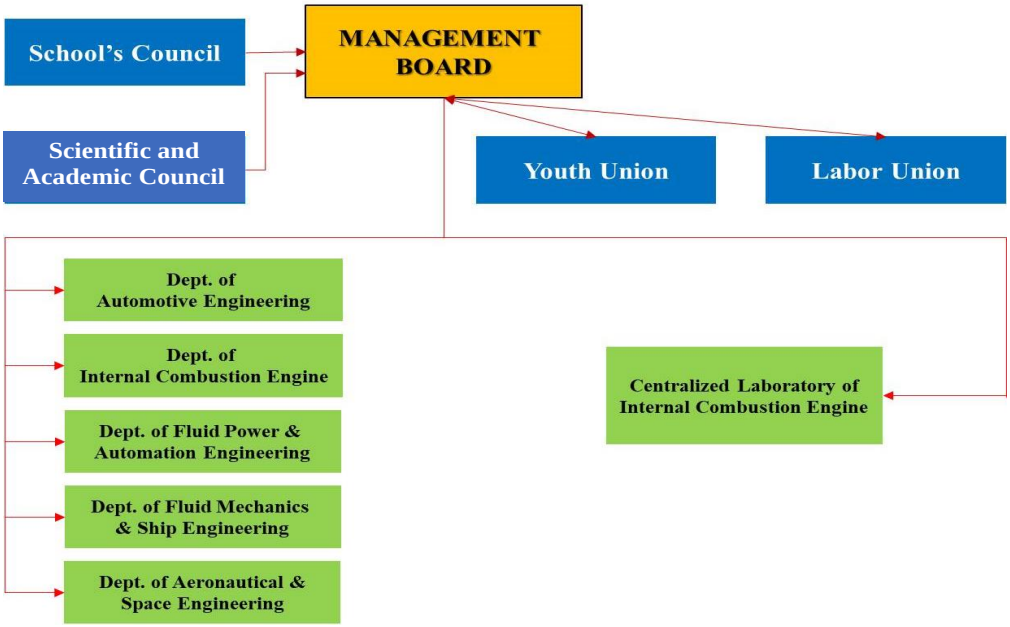

Figure 0.2: Organizational Structure of STE

Currently, the School has about 1,900 full-time students in four undergraduate programmes including TME, Aeronautical Engineering, Ship Building Engineering, Advanced Automotive Engineering and one high quality programme in cooperation with France; 97 Master students and 53 Ph.D students.

At the master's level, at STE School there are programmes including Tranport Mechanical Engineering and Automotive Engineering. At the doctoral level, there are two

programmes including Tranport Mechanical Engineering, Automotive Engineering and Fluid Mechanic Engineering.

Regarding research activities, STE is decentralized autonomously by HUST in carrying out research projects at all levels. Scientific staffs are always motivated, encouraged, facilitated to participate as well as host projects. STE staffs are currently hosting 01 state-level research project, a state-level protocol project cooperating with the Russian Federation (submitted), 07 ministry-level projects, 04 Nafosted projects, 02 international collaborative research projects, 12 university-level projects and participating in many other research programmes of HUST. Activities on investigating, inspection consultancy and technology transfer are remained regularly to contribute to the global success of the School. [TME.00.14]

STE-research ability has been enhanced through international cooperations. The School has coordinated training activities with foreign enterprises and universities such as Mitsubishi Heavy Industries Group - Japan, Toyohashi University of Technology - Japan, Nagoya University - Japan, Safran - France, Ecole Nationale Superieure De Mecanique Et D'aerotechnique - France, EMBARQ, World Resources Institute, Chulalongkorn University - Thailand, King Mongkut's Institute of Technology Ladkrabang - Thailand, Bandung Institute of Technology – Indonesia. In addition, the School also promotes more researchexchange and implementation of international cooperation projects such as the AUN/Seed-Net network, AOTULE network, MHI, Eco-Red 2015-2018, JSPS Core-to-Core 2015-2018, ERIA Energy 2016-2018, Denso-TokyoTech. [TME.00.15]

The mission of STE is "Human development, high-quality workforce training scientific research, technological innovation and knowledge transfer in the field of mechanical-transport engineering, that serves our country and global society".

The vision of STE is **"**To become a leading institution in Southeast Asia for education, research and innovation in mechanical transport engineering; Approach an autonomous institution in Hanoi University of Science and Technology". [TME.00.16]

5. Introduction to the academic programme

Name of the Programme:	Engineering in Transport Mechanical Engineering
Education level:	Undergraduate
Major:	Transport Mechanical Engineering
Training Code:	7520116
Degree:	Engineer

The TME programme has been implemented according to the HUST model and academic programme approved since 2009. The programme has been applied to engineering, professional orientation, specialized major, complementing students with advanced technical knowledge and occupational qualifications to meet the requirements of recruiters. The programme requires a minimum of 160 credits for full-time undergraduate. Graduated students can also follow a master programme, outstanding students are able to be admitted directly to a PhD programme.

TME programme has been developed and applied since 2009. Since then, TME has been continuously adjusted and improved to meet HUST's regulations in accordance with

HUST's Academic Programme Development 2017-2025 and TME's ELOs has been developed based on CDIO (Conceive - Develop - Implement - Operate) approach. The process of developing the academic programme 2017 is summarized as follows: The Chairman of the Scientific and Academic Council (SAC) is mainly responsible for developing ELOs and proposing a group of experts to build ELOs of the programme [TME.00.17]. The expert group conducts surveys to collect reviews and feedback from lecturers, staffs of Undergraduate Office, staffs of Quality Management Office, employers, graduates, alumni within 5 years, first-year students and final-year students [TME.00.18]. ELOs of TME are approved by SAC and submitted to HUST for approval [TME.00.19].

PART II. DESCRIPTION

1. Criterion1. Expected Learning Outcomes

ELOs of the TME programme include knowledge, skills (social and specialized skills), and attitudes that the graduated students are expected to achieve.

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

With the mission and vision of HUST has been presented in the introduction of the report as well as publicly announced through official documents [TME.01.01.01], and on the HUST websites [TME. 01.01.02]. The TME programme has been developed and applied since 2009 [TME.01.01.03, TME.01.01.04]. After that, from 2011 to 2017, the programme has been continuously adjusted and improved to meet the requirements of HUST [TME.01.01.05], [TME.01.01.06]. Therefore, ELOs of the TME programme was built according to the CDIO approach with the following process [TME.01.01.06]:

- **First step:** The Chairman of SAC proposes an expert group to build the ELOs of the academic programme.
- **Second step:** The Chairman of SAC holds seminars to discuss and approved objective, content, structure, implementation plan, resources and entrusting committee members with building the ELOs.
- **Third step:** Experts refer to current academic programmes, propose consultances knowledge, skills, ethical qualities and capabilities corresponding to get the ELOs target towards career-specific training products.
- **Fourth step:** The expert group refers to sample questions to make a satisfaction questionnaire that is suitable for questioned subjects and indispensable information. To carry out the training course for staffs and people perform this survey. To conduct a trial investigation and adjust the questionnaire. The result of this step is a questionnaire form for different subjects.
- **Fifth step:** The expert group conducts the survey and collects information from the stakeholders.
- **Sixth step:** The Chairman of SAC holds next seminars to collect suggestions from representative of specialists, scientists, experts, lecturers, alumni and students, etc.
- **Seventh step:** The Chairman of SAC gathers comments and suggestions concerning with the ELOs. Based on these comments, the other seminars will be held to get more comments and through the School council to get the complete ELOs of all majors in the School. The product of this step is the ELOs of the academic programme.
- **Eighth step:** After receiving comments and improving the ELOs, SAC submits the final ELOs to SAC of HUST for approval proposed it.
- **Ninth step:** The HUST president approved the final ELOs of the academic programme after received general approval by SAC.

SAC has been soon implemented right after it was established [TME.01.01.7]. During the construction process, SAC has consulted ELOs of the university level programmes of some universities, such as: Chulalongkorn School - Thailand; Thammasat School - Thailand; Teknikal School - Malaysia; Teknologi School - Malaysia; Nagoya School - Japan [TME.01.01.08]. Therefore, the ELOs of the TME programme has been clearly established, including: ELOs of knowledge and professional capacity; ELOs on professional skills and complementary skills; ELOs about moral qualities [TME.01.01.09]. On successful completion of the programme, students will be able to:

1. Be equipped with comprehensive core and advanced engineering knowledge to get adapted successfully to jobs relevant to their disciplines, with focus on abilities to apply core and advanced TME knowledge and modern instruments to design and develop TME products, including:

   1.1 Abilities to apply knowledge of underlying mathematics and science to design TME systems/machines.

   1.2 Abilities to use core and advanced engineering knowledge to analyze mechanical engineering systems/machines.

   1.3 Abilities to use advanced engineering knowledge, modern methods and instruments to design and assess mechanical engineering systems/machines.

2. Be equipped with personal and professional skills and attributes, lifelong learning and self-studied abilities to pursue higher levels of education to get adapted to the ongoing scientific and technological development, including:

   2.1 Abilities to identify, determine and model technical problems, to estimate and analyze them quantitatively, to identify random factors, to come up with conclusions, solutions and recommendations.

   2.2 Abilities to develop hypothesis and probabilities, to understand and select information from paper-based, electronic formats or internet, to conduct experimental surveys, to verify and prove hypothesis.

   2.3 Abilities to develop a holistic view of any problems, to identify emerging problems and interactions in systems, to arrange and determine key factors as well as to analyze strengths and weaknesses and come up with solutions.

   2.4 Abilities to be persistent and flexible, willing to take risks, and know how to make full use of creative and critical thinking, to conduct self-evaluation of one's own knowledge, skills and attitudes, to know how to study for lifelong learning; to manage time and resources.

   2.5 Professional ethics and conduct, honesty and sense of responsibility, proactive career planning, regular self-updating of technical information.

3. Be equipped with communication and teamwork skills, including:

   3.1 Abilities to set up, and develop teams including technical, multi-disciplinary ones, and to organize team activities.

   3.2 Abilities to select effective communication strategies, to develop communication structures, to communicate effectively in writing, multimedia and graphic media

with good presentation skills.

3.3 Good English proficiency at work with minimum TOEIC score of 500.

4. Conceive ideas for the purpose of design, development and operation in enterprise and social settings, including.

4.1 Understanding roles and responsibilities that engineer holders should have in the society, impact that technological applications can have on the society, related legislations and regulations, historical and cultural contexts, global current development issues and prospects.

4.2 Respecting multicultural values, mastering business strategies, objectives and plans of the respective organization, having technical commercialization mindset, being adaptable to different working environments.

4.3 Being able to develop objectives, requirements for technical systems, to define their functions, concepts and structures; to do technical system modeling for feasibility, and to develop project implementation plans.

4.4 Being able to develop and analyze designs, processes and approaches, to apply technical knowledge and analytical results in designs, to design and work in multidisciplinary teams, to understand multi-objective designing.

4.5 Being able to plan system development, implementation and analysis; to apply system control knowledge, to program diagnosis integrated with both software and hardware, to understand relevant sets of testing standards, to test, verify and validate, monitor and manage the implementation process.

4.6 Being able to develop and optimize operation processes and operation process training, to understand other support options related to the system operation process, system improvement and development, system demobilization, operation process management.

5. Have political quality and willingness to serve, to have good health and meet requirements in developing and defending the country, including:

5.1 Political theory qualifications in line with general programmes and regulations of MOET.

5.2 Physical Education Certificate and Military Training Certificate in line with general programmes and regulations of MOET.

The ELOs of the TME programme is a collection of professional and social skills, knowledge and attitudes that students can achieve after graduation. Inparticular, the basic knowledge in the field of TME shown in the ELO 1, professional skills and knowledge expressed in the ELO 4, social and career skills illustrated in ELOs 2 and 3. Therefore, TME engineers completely met the requirements of skills, knowledge and attitudes in the TME fields such as (project management engineers, design and development engineers, operation and maintenance engineers, inspection and evaluation engineers, etc.). It is shown that, the TME programme has contributed effectively to human development, high quality human resource training, scientific research, technological innovation, knowledge transfer, social and country services as expressed in the mission of HUST.

In addition, the requirements for social skills are reflected in the ELO 3, and career skills expressed in the ELO 4, especially in category 4.1 and 4.2. They are considered important key features to ensure that HUST becomes a leading regional research university with the core of science and technology, has a critical impact on the development of a knowledge economy and contributes to maintain security and peace of the country, pioneers in the Vietnamese university education system as stated in the vision of HUST.

Consiquently, the ELOs of the programme has taken into account and clearly reflected the mission and vision of HUST.

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

From the description of the ELOs of the academic programme, it can be seen that the ELOs include general knowledge that is expressed in different modules, as follows:

- Mathematics and basic science courses are presented in the ELO 1.1.
- Social and professional skills, the use of foreign languages that graduate students needed are shown in the ELOs from category 3.1 to 3.3.
- The ethical and political qualities required in accordance with the Vietnamese social situation are reflected in the ELOs from category 2.1 to 2.5 and 5.1.

The ELOs of the academic programme also covers professional knowledge in the field of TME, specifically as follows:

- Basic and core knowledge are presented in the ELOs category 1.2 and 1.3.
- Professional skills and knowledge are built according to the CDIO approach as shown in ELO 4.

From the ELOs of the academic programme, SAC has developed a TME programme including all necessary courses, in which each course contributes a certain level to one or more ELO of the programme, thus ensuring contribution to the ELOs. This is clearly demonstrated in the matrix of the relationship between courses and the ELOs of the programme which is partly shown in table 1.1 or detailed in [TME.01.02.01].

The ELOs of the academic programme is presented at the beginning of the description of the STE programme book [TME.01.02.02]. Through websites, documents of the programme and the STE information board, the ELOs is introduced to students, alumni, lecturers, employees and employers.

On the basis of the objectives and the ELOs, the academic programme is designed with a structure including courses of general and specialized knowledge. In which general knowledge and skills come from math, basic science, computer science and elective courses, specialized knowledge and skills are acquired from compulsory courses, major electives and specialized courses, thematic courses, internships and engineer thesis. Contents of the knowledge blocks of the programme and the courses are designed so that students acquire knowledge and skills from lower level to higher level, this has been shown in the book of the academic programme of the major group 01 [TME.01.02.03] and the courses syllabus [TME.01.02.04].

Table 1.1: Matrix of the relationship between courses and the ELOs in programme 2017

Course Name	**Expected Learn Outcomes**																		
	1.1	**1.2**	**1.3**	**2.1**	**2.2**	**2.3**	**2.4**	**2.5**	**3.1**	**3.2**	**3.3**	**4.1**	**4.2**	**4.3**	**4.4**	**4.5**	**4.6**	**5.1**	**5.2**
Fundamental Principles of Marxism-Leninism I																		X	
General Law								X				X						X	
Swimming																			X
Vietnam Communist Party's Direction on the National Defense																			X
English I										X	X								
Analysis I	X																		
Experimental Probability-Statistics	X	X		X															
Introduction to Computer Science	X				X														
Introduction to Transportation Engineering		X	X	X		X						X							
Mechanical Technology	X	X	X												X				
Introduction to Management				X	X	X	X	X	X	X									
Business Culture and Entrepreneurship				X	X	X	X	X					X						
Applied Psychology						X	X	X										X	
Soft Skills				X	X	X	X	X	X	X		X	X						
... ...																			
Technology and Technical Design Thinking		X	X	X	X	X							X	X	X	X	X		
Technical Writing and Presentation				X	X	X			X	X	X								
Fundamentals of Internal Combustion Engines	X	X	X	X	X	X													

Automobile Maintenance and Repair		X	X	X	X	X	X		X	X				X		X	X		
Design of Internal Combustion Engine	X	X	X	X		X								X	X	X			
Vehicle Testing	X	X	X	X	X		X		X	X						X	X		
Air Pollution from Automobile			X	X	X	X						X		X					
Automobile Design Project 2	X	X	X	X			X		X	X									
Project			X		X	X	X	X	X	X		X	X	X	X	X	X		
Graduation Practicum	X	X	X	X	X	X	X	X	X	X		X	X	X	X	X	X		
Engineer Thesis	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X		

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

The ELOs of academic programmes from 2009 to 2017 [TME.01.03.01], TME.01.03.02], TME.01.03.03] was built according to the CDIO approach with the 9-steps process as shown in section 1.1. In particular, the information collecting survey and seminars organizing to get comments from stakeholders play an important role in finalizing the draft of the ELOs to be approved by SAC of HUST. The report summarizing the seminars about the ELOs of the academic programme illustrated that there were up to 97% of the survey respondents agree that the ELOs have been consistent with the programme objectives and meet the social and the employer needs [TME.01.03.04]. Thus, the ELOs of the academic programme reflected the requirements of the stakeholders.

Moreover, the ELOs of the academic programme coincide with the university training regulations of MOET [TME.01.03.05], [TME.01.03.06], in which have complete knowledge of political theory, foreign languages, national defense, security and physical education, as shown in the 3.3, 5.1 and 5.2 ELOs. As for businesses, the ELOs of the academic programme also satisfies the requirements on teamwork skills, communication skills, foreign language skills, career skills, personal qualities as expressed in the ELOs of 2, 3 and 4. This proves that the ELOs reflects all the requirements of learners, employers, and MOET.

The report of the survey results for recent graduates showed that the ELOs of the academic programme met the requirements of stakeholders: 77% of students were employed right after graduation, 5% of students were taking higher education and 12% of the remaining students were awaiting interviews or considering job options [TME.01.03.07].

From 2009 up to now, TME programme has been adjusted and improved 2 times in 2014 and 2017, in which the programme 2014 had a small adjustment to fit the requirements of the university training regulations of MOET, however, the programme 2017 had made a major improvement to satisfy the HUST programme development project in the period of 2017-2025[TME.01.03.08]. This improvement is carried out on the basis of: Comments from businesses, alumni, senior year students and lecturers on the programme 2014 and new training model of HUST [TME.01.03.09], feedbacks were used to improve the programme

and develop advanced teaching and learning methods [TME.01.03.10]. Survey results of employment status, academic programme, about STE and HUST which were collected from 2014, 2015, 2016, and 2017 graduated students [TME.01.03.11]. Therefore, the ELOs has been reviewed and adjusted to suit the objectives of the academic programme. Details of the ELOs changes are shown in [TME.01.03.12], with some changes as follows:

- The ELOs of the programmes 2009 and 2014 has no big differences, but the programme 2014 has added the General Law course to meet the requirements of the university training regulation stipulated by MOET [TME.01.03 .13], so the number of credits increased from 162 to 164.
- The ELOs of the academic programme 2017 compared to 2014 had some changes to meet the requirements of high level human resources and the trend of globalized knowledge economy, specifically as follows:

+ In category 3.3, increasing the English standard from TOEIC > = 450 to > = 500 for graduated students to have the ability to work in an international environment.
+ In catagory 2, removed item 2.6 but added item 4.6 in category 4 to meet the requirements of improving career skills, teamwork skills, communication skills.

Therefore, programme 2017 had some modifications as follow: The general knowledge and skills were reduced 1 credit, the part of Basic core courses were reduced 1 credit, Elective part was reduced 9 credits but added up soft skill (Including 2 compulsory courses: Social/Start-up/other skill course (6 credits); Technical Writing and Presentation course (3 credits)). And the Graduation practicum course was increased from 3 to 4 credits, and Engineer thesis was increased from 9 to 12 credits.

The ELOs of the academic programme is publicly announced with the programme so that stakeholders can easily access and comment on the website of HUST and STE [TME.01.03.14]. On the other hand, during the annual Open Day event for high school students, STE provides leaflets introducing the programme and work opportunities [TME.01.03.15]. Employment information is also published on the STE website [TME.01.03.16].

2. Criterion 2. Programme Specification

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

The description of the academic programme in the programme 2017 book [TME.02.01.01] is described thoroughly information and posted on the website of HUST and STE, including the name of the programme in Vietnamese and English, the programme general and specific objectives, the ELOs of the programme, programme structure and knowledge blocks as well as the number of credits required for each block, and the main contents of the courses in the programme.

The specific content of the programme includes:

0. General information: including programme name, programme code, date of approval;
1. Objectives of the programme (both general and specific objectives);
2. ELOs;
3. Study time and total accumulated credits;

4. Admissions subjects;
5. Education process and graduation conditions;
6. Point proportion;
7. Content of the academic programme;
   7.1. Structure of the academic programme;
   7.2. List of courses of the academic programme;
8. Brief description of the content of courses.

Updating and supplementing information related to the programme description is done according to the adjustment process of HUST, the main adjustment contents in the period of 2011 to 2017 are unified and detailed by SAC of STE in table 2.1 and table 2.2 [TME.02.01.02]. In order to achive the "Comprehensive and up-to-date academic programme description", SAC of STE sent a dispatch requesting the change of the courses content [TME.02.01.03], based on that the SAC of HUST has issued a decision on approving the programme structure [TME.02.01.04]. Updated contents of the academic programme based on the requirements of the stakeholders were shown as follow:

a. Requests from learners and the assigned department and taking charge of the courses to suit the training capacity of the department as well as to meet the development trend of the majors (For example: changed the number of credits of some courses from practice to large assignments or homework and vice versa due to the Dept. of Automotive Engineering, Dept. of Internal Combustion Engine, and Dept. of Fluid Power and Automation Engineering) [TME.02.01.05], [TME.02.01.06].
b. From actual requirements of businesses [TME.02.01.07].
c. By the request of MOET, the General law course was introduced in the academic year of 2012-2013 [TME.02.01.08], [TME.02.01.09].

The academic programme has been changed, updated regularly, and publicly announced. Currently there are 3 copies of the programme approved in 2009 [TME.02.01.10], 2014 [TME.02.01.11], and 2017 [TME.02.01.12].

Table 2.1: Main information of the TME programme adjustment in the period of 2011 to 2015

Adjustment time	**Adjusted content**	**Time and subject to apply**	**Note**
11/2011	Changed the conditions of the courses	TME students, apply from the 20122 semester	
11/2011	Changed the weight of the courses	TME students, apply from the 20122 semester	
2012-2013	Supplemented the General law course	For university students	
2014-2015	Added the course of Automotive technical diagnosis	Elective course for students oriented Automotive Engineering	

Table 2.2: General information about the TME programmes 2014 and 2017

Information	2014	2017
1. Name of the institution issuing the certificate	HUST	
2. Name of educating institution	STE	
3. Expertise Committee	SAC at all levels	
4. Graduation certificate	Engineer	Engineer
5. Programme name	TME programme	TME programme
6. Major	TME	TME
7. Programme code	52520103	7520116
8. Programme objectives	Equipment for graduates: (1) Solid knowledge base to adapt to different jobs in a wide field and have in-depth knowledge of a narrow specialization of TME. (2) Professional skills and personal qualities needed to succeed in careers and can continue to master and doctoral programmes domestic and abroad. (3) Social skills needed to work effectively in multidisciplinary teams and in an international environment. (4) Capacity of project planning, design, implementation and operation of equipment, measurement, control and automation systems suitable to economic, social and environmental contexts. (5) Political and ethical quality,	Equipment for graduates: (1)Strong professional knowledge base and deep professional knowledge, professional practice skills, capable of designing and manufacturing in the field of manufacturing cars, specialized vehicles and energy, hydraulic control. (2)Having professional skills and personal skills, being able to study at a higher level, self-learning ability to adapt to the continuous development of science and technology and being able to study continuously. (3)Good communication, foreign language and teamwork skills to work in an interdisciplinary,

	conscious of serving the people, having health, meeting the requirements for national development and defense.	multicultural and multinational environment. (4)Having the ability to formulate ideas, design, implement and operate systems in businesses and society.
9. ELOs	Detailed in the ELOs summary table of the academic programme [TME.02.01.13]	
10. Admissions	According to the Enrollment Regulation of MOET and HUST	
11. Type of training	Formal	
12. Duration of training	5 years (10 semesters)	5 years (10 semesters)
13. Teaching language	Vietnamese	
14. Credits needed to accumulate	164	160
15. Teaching strategy, test-evaluation	- Teaching-learning strategy: Taking learners as center, Learning goes hand in hand with practice. - Form of teaching-learning: The number of theoretical / practical / self-study hours is clearly allocated for each course. - Test-evaluation forms: exercises, answers to classroom situation questions, multiple choice tests, discussions, presentations, group exercises, essays, writing tests and oral examinations depending on each course to meet ELOs on knowledge and skills.	
16. Programme update time	2014	2017
17. Post on	STE website: http://ste.hust.edu.vn/dao-tao/	STE website: http://ste.hust.edu.vn/dao-tao/

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

Outlines of the courses in the academic programme are described fully and in detail, including: General information, course descriptions, objectives and ELOs of the course, learning materials, how to evaluate the course, teaching plan, rules of the course, approval date, update process. Details are presented as follow:

- General information, including:

+ Course name

+ Course code: TExxxx in which TE is the symbol of courses taught by STE.

+ Volume: distribute time for theory, exercises, practices/experiments and self-study. For example: 3 (3-0-1-6), meaning 3 study credits of the course, including: 3 hours of classroom theory per week, 0 hour of exercise, 1 hour of practices, 6 hours of self-study.

+ Prerequisites: including the list of the courses required for students to study and pass, the list of courses requires students to study, the list of courses requires student to study in parallel.

- Description of the course.
- Objectives and ELOs of the course.
- Learning materials: including textbooks and reference materials.
- How to evaluate the course: including component points, specific evaluation methods, descriptions, ELOs and proportions.
- Teaching plan: number of hours to teach theoretical knowledge, practice/experiment, archived ELOs, teaching and learning activities.
- Regulations of the course.
- Approval date.
- Update process: adjusted contents, approved date, applied semester/academic year.

The amount of contribution of the course to the ELOs according to CDIO level 2 of the academic programme is clearly shown in the detailed outline of the course [TME.02.02.01]. Table 2.3 shows an example of the course contributions response to the ELOs of the academic programme 2017.

Table 2.3: Example of the course contribution level for the ELOs according to CDIO level 2 of the TME programme 2017

Objectives/ ELOs	**Description of targets / ELOs of the course**	**ELO is allocated for the course / Level (I / T / U)**
[1]	**[2]**	**[3]**
M1	Present and analyze the movement rules of the main components of the crankshaft transmission mechanism.	1.1; 1.2; 4.3; 2.3.
M1.1	Identify and understand the components of the crankshaft transmission mechanism.	[1.1] (I); [4.3](I)
M1.2	The analysis is a rule of motion of components in the crankshaft transmission mechanism.	[1.1](T); [1.2] (U)

I – Introduction; T – Teach; U – Utilize.

Outlines of the courses are adjusted regularly through meetings of SAC to update the requirements on contents, knowledge, assessments, conditions, etc. The adjusted and updated contents are shown in the records of SAC meetings [TME.02.02.02] and the official dispatch requesting the change of the course contents of STE leader with the leader of Academic office [TME.02.02.03].

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

The description of the academic programme is published on printouts at STE, on the website of HUST [TME.02.03.01], on the website of STE [TME.02.03.02], leaflets in the enrollment consultancy programme and annual major introduction organized by the Academic office [TME.02.03.03], in the student handbook that every student receives when enroll [TME.02.03.04], in the student learning programme [TME.02.03.05] for easy access by students, lecturers, employers and parents.

The description of the academic programme provides useful information (e.g. training process, graduation conditions, programme structure, training diagram, etc.) so that lecturers can guide students. Lecturers can also use relevant information (such as methods of assessment, summary of courses, etc.) to serve the course they teach. Enterprises can also find useful information about the academic programme, ELOs, etc.

The detailed course outline [TME.02.03.06] is also publicly available on printouts at STE. The syllabus of each course is provided by lecturers to students during the first meeting [TME.02.03.07].

Information on changes of the academic programme and the course is also informed to students on the website and fan page of the training department, STE and by class advisors in the class meetings of students each semester [TME.02.03.08].

In addition, some parts of the academic programme, courses outlines (such as ELOs, study plan, etc.) are provided to stakeholders directly through surveys or indirectly via email forms or fan pages [TME.02.03.09].

3. Criterion 3. Programme structure and content

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

As already mentioned, the academic programme of Engineer in Transport Mechanical Engineering is built in accordance with the CDIO guidelines. The programme is designed on the base of old the programme with annual training [TME.03.01.01] and referred the ideas of companies [TME.03.01.02, TME.03.01.03], profesional and researchers [TME.03.01.04]. The programme is designed to ensure the balance between different knowledge blocks: general education, basic core knowledge, specialized knowledge, optional knowledge (compulsory elective courses, free elective courses), technical internship skills, projects and graduation thesis [TME.03.01.05]. The programme structure could attract foreign students from Japan and other countries to attend short courses [TME.03.01.06].

After operation period, comparing with the academic program, comments from stakeholders [TME.03.01.07]. Blocks of knowledge are distributed to meet the corresponding learning outcomes, the more details are showed in Table 3.1. The teaching plan for each

period is also sent to lecture in order to meet the corresponding learning outcomes [TME.03.01.08, TME.03.01.09]. Learning outcomes also was calculated based on measurement and evaluation of training programme [TME. 03.01.10, TME.03.01.11].

Table 3.1: Blocks of knowledge and the corresponding programme's ELO of Engineer in Transport Mechanical Engineering of 2017

Index	Curriculum	Number of credits	The learning outcomes
I	**General Education**	**50 credits**	**General requirements for technical majors**
1.1	Mathematics and basic science	32	1.1, 1.2, 2.1
1.2	Political theory	10	2.5, 4.1, 5.1, 5.2
1.3	Physical Education	(5)	
1.4	General Law	2	
1.5	National defense and security education	(10)	
1.6	English	6	Course target: TOEIC 500, meets the expected learning outcome 3.3
II	**Professional education of the TME degree**	**110**	
2.1	Basic and Core of Engineering	48	1.1, 1.2, 1.3, 2.1, 2.3, 4.1, 3.3, 4.4
2.2	Soft skills	9	1.2, 2.1, 2.2, 2.3, 2.4, 2.5, 3.1, 3.2. 4.2, 4.3, 4.4, 4.5, 4.6, 5.1
2.3	Elective Module	16 (±2)	1.1, 1.2, 1.3, 2.1, 2.2, 2.3, 2.4, 3.1, 3.2. 4.3, 4.3, 4.5, 4.6
2.4	Engineering Practicum	2	4.1, 4.2, 4.3, 4.4, 4.5
2.5	In-depth Elective Module	19	1.1, 1.2, 1.3, 2.1, 2.2, 2.3, 2.4, 3.1, 3.2. 4.3, 4.3, 4.5, 4.6
2.6	Graduation Practicum	4	1.1, 1.2, 1.3, 2.1, 2.3, 2.4, 2.5, 3.1, 3.2, 4.1, 4.2, 4.3, 4.4, 4.5, 4.6
2.7	Engineer Thesis	12	1.1, 1.2, 1.3, 2.1, 2.3, 2.4, 2.5, 3.1, 3.2, 3.3, 4.1, 4.2, 4.3, 4.4, 4.5, 4.6
	Total number of credits	**160 TC**	

The curriculum consists of 160 credits divided into blocks of knowledge [TME.03.01.10]: general education, professional knowledge of the engineer degree. The 50 credits of general education, there are 6 credits of English. The professional knowledge of the engineer degree includes 110 credits, 48 credits of Basic and Core of Engineering, 9 credits of Soft skills, 16 credits of elective major, 2 credits of Engineering Practicum, 19 credits of In-

depth Elective Module, 4 credits of Graduation Practicum and 12 credits of final graduation thesis.

According to the CDIO approach, the course introduction to Engineering is compulsory and is introduced to students in the third semester to provide students with the most general professional knowledge, the students also were teached soft skills such as team building skills, teamwork, presentation skills, and technical report writing skills.

Soft skills as well as skills in implementing engineering design process are strengthened and enhanced in the Project courses as the following details: Project 1 focuses on general mechanical parts design, Project 2 addresses design of certain part or system of the transport mechanical engineering field, Project 3 guides the way to design a complete integrated system.

The Engineering Practicum course is conducted at the end of the 3rd and the beginning of the 4th year, in which students are given a one-month internship to learn more about their job positions, position requirements, and to feel the connection between the studying knowledge and the actual work in the industry. Students also take part into some certain manufacturing processes, such as technical design, equipment handle, technical maintenace and repair.

For Graduation Practicum course, students take a 6-week internship at an enterprise to find out the real problems arising from the business and to propose the graduation thesis. The Engineer Thesis enhances the skills of design process, analytical thinking skills, problem solving, presentation skills, and report writing skills for graduation. In addition, there are project-based assignments in the curriculum that reinforce the academic knowledge of the taught courses and skills of the technical design process. The relationship between Project courses and knowledge blocks is shown in Figure 3.1.

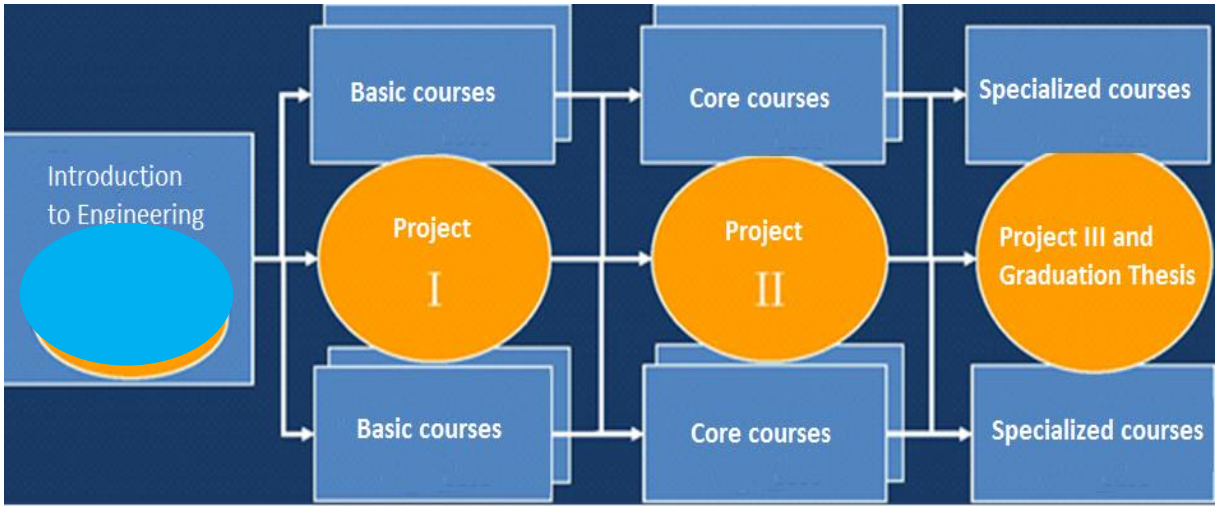

Figure 3.1: Relationship between Project courses and knowledge blocks.

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

As mentioned above, the blocks and the corresponding courses in the curriculum are designed based on the learning outcomes of the academic programme so that all outcomes are

covered. Each detailed syllabus clearly defines the contribution of the courses to the learning outcomes as Introduce (I), Teach (T), and Utilize (U), the template illustrated in Table 2.3 [TME.03.02.01].

Details of the contribution of the courses in the entire curriculum are shown in the course-outcomes mapping matrix [TME.03.02.02].

The modules are designed base on referred the ideas of stakeholders [TME.03.02.03], lecturers [TME.03.02.04] and SAC [TME.03.02.05].

It is depended on human resources in order to meet good training program, so it is required a teaching assignment based on the strong fields of lecturers to meet the learning outcomes [TME.03.02.06, TME.03.02.07]. Based on learning outcomes, the lecturers refer documents from internet source and programme education of international universities to apply in teaching activities with new teaching method (e-learning, presentations, group discussions, seminars, situational teaching and exercises).

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

The TME programme is referred to the old the programme, , the programme and international academic programmes from Nagoya University - Japan, Ecole Nationale Superieure De Mecanique Et D'aerotechnique –French Republic, Chulalongkorn University, Thai Lan, King Mongkut's Institute of Technology Ladkrabang, Thai Lan, Bandung Institute of Technology, Indonesia. The TME programme is built according to the credit-based system with total number of credits of 160 including 125 mandatory credits, 16 Elective Module credits and 19 In-depth Elective Module [TME.03.03.01]. The programme is also reffered to the comments of stakeholders [TME.03.03.02].

The academic programme also ensures the depth of the specialized courses in the block of specialized courses for the Engineer programme in the fifth year as follows:

- The block of General Education (50 credits) focuses on providing background knowledge in mathematics, physics, political theory, business management, general law, and English. In addition, students also take courses on national defense education, physical education.
- With the block of professional knowledge in Transport Mechanical Engineering programme (110 credits), the more details are shown in sections of 3.1

The ratio of the blocks of knowledge is shown in Figure 3.2.

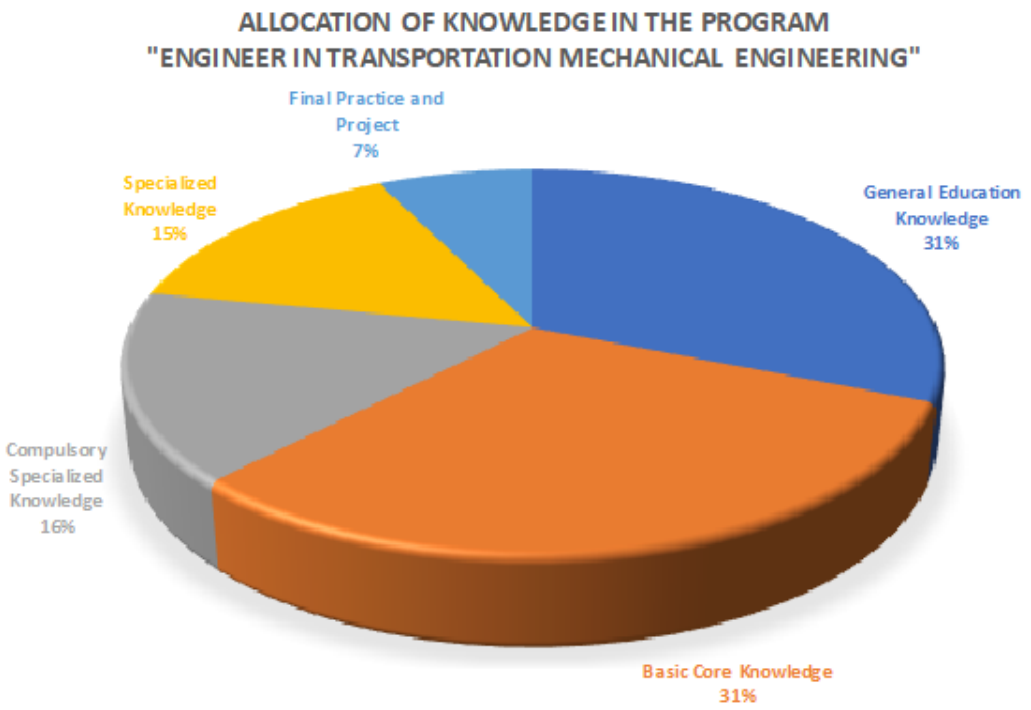

Figure 3.2: Allocation of blocks of knowledge

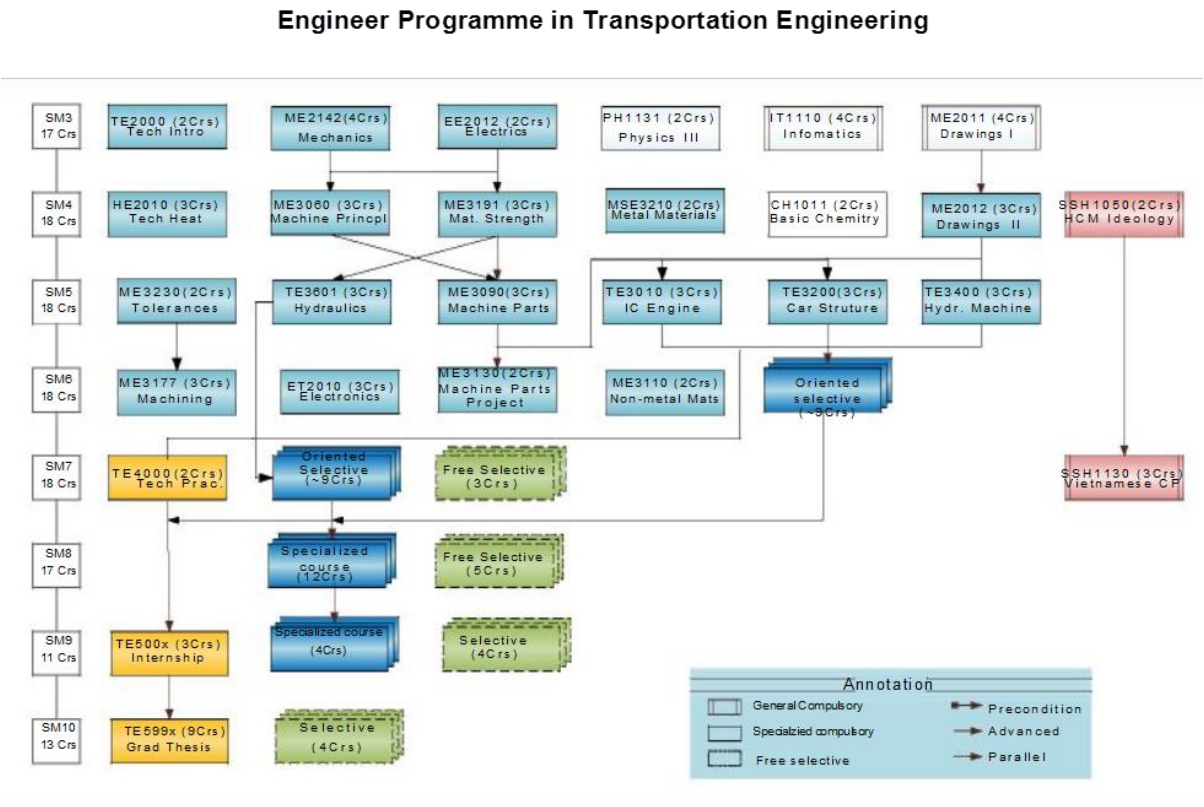

Figure 3.3: Standard Curriculum path of the programme from 1st semester to 10th semester that reflects the relationship of courses, blocks of basic core knowledge and specialized knowledge

The Figure 3.2 shows that the proportion between blocks of compulsory and elective knowledge is reasonable that makes the curriculum flexible, meeting the different needs of learners.

Of the 18 basic core courses, there are 1 course of Introduction, 1 course of project (Project 1) and 16 theoretical courses, of which 10 courses have credits of hand-on experiments accounting for 63%, 8 courses have credits of exercises. Thus, it can be said that the amount of time students can practice or do project-based assignments occupies a large proportion in the academic programme.

The courses are well correlated as shown in the syllabus of each course in the programme. All syllabus courses have to show prerequisites or parallel courses [TME.03.03.03]. These requirements are introduced to ensure that the learner is qualified enough to achieve the course's ELO, contributing to ELO of the entire programme. The standard curriculum path is shown in Figure 3.3. In this figure, the dependence between the courses is represented by arrows. The solid arrows represent the prerequisites and the dashed lines represent parallel courses.

In addition, as discussed in section 2.1, the academic programme is also reviewed and updated annually [TME.03.03.04]. The TME programme information is also mentioned in admission leaflets [TME.03.03.05] and open day for high school students [TME.03.03.06].

4. Criterion 4. Teaching and learning approach

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

Based on mission and vision of HUST and STE, with the reference to some universities in Vietnam and other countries, actual conditions of the country, the Engineer in Transport Mechanical Engineering has good work skills in order to adapt with social. Leadership of STE have discussed and completely agreed with the educational philosophy of STE [TME 04.01.01]. Educational philosophy is constructed, promulgated and informed to stakeholders and lecturers [TME 04.01.02].

The educational philosophy of STE is "to combine education with production, to attach theory to practice, to unite study with experiment,to connect university with society" [TME.04.01.03]. Educational philosophy is posted on the main website of the School so that it is easily accessible for all interested parties. This philosophy motivates the implementation of the overall objective of the Engineer in Transport Mechanical Engineering Programme.

Educational philosophy has been comprehended and applied in teaching activities with new teaching method (e-learning, presentations, group discussions, seminars, situational teaching, exercises) along with the use of modern technologies (projector, video ...) to support learners, create interesting learning environment, and engage students to study and comprehend the subjects deeper, as well as to enhance students' ability to memorize their knowledge [TME.04.01.04]. In addition, students get a chance to practice to master theoretical knowledge that has been learned and memorize longer.

Students are encouraged to participate in research with their mentors. In fact, there are some second-year students have started taking part in research, and write journals to create innovation and disseminate knowledge. Students are also encouraged to participate in

research contests organized by enterprises such as Honda, Shell Eco, ShipCon, AutoCon, etc. [TME.04.01.05].

The lectures are known educational philosophy by the website and news of STE, the news is hung on the bulletin board of STE. The lectures usually ask the students for 5W questions (Why, What, How, When and Where), this easy way to transmit the educational philosophy to the student.

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

Teaching and learning activities as well as teaching schedules are detailed in the syllabi of the courses. Students are instructed how to study, refer materials for each chapter and learning contents specified in the detailed syllabi. In addition, the formality of the assessments also ensures that the course satisfies the course learning outcomes [TME.04.02.01].

For the subjects with only theory and exercises, the knowledge taught in the classroom is the basic knowledge of the subject, but students are required to collect more knowledge to fulfill assignments through reports and homework. In the specialized subjects, lecturers are encouraged to use illustration and projector to make the class morelively. Students are encouraged to solve in-class exercises during exercise hours and answer questions during the theory hours, and earning bonus scores for that. This ensures that the learning environment encourages students to actively participate in the learning process.

For courses with experiments, students can participate in experiments in laboratories. Experimental classes have a maximum of 20 students to ensure the best performance. Before going to the experimental class, students must review the theory and prepare for the experimental session by reading the experiment manual first. During an experiment, the instructor reviews the theory and guides the experiment process. Students then do the experiment step by step as instructed and answer the questions that reinforce the knowledge and takes notes experimental results. After the experimental session, students must write and submit a report [TME.04.02.02].

For some basic core courses and specialized courses, besides theory hours, students also do project-based assignments as the theory-applied design. The project-based assignments help the students consolidate knowledge in the subjects while reinforcing the engineering design process, presentation skills, and reporting skills [TME.04.02.03].

For Project 1, 2, and 3 to Graduation Thesis, each instructor is assigned to mentor several groups of students, each group of 3-5 students. The Project 1 course (Mechanism Design) aims to equip students the skills needed to calculate, design and build a mechanical drawing. By that way, students can practise and drill on teamwork skills as well as other soft skills. The Project 2 course (specialsed subject) allows students to practice their design skills with the tranport mechanical engineering systems or components. Especially, in Project 2, students are instructed by a professional lecturer, and a practical instructor at the practical training center. Students may arrive at the practical training center at an appropriate time to use the devices and tools for the design, experimental work and development process. Final-year students begin to receive specialized research topics which have been framed by the research labs during the time of implementation of the Project 3 course.

Graduation theses are implemented in the final semester to solve problems derived from real industry issues, or from research topics of instructors. The theses, in addition to strengthening professional knowledge, also help students improve their ability to perform engineering design and other soft skills.

During the whole courses of the training process, students have at least two opportunities to be exposed to the industrial environment. For the first time, students go on a one-month internship at the end of the 3rd year in order to find out more about the positions of a company, and understand more about the link between classroom knowledge and job requirements [TME.04.02.04]. In the second time, students take a six-week final internship at a company to get acquainted with a particular job, finding a problem needed to be solved in the operation of the company, then proposing a thesis topic [TME.04.02.05].

In addition, at each semester, in the biannual student meeting, the companies will come to introduce the companies' business, job requirements and job positions for students to have a better overview of professions, and also help students to have better goals to strive for [TME.04.02.06]. These activities of internship or introduction to business, specifically meet ELOs of 4.1 and 4.2.

A key factor contributing to engage students in learning is that with a credit-based training system and with a flexibly-designed academic programme, students are free to choose their study schedule as well as their favorite majors and disciplines.

The application of information technology in teaching is also encouraged. The lecture rooms are equipped with projectors for teaching on slides and internet for teaching by slide and e-learning [TME.04.02.07], this helps to improve the quality of training. STE has plan to teach by e-learning, some curriculums are built and teach for student [TME.04.02.08]. Besides that, the lectures have been learnt about the new teaching methods as blended learning [TME.04.02.09].

The end of objectives, the students are given an evaluation form about teaching activity of lectures [TME.04.02.010]. This evaluation helps the lectures to improve the method and teaching activity in order to adapt to student.

Another very important factor contributing to improve the quality of training, meeting the requirements of the learning outcomes is that students are encouraged to pursue independent working with lecturers in the laboratories (Lab). Each Lab is mentored by one or several instructors in a specific research orientation. Students participating in the labs are divided into task groups by the instructors and assigned small research work according to the research orientation of the labs. The number of students in the TME programme participated in the student research competitions annually organized by the School since the past 6 years is summarized in Table 4.1 [TME.04.02.011].

Table 4.1: Statistics on the number of students participating in Research Student Competition

Academic year	Number of students registered to the competition	Number of research topics registered
2013 - 2014	45	19
2014 – 2015	66	22
2015 – 2016	34	16
2016 - 2017	48	17
2017 – 2018	32	13

It can be seen that, the number of research topics was quite constant by years. Some of students had joined academic publication with their instructors that were published in reputable national and international articles. At each laboratory, it has at least 8 students participate in research ativities, these research groups present in Research Student Competitions. Some results were applied in training as designing and manufacturing a test bed for motorcycles which was used for experiments of students [TME.04.02.012], and some students puplished articles on internaltional journals [TME.04.02.013] and domestic journals [TME.04.02.014].

An example for research student group which is win in a Research Student Competition of STE about manufacturing a tennis ball shooting machine, the students were applied the subjects about flying model of objects, the principle of machine to calculate and design motion trajectory of ball, so it is passed learning outcomes of the TME programme. The commercial ball shooting machine appeared on the market.

4.3. Teaching and learning activities enhance life-long learning

Lifelong learning is an important learning outcome for higher education. For the TME programme, this requirement is defined in the ELO 2.6: Understanding contemporary issues and perceive lifelong learning. To meet this requirement, learners should be equipped with good background and self-study skills, long-term knowledge retention skills, ability to recognize old and new knowledge, ability to create and apply new knowledge, convey knowledge to others, studiousness and lifelong learning spirit.

The teaching activities are towards training skills for students [TME.04.03.03], teaching activities by chalk board was used for long time before, however upto now, it is changed with the change of infrastructure, the classrooms are equiped projectors, air conditioner and internet; these changes help to strongly improve the teaching quality [TME.04.03.02].

In terms of knowledge, the curriculum is designed to ensure that students have a sound background in mathematics and science, solid core disciplinary knowledge so that they can learn new knowledge on their own. Most basic core subjects have experimental hours after each block of theoretical knowledge to help consolidate the knowledge for students [TME.04.03.03].

In order to help the students to memorize long-term knowledge, examinations are improved at least one time per semester, whereby, the students must learn more due to semesters.

To help the students recognize old and new knowledge, students are encouraged to do assignments on a topic of the subject and have to present in class. Assignments help students understand clearly the content of the subject, know how to solve the assigned problem through the plan of assigning team members to search for documents, collect information and teach other team members.

For theoretical modules, lecturers focus on evoking knowledge, assigning homework to students to learn advanced knowledge themselves. This activity helps students have habits and skills of self-learning, self-seeking information.

Students participate in active learning in the classroom through a range of exercises, well-prepared questions, and a variety of learning methods such as project work, group assignments and seminars. This participate helps students communicate knowledges for other students.

However, Vietnamese students, like most of Asian students, are usually quite quiet and passive in class. It should be emphasized that students do not immediately engage in active learning but need to be motivated through a series of well-prepared exercises and questions, along with various learning styles such as Group work or projects, seminars.

With modules as Projects 1, 2, 3 and graduation theses together with the research activities with lecturers in the laboratories, students are trained activeness and creativity in learning and research, thereby enhancing their ability to study for life [TME.04.03.04].

Teaching and learing activities help promote skills for students, improve lifelong learning ability, lectures in STE can supervise the students research sciences to become the students can self-study lifelong, as an example, Mr. Nguyen The Truc, a lecturer became the person who can self-study lifelong after graduation [TME.04.03.06], now he is a PhD student of Tokyo Institute of Technology, Japan [TME.04.03.05].

5. Criterion 5. Student assessment

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

The student assessment process at STE is guided by MOET's Academic regulations [TME.05.01.01] and HUST's Academic regulations [TME.05.01.02].

Every year, canditates are considered for admission to HUST based on the standard score and number of candidates registered of each training group in university entrance examination (UEE) or national high school graduation examination (NHSGE) [TME.05.01.03]. Candidates registering in the Mechanical-Transport Mechanical Engineering (M-TME) group are recruited based on the standard score of a combination of three subjects: Mathematics, Physics and Chemistry or English. Standard scores recruiting to M-TME group from 2013 to 2017 are listed in Table 5.1 [TME.05.01.04]. It can be noted that the standard scores for M-TME group are relatively high and tend to increase year by year.

Table 5.1: Standard scores to recruit to M-TME group at HUST by year

Recruiting year (Course)	**2013-2014 (K58)**	**2014-2105 (K59)**	**2015-2016 (K60)**	**2016-2017 (K61)**	**2017-2018 (K62)**
Examination type	UEE	UEE	NHSGE	NHSGE	NHSGE
Standard score/ maximum score	23/30	21.5/30	24/30	24/30	25.75/30

Before the academic/school year 2017-2018, students entering to M-TME group will be assigned to TME after the first year of study based on their academic results and aspiration of students. Table 5.2 shows the recruiting score according to accumulating grade point average (CPA point) in the first year and the number of students entering to TME each year since 2012 [TME.05.01.05]. Particularly for 2017-2018, students are directly assigned to TME right after they confirm their admission to M-TME group. It can be noted in Table 5.2 that the recruiting score tends to decrease in recent years. Maybe, the main reason is due to the promotion and introduction about TME programme to first-year students in M-TME group was not effective.

This is a difficulty and challenge for STE. However, for the 2018-2019 enrollment period, HUST's Enrollment Regulation was changed; HUST did not enroll students in M-TME group but directly enrolled students in TME. The standard score for admission to TME in 2018-2019 was 22.2 points [TME.05.01.06].

Table 5.2: Recruiting score to TME based on CPA point of the first year and the student number required by TME each year

Year (Course)	**2012-2013**	**2013-2014**	**2014-2015**	**2015-2016**	**2016-2017**
Number of students entering to TME	150	170	221	166	165
Standard score	2.12	2.17	1.43	1.50	1.54

Before 2016-2017, at the beginning of the course, students must take a placement test held by HUST to classify student's English level. Since 2017-2018 student's English level has been classified based on English results in NHSGE [TME.05.01.07]. Students who passed the test with the required score will be exempted and recognized as having completed one or two basic English modules. The rest must study one or two modules in the first year.

Student's performance assessment in a course is specified by Chapter 2 in HUST's University Training Regulation [TME.05.01.08]. For each course, assessment methods are clearly specified in the course syllabus [TME.05.01.09] and are selected to meet the learning outcomes. Normally, one theoretical course of 2 credits or higher is assessed from two formal compositions: process grade and final grade, where weight percentage of the final grade

varies from 0.5 to 0.8. Theoretical courses of less than 2 credits can be assessed by combining the progress and final grades, or just by the final grades. The process grade of the theoretical courses is evaluated through a midterm exam, periodic tests, or combinations of other compositions such as experiments, assignments, essays, etc. [TME.05.01.10]. The final grade of theoretical courses is evaluated through a final exam [TME.05.01.11]. Student attendance results in a course can be used to account for the progress grade as shown in Table 5.3. To encourage students to study, students who obtain prizes in Olympic competitions are considered to be exempted from the final exam or to get bonus points to the final exam scores of the relevant course.

Table 5.3: Additional points to the progress grade based on student attendance results

Number of absences	0	1-2	3-4	≥5
Plus/minus points	+1	0	-1	-2

After each semester, students are assessed in the semester based on their grade point average (GPA) and are assessed from the beginning of the course based on the CPA according to academic ranks are shown in Table 5.4.

Table 5.4: Table for academic ranks

GPA/CPA	<1.0	1.0-1.49	1.5-1.99	2.0-2.49	2.5-3.19	3.2-3.59	3.6-4.0
Rank	Poor	Weak	Medium-weak	Medium	Fair	Good	Excellence

In the last academic year, students must register for a graduation internship at a company before conducting their thesis. Graduation internship results are assessed based on the company's comments and the results of the internship report. Graduation thesis is assessed by a committee that established by the school dean [TME.05.01.12]. Before students defend their thesis in the committee, thesis booklet will be evaluated by the instructor and the reviewers with criteria that reflect the learning outcomes of the thesis [TME.05.01.13]. The committee evaluates additional criteria such as presentation content, presentation skills and responses to the committee comments. Scores are given according to the committee 's evaluation form [TME.05.01.14].

Students are recognized for graduation when they have completed all the requirements of the academic programme within the prescribed time, including the learning outcome of English language and have a cumulative grade point average (GPA) of at least 2.0/4.0 points [TME.05.01.15]. In a survey of graduated students in 2016, 83.7% of the surveyed students commented that they agreed with the method of assessing academic performance at HUST [TME .05.01.16].

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

As mentioned above, the information on assessment of each course is regulated in detail in the course syllabus [TME.05.02.01]. This information is also provided in student

book that given to students when they enroll [TME.05.02.02], in anual student meetings [TME.05.02.03] and is fully informed to students at the first lesson by the lecturer.

Beginning each school year, students can know learning and exam weeks in an academic timetable chart [TME.05.02.04] posted on the HUST's website [TME.05.02.05]. Students can also know exact days of the mid-term and final exams before one week from the HUST's website [TME.05.02.06]. Information on timelines for midterm report, final report, graduation internship and thesis committee are announed directly to students before two weeks by their instructors.

In addition, students at STE can be advised and assisted with academic matters as well as feedback of their academic results through Class Advisors and Academic Advisors at any time at School's office from Monday to Friday of the week [TME.05.02.07]. Members of the Class Advisors and Academic Advisors are usually the School's staffs.

The surveys to lecturers are carried out in recent years after each course by the students [TME.05.02.08] and the survey results are considered by Dean of STE and Head of Departments to find solutions to improve the teaching quality at the School [TME.05.02.09].

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

Regulations for organizing exams, assessment rubrics and marking schemes are clearly defined by Articles 27 and 28 in HUST's University Training Regulation [TME.05.03.01]. Accordingly, the School is responsible for organizing the implementation, or the Department is authorized to perform the following work: issuing exam questions, giving the exam, marking and entering scores, resolving complaint of scores, preserving exam articles. To ensure the reliability and fairness of student assessments, the selected exam questions must follow the outline of the course. Exam questions need to be produced by the teaching lecturers following the School's form, with specific grades and answers and must be certified by the Leadership of the School or of Department before giving the exam [TME.05.03.02]. The classes that have the same exam time must use the same test questions and the classes having different exam time must use different exam questions, but it is necessary to ensure that the exam questions have the same volume and difficulty level.

Final oral exams, including final projects must be undertaken by two lecturers. Grades of the final oral exams are publicly available after each examination. In cases where the two lecturers fail to reach agreement on the marks, the final mark will be decided by head of the department.

For graduation thesis, the results are also evaluated by the process grade and the final grade. The process grade is calculated from the point of the instructor and the point of a reviewer according to the prescribed weight. The final grade is the point of the final thesis defense, averaged from the points of committee members. To ensure validity and fairness, the graduation committee includes 3 to 5 members, of which the chairman and secretary are the university members and not the instructor [TME.05.03.03]. The committee may have a member who is an off-campus staff but must have at least a formal university diploma in the same field.

Course grades are calculated from the total grade of the midterm grade and the final grade with the corresponding weight, rounded to the nearest decimal and converted into letter grades as shown in Table 5.5. If one component grade is lower than 4, the course grade will be F. A passing grade must be D or higher for normal courses and must be C or higher for graduation courses. To calculate the average point, the course grades are converted into a point scale of 4.

Table 5.5: Converting table of course grade

Total grade of composition	0.0 ÷ 3.9	4.0 ÷ 4.9	5.0 ÷ 5.4	5.5 ÷ 6.4	6.5 ÷ 6.9	7.0 ÷ 7.9	8.0 ÷ 8.4	8.5 ÷ 9.4	9.5 ÷ 10
Course grade	F	D	D+	C	C+	B	B+	A	A+
Converting grade	0	1	1.5	2.0	2.5	3.0	3.5	4.0	4.0

In a survey of a student group from STE in 2018-2019, 77% of the surveyed students commented that the content of exam questions, test methods and assessment grades ensure rationality and fair [TME.05.03.04].

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

Timely feedback to the students is an important factor in improving the learning outcomes. Therefore, HUST in general and STE in particular are aware of this and have proposed many solutions for this problem.

For courses with homework, students are assigned homework and the results will be responded by lecturers in next lecture. For the experimental test, the results are announced to students immediately after the test. For courses with mid-term and final examinations, mid-term examination grades are given by lecturers one week after the end of the course and final examination grades are given at least 15 days after the test. Solutions for the mid-term exam question are also provided to the students in the next lecture. Students can see their test results as soon as the grades are entered into the Student Information System (SIS) on the student management page [TME.05.04.01]. From 2018, Lecturers are required to enter directly the midterm and final exam scores on the SIS system to reduce the publishing time of the scores for the students [TME.05.04.02].

For graduation thesis, instructor's grade, reviewer's grade and grade of the committee are announced directly to the student immediately after the student completes his/her presentation. Student that failed in the presentation must register for graduation thesis in the next period.

GPA and CPA points of students will be calculated as soon as grades of all courses are given. Based on the GPA and CPA points as well as the number of failed courses during the semester, students can know which level of their academic warning according to Article 12 and 13 in HUST's University Training Regulation [TME.05.04.03]. Knowing the level of academic warning, students will plan to study for the next semester in order to lower the level of warning and improve the learning outcomes.

After each semester, STE usually organizes a student meeting to assess the academic performance of the students in the semester, collect student's comments related to the learning process, and to provide students with useful information to register appropriate courses in next semesters [TME.5.04.04]. A survey showed that 59% of the surveyed students in STE satisfy with the feedback of the academic results and 71% satisfy with activities to support academic advice from HUST as well as from STE. However, many students reflected that the mid-term results should be announced immediately after the test instead of announcing after the 1-week term end [TME.05.04.05]. This may be a major reason of the low satisfaction in the survey results.

5.5. Students have ready access to appeal procedure

The appeal procedure on learning results is clearly and explicitly defined by Article 10 in HUST's University Training Regulation [TME.05.05.01]. This procedure is widely disseminated to students at anual student meetings [TME.05.05.02], academic advisory meetings [TME.05.05.03], and in student book [TME.05.05.04]. If a student does not agree with his/her exam result, the student can submit an appeal document [TME.05.05.05] to the School within one week from the date that the exam result is published on the SIS system [TME.05.05.06]. The School will arrange another qualified lecturer to mark the student's test. Appeal result is announced to student at least two weeks after submitting the appeal form. Particularly for oral test or thesis defense, the appeal request shall not be considered.

6. Criterion 6. Academic staff quality

6.1. Planning of academic staff establishment or needs (including succession, promotion, re-deployment, termination, and retirement plans) are carried out to ensure that the quality and quantity of academic staff fulfil the needs for education, research and service.

Planning of academic staff establishment or needs (including succession, promotion, re-deployment, termination, and retirement plans) is always focused on by STE in order to fulfil the needs for education, research and service. STE builds plans in compliance with "Proposal for the project of General plan on construction and development of HUST in the period of 2006 – 2030"[TME.06.01.01]. The planning is based on workload, development plan, total staffs, the percentage of officials having the national academic titles such as Associate Professor, Professor, staffs with doctorate degree, support staffs and the number of staffs at retirement age. Table 6.1 excerpted from the evidence [TME.06.01.02] shows the human resources for period of 2014-2018.

Based on the academic staff plans for each term, STE annually sets plan for recruitment and promotion upon consideration in the number of staffs reaching retirement age, workload and recruitment proposal submited by departments [TME.06.01.03]. Then STE submits the recruitment needs to Department of Human Rescourse according to procedures issued in the recruitment process of HUST [TME.06.01.04] and Regulations on standards for employee of HUST [TME.06.01.05]. Almost teaching staffs in STE graduated master and Ph.D. programmes from developed countries such as France, Germany, Japan, Korea…These staffs ensure both quantity and quality requirements so that STE can meet the needs of training, scientific research and support activities [TME.06.01.06].

Table 6.1: Planning of academic staff during 2015-2019 of STE for TME programme

Year	2015	2016	2017	2018	2019
Total number of staffs	56	54	54	52	52
Number of lecturers	51	49	49	47	47
Number of support staff	5	5	5	5	5
Ratio of Full Professors/lecturers (%)	3.92	4.08	4.08	6.38	6.38
Ratio of Associate professors/lecturers (%)	33.33	42.86	42.86	46.81	46.81
Ratio of lecturers with doctorate degree (including professors) (%)	78.43	83.67	83.67	87.23	87.23
Ratio of support staff with master degree or higher (%)	100%	100%	100%	100%	100%
Number of faculty reaching retirement age/ number of support staff reaching retirement age *	10/0	10/0	11/0	11/0	11/0

** Under the provisions of Vietnamese labor law, the retirement age for men is 60 and women is 55.

Table 6.2: Number of lecturers of STE recruited since 2011 for TME programme

Year	Recruitment Needs	Number of new lecturers	Full name of faculty and nation for doctorate training
2011	1	1	- Msc. Do Viet Long (Germany)
2012	1	1	- Dr. Tran Xuan Bo (Japan)
2013	4	1	- Msc. Le Van Nghia (Russia)
2014	1	1	- Dr. Vu Van Truong (Japan)
2015	4	0	
2016	1	1	- Dr. Truong Van Thuan (Taiwan)
2017	1	1	- Msc. Tran Trong Dat (Vietnam)

Table 6.3: Number of applicants for the national titles of Associate professors, Full professors of STE for TME programme during 2011-2018

Year	Number of Assoc. Professors/ and full professors According to the plan	Number of Assoc. Professors/full professors achieved in reality	Full name of faculty achieving the national titles
2011	1/2	1/2	- Nguyen The Mich – Prof. - Ho Huu Hai- Assoc. Prof. - Luong Ngoc Loi - Assoc. Prof.
2012	0/1	0/1	- Ngo Van Hien - Assoc. Prof.
2013	0/3	0/3	- Khong Vu Quang - Assoc. Prof. - Le Thanh Tung - Assoc. Prof. - Truong Viet Anh - Assoc. Prof.
2014	0/0	0/0	
2015	0/1	0/1	- Hoang Sinh Truong - Assoc. Prof.
2016	0/4	0/4	- Tran Quang Vinh - Assoc. Prof. - Pham Huu Tuyen - Assoc. Prof. - Tran Thi Thu Huong - Assoc. Prof. - Phan Anh Tuan - Assoc. Prof.
2017	0/0	0/0	
2018	1/3	1/3	- Le Anh Tuan – Prof. - Duong Ngoc Khanh - Assoc. Prof. - Dam Hoang Phuc - Assoc. Prof. - Le Thi Thai - Assoc. Prof.

The planning of contingent leadership for the next term (Dean, vice dean and office learders) is also implemented following HUST procedures [TME.06.01.07]. Recently, STE is facing difficulties in recruiting young high-level academic staffs to meet the needs of training, research, gradual replacement of staffs at retirement age and staffs changing their jobs... HUST and STE particularly are trying to overcome this issue in the coming years when they are given autonomy via Decision No. 1924 / QĐ-TTg dated 06/10/2016 of the Government [TME.06.01.08] and schools will self-reliance on staff pay. At present, HUST has policy to attract young doctors such as to support 15% of salary during apprenticeship, give young doctors the first priority when considering research projects assessment at the school level for new working environment adaptability [TME.06.01.09]. In addition, for ensuring a good source of qualified young lecturers, students who have good academic achievements are encouraged to take part in scientific research, pursue postgraduate programmes at HUST or abroad. This is a high quality human resource for staff recruitment.

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

At present, STE has 71 staffs totally and has 47 full time lecturers (who belong to one of four departments: Automotive Engineering, Fluid Power and Automation Engineering, Internal Combustion Engine, Fluid Mechanics and Ship Engineering or Centralized Laboratory of Internal Combustion Engine) including 3 professors, 22 associate professors, 16 doctors and 6 masters for TME programme as shown below [TME.06.02.01].

Table 6.4: The number of academic staffs and their FTEs for TME programme

Category	M	F	Total		Percentage of PhDs
			Headcounts	FTEs	
Professors	3	0	3	3	100%
Associate Professors	16	2	18	18	100%
Full time Lecturers	44	3	47	47	87.23%
Part time Lecturers	0	0	0	0	0%
Visiting Professors/ Lecturers	0	0	0	0	0%
Total	44	3	47	47	87.23%

(Updated on the 6th of June 2019)

(*) FTE– Full Time Equivalent is a unit which indicates the workload of an employed person. FTE is equivalents to 40 hours of work per week including teaching hours, research hours and other supporting tasks (that of a full-time job). For example, a guest lecturer who works 8 hours per week has FTE of 0.2.

According to guide of identifying equivalent staff-to-student ratio in official dispatch No.1325/BGDĐT-KHTC [TME.06.02.02], work norm of lecturers/researchers [TME.06.02.03] and training requirement, STE always keeps staff-to-student ratio suitable. The ratio data in the last 5 years is shown in Table 6.5.

Table 6.5: Ratio of lecturer to student for TME programme

Academic Year	Total FTEs of Academic Staff	Total FTEs of students	Staff-to-student Ratio
2013-2014	49	583	1/11.9
2014-2015	51	572	1/11.22
2015-2016	49	678	1/13.84
2016-2017	49	699	1/14.26

2017-2018	47	652	1/13.87

(Updated on the 6th of June 2019)

Table 6.5 indicates that the staff-to-student ratio meets the requirement of Circular No. 32/2015/ TT-BGDDT dated on 16th December 2015 that stipulates the enrollment quota for institutions of higher education 1/20 (for Sector V - Engineering). This staff-to-student ratio helps to ensure the quality of teaching, research and support activities (such as class management) of lecturers. Via ensuring the appropriate ratio of lecturers / students along with reasonable work assignments, almost STE staffs complete well the assigned tasks. The completed work of each employee in each area they are in charge of, such as the number of teaching/research hours is statistically monitored for each academic year and is publicized in the annual Official Meeting report [TME.06.02.04].

Thereby, it can be seen that STE always monitors and ensures staff-to-student ratio and workload of lecturers, researchers as a basis for improving the quality of training activities, scientific research and support activities.

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

The recruitment and selection of lecturers and researchers in STE is in accordance with the Regulations on Recruitment of HUST [TME.06.03.01], The recruitment process of HUST [TME.06.03.02] and Regulations of appointment, resignation, dismissal of School/Faculty's leaders attached to the Decision No. 1626 QD / DHHK-TCCB issued by HUST president [TME.06.03.03]. The regulations are based on Law of Officers [TME.06.03.04].

Academic staffs need to meet ethical and professional standards which are appropriate to the recruitment position. In details, academic staffs need the following criteria:

- Having a doctorate or master's degree in recruitment criteria. Candidates master need additional requirements: Graduated from a regular university with a credit grade or higher, retake not more than 5 subjects, of which no more than 3 specialized subjects (or no more than 5 subjects assessed points D, F for the first test – applying for credit training). Priority recruitment is given to candidates Ph.D.
- Having suitable abilities of a foreign language, computer skills appropriating to the position of recruitment: 5.5 Ielts or higher or equivalent for lecturers. Candidates graduated Bachelor/Master/Ph.D. overseas whose theses and dissertations are written in English are exempted from the English certificate. Ethical criteria: Staffs must be exemplary, comply with Government law, Law of Officers, Education Law, HUST's rules and regulations.

The criteria for leader appointment are defined clearly and announced widely via HUST website for the purpose of selecting the best candidates both inside and outside the country. In addition, the standard of appointment of lecturers / researchers in leader positions is clearly defined by HUST and publicly disseminated in the official documents and website [TME.06.03.05]. The staffs who have great contribution in teaching/research are encouraged to get national academic titles of Professor or Associate Professor. The criteria for these titles are defined by National Council for Professor Titles [TME.06.03.06].

6.4. Competences of academic staff are identified and evaluated

The competences of academic staffs in STE are determined and evaluated based on Regulations on standards for employee [TME.06.04.01] [TME.06.04.02] and the performance of the tasks of teaching, scientific research and other supportive activities such as class advisor, academic advisor.

In teaching activity, a qualified lecturer have to meet the following requirements:

- To complete workload assigned,
- To abide by regulation of teaching schedules,
- To apply pedagogical methodologies for the highest teaching effectiveness, satifying learning standard output,
- Keep updating new knowledge as well as teaching methods,

The assessment of teaching capacity of lecturers is conducted through the following forms: student feedback sheets, direct monitoring at the classroom and classroom observation. The assessment via student feedback used to be done by the quality assurance center. At the end of each semester, student feedback of teaching attitudes, teaching methods and professional competence of the instructors via the assessment sheet [TME.06.04.03] was collected. The comments are summarized and sent to STE as foundation of lecturer assessment. The second assessment form is to evaluate the implementation of a lecturer's teaching plan via direct monitoring at the classroom. Information regarding to staffs who do not guarantee their timetable will be sent to STE for reminder and evaluation evidence. The third assessment form is either announced classroom observation or an unannounced classroom observation [TME.06.04.04]. For the form of announced classroom observation, STE builds a plan at the beginning of each semester and sends to the responsible department for monitoring [TME.06.04.05]. Observers include the School's leaders, Department’s leaders, and representatives of academic groups. At each classroom observation, the observers will assess academic outcomes, the effectiveness of the teaching measures, and the expertise of the lecturer on the assessment form [TME.06.04.06]. At the same time, the observers give students the student’s assessment survey and collect the surveys at the end of the class [TME.06.04.07]. For the form of unannounced classroom observation, the assessment team consists of members of the University's pedagogical advisory board. The assessment procedures are similar to those in the announced observation form. Table 6.6 summarizes the number of the observed staffs for each year and the average grade for pedagogical and professional methods (5 at the maximum) [TME.06.04.08]

Table 6.6: Summary of Classroom Observation Results of TME’s lecturers

Year	**2013-2014**	**2014-2015**	**2015-2016**	**2016-2017**	**2017-2018**
Number of Lecturer	4	11	5	8	5
Average grade for professional method	3.88	4	4.04	4.32	4.76
Average grade for pedagogical method	4.08	4.14	4.3	4.29	4.9

For research activities, each lecturer shall fulfill 600 hours of required research hours prescribed in the University's working regulations [TME.06.04.09]. This workload is equivalent to be sponsor of a university level project, or being the unique author of a scientific paper, or being an author of two research papers which have two authors. At the end of each academic year, academic staffs will declare and calculate the amount of research workload and submit it to STE as the basis for assessing the completion of their research requirement.

For the task of class management, each student class has an advisor. A class advisor is a bridge between students and supporting agencies of school and university. Besides, the class advisor is the one who gives marks basing on student progress report to evaluate student's progress. An academic advisor board is decided by the Dean of STE. The board can support students directly in school office, or support students online via school's fanpage, website, phone or email. The task is specifically defined in Article 14 of the "Regulation for academic advisors and class management for students" issued by Decision No. 117 dated 26th December 2014 by the President of Hanoi University of Science and Technology [TME.06.04.10]. Assessment of student class management effectiveness is defined in Article 17 of this Regulation [TME.06.04.11].

Based on the aforementioned evaluation, STE will annually classify staffs in grade A, B, C [TME.06.04.12] (descending order A, B and C, respectively) and announce in the Final report of staff conference [TME.06.04.13].

In addition, the working capacity of staffs is further assessed through community support activities such as: participating in the introduction of career, vocational guidance for students; Business support consultancy ... is also mentioned in the annual meeting of officials and employees.

In order to identify and evaluate academic staff competences better, HUST in 2018 issued new regulations on cadre work basing on Key Performance Indicator (KPI). In these regulations, criterions of staff are shown in detail. KPI reflects the capacity of academic staff in every assigned taskes and is involved in salary formulation [TME.06.04.14]. KPI indicators have been built in the near future.

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

Based on the workload, the education and training status highlighted in the Conference staffs' resolution [TME.06.05.01], the demand for training and professional development of the academic staffs in STE is identified. Thus, there are implementation activities to fulfil them [TME.06.05.02]. The department plans to dispatch staffs who have master degree to study Ph.D. abroad or interior universities [TME.06.05.03]. With a wide network of HUST and STE, there are many sources of scholarships or training courses supported by partners such as AUN/Seed-net, Erasmus Mundus ... [TME.06.05.04]. Many staffs in STE have been trained in developed countries via these programmemes [TME.06.05.05]. Besides, when there are short-term academic programmemes to improve professional skills for lecturers and researchers, STE and departments always support staffs in administrative procedures as well as workplan. Therefore, staffs can get permit from HUST to attend these programmeme [TME.06.05.06].

Beside professional development, STE's academic staffs also focus on pedagogical and soft skills needed. All new staffs have one year of apprenticeship under the guidance of an experienced instructor. During the apprenticeship, the lecturers will be trained in the pedagogical course organized by the University. In this course, new staffs are trained in pedagogical behavior, presentation skills, conveying information to learners and handling situations. Completed apprenticeship staffs will be awarded pedagogic certificates [TME.06.05.07]. STE also encourages staffs to participate in soft skills development programmes such as office information technology, technology management knowledge... and many staff members have been certified for the programmes [TME.06.05.08].

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

Based on working performance [TME.06.06.01], STE has kinds of reward and recognition to create motivation and support for education, scientific research and support activities of academic staffs [TME.06.06.02]. STE follows the guide on emulation and reward issued by HUST [TME.06.06.03]. Academic staffs can achieve individual and collective titles for the entire staff of the school such as: Progressive labour, Emulator at different levels, Progressive Labor Collective, Excellent Labor Collective or wages raise ahead of one year instead of the regulations. Furthermore, according to the current regulations of the Government, staff can register for higher emulation titles of the State such as the Government's Merit, Labor Medal (first, second, third) and the noble titles such as the Lecturer of Excellence and the Lecturer of the People.

Specially, in order to encourage academic staffs to actively participate in scientific researches, the University awards cash prizes of up to 10 million VND for 1 ISI article, 4 million VND for 1 Scopus article and 1 million VND for the 1 other type article [TME.06.06.04]. In addition to the regulations on emulation and reward issued by the University, STE also has a private award rules for the staff who have scientific articles up to 2 million VND/article indexed in ISI and Scopus. This kind of incentive reward is clearly stated in STE's internal spending regulations

It can be said that the regulations on rewarding, the University as well as STE has really promoted the effect, creating motivation for lecturers and researchers in fulfilling their mission.

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

The research activities of the lecturers include chairing or participating in research projects, participating in conferences, scientific seminars, publishing domestic or international scientific papers [TME.06.07.01]. Every year, academic staffs must complete the research hours of 600 hours as prescribed.

The lecturers and researchers of STE have chaired and participated in many level projects from various sources such as the national level projects, ministry level projects and projects of international cooperation ... Table 6.7 below is the statistics of research projects in the period 2014-2018 of STE for TME program [TME.06.07.02].

Table 6.7: The projects of STE in TME program in the period 2014-2018

Project types	Quantity
National lever	04
Ministry level	09
International collaboration	02
University level	24
Nafosted	04

Regarding to scientific publication, the number of articles published in international journals and preceedings is on the increase. This is the result of increased funding from a variety of sources for research projects, as well as a dedication to the research work of STE's staffs. Published article statistics in recent years are shown in Table 6.8 [TME.06.07.03].

Table 6.8: Types and Number of Research Publications of STE in TME program

Academic Year	Types of Publication				Total	No. of Publications Per Academic Staff
	In-house/ Institutional	National	Regional	International		
2015-2016	-	93	3	7	107	1.98
2016-2017	-	128	-	10	138	2.56
2017-2018	-	65	-	33	98	1.88

(Updated on the 6th of June 2019)

From the above data tables, it can be seen that the kinds and number of international scientific researches of STE staffs in TME program are very diverse and tend to increase steadily. The number of international publications over the past two years increased previously reflecting the effectiveness of the encouragement of STE.

The research activities of STE are updated annually in order to monitor and match for quality improvement. The evaluation of projects at all levels is carried out by the SAC of STE. The results of the proposal are publicized [TME.06.07.04].Furthermore, STE held some conferences which attracted many participants over the world as: National conference on mechanical & transportation engineering in 2016, National conference on fluid mechanics in 2016, the first seminar on JSPS Core-to-Core Programmeme [TME.06.07.05]. In 2018, STE was the co-organizer of the first International Conference on fluid machinery and automation systems [TME.06.07.06]. The conference attracted hundreds of attendees with more than 100 papers with the participation of prestigious scientists from Australia, Japan, Korea, Taiwan, China, Malaysia. Articles published by these conferences are reviewed, recognized for grading in consideration of Assoc. Professor/Full Professor as well as doctors of HUST.

In order to update the new knowledge of science and technology applicable to education and training, beside research projects and seminars, lecturers and researchers of STE also compose many new textbooks.

Via identifying, monitoring and matched to evaluate the quality, research activities of the staff always exceed the annual norms. The total number of hours converted, statistics of scientific articles and the list of published textbooks are given in the Appendix of Annual Final report of Staff Conference [TME.06.07.07].

7. Criterion 7. Support staff quality

7.1. The staff planning (for working in libraries, laboratories, information technology systems and other support services) is carried out to meet the needs of training, scientific research and activities for serving community

Similar to academic staffs, support staffs are also planned according to the Government's guidelines and decree on the recruitment, employment and management of officers [TME.07.01.01].

At present, STE has 8 support staffs as in Table 7.1 [TME.07.01.02]. Administrative board has 2 masters and 1 bachelor working at the school office. STE has 5 practical instructors including 4 master and 1 doctor working at specialized laboratories. The practical instructors are also involved in the development of hands-on labs for good coordination between theory and practice in the curriculum. For accomplishing assigned task, the support staffs in the planning stage should ensure the recruitment criteria [TME.07.01.03]. Based on the personnel plan of the term, the number of employees reaching the retirement age or transferring their jobs of each department, STE proposes the corresponding recruitment criteria [TME.07.01.05] to the Department of Human Rescourse, according to the Recruitment Process published by the University [TME.07.01.06].

Table 7.1: Number of STE support staff for TME programme (2018)

Support Staff	**Highest Educational Attainment**				**Total**
	High School	**Bachelor's**	**Master's**	**Doctoral**	
Library Personnel					
Laboratory Personnel			4	1	5
IT Personnel					
Administrative Personnel		1	1		2
Student Services Personnel (enumerate the services)			1		1
Total		1	6	1	8

(Updated on the 6th of June 2019)

Bảng 7.2: Number of HUST support staff for TME programme (2018)

Support Staff	Highest Educational Attainment					Total
	High School	Bachelor's	Master's	Doctoral	High School	
Academic Affairs Office	0	0	8	7	4	19
Ta Quang Buu Library	0	0	17	18	0	35
Student Affairs Office	0	0	10	5	2	17
Dormitory Management Center	2	0	17	3	0	22
Medical Center	0	13	7	2	0	22
Network Information Center	0	0	1	12	1	14
Human Resource Office	0	0	5	2	2	9
Research Management Office	0	0	3	2	4	9
Facilities Management Office	14	4	16	9	2	45
Admissions Office	4	2	9	9	4	28

(Updated on the 6th of June 2019)

Regarding to task of library and internal communication, STE has staffs working as positions concurrently for information processing and supporting staffs and students. Other supporting activities such as sports, culture, health, political affairs and student affairs, beside official staffs, STE shares with the specialized departments and centers of the University. These units have a large and highly qualified support staff as shown in Table 7.2. Via suitable and flexible planning of support staff, STE can meet the requirements of teaching, research and support activities [TME.07.01.07].

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

Recruitment and selection criteria for appointment, deployment and promotion are implemented in accordance with the Law of officer [TME.07.02.01] and announced in website [TME.07.02.02]. Recruited candidates need to meet the standard with each corresponding job position in accordance with the Regulation on recruitment criteria of HUST staff [TME.07.02.03]. The general criteria for university staff are as follows:

- Have good moral qualities, good wills, commitment to long-term work at the University;
- Have good health and appearance in a pedagogical environment
- Have suitable ability of foreign language and computer skills for recruitment.

In addition, practical instructors, technical staff and administrative staff should meet professional standards: holding a master's degree relevant to the position of the university, or a degree of at least 3 years of relevant experience vacancies; IELTS 5.0 or above or equivalent.

The support staff planning is proposed by the departments based on training needs, the number of students and number of staffs in age of retirement for the purpose of ensuring good quality of training.

7.3. Competences of support staff are identified and evaluated

Competences of support staff are firstly defined in the employment standards corresponding to each position [TME.07.03.01] and publicly evaluated after apprentice completion. During the work, support staffs are often inspected their competences, ex. practical classroom observation [TME.07.03.02] following regulations and [TME.07.03.03]. For the task of class management, each support staff is assigned to be in charge of 1 or 2 classes. Class advisor is nominated to take care student class and is a bridge between students and supporting agencies of school and university. Class advisor is also the one who gives marks basing on student progress report to evaluate student's progress. The duties are specifically defined in Article 14 of the Regulation on Student Advisory and Management issued by Decision No. 117 dated 26th December 2014 by HUST's president [TME.07.03.04]. In addition to the main tasks in the University and the School, the capacity of staff is also assessed through community support such as career introduction, technology transfer consultancy with enterprises ...

Based on the aforementioned evaluation, STE will annually classify staffs in grade A, B, C [TME.07.03.05] (descending order A, B and C, respectively) and announced in the Final report of Staff Conference [TME.07.03.06].

For an improvement in identifying and evaluating support staff competences, HUST in 2018 issued new regulations on cadre work basing on Key Performance Indicator (KPI). In these regulations, criterions of support staff are in details. KPI indicators have been developed to reflect the competence of support staff and are involved in salary formulation [TME.07.03.07].

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

Based on the workload, the training situation of STE mentioned in the Annual Final report of Staff Conference [TME.07.04.01], the demand for training and professional development of the staffs is identified. So, there are many implemented activities to meet the desired requirements [TME.07.04.02]. Departments proactively plan to encourage staffs to improve their capacity [TME.07.04.03].

The staffs of laboratories are facilitated to keep developing their professional skills. For new equipment as well as in the development of new hands-on labs, laboratory staffs are well trained.

The staff working in the library, information technology ... are also encouraged and facilitated by STE to improve their professional skills via courses if available.

Newly recruited staffs will be required to take one apprentice year under guidance of an experienced instructor. Every year, STE asks staffs to participate in short training courses organized by the University such as fire-fighting, civil defense, office training and so on [TME.07.04.04].

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

STE has always implemented rewards and recognition forms to motivate and support staff training, scientific research and supportive activities. During the implementation, STE follows the guide on emulation and reward issued by HUST [TME.07.05.01]. Based on the staff's work results [TME.07.05.02], the levels of reward and recognition of work results for are publicized in the annual staff meeting [TME.07.05.03] as follows:

- Progressive labour: Who completed the assigned tasks, high productivity and quality; Well enforced internal rules, regulations, have the spirit of overcoming difficulties to complete the task etc.
- 15% of individuals achieving the title of "Progressive Labour" of the unit (of which not more than 1/3 are managerial staff) may be nominated to consider the title "University Level Emulator". This title is used in the criteria for considering wages raise ahead of time or may be given priority when appointing leader. The examination is conducted at the Department level at the end of each academic year and submitted to STE for consideration before submitting to the University. Who have excellent achievements, experience initiatives ... can be considered as "Ministry Level Emulator", "National Level Emulator" etc.
- Beside titles for individuals, the collective of staffs who have good achievements may be nominated "Progressive Labor Collective", "Excellent Labor Collective".
- Every year, 10% of the staffs who have excellent achievements in the work; be awarded the title of "University Level Emulator" or higher will be considered for wages raise ahead of one year instead of the regulations. As a rule, the wage cycle is 3 years.
- In addition, according to the current regulations of the Government, staff can register for higher emulation titles of the State such as the Government's Merit, Labor Medal (first, second, third) and so on.

The support staff's performance are evaluated from the individual's own comments, through the department meeting and then report back to STE as the basis for submission to the University. The results of the selection of individual and collective emulation titles such as "Emulation Labour" ... are carried out and published in the annex of the Annual Officials Meeting [TME.07.05.04].

Criterion 8. Student quality and support

Enrollment policies as well as its criteria and methods of STE always follow the enrollment rules of MOET and HUST. The enrollment of STE in particular and of HUST in general represents equality of opportunity, regardless of race, color, national origin, ethnicity, sex, marital status, education, politics, age, economic conditions of students.

The extracurricular activities and support activities at STE have been appreciated to help improving learning progress or creating favorable psychological and learning environment for students creating a psychological environment as well as a circumstances which is appropriate to training, research and comfort for learners.The criteria for evaluating student support activities of STE are detailed below.

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

HUST has a transparency enrollment policy [TME.08.01.01]. Bulletin on enrollment, majors, scholarship policies, financial support, study environment and career orientation for students are broadly informed in writing and on the web portal of HUST [TME.08.01.02]. STE conducts enrollment affair in accordance with the general admission regulations of the MOET and HUST. The enrollment quota of STE is determined annually based on social needs, infrastructure, number of staffs, based on the enrollment results of previous and current years; then proposed to HUST [TME.08.01.03]. HUST yearly cooperates with MOET and other related organizations to participate in the event "Open Day" to support informing timely candidates and their families about the university entrance exam. [TME.08.01.04].

STE's admissions process is carried out following MOET regulations, published in writing sent to high schools as well as bulletin on MOET websites [TME.08.01.05]. Students are recruited to HUST based on the combination of scores determined through the NHSGE in block A00 (Mathematics, Physics, Chemistry) or block A01 (Mathematics, Physics, English) organized by MOET. From 2017 (C62) till now, students have been assigned to STE as soon as they are admitted to the university. Candidates are selected based on the number of applications to HUST and the criteria that HUST has previously registered [TME.08.01.06].

The yearly enrollment quota for TME is based on the expectation of students. The training quota is set by HUST. The number of students in the school year 2017, K62, admitted to the TME is 367 students according to manpower needs of the labour market and HUST regulation [TME 08.01.07]. This amount is compatible with social needs, as well as facilities and academic staff at STE [TME.08.01.08].

The TME in general, the automobile industry in particular, is currently the key industry invested preferentially by the Government for the industrialization strategy in recent years. Along with the development strategy of Vietnam automobile industry until 2025, with a vision to 2035, the projects of modernly automotive assembling and manufacturing plants in large cities across the country have been continuously established. Therefore, in order to meet the development of the automobile industry timely, training of TME technicians and engineers is very necessary for time to come [TME.08.01.09].

8.2. Criteria and methods of selecting Students are clearly defined and evaluated

The criteria and selection methods for selecting students of STE are defined with the following conditions [TME.08.02.01]:

- Condition 1: The total score of the combination selected for admission in the NHSGE meeting the HUST's admission entrance point, belonging to two groups of A00 or A01.
- Condition 2: Student has the university’s entrance point which is greater than the prescribed level of HUST

- Condition 3: Student has the desire to study electronics and telecommunications at STE.
- Condition 4: Student has the university's entrance result which is higher than the admission mark prescribed by STE.

The intakes of first-year students to HUST from 2014-2017 and STE from 2017-2018 (K62) is summarized in Table 8.1.

Table 8.1: Intake of First-Year Students (last 5 academic years)
(Intake of whole HUST for K59 - K63, and intake of TME Programme from K62)

Academic Year	**Applicants**		
	No. Applied	**No. Offered**	**No. Admitted/Enrolled**
2014 – 2015 (K59)	10727	6425	5806
2015 – 2016 (K60)	11263	6907	5997
2016 – 2017 (K61)	11572	8275	5110
2017 – 2018 (K62)*	2552	260	267
2018 – 2019 (K63)*	3662	280	289

(Updated on the 6th of June 2019)

(*) From academic year 2017-2018 (K62), STE has joined in carrying out enrollment with HUST for students entering the TME programme from the first year. From 2017, the number of TME's applications, TME offers and enrolled application were counted.

Table 8.2: Total Number of Students following TME programme at STE
(last 5 academic years)

Academic Year	**Students**					
	1st Year	2nd Year	3rd Year	4th Year	>4th Year	Total
2014 – 2015 (K59)	Null	169	152	139	112	572
2015 – 2016 (K60)	Null	218	167	152	141	678
2016 – 2017 (K61)	Null	158	217	170	154	699
2017 – 2018 (K62)	267*	111	156	216	169	919
2018 – 2019 (K63)	289*	N/A	N/A	N/A	N/A	289

(Updated on the 6th of June 2019)

Notes:

Null: First-year student still haven't been enrolled into TME Programme yet.

N/A: Number of students will be counted after finishing the academic year 2018-2019.

(*) The total number of students actually participate in TME programme and lectured by TME's academic staffs is still 652.

It can be clearly seen that over last five years the average enrollment of STE is basically stable [TME.08.02.04] which is suitable for social needs as well as STE's training capacity [TME.08.02.05]. The criteria and process of STE's enrollment have been evaluated and learnt from experienced year over year to improve the quality of the incoming students while still complying with the general regulations of the MOET. The TME's programme has been deployed according to HUST's allocation based on the competence, the number of academic staffs and the facilities of the School.

From 2017 (K62) STE has joined in conducting enrollment with HUST for students entering the TME programme from the first year. After intaking, STE leadership and the leaders of the stakeholders organized meetings to appreciate from experience for enrollment in the following years for better implementation [TME.08.02.06]. Also, STE is also associated with HUST to participate annually in communicating university admission in general events such as the "Bach Khoa Open Day" and "Bach Khoa's Student for One Day" [TME.08.02.07].

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

STE curriculum is the credit-based one with a specific number of credits for all students. STE monitors the learning progress and results of students via the SIS [TME.08.03.01]. Regulative study schedules indicate learning time in class and the course process. Students are free to register the number of credits, however, according to HUST's regulation each student register only from 12 to 24 credits in each semester [TME.08.03.02]. Students are compulsory to complete all courses in the curriculum designed from the beginning of the undergraduate curriculum to meet graduation conditions. On the SIS system, the academic status is updated and warnings are announced quickly to students [TME.08.03.03]. Besides, the Management Board and the Academic Advisory Board of STE have the right to access to this system to monitor student learning status as needed. Parents of students are also provided with an account to be able to follow the students' learning situation [TME.08.03.04].

To ensure monitoring students' progress or difficulties in order to promptly give advice or supports for students in need. STE applies parallelly two methods of monitoring the results of students following the conditions and personnel of HUST and the School.

The first method is the combined activities of STE and Department of Politics and Student Affairs (DPSA) with the arrangement of class advisor managing from 30 to 60 students for each group, meeting directly students for regular activities at class according to the schedule specified by DPSA. This system allows students to have their supervisor who can exchange emails, make phone calls or meet face-to-face when having problems related to study or difficulties as needed. This system is very effective for first- and second-year students, especially they are newcomer to the university's environment, different from that of high schools. Class advisor usingthis system to instructand train periodically according to the schedule of DPSA [TME.08.03.05]. Besides, for directly exchanging between students and HUST leaders democratically and responsibly as well as understanding students' thoughts,

expectations and solve the problems that students meet while studying, HUST regularly organizes meetings for conversation between the leader board and classes' representatives [TME.08.03.06].

The second method goals are similar to the first one by consulting with the Academic Advisor Board [TME.08.03.07] who are available at STE's office to respond to questions from students and support them as fast as possible [TME.08.03.08]. STE regularly updates the list of students who have difficulties in studying with bad study outcomes, contacts directly with students and seek solutions to improve study results and ensure them accumulate enough study credits, eligible for graduation [TME.08.03.09]. These consultative issues are recorded in detail by day in Academic Advisor Board's calendar and diary allows the School to assess urgent issues and provide comprehensive solutions while also helps STE manage Academic Advisor Board to fulfil their responsibilities [TME.08.03.10].

If a student receives a warning in academic performance, depending on the warning level, there is a limitation in the number of maximum credits the student can register in a semester. According to HUST regulations, at warning level 1 the students can register 18 credits (instead of regular maximum 24 credits) in one semester and if the warning level is 2, this number is 14 credits. This regulation forces students to spend more time on course for having better results.

Class Advisor task is also implemented by STE in cooperation with HUST's DPSA deployed effectively to each class advisor. Lecturers fully and seriously take responsibility and understand the university regulations on the undergraduate academic programme and foreign language requirement, student academic status in order to inform and remind students of their results. The class advisors scored the behavioral points for students according to HUST regulations. Other than, they also listen, answer and summarize the comments and questions of students and report to STE on request. [TME.08.03.11]. DPSA collaborates with STE on evaluating each class advisor annually [TME.08.03.12]. At the end of each semester, STE synthesizes the study results of all students in group and sends them to the class advisors to monitor students' overall academic situation, to remind students who received the academic warning as well as to check their study progress [TME.08.03.13]. The TME programme is designed according to the credit-based system, with a regulative study plan for the fulltime course on which students make up their own study plans each semester in accordance with student capacities and students can complete the programme and graduate sooner or later than as planned.

Furthermore, STE also applies other monitoring methods through the activities of the Youth Union, Student Association, or through clubs, lecturers, surveys, feedback, … routinely to record the learning process of the learners.

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

In addition to counseling and support methods for students described in section 8.3, students often receive advice from the head of STE and stakehoders for undergraduate academic affairs. Consulting and supporting activities are mostly conducted the first meeting for first-year students. The consultancies concern with accommodation, the living condition in Hanoi, information and financial support, health insurance, vocational guidance, sports

activities, events of STE and student reward. The consultancy is also conducted in the final semester for last-year students. Moreover, STE advises students on the appropriate career option, tutors and shares soft skills, job interview skills.

At the beginning of each semester, STE organizes Biannual Student Meeting for all STE students [TME 08.04.01]. The head of STE, academic advisors and support staffs are always available to solve troubles related to study: curriculum updates, regulation updates, subject selection, suspension and dismissal, research, finance, individual problem, international students, gender, health, spiritual life, safety, security and religion. In the curriculum, there is also an elective subject "Psychology" that helps students to solve problems in their life, as well as in the future profession. STE also arranges other activities for Youth Union of each Class at least twice per semester to summarize the academic results and activities of the Youth Union, as well as propose the orientation activities for the next semester.

Apart from study, STE students also participate in other extracurricular activities such as the Youth Union Association, Student Union; as well as take part in different competitions, and scientific research projects with lecturers. STE students have received many prestigious prizes in the extracurricular activities and competitions as follows [TME.08.04.02]:

- The Second Prize of the "Driving Eco-Fuel Economy 2015" contest for universities.
- The Second Prize in the "Ethanol Shell Eco-marathon Biofuels 2012" contest in Asia.
- The Second Prize of the Ministerial-level Research Students.
- The Champion Prize of BK-League, HUST's Student Football League 2014.
- The First Prize of HUST's Student Research Week 2016.
- The Consolation Prize of HUST’s Young Creativity Competition 2017.

The school has a scholarship policy to support students such as a scholarship for full-time students in difficult circumstances (poor, pro-poor or other extremely difficult circumstance) [TME.08.04.03]. In order to bring financial support and maximal development opportunities for students, HUST also cooperates with domestic and foreign institutions to offer scholarships for students.

The DPSA regularly organize theme workshops for HUST students such as a workshop on Women development for female students, the workshop on Reproductive Health, the workshop on current Vietnam and World politics. HUST grants scholarships to students based on academic achievement and family circumstances [TME.08.04.04]. Advising and supporting activities are more effectiv, many computer-based and social media-based solutions have been implemented such as using social networks, websites, parallel establishing extracurricular clubs like English club, sports club, scientific research club [TME.08.04.05].

Students having enough academic competence and foreign language skills are encouraged to participate in the selection to get the opportunity to receive scholarships from enterprises, participate in internship courses abroad. STE has promoted the chances of cooperation to create opportunities for students to receive scholarships, internships from enterprises and foreign educational institutions [TME.08.04.06].

Career orientation, supporting activities for students is always the concern of HUST and STE during training and educating process. The number of enterprises cooperating with HUST in supporting student activities has increasingly enhanced in recent years. The number of scholarships from enterprises increased by over 30%, the rate of students having jobs through employment workshops reached over 50% of the total number of graduates. Besides, enterprises have also cooperated with HUST in many activities to support training students such as accepting interns, visiting factories, organizing professional skills courses [TME.08.04.07], recruitment workshops are regularly organized by enterprises cooperating with HUST and STE. Yearly, HUST and relating units organize and participate in the Day of College Admissions Consultant Recruitment [TME.08.04.09]. In parallel with this Day, HUST has also organized the Bach Khoa Open Day over the years. The University has opened labs, workshops, traditional centre, libraries, dormitories, stadiums, making campus tours for students to visit and see HUST's environment and facilities. STE's laboratories always attract pupils from all schools to visit and get information about the TME programme [TME.08.04.10].

Besides the reseach activities, academic courses and professional skill, STE students have also participated actively in other extra-curricular activities of HUST's Youth Union and Vietnamese Students' Association. They achieved many awards (TME.08.04.02) like sports activities, especially football, student volunteers, the university camping, … The Team of Student Volunteers of STE is also one of the best volunteer teams with many achievements in the programmes of HUST as well as of the Hanoi Youth Union which organizes as the programme for the National University Entrance Exam Support Campaign, Green Summer, ... [TME 08.04.11].

8.5. The psychological environment, society and landscape facilitates the training, research and comfort for individual learners.

HUST students are experienced in a friendly environment, modern facilities system which is meeting the needs of learning, researching, participating in diversified sporty and entertaining activities. The university campus has a total area of 25.6 ha (the largest campus among universities in Hanoi).

Ta Quang Buu Electronic Library with an area of 37,000m^2 can simultaneously serve 2,000 students with 382,404 books, 130,000 e-books. Students can access to database for free from many sources such as Science Direct, Scopus,... [TME.08.05.01]. The complex of 400 classrooms and laboratories, including 12 key laboratories that serve effectively in training and research. The entire auditorium is fully equipped with air-conditioning, teaching facilities and free wifi around campus [TME.08.05.02]. The dormitory ward is spacious to meet the accommodation needs of nearly 4,500 students with abundant facilities including self-study rooms, conference halls, clubs with an area of 400 m2 and infrastructures for outdoor activities served for students doing sports after lessons [TME .08.05.03]. The sports complex has an area of 20,000m^2 with modern facilities, including football stadium, swimming pool, national standard tennis court and multi-purpose Southeast Asian gymnasium. The clinic operates as a general polyclinic for university staffs, officials and all students. Bach Khoa Service Center has the function of managing and organizing the deployment of service activities on the university campus to serve HUST's staffs and students [TME.08.05.04].

In order to ensure in using effectively the existing facilities, HUST always concerns about the campus sanitation services, common corridors in the classroom and auditorium areas, ensuring a green and clean environment in the entire campus; pay attention to management, renovation, repair and maintain facilities, power and water system in the campus to ensure the service of training and academic activities, serving the work and study of staffs and students throughout the whole HUST. In addition, the divisions and departments related to the management of facilities at HUST also organize and steer storm and flood prevention and fire fighting and prevention for the whole university. [TME.08.05.05]

STE has always concerned about building facilities serving study and research not only for the staffs of the School but also for the students to participate in research at laboratories of all departments. The research activities of students have received attention from STE's leaders closely. Most students of TME participate in research activities and conduct research under the supervision of lecturers at laboratories belonging STE [TME.08.05.06]. STE has cooperated with domestic and foreign companies to regularly organize and encourage students to participate in high qualified scientific contests, including the model aircraft, eco-fuel economy contests, such as Shell Eco-Marathon, Honda Eco Milleage Challenge, the National Olympic on Fluid Mechanics, contests organized by STE including Shipcom 2015, 2016 [TME.08.05.07]. Besides, TME's students participate actively in other research activities of STE and HUST, such as school-level, university-level or ministry-level research.

STE always coordinates with DPSA, class advisors help students to get information and take part in all activities organized by HUST such as workshops, professional skill courses, thematic seminors especially topics on gender, reproductive health or special topics for female students, etc [TME.08.05.08]. STE and class advisors strictly implement to manage the classes to ensure that all students of STE participating in "Biannual Student Meeting" activities according to HUST's regulations to help them grasp general information about the university, introduction to training professions, social needs for the academic programme, new regulations on training, dealing with study problems, student affairs and necessary information in the training process such as policy regimes, academic advisors, student scientific research, Olympic contests, other clubs for students upon interests [TME.08.05.09].

The goal of training at STE is always toward students, creating the greatest favourable conditions for students to develop. Student's scientific research club is not only a place for students to study and research but also a place for students to exchange, learn and help each other, as well as cultivate the experiences of soft skills, presentation or teamwork skills. STE's staffs always support and encourage students to participate in all extra-curricular activities of HUST's Youth Union, Vietnamese Students' Association students such as camping, sports activities, art performances and student volunteer plans [TME.08.05.10].

9. Criterion 9: Facilities and infrastructure

As a member of HUST, STE is shared the common facilities and infrastructure of HUST. In addition, STE has own laboratories, lecture rooms, and learning material resources to meet the need of teaching and research activities.

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

HUST has a total area of 25.6 ha, including 241 lecture halls and classrooms located in blocks D, TC, T and B1 [TME.09.01.01] providing enough rooms for education and research [TME.09.01.02]. Each classroom has an area of 40 to 160 m^2 equipped with teaching equipment such as board, projecting screens, projector, and sound systems [TME.09.01.03]. In addition, HUST also arranges self-study rooms at all buildings to enable students to have self-study space outside the classroom [TME.09.01.04]. Since 2016, a wifi system has been installed to cover the lecturing area as well as all the campus area to enhance training and research activities [TME.09.01.05]. Air conditioners have been equipped for 232 classrooms at HUST since 2017 to serve better the student's learning needs [TME.09.01.06].

HUST has 05 large conference rooms and 06 small seminar rooms located at C1, C2, C10, B1 and Ta Quang Buu Library buildings to hold local and international meetings, seminars and conferences [TME.09.01.07]. In addition, HUST has 17 computer rooms with total area of 1,394 m^2 conneted to specialized softwares and 3 language studying rooms set up with professional foreign language softwares to help students having better learning conditions [TME.09.01.08]. E-learning classrooms were also set up by HUST in cooperation with Asian universities to provide students with access to foreign traning programmes [TME.09.01.09].

In addition to the general facilities generally used between schools at HUST, STE has three specialized classrooms at C3-309, C7B, and T-210 equipped with posters, placarrds, and visual instruction models that help students to understand better the contents of the lectures [TME.09.01.10]. Furthermore, STE has one big meeting rooms at C15 building (80 m^2) and two small meeting rooms at C7B building (20 m^2) and C6 building (10 m^2) equipped with projection screen, projector and sound system to organize meetings and seminars of the School [TME.09.01.11].

All staffs at STE are provided with working area and are located at rooms C3-304, C3-305, C3-306, C3-311, C6-205, C8-207, C7B and C15-3th Floor with total area of 264 m^2. All the rooms are equipped with working desks, computers, printers, internet, air conditioners and other necessary facilities for research work [TME.09.01.12].

A survey result from students at STE on the teaching, learning facilities and equipment in 2018 [TME.09.01.13] indicated that 74.3% of students were satisfied with lecture halls and classrooms at HUST. Many students reflect that even though the wifi network is covered by all university area, the quality of wifi is still poor in some lecture halls. This reflection may be a major reason for the low satisfaction of the students in the survey results.

Every year, the maintenance and upgrading of student classrooms and lecturer rooms are always carried out such as lecture hall equipment upgrading projects [TME.09.01.14], [TME .09.01.15], and [TME.09.01.16]; building and renovation project of TC lecturer hall area [TME.09.01.17]; building and repairing project of Block D6 [TME.09.01.18]; investment project to build the lecture hall and research rooms D8 [TME.09.01.19]; new deploying demolition and construction investment project of the staff working and laboratory area in blocks C7B, C7 and C8 according to the World Bank project [TME.09.01.20] which will include many working rooms, laboratories, meeting rooms of STE. In addition, HUST is undertaking the development plan of the second campus in Hung Yen province to expand the training scale [TME.09.01.21].

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

The electronic library of HUST is the largest library of universities in Vietnam. It is located at Ta Quang Buu Library building with an area of 37,000 m^2 which can serve simultaneously up to 2000 students with modern equipments (Figure 9.1) [TME.09.02.01]. The library consists of 01 office room, 01 bibliographic information room, 01 library guiding room, 02 self-study rooms, 04 specialized reading rooms, 02 home loan rooms, 01 thesis and dissertation room, 01 magazine-journal reading room and 01 mutimedia room [TME.09.02.02].

Library resources currently include 382,404 books with 99,278 titles, 130,000 eBooks, 267 Vietnamese journals, and 16.060 theses and dissertations [TME.09.02.03]. To strengthen the information resources for training and scientific research, Ta Quang Buu Library has cooperated with international publishers to gain access to online databases. Currently, the Library provides access to the following 03 databases: The IET Digital Library, Science Direct, and Proquest Central [TME.09.02.04]. All staffs and researchers of STE as well as other Schools are provided an account to access the online databases.

Figure 9.1. Photo of Ta Quang Buu library

The library's multimedia room equipped with 50 computers allows readers to access freely the Internet and to access online databases such as Science Direct, The IET Digital Library, Science Direct, and ProQuest Central. The room also has a self-study area for students [TME.09.02.05].

The library is opened from 8:00 am to 9:00 pm daily from Monday to Friday and from 8:00 am to 4:00 pm on Saturday and Sunday [TME.09.02.06]. Every year, the library organizes a skill training class for using library for first-year students [TME.09.02.07]. Students are provided library materials [TME.09.02.08] and students can easily access the library information via the Library website [TME.09.02.09].

In addition to above services, the library also provides several other services for readers, such as backing up documents, providing information on demand, organizing classes to guide libraries, conferences, meetings and workshops.

Annually, the library has plans to update reference resources based on the needs of HUST's staffs, lecturers, researchers and students to establish, implement and maintain adequate resources at the library [TME.09.02.10], [TME.09.02.11]. A general survey of students on facilities and resources in the library in May 2017 indicated that 78% of the readers were satisfied with the facilities and the library's learning environment; 70% of readers evaluated that the library resources is sufficient in quantity and is abundant in content and 97% of readers are satisfied with the Library's service [TME.09.02.12]. However, there are suggestions for adding air conditioning and trees to the reading rooms.

In addition to the Ta Quang Buu library, each department at STE has a small library to serve students and lecturers. They can use theses libraries for their teaching, learning and scientific research [TME.09.02.13]. Resources of the STE's libraries include textbooks, reference books, subject theses, graduation theses, master's theses and doctoral dissertations.

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

STE has 06 laboratories (including one national key laboratory in internal combustion engine) and 03 practice workshops with a total area of 1,817 m^2 for the purposes of training and scientific research [TME.09.03.01]. The national key laboratory in combustion engine was built according to the MOET's project with investment funding of 4.6 million dollars from ODA funding of AUSTRIA to build a modern laboratory in Asean. All laboratories and practice workshops of STE are equipped with signboards, laboratorial rules and regulations, and fire extinguishers [TME.09.03.02].

Each laboratory is equipped with many equipment, machinery and specialized software to provide the best conditions of practice and experiments for students, lecturers and researchers [TME.09.03.03]. Information on the main equipment and software of all the laboratories is posted on the STE's website [TME.09.03.04] in order to share the information to all the students and lecturers at STE. Each laboratory has a notebook to monitor the operation status of each device and to update new equipment [TME.09.03.05].

Annually, STE is allocated a budget from HUST for purchase, repair and maintenance of small equipment in laboratories (Table 9.1) [TME.09.03.06]. The proposal for purchase, repair, maintenance of equipment and supplies is carried out according to a specific procedure [TME.09.03.07]. In recent years, the laboratories have also been upgraded continuously [TME.09.03.08]. In addition, the laboratories were additionally equipped with new equipment from the school budget (Table 9.2) [TME.09.03.09] and from research projects (Table 9.3) [TME.09.03.10] and from the partner enterprises of STE [TME.09.03.11]. In 2018, a priority project from the government budget was invested for STE to upgrade automobile laboratory that meet international standard [TME.09.03.12]. Total equipment value of the project worth 26.7 billion VND [TME.09.03.13]. In May 2019, STE was donated a 01 truck for student experiments by Hino Company [TME.09.03.14]. In addition, currently a 155 million USD World Bank project is being implemented for some major universities in Vietnam including HUST to enhance research and teaching capacity and to improve management of higher education system of Vietnam [TME.09.03.15]. With this project, the working room, laboratories and other function rooms of STE will be upgraded comprehensively to enhance teaching and research capacity in future.

Table 9.1: Annual budgets for purchase, repair and maintenance of small equipment in laboratories

School Year	**2012-2013**	**2013-2014**	**2014-2015**	**2015-2016**	**2016-2017**	**2017-2018**
Budget (million dong)	120.8	192.9	200.138	156.328	216	198.450

Table 9.2: New equipment purchased in course 2016-2018 by HUST's budget

No.	**Name of equipment**	**Origin**	**Unit**	**Quanti.**	**Total Amount (VND)**	**Laboratory**
1	Teledyne lecroy-ware ace 1012	USA	Piece	1	29,700,000	C15
3	Hydraulic source	Vietnam	Unit	1	40,000,000	T-109
5	Electronic Oscilloscope	EU	Piece	2	5,500,000	C7B
6	Battery Charger & Starter Kit	China	Piece	1	9,350,000	C7B
7	Oil discharging equipment, suction type breaker	China	Piece	1	6,930,000	C7B
8	Fast battery testers and automotive charging systems	China	Piece	2	3,000,000	C7B

Table 9.3: New equipment in course 2016-2018 by research projects

No.	**Name of equipment**	**Origin**	**Unit**	**Quanti.**	**Lab.**	**Total Amount (VND)**	**Funding recourse**
1	High speed camera HAS-U1	Japan	Piece	1	T-109	402,050,000	Eco-RED project
2	Engine controlling module	Vietnam	Module	1	C15	406,372,682	Eco-RED project
3	Dell Laptop	China	Piece	1	C15	16,167,122	Eco-RED project
4	Computer set HP Z240: Tower Workstation	Singapore	Module	1	C6-102	62,181,240	Eco-RED project

In 2018, a survey result conducting to a student group studying in Module of Fluid Power & Automation Engineering at STE on facilities and equipment at the Laboratory of

Fluid Power & Automation Engineering indicated that 53% of the students were satisfied and 29% of the students were partially satisfied with the current facilities and equipment of the laboratory [TME.09.03.16]. Based on the result of this survey and through practical survey, the School's leadership have required the Department of Fluid Power & Automation Engineering to take measures to improve the facilities and equipment of the laboratory [TME.09.03.17]. Up to now, the laboratory has been equipped with new tables and chairs [TME.09.03.18] and has been submitted documents to HUST in order to require for an additional laboratory at 4th floor in T building [TME.09.03.19] and for additional equipment [TME.09.03.20].

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

HUST has a multimedia room with 50 computers located on 3th floor in Ta Quang Buu Library Building. Students can use the computer to access internet, find electronic documents, search the database of the Library [TME.09.04.01].

HUST's Intranet Information Network is connected to all areas of the campus using a fiber-optic wire network at speed of 100/1000Mbps. Since 2016, a Wi-Fi network has been installed to allow students and staffs access to the internet at anytime and anywhere in the campus [TME.09.04.02].

From 2007, HUST has deployed mailboxes for all employees, lecturers and students to enhance the management of training, transactions, and contact [TME.09.04.03]. From 2014, an electronic document management system on e-Office software for the whole school to serve the university administration [TME.09.04.04] has been installed. Using E-Office software, incoming and outgoing documents are easily managed. Next, since 2017, an Office 365 ProPlus software system has been installed for all staffs and lecturers to utilize the extensive facilities of the software in management, training and research [TME.09.04.05]. From 2018, a training management system [TME.09.04.06] and a financial management system [TME.09.04.07] have been implemented to manage and monitor the lecturer's workload and to improve the financial management efficiency of the University.

Particularly for STE, the school has 01 large computer room at C6-204 with 20 computers used for training the computer application modules, serving the simulation clubs of students and serving the calculation research group [TME.09.04.08]. In addition, the school has a small computer room at room C3-305 equipped with 10 computers along with specialized software. Students can apply modern computing technologies in automobile design and calculation [TME.09.04.09]. In addition, computers at the STE's laboratories are also equipped with the following specialized software for training and research: ANSYS v12.0 software including liquid-computing modules (Ansys-fluent, Ansys-CFX and Structure calculation, and other modules ; CATIA v5.20 design software for 3D design and product assembly, Automation Studio v5.0 software for calculation, design of hydraulic-pneumatic and control systems; AVL software for Motor simulation, flow, heat exchanger, exhaust gas treatment, dynamic calculation, strength, oscillation, transmission engine dynamics, motor physics simulation, vehicle simulation and analysis, optimization of engine efficiency [TME.09.04.10].

HUST has an Information Network Center with a team of technicians that can assist and guide the staffs, lecturers and students of all Schools using informatic equipment, computer softwares as well as repairing and engraving the problems of information technology [TME.09.04.11]. Information technology system of HUST is also regularly monitored and maintained by the Information Network Center to ensure a stable running of the system for the management, training and research activities of the university [TME.09.04.12].

A recent survey result conducting to a student group studying in Module of Fluid Power & Automation Engineering at STE indicated that 65% of the students were satisfied and 29% of the students were partially satisfied with the university's information technology system [TME.09.04.13]; the students mainly commented that the signal of the Wi-Fi system is relatively weak and needs to be improved.

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

All offices, classrooms and laboratories are equipped with automatic circuit breakers, fire extinguishers and medical first-aid to ensure the safety of students, staffs and lecturers in the university [TME.09.05.01]. Safety rules, regulations and guidelines are provided to each laboratory to ensure safety and prevent accidents. Periodically, the staffs of the University are trained in fire prevention [TME.09.05.02].

HUST has a medical center located on campus that is responsible for monitoring, primary care, medical examination and treatment, 24/24 hour medical and nursing care for students and staffs. The center is also responsible for environmental protection, epidemic prevention and food hygiene and safety in the university [TME.09.05.03]. Before commencing HUST, students are required to have an entrance health check. HUST requires 100% students and employees must have health insurance. Every year, the medical center organizes periodical health checks for all HUST's staffs [TME.09.05.04] and implementation of disease prevention at the University [TME.09.05.05]. An opinion survey of staffs and students about the Medical Center indicated that 88% of the staffs and 86.5% of the students were very satisfied with the procedure at the Center [TME .09.05.06]. In addition, 78.5% of staffs and 82.2% of students also reported that the center environment is green and clean.

HUST has a dormitory for students including 457 rooms with an area of 26,700 m^2 serving a large number of students. The dormitory area is also arranged with cultural clubs, sport facilities, and self-study rooms for students to improve the students' physical and mental condition [TME.09.05.07]. In addition, HUST has also built cafeterias for staffs and students with a total area of 2,489 m^2 [TME.09.05.08].

For physical activity, HUST has a large sport center with a gymnasium, a swimming pool, and a stadium [TME.09.05.09]. HUST always focuses on training the students health; students are required to take physical education courses such as football, basketball, badminton, swimming, running, etc. to meet the graduation requirements. In addition, students can freely attend some of the university's athletic clubs [TME.09.05.10]. For sanitation work, HUST has a team of regular cleaning staffs that work all days of the week [TME.09.05.11]. For security activity, HUST has a professional security team which has the task of patrolling and guarding for 24/24h daily including weekend, public holidays and keep the university safe and secure. [TME.09.05. 12].

For students with disabilities, because of the limited facilities of the university, some students in the same class are often required to support and help students with disabilities in moving to class. In recent years, HUST has always considered designing facilities to support students with disabilities when upgrading and building new buildings [TME.09.05.13].

STE has established the Class Advisor and Academic Advisory Board to keep track of the students' learning results as well as the student's health and psychology so that the students can be consulted and assisted during their studies at HUST [TME.09.05.14].

10. Criterion 10: Quality Enhancement

The education framework is designed and updated based on the TME Programme, it conformities with international and domestic standards, labor market requirements in the field of Transport Mechanical Engineering, and the mission and vision of STE.

10.1. Stakeholders' needs and feedback is used as input data to build up and developed academic programme

The TME programme is developed with initial ideas and feedback from academics, learners, graduated students and other stakeholders who work in government, and professional organizations.

a. The academic programme is developed by all lecturers

As mentioned in Criterion 1 and Criterion 3, the curriculum of the academic programme (TME) was built up pursuant to Decision 804/QD-DHBK-DTDH dated 17/8/2007 by HUST's President. It includes block of general education, block of the professional knowledge, and block of the transport mechanical engineering field and complementary knowledges in accordance with the regulations of the MOET and the regulations of HUST [TME.10.01.01]. In order to develop the the programme, the STE has consulted the curriculum of the TME programme in some domestic and foreign universities ([TME.10.01.02], [TME.10.01.03]). The STE organized a meeting of the SAC to discuss about criteria, learning outcomes, and programme curriculum [TME.10.01.04]. The STE also set up a development trainning committee [TME.10.01.05]. These jobs were aimed at developing the TME program, in order to meet international standards and to satisfy the demand of domestic and foreign job markets for the field of transport mechanical engineering, as well as in accordance with the mission and vision of HUST in general and of STE in particular [TME.10.01.06].

To ensure quality improvement, STE always implements the program development process including the following steps: First, prepare the manuscript and discuss it at the SAC of STE. Next, the TME curriculum is widely disseminated to all stakeholders to get comments on the programme curriculum. The curriculum is adjusted based on the synthesis of feedback from academic staffs, researchers and recruiters ([TME.10.01.07], [TME.10.01.08], [TME.10.01.09]). Finally, the curriculum is reviewed by the board of directors of STE [TME.10.01.10] and submitted to HUST for approval.

During the teaching process, when there is feedback from students and lectures, scientists and recruiters on the academic programme, STE has absorbed and reviewed the adjustment [TME.10.01.11]. Since the first academic programme of TME in 2009, the programme curriculum has been adjusted more fully in 2017 ([TME.10.01.12],

[TME.10.01.13]).

b. Development of curriculum associated with students

Every year, the Quality Management Office (former Center for Quality Assurance) carry out surveys about the lectures and courses from students after finishing the courses ([TME.10.01.14], [TME.10.01.15]). HUST and STE also organize meetings to discuss with students for evaluating of academic programme and course content [TME.10.01.16]. Graduated students can also conduct a general assessment surveys on the quality and effectiveness of the school's training. Students are also required to complete a survey each semester [TME.10.01.17]. With the Academic Advisory Board, the Student Association, the Youth Union, STE also encourages students to discuss and feedback on the programme. For example, in the revised TME 2017, in addition to adjusting the practice credit in total credit for some courses, STE has added some new courses to improve students' practical skills [TME.10.01.18].

Table 10.1: Courses for practice in the revised academic programme 2017

No.	Course	Total credit	Credit		
			Theoretical	Practical	Self study
1	Automobile Maintenance and Repair	4	3	1	8
2	Experimentation and Tests on Automobile	2	2	1	4
3	Fundamental of Mechatronic System on Automobile	3	3	1	6

c. Development of curriculum associated with labour market

Information about the labour market and employers is an important source for the design and development of the programme because graduated students need to meet the requirements of the jobs. The programme includes both classical and background courses such as Automotive structure, Automobile theory..., and includes courses to meet the actual requirements of the jobs such as Body and frame technology, Computer applications in automotive design... [TME.10.01.19]. The final programme is reviewed by schools, universities and management organizations in the relevant fields, such as the Vietnam Register, the Road Administration, national and international professors and so on to collect feedback to adjust and refine the curriculum and course content to better match the development of the job market and the requirements of the jobs [TME.10.01.20]. The TME programme has been sent to stakeholders with a letter of recommendation for the programme's development ideas, then the comments will be collected for further researches. STE has also organized workshops with stakeholders to discuss and give feedback on programme development [TME.10.01.21].

During the program development process from 2009 to the present, STE has regularly collected feedback from business people and alumni about the training activities and the quality of graduated students [TME.10.01.22]. The result of the survey on work abilities of graduated students showed that most of them had good knowledge and logical ability, but

their communication and teamwork skills were still limited [TME.10.01.23]. The survey with recruitment on the quality of graduated students and education quality is conducted annually [TME.10.01.24]. Recent surveys showed that the knowledges and professional skills, self-study skills and data processing skills are extremely important. The fundamental knowledge and skills are the abilities to apply professional knowledge in the workplace, the ability to use foreign languages and logical thinking [TME.10.01.25]. The feedback from labour market has been scrutinized in updating the TME programme since 2009 and the development strategy of STE [TME.10.01.26] (See also Criterion 1.3).

In summary, taking the feedback of stakeholders as a basis for design and development which makes the academic program more complete and more practical. These results are summarized in the annual summary report of STE ([TME.10.01.27], [TME.10.01.28], [TME.10.01.29], [TME.10.01.30]), as well as expressed through positive assessments from stakeholders' feedback STE([TME.10.01.31], [TME.10.01.32], [TME.10.01.33]).

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

The build-up and development on the academic programme are done and it is periodically updated, examined and evaluated. The improvements are made to enhance efficiency and effectiveness.

The programme framework is always reviewed at suitable times

Annually, the SAC examines, reviews and evaluates the effectiveness of the TME programme ([TME.10.02.01]) based on stakeholders' opinions ([TME.10.02.02], [TME.10.02.03], [TME.10.02.04], [TME.10.02.05], [TME.10.02.06]) about the education quality and the output results to adapt with the rapid changes of society in the field of transport mechanical engineering and to stick up with the education stategy of HUST and STE ([TME.10.02.07], [TME.10.02.08], [TME.10.02.09]).

As mentioned in criteria 2 and 3, the intial programme was built up based on the former of training on the annual basis model [TME.10.02.10]. Due to the needs of society as well as the development of world education technology, it is necessary to develop programme according to the credit-based training model [TME.10.02.11]. Changes in programme development from 2009 to now have been made to create a more flexible training process and to provide more options for students [TME.10.02.12], as well as more clearly identify the outcome of the training program ([TME.10.02.13], [TME.10.02.14]).

Table 10.2 reflects the changing on TME programme structure within 10 years, which shows the change in the structure of knowledge groups as well as the number of credits per knowledge block to suit the development trend. Besides, the amount of new knowledge has also been changed to meet the updated requirements of society. The up-to-date knowledge is presented to students via website of HUST and STE [TME.10.02.15] [TME.10.02.16] (See also Criteria 2 and 3).

Table 10.2: Academic programme structure of TME

Content		The programme is applicable from	
		2009 - 2017	2017 - now
Credits	General knowledge	51	50
	Basic knowledge of the TME programme	49	48
	Specialized knowledge	54	35
	Supplementary knowledge	-	9
	Technical practice	2	2
	Graduation internship	4	4
	Graduation project	12	12
	Total credits	164	160

Using stakeholders' feedback to improve the programme

Stakeholders' opinions are always considered to improve the programme, they are lectures, students, alumni, and employers ect. The consultation process of stakeholders is conducted according to the instruction of HUST ([TME.10.02.17], [TME.10.02.18]). The TME programme is sent to stakeholders together with a proposal for improvement of the programme. HUST and STE have been developing evaluation forms as well as developing a variety of assessment forms to be able to improve both the quantity and quality of survey responses. Feedbak forms include letters, seminars, activities of the Students' Union and the Youth Union [TME.10.02.19]. From these ideas, STE has improved academic programmes more in line with practical needs. Many advanced theoretical courses have been revised to increase the practical hours as well as the content and methodology of modern studies [TME.10.02.20]. In addition, STE also uses exchange internships with foreign universities to update methods and knowledge to orient the program development [TME.10.02.21].

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

The teaching-learning process and assessment activities are regularly reviewed and evaluated to ensure consistency with the learning outcomes. STE always implements the quality assurance and continuous improvement of teaching methods and evaluation methods.

With the objective to ensure and improve the quality of teaching and learning, teaching methods, and evaluation methods are considered as the most important criteria. Therefore, improvement and innovation of teaching method are much focused tasks at STE. With the current explosion of information, advanced teaching methods are imparting knowledge and

skills. The instructors are considered as facilitators of student learning and inspiring thinking of students (See also Criterion 4).

STE always focuses on investment of quality improvement for teaching staffs. Many staffs have been sent to exchange the teaching methods, improve the teaching qualification [TME.10.03.01]. The young staffs are encouraged to continue postgraduate studies at abroad universities [TME.10.03.02] (See also Criteria 6 and 7). There are many types of teaching methods which are also innovated and diversified: lectures, seminars, group exercises, assignments, practice, on-the-job training, E-learning, blended learning, etc. The high-tech materials such as movies, videos, etc. are also used to support the learning process [TME.10.03.03].

The Academic Affairs Office and STE organize the examination, monitor, marking, summarization of test scores of students for each semester ([TME.10.03.04], [TME.10.03.05], [TME.10.03.06], [TME.10.03.07]). The information about the learning and examination schedule is provided by the Academic Affairs Office and direct comments of students through website and email system [TME.10.03.08]. All the comments are considered and processed to ensure the learning and researching of students conveniently and effectively.

The Quality Management Office manage and monitor the teaching and learning in an independent way based on two-way feedback [TME.10.03.09] [TME.10.03.10]. Accordingly, the method and quality of teaching are assessed from the assigned staff and students during that course. The Dean of STE also appoints the staffs to attend and audit the teaching to grasp the teaching method and qualification ([TME.10.03.11], [TME.10.03.12]).

The student performance evaluation process includes regular checkpoints (attendance points), mid-term checkpoints, and final-term checkpoints. The evaluation point is also applied to many different forms such as essays, quizzes, essay writing, seminars, oral test ([TME.10.03.13], [TME.10.03.14], [TME.10.03.15]). For graduation projects, STE establishes committees for checking graduation projects to evaluate the presentation of the research results of the project independently ([TME.10.03.16], [TME.10.03.17]). Students are encouraged to express their views, arguments, ideas with each other and with lecturers.

Annually, HUST organizes the meetings to review and verify the assessment and inspection. According to the regulations on "Evaluation of results and implementation of final-term examination", these documents have very important roles in self-assessment and program development [TME.10.03.18] (See also Criterion 5).

In addition, according to the survey results, most of the opinions suggest that the method of student assessment in the exams, in STE in particular and in HUST in general, ensures the fairness and transparency, which contributes quality assurance of the academic programme ([TME.10.03.19, [TME.10.03.20]).

10.4. Research output is used to enhance teaching and learning

Scientific research has always attracted the attention of staffs and students of STE [TME.10.04.01]). Research topics are proposed by STE's staffs from the needs of reality ([TME.10.04.02], [TME.10.04.03], [TME.10.04.04], [TME.10.04.05], [TME.10.04.06], [TME.10.04.07]), or on development ideas for students' graduation theses. Many projects with good results are highly appreciated at conferences [TME.10.04.08], and applied in teaching or

practice [TME.10.04.09]. Base on the results of scientific research of the internal staffs and students, STE has oriented for using training-model, learning tools to perform the experiments, practice. By these results, the system of laboratory equipment has been updated and upgraded. Scientific results are applied in practical use to improve teaching and learning quality [TME.10.04.10] [TME.10.04.11] [TME.10.04.12]. Figure 10.1 shows an example of a scientific research of students. [TME.10.04.13]

Figure 10.1: Images of the product of student research project "Study on design an equipment to measure the velocity of automobile and motobike" is used to measure the speed of cars and motorcycles in the course "Automobile testing"

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

The quality of facilities and support services (in libraries, laboratories, IT systems and learning support services) is often evaluated and improved.

Facilities and infrastructure meet the requirements of teaching at STE. Annually, the equipment is upgraded, repaired and maintained. The space is adequate for teaching and learning, the classroom area is suitable for the large or small classes or group discussions. However, the space for conducting experiments is limited (See also Criteria 8 and 9).

As described in section 10.1, the questions related to the quality of support and utility services, in the survey questionnaires about the academic programme and the learning environment for students, were also addressed [TME.10.05.01]. The results of the survey are collected and analyzed by the Quality Management Office then will be sent to the relevant units (library, laboratory, IT and other services). According to a survey of students, majority of the respondents suppose the STE facilities are sufficient for the needs of students ([TME.10.05.02], [TME.10.05.03]).

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

Having complete feedback from the companies

The quality of the academic programme is evaluated by stakeholders including students, alumni, academic staffs and companies. The stakeholders' opinions survey on the quality of the academic programme and the quality of graduated students is conducted annualy. There is a system of collecting feedback from stakeholders at STE and HUST. However, collecting feedback from companies and alumni has been done regularly since 2016. In addition, STE also established channels to actively respond to collect the feedback in the seminars of STE and of HUST with businesses ([TME.10.06.01], [TME.10.06.02], [TME.10.06.03]). Most recently in 2016, STE conducted a survey from the stakeholders including representatives of recruiting agencies as the universities and colleges, research institutes and centers, enterprises [TME.10.06.04]. The main investigative content includes the skills and abilities adaptable to the working environment of graduated students; the graduate students have met the requirements of job positions; requirements of ability to speak English and computer skills for job positions; communication and teamwork skills of graduated students, etc. [TME.10.06.05]. The survey result showed that students graduated from STE have specialized knowledge and good working skills to meet the job requirements, but communication and teamwork skills are not good [TME.10.06.06]. The feedbacks from stakeholders are very straightforward, constructive and useful. In addition, STE also collects feedback from the University's new online feedback channel for staffs ([TME.10.06.07]) and for students ([TME.10.06.08]) about the quality of the academic programme.

Based on the collected feedback, STE adjusts and improves the academic programme to meet the employer's expectations for enhancing career opportunities for students after graduation, such as requiring higher language skills, increasing the amount of hands-on practice with enterprise production ([TME.10.06.09], [TME.10.06.10]). Feedback from the others universities for TME students also has been an important role in the duty of improving the quality of the programme. All stakeholder feedback is highly appreciated to improve the structure and content of the curriculum framework as well as the spirit and learning attitude of TME students. [TME.10.06.11].

Having complete feedback from students and alumni

According to the regulations of HUST, at the end of each semester, students who followed the TME programme are all surveyed about the quality of teaching, the content and the process of evaluation for each attended course [TME.10.06.12] [TME.10.06.13]. In addition, every year, the President of HUST organizes the face-to-face meetings to get the reviews and feedback on all aspects of the education activities from students [TME.10.06.14]. STE also establishes active feedback channels to collect students' opinions through the Academic Advisory Board. This feedback will be considered to adjust and improve the curriculum and teaching methods, while demonstrate the central role of students in the curriculum.

The opinions in evaluation and suggestion on the quality of the academic programmes from alumni are also regularly inspected by STE in stages in order to establish and develop the programme which meets the requirements of the labour market. STE maintains the contact with alumni (including alumni who graduated from 2015 up to now) and regularly updates the

employment status of graduates by the courses via questionnaire/online survey. In the total number of respondents for the TME programme, most of alumni frequently use the knowledge they have learned in their jobs , nearly 60% of the respondents suppose the specialized knowledge gained at the school is acceptable and over 80% of the respondents suppose the adaptability of students graduated from the TME programme is reached fairly upward. Feedback from alumni who are continuing to study in the higher programmes also helps to improve the curriculum in line with social development trends and international standards [TME.10.06.15].

Having complete feedback from the STE's members

The opinions of the lecturers are drawn from the problems arising in the actual teaching process, therefore they have great value to the development of curriculum. STE organizes to get the comments for improving the quality of the academic programme according to the society development trend from the retired key staffs as well as the current academic staffs. These opinions are considered as the basis for the development and adjustment of the academic programme [TME.10.06.16].

Every year, STE also organizes the summation to review the academic yearly results for getting opinions from staffs on the education, scientific research, facility construction and quality evaluation [TME.10.06.17]. Before making any changes in the structure of the curriculum or work environment, the Board of Directors of STE is interested in the opinions of the academic staffs for the improvement performing in the most effective way [TME.10.06.18]. At the end of each academic year, STE organizes meetings to get the opinions from staffs on the working quality during the year. In these meetings, staffs may raise the feedback concerning with the working environment, teaching-learning process and the academic programme [TME.10.06.19].

11. Criterion 11: Output

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

The quality of graduated students from the programme (ex: graduation rate, dropout rate, everage duration time of studies, professional capacity…) are recorded, monitored and compared; and the academic programme must meet with the standard outputs and the needs of stakeholders.

During TME programme operation, STE always considers the output quality or the result of the ELOs of the programme.

The number of students enrolling in the programmes is only calculated after the first year. The rate of graduation and dropout are calculated on the number of graduated students, number of dropout student respectively and the number of input students at STE. The graduation rate of STE was over 80% and the dropout rate was under 18% for period 2014-2015 (Table 11.1) [TME.11.01.01]. The graduation rate at STE tends to increase, and the dropout rate decreases and up to now is kept below 5%. The statistics and evaluation of graduation rates, the dropout rate has always been determined by STE as necessary works for assessment and improvement of the academic programmes. Through statistics and surveys [TME.11.01.02], the graduation rate is still low, and the dropout rate is still high in the

previous years because students are still confused with the new form of credit training, as well as the old program, which is somewhat unresponsive, has not attracted students by branch. In addition, there are other reasons such as delaying the achievement of English output or expiry of study time at HUST. So far these ratios have changed in a more positive way, partly due to the evaluation and improvement of the program structure as well as the updating of actual needs in the teaching modules and enhancing the performance of the Academic Advisory Board and the STE's learning support clubs ([TME.11.01.03], [TME.11.01.04], [TME.11.01.05]).

Table 11.1: Pass rate and drop out rate

Academic year	**Cohorts size**	**% completed first degree in**			**% dropout during**			
		3 years	4 years	≥ 5 years	1st year	2nd year	3rd year	4th years & beyond
K54 (2009-2014)	111	0	0	74.7	-	0	3.96	21.34
K55 (2010-2015)	113	0	0	85.84	-	0	4.42	9.73
K56 (2011-2016)	123	0	0	95.93	-	0.81	0	3.25
K57 (2012-2017)	114	0	0	95.61	-	0	1.75	0.87
K58 (2013-2018)	169	0	0	95.85	-	0.59	1.77	1.77

(Updated on the 6th of June 2019)

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

The quality of graduated students from programmes (ex: graduation rate, dropout rate, everage duration time of studies, professional capacity…) are recorded, monitored and compared, and to ensure that graduated students must be qualified with the standard outputs and the demand of stakeholders.

The duration time to complete the academic programme is 5 years (10 semesters) [TME.11.02.01]. However, the studying time of each student may vary from minimum 4.5 years to maximum 7.5 years, it depends on the number of credits per student accumulating in each semester. According to the evaluation of stakeholders ([TME.11.02.02], [TME.11.02.03]), this training time is in line with the general development trend of educational system in Vietnam. From 2014, the TME programme has been taken from 9 to 10 semesters, the graduation rate after 9 semesters is more than 80% [TME.11.02.04]. Results from statistics and analysis of survey data indicate that, the reason for reduction in graduation rate before 9 semesters is that the students must study English with 450 TOEIC score for outcomers (500 TOEIC score of the amended academic programme from 2017).

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

The goal of the academic program is to increase the employment rate as well as to improve quality and expand the work area of graduated students. To accomplish this goal, STE always organizes seminars, face-to-face dialogues between recruitment companies and

students ([TME.11.03.01], [TME.11.03.02]). In addition, STE regularly invites alumni to talk to students about the TME programmes, learning methods, skills to prepare for job interviews as well as skills needed when working in reality. With the result of those efforts, graduated students of STE are evaluated well professional knowledge, working skills and well-adapted by the partnerships and recruitment companies [TME.11.03.03]. The rate of students having jobs after graduating 6 months reaches nearly 90% [TME.11.03.04]. Among them, almost students are able to find their jobs and choose suitable jobs for themselves, with over 50% jobs in the fields of studies in the university and the school, over 30% jobs in the fields of automobile and transport mechanical engineering, about 5% jobs in the management area, and about 7% of alumni found jobs which are not aligned with the major [TME.11.03.05]. Many graduated students of STE have received domestic and intenational scholarship after graduation [TME.11.03.06].

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

The scientific research activities of the learners are implemented, monitored and compared and meet with the requirements of stakeholders.

As mentioned in section 10.4, scientific research activities of staffs and students are much considered at STE [TME.11.04.01]. STE is equipped with modern lab systems with innovative tools and equipments which were invested more than 4.6 million USD [TME.11.04.02], [TME.11.04.03]. These equipments support significantly for undergraduate and postgraduate programmes. Allowing to use lab systems helps students to have chances to implement experiments and high tech analyses that enhances scientific research quality and graduation thesis [TME.11.04.04]. STE also assists students in organizing and operating scientific research clubs. In addition, students from the second year are oriented to carry out scientific research projects. The efforts of leaders, staffs and students of STE have increased the number and quality of scientific research of students [TME.11.04.05]. On the other hand, STE has also established learning support clubs and English clubs to improve the quality of students' learning as well as enhance the ability of applying foreign scientific research achievements in scientific research products of students. Many works of STE students have become some parts of the higher level scientific research projects together with the instructors [TME.11.04.06]. Many projects of the students of STE have awarded the prides of HUST and other competitions in the domain of transport mechanical engineering field [TME.11.04.07], [TME.11.04.08], [TME.11.04.09]).

The synchronous and modern lab systems are a good condition for the staffs of STE to take charge of and participate in many scientific research topics at all levels, such as the independent and key topics of State-level programmes, basic research topics of the Ministry of Science and Technology and topics of HUST level [TME.11.04.10]. In addition, STE has implemented a number of scientific research projects funded by Nafosted, AounSeedNet or other non-governmental organizations of other countries such as Norway, Denmark, and Japan [TME.11.04.11]. The results of scientific researches of staffs are reflected in the number of scientific articles in national and international articles and reports at national and international conferences [TME.11.04.12] [TME.11.04.13]. In recent years, STE has organized three national and international scientific conferences ([TME.11.04.14], [TME.11.04.15], [TME.11.04.16], [TME.11.04.17]). Annual research results of staffs and

students are always synthesized, compared and analyzed in annual reports to improve the quality and quantity of scientific researchs in STE ([TME.11.04.18], [TME.11.04.19]).

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

As in Criterion 11.2 and Criterion 11.3 on Outputs, the results of stakeholders' responses are satisfactory and acceptable. This indicates that graduated students meet the output standards/ELOs. In Criterion 1, ELOs reflect the requirements of the stakeholders. Criterion 11.5 is used to assess the satisfaction of the stakeholders to monitor and to benchmark for improvement.

The TME programme is considered by the cooperating units to be suitable with the requirements of an engineer academic programme for the transport mechanical engineering as well as the proffession and capabilities of students [TME.11.05.01]. Fundamental knowledges are arranged logically alongside the general and in-depth knowledge. This knowledge provides students with logical thinking and practical application flexibility for working or continuing to improve at a postgraduate level [TME.11.05.02]. In order to help the training and scientific research to be integrated, STE regularly invites scientists to make lectures and exchange science activities. Scientists have good comments on the most up-to-date curriculum and the capicities of students who may be suitable for their professional work after graduation [TME.11.05.03]. Alumni feedback is mixed, but the positive assessment rate of alumni is quite high.

The feedback from alumni after graduation shows that the TME programme has provided a basic and specialized knowledge system that is relevant to the actual work. Many alumni who continue to study at the postgraduate levels also evaluate that the knowledge of the core curriculum as a solid step for further advanced studies [TME.11.05.04]. The results of the student survey on the STE's curriculum show that the majority of students thought the learning materials meet their needs, but the need to reduce the load of the science courses. In the first and second year, increase the number of courses in the specified fields and the groups of specified fiedls, and increase the amount of practical courses to improve work and practice. Besides, some comments suggest that it is necessary to improve communication skills in English to meet the job requirements of enterprises [TME.11.05.05]. Collecting feedback from lecturers on teaching activities has become an important and regular task in the annual quality assurance plan of HUST and STE. This is considered as an objective survey channel for academic programmes and teaching activities. In recent years, comments on teaching activities and course assessment have always been considered in positive way [TME.11.05.06].

STE and HUST have been received positive feedback on the academic programme from the companies. Employers highly appreciated the basic knowledge and skills of graduated students of STE. In addition, STE also directly interviewe with the leaders of the employers. They are also satisfied with the professional ability and morale of the graduates of the TME programme at STE. Employers, however, also said that the TME programme should focuses on enhancing practical skills for students [TME.11.05.07] [TME.11.05.08]. STE also has received positive feedback from international professors, alumni and staffs [TME.11.05.09]. They are also satisfied with the students’ abilities, good basic knowledge, hardworking and quick adaptation to the scientific research environment.

The STE's staffs are also satisfied with the working environment. Many doctorate graduates abroad showed their desire to work at STE. [TME.11.05.10].

The TME programme has received positive feedback from local and international experts. The responses showed that the TME programme is modern and and in line with development trends. They are also satisfied with the students and the pedagogical environment when lecturing and working with STE [TME.11.05.11].

Although there are effective activities, STE always aims to improve the quality of survey of stakeholders. In addition, STE also understand that it is necessary to update the survey questions for more practicality. In the coming time, the survey partners need to be updated and expanded further to get prompt and timely feedback and to push the active activeness of stakeholders. STE also needs to organize a specialized committee in charge of receiving information, statistics and analysis so that the survey results are more frequent and updated to obtain useful information for the development and improvement of the academic programme.

PART 3. STRENGTHS AND WEAKNESSES ANALYSIS

1. Strengths, Weaknesses and Remedies

Criterion 1:

- Strengths:
- The programme was built based on the Chulalongkorn University programme
- The ELOs were built based on the CDIO approach with the consultation of relevant stakeholders, aligned with the mission and vision of HUST.
- The ELOs are reviewed and adjusted on the basis of feedbacks of the stakeholders.
- The ELOs are widely publicized to all stakeholders.
- Weaknesses:
- Students employment positions are not specified in the programme ELOs. However, this has been offsetted by introducing graduates employment positions on leaflets, admissions sites, and the course "Introduction to STE"
- Collecting feedbacks of stakeholders of the academic programme and the ELOs has not been carried out regularly from 2009 to 2013 but has been partially completed by collecting feedbacks from graduates annually from 2014 to present.
- Remedies:
- Add students employment positions in the description of the academic programme.
- Schedule a regular, systematic collection of feedbacks from the employers.

Criterion 2:

- Strengths:
- The programme is fully informative, updated, and widely disseminated to stakeholders on various channels.
- Syllabi of courses are informative, updated, and disseminated to learners at the first class of the courses.
- Weaknesses:
- Due to the regulations of HUST and STE which does not provide the syllabus details of the courses on STE website, but only the course objectives, the summary of the courses, and the academic programme description.
- Remedies:
- Proposing to HUST to allow publishing the syllabi of the programme on the website.

Criterion 3:

- Strengths:
- The programme curriculum is designed according to the CDIO method based on the ELO therefore guarantee to meet the ELO.
- Each course is designed to meet the course ELO, thereby meeting the programme's ELO.

- Knowledge blocks has reasonable proportions, are logically arranged and in an appropriate and updated order.

- Weaknesses:

- Collecting feedback from enterprises has not been implemented systematically every year, but was via only one workshop or via the way of enterprises actively contacting the School. Therefore, the annual review and updating of the academic programme does not adequately reflect the requirements of enterprises.

- Remedies:

- Plan for collecting annual feedbacks from industry

Criterion 4:

- Strengths:

- The educational philosophy is clearly stated and disseminated to all stakeholders. Appropriate teaching and learning activities are designed in alignment with the philosophy of education.

- Diverse teaching and learning activities are designed to meet the learning outcomes of the respective subjects. In many teaching and learning activities, students stand in the center, helping to improve self-learning, proactivity, creativity, lifelong awareness and lifelong learning.

- Many students work in research laboratory with faculty from the 3rd year. This helps students improve their research capacity, creative thinking and other soft skills.

- Information technology is used in teaching and learning activities, enhancing the attractiveness of lectures and interaction between students and faculty such as e-learning, online courses, course webpages.

- Weaknesses:

- The large classroom size of many courses restricts the application of active teaching and learning methods, thus limiting students' ability to acquire knowledge and practice soft skills.

- Some lecturers have not been active in applying information technology to teaching

- Remedies:

- Apply other active teaching techniques that are appropriate for large class sizes.

- Organize training courses to teach lecturers to apply information technology in their lectures.

Criterion 5:

- Strengths:

- HUST and STE have completed and explicit academic regulations to assess students.

- HUST and STE use a variety of assessment methods including entrance exam, English entrance test, course assessments, internship and final project. These methods help to enroll best students at entrance and properly assess students' academic achievements during a course.

- Students at STE can be easily approached to timelines, assessment methods, regulations, weight distribution, rubrics and grading, and appeal procedure.

- Weaknesses:

- Results of the midterm examinations is slowly published, about 1 week after the end of the course. This affects the study plan of students after the midterm examinations.
- Solutions of final tests are not published to students after the exam date. Student is hard to verify their results.

- Remedies:

- To reduce the publication time of grade for the midterm examinations.
- Solutions of final tests should be published to students after the exam date on Department's bulletin board or Department's website.

Criterion 6:

- Strengths:

- The school has good planning on human resources, so the ratio of Full professors / associate professors and PhD/total number of lecturers is high in the University, well meeting the requirements of training, research and other services.
- The staff-to-student ratio meets the standards of MOET, ensuring quality of training.
- The School have appropriate recruitment criteria and policies that are publicized.
- The School have regulations on faculty mandate and competencies and evaluate faculty capacity systematically.
- The School have a process to determine the training needs of staff and many training activities to improve professional qualifications, pedagogy for staff.
- The University has a policy of rewarding and recognizing staff with good working performance in order to motivate staff for better fulfillment of their assigned tasks.
- The school has abundant scientific activities, the number of projects and scientific publications ranked in the high class among the Schools of HUST.

- Weaknesses:

- Some lecturers are not very active in scientific research, have not reached their full potential.

- Remedies:

- Motivate faculty members to participate in scientific research projects, participate in joint journal writing to motivate them to research.

Criterion 7:

- Strengths:

- School has flexible and suitable policies of support staff planning while sharing with the specialized departments/ centers of the University but still has its own staff for specialized tasks.
- The staff assessment policies are constantly updated and reviewed to promptly offer training to improve the professionalism of the corresponding staffs.

- Weaknesses:

- The quality of service in some sectors doesn't meet the requirements during work peaks This is due to the lack of supporting facilities, leading to instant overload of support staffs.

- Remedies:

- Along with upgrading staff support facilities, STE will apply new management system that allows to access and evaluate staff quality to identify who fulfill their duties and who needs more training to improve their capacity.

Criteria 8:

- Strength:

- There are clear enrollment policies and criteria to ensure the quality of enrollment.
- There are many channels supplying information which help the Direction Board, Advisory Board and students to track progress and study results.
- STE's support staff provide students with a variety of information to help students executing procedures conveniently and efficiently, such as transcript demand, course registration, practical registration, student certification, …
- STE encourages students to participate in the external activities such as sports competitions, student research awards, and which create a social and landscape environment that facilitates the best condition for learning and doing research for students.

- Weaknesses:

- The number of students participating in extracurricular activities in culture, sports and scientific research is still limited

- Remedies:

- Organizing more active programmes to encourage students to participate in extracurricular activities and participate in more research labs thru Class advisors and Advisor Board.

Criterion 9:

- Strengths:

- Classrooms are adequate for students at HUST and STE's students and well equipped with teaching equiments, air-conditioner, and wifi system.
- The library is large with plenty of reading rooms and resources.
- HUST provides good conditions of environment, health and safety for staffs, lecturers, researchers, and students.

- Weaknesses:

- The number of labs and facilities for scientific research at STE is limited. Funding provided annually by HUST for laboratory refurbishment and equipment purchase is not much.
- The access to international databases of the Library is limited and this has influence on the quality of scientific research at HUST as well as STE.

- Remedies:

- To provide more laboratories, research equipment and research fund.
- To support more international databases for the Library.

Criterion 10:

- Strengths:

- STE has developed a quality assessment process based on getting the feedbacks of stakeholders for TME programme, teaching and learning approach. STE can be able to make annually the necessary adjustments, constantly improving the quality of teaching and learning methods, ensuring compatibility and relevance to the learning outcomes of the curriculum.
- STE has regularly organized seminars for teachers on new integrated teaching methods to improve soft skills for students. STE also invites foreign or local experts to give talk in the seminars with full participation of STE teaching staff.
- The quality of teaching support and utility services for learners is regularly reviewed, evaluated and improved.

- Weaknesses:

- There is still a group of conservative teaching staff who refuse integrating new teaching methods so there is a lack of consistency in teaching approach for the same course.
- The number of students, alumni and businesses involved in giving feedbacks is still limited due to the lack of a habit of responding online.

- Remedies:

- Encourage more staff to participate in seminars, to exchange and share experiences on new teaching methods.
- Reveal student assessment results to teaching staff.
- Implement regular reminder methods to get stakeholder feedback via email and phone.
- Enhancing analysis and updating survey data regularly and professionally.

Criterion 11:

- Strengths:

- The online management SIS systems of HUST allows school to control the dropout rates, pass rates accurately and regularly.
- STE implements different methods to monitor and support learners in difficulty through the staff of Academic Advisory Board who work efficiently and somehow allow to reduce the dropout rate.
- The students of STE get job aligned with their major and more than 95% of students have jobs after 6 months of graduation.
- The stakeholders (employer, alumni, students, lecturers) are largely satisfied with the curriculum and training quality of the School.

- Weaknesses:

- Soft skills of STE students are still limited (presentation skills, reports and English).

- Their skill in using of equipment, welding, PCB design tool is still poor.

- Remedies:

- Enhance the integration of soft skills training for students.
- Increase the requirement of English certificate (TOEIC 550).
- Review all the practical sessions and increase the amount and quality of equipment for students used in hardware design project.
- Strengthen the analysis and update data to timely adjust the targets not yet achieved.

2. Self assessment checklist

		1	**2**	**3**	**4**	**5**	**6**	**7**
1	**Expected Learning Outcomes**							
1.1	The expected learning outcomes have been clearly formulated and aligned with the vision and mission of the university						6	
1.2	The expected learning outcomes cover both subject specific and generic (i.e. transferable) learning outcomes						6	
1.3	The expected learning outcomes clearly reflect the requirements of the stakeholders						6	
2	**Programme Specification**							
2.1	The information in the programme specification is comprehensive and up-to-date						6	
2.2	The information in the course specification is comprehensive and up-to-date						6	
2.3	The programme and course specifications are communicated and made available to the stakeholders					5		
3	**Programme Structure and Content**							
3.1	The curriculum is designed based on constructive alignment with the expected learning outcomes					5		
3.2	The contribution made by each course to achieve the expected learning outcomes is clear.					5		
3.3	The curriculum is logically structured, sequenced, integrated and up-to-date					5		
4	**Teaching and Learning Approach**							

4.1	The educational philosophy is well articulated and communicated to all stakeholders					5		
4.2	Teaching and learning activities are constructively aligned to the achievement of the expected learning outcomes					5		
4.3	Teaching and learning activities enhance life-long learning					5		
5	**Student Assessment**							
5.1	The student assessment is constructively aligned to the achievement of the expected learning outcomes						6	
5.2	Student assessment is constructively aligned to the achievement of the expected learning outcomes						6	
5.3	Methods including assessment rubrics and marking schemes are used to ensure validity, reliability and fairness of student assessment						6	
5.4	Feedback of student assessment is timely and helps to improve learning					5		
5.5	Students have ready access to appeal procedure						6	
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						6	
6.2	Staff-to-student ratio and workload are measured and monitored to improve the quality of education, research and service						6	
6.3	Recruitment and selection criteria including ethics and academic freedom for appointment, deployment and promotion are determined and communicated						6	
6.4	Competences of academic staff are identified and evaluated						6	
6.5	Training and developmental needs of academic staff are identified and activities are implemented to fulfil them						6	
6.6	Performance management including rewards and recognition is implemented to motivate and						6	

	support education, research and service							
6.7	The types and quantity of research activities by academic staff are established, monitored and benchmarked for improvement						6	
7	**Support Staff Quality**							
7.1	Support staff planning (at the library, laboratory, IT facility and student services) is carried out to fulfil the needs for education, research and service						6	
7.2	Recruitment and selection criteria for appointment, deployment and promotion are determined and communicated						6	
7.3	Competences of support staff are identified and evaluated						6	
7.4	Training and developmental needs of support staff are identified and activities are implemented to fulfil them						6	
7.5	Performance management including rewards and recognition is implemented to motivate and support education, research and service						6	
8	**Student Quality and Support**							
8.1	The student intake policy and admission criteria are defined, communicated, published and up to date						6	
8.2	The methods and criteria for the selection of students are determined and evaluated						6	
8.3	There is an adequate monitoring system for student progress, academic performance, and workload						6	
8.4	Academic advice, co-curricular activities, student competition, and other student support services are available to improve learning and employability						6	
8.5	The physical, social and psychological environment is conductive for education and research as well as personal well being						6	
9	**Facilities and Infrastructure**							
9.1	The teaching and learning facilities and equipment (lecture halls, classrooms, project rooms, etc.) are adequate and updated to						6	

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

	benchmarked for improvement							
11.5	The satisfaction levels of stakeholders are established, monitored and benchmarked for improvement						6	

PART 4. APPENDICES

1. Glossary

No	Abbreviation	Stands for
1	AUN-QA	Asean Universities Network – Quality Assurance
2	BGDDT	Ministry of Education and Training (in Vietnamese)
3	CDIO	Conceive, Design, Implementation and Operate
4	CEQUA	Centre for Quality Assurance
5	DPSA	Department of Politics and Student Affairs
6	ELO	Expected Learning Outcomes
7	FT	Full-time
8	FTE	Full-time Equivalent
9	GPA	Grade Point Average
10	HUST	Hanoi University of Science and Technology
11	Lab	Laboratory
12	MOET	Ministry of Education and Training
13	M-TME	Mechanical-Transport Mechanical Engineering
14	NHSGE	National High School Graduation Examination
15	ODA	Official Development Assistance
16	SAC	Scientific and Academic Council
17	SAR	Self-Assessment Report
18	SIS	Student Information System
19	STE	School of Transportation Engineering
20	SWOT	Strength Weakness Opportunity and Threat
21	TME	Transport Mechanical Engineering
22	UEE	University Entrance Examination

2. List of tables

3. List of figures

4. List of evidences

No	Codes	EVIDENCE
1	**Introduction**	
2	TME.00.01	List of people in STE's group of writing self-assessment report
3	TME.00.02	Demand for TME manpower and survey results
4	TME.00.03	Survey questionnaire for learning output and survey results
5	TME.00.04	Summary of the survey results on the development of TME's curriculum
6	TME.00.05	Decision of the establishment of Hanoi University of Science and Technology
7	TME.00.06	List of training curriculum
8	TME.00.07	STE Report at Staff Meeting
9	TME.00.08	HUST enrollment information website
10	TME.00.09	The overall project planning and development at HUST 2006-2030 (BK50-2) and Release Official Approval
11	TME.00.10	Vision and Mission of HUST https://www.hust.edu.vn/su-mang-tam-nhin-gia-tri-cot-loi
12	TME.00.11	Dispatch on the autonomy of HUST and STE
13	TME.00.12	Decision of establishing the School of Transportation Engineering (2006)
14	TME.00.13	List of STE staffs
15	TME.00.14	List of STE’s projects for the period 2015-2017
16	TME.00.15	Report on STE research mission and the list of projects
17	TME.00.16	Vision and Mission of STE
18	TME.00.17	Minutes or Notes of STE Academic Council and Dean

19	TME.00.18	Survey forms and results of lecturers and scientists
20	TME.00.19	Meeting Minute and Dispatch relating on TME Programme of STE Academic Council
21	**1. Criterion1. Expected Learning Outcomes**	
22	***1.1. The expected learning outcomes have been clearly formulated and aligned with the vision and mission of the university***	
23	TME.01.01.01	Mission and Vision of Hanoi University of Science and Technology published on HUST website
24	TME.01.01.02	Website of HUST (https://www.hust.edu.vn/)
25	TME.01.01.03	Decision No. 296 on approving ologies and academic programme university (2009)
26	TME.01.01.04	Decision No. 300 on establishing committee of education programme university (2009)
27	TME.01.01.05	Meeting minutes of the SAC
28	TME.01.01.06	Development guide on academic programme (2017)
29	TME.01.01.07	Decision No. 926 on establishing SAC (2017)
30	TME.01.01.08	Reference to the academic programme of international universities
31	TME.01.01.09	Engineer with the expected learning outcomes of academic programme of TME
32	***1.2. The expected learning outcomes cover both subject specific and generic***	
33	TME.01.02.01	Matrix of the relationship between courses and the ELOs in programme 2017
34	TME.01.02.02	Book for Describing Academic Programme (2017)
35	TME.01.02.03	Book of Academic Programme for 1st Group
36	TME.01.02.04	Detailed Outline of TME programme 2017

37	***1.3. The expected learning outcomes clearly reflect the requirements of the stakeholders***	
38	TME.01.03.01	Book for Describing Academic Programme (2009)
39	TME.01.03.02	Book for Describing Academic Programme (2014)
40	TME.01.03.03	Book for Describing Academic Programme (2017)
41	TME.01.03.04	Survey report of expected learning outcomes
42	TME.01.03.05	Regulation on Education of university level of MOET
43	TME.01.03.06	Decision of MOET
44	TME.01.03.07	Survey results
45	TME.01.03.08	Development guide on academic programme (2017)
46	TME.01.03.09	Seminar minutes on current programme and introduce new training model to business, alumni, senior students, and lecturers
47	TME.01.03.10	Report on survey from business, alumni, senior students, and lecturers
48	TME.01.03.11	Report on survey from alumni to collect the employment information and feedbacks on the programme, the school and the university
49	TME.01.03.12	The difference of ELOs of the TME programmes 2009, 2014 and 2017
50	TME.01.03.13	Decision on supplementing the General Law course
51	TME.01.03.14	Expected learning outcomes on website of STE
52	TME.01.03.15	STE's leaflets present the academic programme and job opportunities
53	TME.01.03.16	Information about job opportunities on website of STE
54	**2. Criterion 2. Programme Specification**	
55	***2.1. The information in the programme specification is comprehensive and up-to-***	

	date	
56	TME.02.01.01	Book for Describing Academic Programme (2017)
57	TME.02.01.02	Table 2.1. Changed Outline of Academic Programme
58	TME.02.01.03	The proposal for changing content of the course
59	TME.02.01.04	Decision of University for approving the update on the structure of Academic Programme
60	TME.02.01.05	The update on changing structure of Academic Programme for departments such as: Automotive Engineering, Internal Combustion Engine, and Fluid Powerand Automation Engineering
61	TME.02.01.06	General variation of learners
62	TME.02.01.07	General variation from business requirements
63	TME.02.01.08	Decision of MOET
64	TME.02.01.09	Decision on supplementing the general law module
65	TME.02.01.10	Book of Academic Programme 2009 of TME
66	TME.02.01.11	Book of Academic Programme 2014 of TME
67	TME.02.01.12	Book of Academic Programme 2017 of TME
68	TME.02.01.13	The difference of ELO of the TME programmes 2009, 2014 and 2017
69	***2.2. The information in the course specification is comprehensive and up-to-date***	
70	TME.02.02.01	Detailed Outline of Coursewords
71	TME.02.02.02	Meeting Minutes of SAC of STE
72	TME.02.02.03	The Official Dispatch with suggesting to change content of Courseword
73	***2.3. The programme and course specifications are communicated and made available to the stakeholders***	

74	TME.02.03.01	The Academic Programme on the website of the Department of undergraduate academic affairs (https://ctt-daotao.hust.edu.vn)
75	TME.02.03.02	The Academic Programme on the STE's website (http://ste.hust.edu.vn/wp-content/uploads/2014/11/Viện-Cơ-kh%C3%AD-Động-lực.pdf])
76	TME.02.03.03	Openday program brochure
77	TME.02.03.04	The link of TME Programme on the website of HUST
78	TME.02.03.05	The link of TME Programme on the website of STE
79	TME.02.03.06	Student handbook of HUST with necessaries
80	TME.02.03.07	Citizenship program
81	TME.02.03.08	Student information system online (http:// http://sis.hust.edu.vn/ModulePlans/Timetables.aspx)
82	TME.02.03.09	The link of fanpage
83	**3. Criterion 3. Programme structure and content**	
84	***3.1. The curriculum is designed based on constructive alignment with the expected learning outcomes***	
85	TME.03.01.01	Annual Academic programme of STE
86	TME.03.01.02	Seminar about learning outcomes of STE 2016
87	TME.03.01.03	Ideas of recruitment business
88	TME.03.01.04	Ideas of leading authorities and researchers
89	TME.03.01.05	Education programme of STE in 2017
90	TME.03.01.06	ICE Lab visit of Tokyo Institute of Technology student
91	TME.03.01.07	Report of developing education programme council
92	TME.03.01.08	Teaching assignment schedule
93	TME.03.01.09	Teaching plan of the year

94	TME.03.01.10	Learning outcomes matrix of Education programme
95	TME.03.01.11	Ruler and evaluation of learning outcomes
96	***3.2. The contribution made by each course to achieve the expected learning outcomes is clear***	
97	TME.03.02.01	Education programme of STE
98	TME.03.02.02	Learning outcomes matrix of Education programme
99	TME.03.02.03	Survey questionnaire of education programme learning outcomes
100	TME.03.02.04	Suggestion of lecturer about Education programme
101	TME.03.02.05	Report of developing education programme council
102	TME.03.02.06	Teaching plan of the year
103	TME.03.02.07	Teaching assignment schedule
104	***3.3. The curriculum is logically structured, sequenced, integrated and up-to-date***	
105	TME.03.03.01	Guidelines for developing training programs
106	TME.03.03.02	Report of developing education programme council
107	TME.03.03.03	Syllabus of Internal combustion engine
108	TME.03.03.04	Report of developing education programme council
109	TME.03.03.05	Admission information leaflet
110	TME.03.03.06	Openday information
111	**4. Criterion 4. Teaching and learning approach**	
112	***4.1. The educational philosophy is well articulated and communicated to all stakeholders***	
113	TME 04.01.01	Report about educational philosophy
114	TME.04.01.02	Decision about promulgated educational philosophy of STE

115	TME.04.01.03	Educational philosophy is published on website of STE
116	TME.04.01.04	Equipments for teaching
117	TME.04.01.05	Summarize about competitions of Shell.Honda
118	***4.2. Teaching and learning activities are constructively aligned to the achievement of the expected learning outcomes***	
119	TME.04.02.01	Subject Syllabi
120	TME.04.02.02	Sample of laboratory class report
121	TME.04.02.03	Sample of report of project-based assigment
122	TME.04.02.04	Technical internship guidelines and sample report
123	TME.04.02.05	Sample of student report for graduation internship
124	TME.04.02.06	Content of student activity week that posted on STE website
125	TME.04.02.07	Slide subject about fuel, grease and exhaust gas of ICE
126	TME.04.02.08	Teaching programme by elearning
127	TME.04.02.09	Blended learning
128	TME.04.02.10	Lecturers evaluation form
129	TME.04.02.11	Summarize about amount of research students
130	TME.04.02.12	Applied student research results in training
131	TME.04.02.13	Students puplished international articles
132	TME.04.02.14	Students puplished domestic articles
133	***4.3. Teaching and learning activities enhance life-long learning***	
134	TME.04.03.01	Practice at the workshop of student
135	TME.04.03.02	Teaching room
136	TME.04.03.03	Syllabus of Internal combustion engine

137	TME.04.03.04	Report of graduation thesis
138	TME.04.03.05	PhD student certification
139	TME.04.03.06	Report of master thesis
140	**5. Criterion 5. Student assessment**	
141	***5.1. The student assessment is constructively aligned to the achievement of the expected learning outcomes***	
142	TME.05.01.01	MOET's University Training Regulation
143	TME.05.01.02	HUST's University Training Regulation
144	TME.05.01.03	Admission information of the year
145	TME.05.01.04	Standard score of M-TME group by year
146	TME.05.01.05	Document on recuirting scores to TME
147	TME.05.01.06	Standard score of M-TME in 2018
148	TME.05.01.07	English standard for regular university students
149	TME.05.01.08	HUST's University Training Regulation
150	TME.05.01.09	Example of course syllabus
151	TME.05.01.10	Sample of midterm exam transcript
152	TME.05.01.11	Sample of final exam transcript
153	TME.05.01.12	Sample of decision on the establishment of a graduation thesis committee
154	TME.05.01.13	Example of graduation thesis assessement by intructor and reviewers
155	TME.05.01.14	Sample of thesis defense score
156	TME.05.01.15	HUST's University Training Regulation
157	TME.05.01.16	Surveyed result on methods of the student assessment at HUST

158	***5.2. The student assessments including timelines, methods, regulations, weight distribution, rubrics and grading are explicit and communicated to students***	
159	TME.05.02.01	Example of course syllabus
160	TME.05.02.02	Student books
161	TME.05.02.03	Student meetings and photos
162	TME.05.02.04	HUST's Academic Timetable-chart
163	TME.05.02.05	Link of HUST's Academic Timetable-chart
164	TME.05.02.06	Link for information on midterm and final exam schedules
165	TME.05.02.07	Class Advisor and Academic Advisory Board
166	TME.05.02.08	Student survey results by course
167	TME.05.02.09	Meeting document on the assessment methods of students' learning outcomes
168	***5.3. Methods including assessment rubrics and marking schemes are used to ensure validity, reliability and fairness of student assessment***	
169	TME. 05.03.01	HUST’s University Training Regulation
170	TME. 05.03.02	Example of a test
171	TME. 05.03.03	Decision on establishing graduation thesis committe
172	TME. 05.03.04	Surveyed results of students on organizing exam, assessment rubrics and marking schemes at STE.
173	***5.4. Feedback of student assessment is timely and helps to improve learning***	
174	TME.05.04.01	Link of Student Information System
175	TME.05.04.02	Score entering system for lecturers
176	TME.05.04.03	HUST’s University Training Regulation
177	TME.05.04.04	Programme for student meetings

178	TME.05.04.05	Surveyed result of students on feedback of student assessment
179	***5.5. Students have ready access to appeal procedure***	
180	TME.05.05.01	HUST's University Training Regulation
181	TME.05.05.02	Programme for student meetings
182	TME.05.05.03	Notebook of academic advisory meetings
183	TME.05.05.04	Student book
184	TME.05.05.05	Appeal document
185	TME.05.05.06	Link of Student Information system
186	**6. Criterion 6. Academic and staff quality**	
187	***6.1. Planning of academic staff establishment or needs (including succession, promotion, re-deployment, termination, and retirement plans) are carried out to ensure that the quality and quantity of academic staff fulfil the needs for education, research and service.***	
188	TME.06.01.01	Proposal for the project of "General plan on construction and development of HUST in the period of 2006 – 2030"
189	TME.06.01.02	Personnel planning of STE
190	TME.06.01.03	Executive summary of academic and support manpower plan
191	TME.06.01.04	The recruitment process of HUST
192	TME.06.01.05	Regulations on standards for employee of HUST
193	TME.06.01.06	STE staff list
194	TME.06.01.07	Leader planning of STE
195	TME.06.01.08	Decision No. 1924 / QĐ-TT-autonomy Decision for Management Decentralization of Faculties and Institutes
196	TME.06.01.09	Decision No 412 on distributing University level projects
197	***6.2. Staff-to-student ratio and workload are measured and monitored to improve***	

	the quality of education, research and service.	
198	TME.06.02.01	Personnel planning of STE
199	TME.06.02.02	Instructions on calculating number of students per lectuter, Official document No. 1325 / BGDĐT-KHTC
200	TME.06.02.03	Work norm of lecturers/researchers
201	TME.06.02.04	Complete work report
202	***6.3. Recruitment and selection criteria including ethics and academic freedom for appointment, deployment and promotion are determined and communicated***	
203	TME.06.03.01	Regulations on standards for employee of HUST
204	TME.06.03.02	The recruitment process of HUST
205	TME.06.03.03	Regulation for appointment, re-appointment, resignation or dismissal of leaders in schools, Faculties, Departments in conjunction with Decision No.1626/QD-BKHN-TCCB of University President
206	TME.06.03.04	Law of Officials
207	TME.06.03.05	Regulations on cadre work
208	TME.06.03.06	Professor or Associate Professors title criteria
209	***6.4. Competences of academic staff are identified and evaluated***	
210	TME.06.04.01	Regulations on standards for employee of HUST
211	TME.06.04.02	Regulations on cadre work
212	TME.06.04.03	Sample of Assessment sheet
213	TME.06.04.04	Classroom observation materials
214	TME.06.04.05	Sample of observation planning
215	TME.06.04.06	Sample of academic and support staff appraisal forms
216	TME.06.04.07	Student’s assessment survey

217	TME.06.04.08	Classroom observation report
218	TME.06.04.09	Work norm of lecturers/researchers
219	TME.06.04.10	Regulation for academic advisors and class management for students
220	TME.06.04.11	Assessement of student class management effectiveness report
221	TME.06.04.12	The process of evaluating and ranking staff members
222	TME.06.04.13	Final report of Staff Conference
223	TME.06.04.14	Regulations on cadre work
224	***6.5. Training and developmental needs of academic staff are identified and activities are implemented to fulfil them***	
225	TME.06.05.01	Executive summary of training and development plan for academic and support staff
226	TME.06.05.02	Minutes of school for staff requirement
227	TME.06.05.03	Proposed staff development of departments
228	TME.06.05.04	Sample of scholarship for staff
229	TME.06.05.05	Sample of staff graduated via AUN/Seed net support
230	TME.06.05.06	Sample of staff dispatch
231	TME.06.05.07	Sample of pedagogic certificates
232	TME.06.05.08	Sample of soft skill certificates
233	***6.6. Performance management including rewards and recognition is implemented to motivate and support education, research and service***	
234	TME.06.06.01	Records of work achievements
235	TME.06.06.02	Records of reward
236	TME.06.06.03	Guide on emulation and reward

237	TME.06.06.04	Decision for promulgation of the Regulation for internal expenses
238	***6.7. The types and quantity of research activities by academic staff are established, monitored and benchmarked for improvement***	
239	TME.06.07.01	Work norm of lecturers/researchers
240	TME.06.07.02	List of projects of STE in period 2014-2018
241	TME.06.07.03	List of publication of STE staff
242	TME.06.07.04	Published information of approved projects
243	TME.06.07.05	Sample of seminar, conference held by STE
244	TME.06.07.06	ICFMAS2018 information
245	TME.06.07.07	Appendix of Final report of Staff Conference
246	**7. Criterion 7. Support staff quality**	
247	***7.1. The staff planning (for working in libraries, laboratories, information technology systems and other support services) is carried out to meet the needs of training, scientific research and activities for serving community***	
248	TME.07.01.01	Government decree on recruitment, use and management of officials
249	TME.07.01.02	List of Support staff in STE
250	TME.07.01.03	Regulations on standards for employee of HUST
251	TME.07.01.04	Final report of Staff Conference
252	TME.07.01.05	Executive summary of academic and support manpower plan
253	TME.07.01.06	The recruitment process of HUST
254	TME.07.01.07	List of staff of specialized departments, centers in the University
255	***7.2. Recruitment and selection criteria for appointment, deployment and promotion are determined and communicated***	

256	TME.07.02.01	Law of Officials
257	TME.07.02.02	Recruitment and selection criteria for appointment, deployment and promotion
258	TME.07.02.03	Regulations on standards for employee of HUST
259	***7.3. Competences of support staff are identified and evaluated***	
260	TME.07.03.01	Regulations on standards for employee of HUST
261	TME.07.03.02	Sample of support staff observation planning
262	TME.07.03.03	Classroom observation materials
263	TME.07.03.04	Regulation for academic advisors and class management for students
264	TME.07.03.05	The process of evaluating and ranking staff members
265	TME.07.03.06	Sample of Final report of Staff Conference
266	TME.07.03.07	Regulations on cadre work
267	***7.4. Training and developmental needs of support staff are identified and activities are implemented to fulfil them***	
268	TME.07.04.01	Final report of Staff Conference and Executive summary of training and development plan for academic and support staff
269	TME.07.04.02	Plan of staff development
270	TME.07.04.03	Proposed support staff development
271	TME.07.04.04	Information technology training for staffs
272	***7.5. Performance management including rewards and recognition is implemented to motivate and support education, research and service***	
273	TME.07.05.01	Guide on emulation and reward
274	TME.07.05.02	Record of staff evaluation
275	TME.07.05.03	Record of reward

276	TME.07.05.04	Appendices of Final report of Staff Conference
277	***8. Criterion 8. Student Quality and Support***	
278	***8.1. The student intake policy and admission criteria are defined, communicated, published, and upto-date***	
279	TME.08.01.01	HUST's enrollment plan
280	TME.08.01.02	HUST's Website of enrollment information
281	TME.08.01.03	Enrollment info related to enrollment posted in HUST's online magazin
282	TME 08.01.04	Open Day Programme
283	TME.08.01.05	General admission regulations of Ministry of Education and Training MOET.
284	TME 08.01.06	Decision on the University's entrance benchmarking No. 95/QĐ-ĐHBK-ĐTĐH signed on 13/8/2016
285	TME.08.01.07	List of students admitted to HUST and STE (K62, K63 for STE)
286	TME.08.01.08	Demand for human resources engineers TME from HUST, STE
287	TME.08.01.09	Annalysis, Proof of Demand for human resources for TME engineers
288	***8.2. The methods and criteria for the selection of students are determined and evaluated***	
289	TME.08.02.01	HUST's enrollment plan and info
290	TME.08.02.02	HUST decisions on student admissions
291	TME.08.02.03	Lists of students admitted to STE.
292	TME.08.02.04	The website for searching enrollment results
293	TME.08.02.05	Analysis of Demand for human resources of TME's engineers
294	TME.08.02.06	Scan of Minutes of STE Academic Council, Dean
295	TME.08.02.07	Dispatch of implementing activities, assigning tasks at STE on Back Khoa Open Day, Admissions Day
296	***8.3. There is an adequate monitoring system for student progress, academic***	

	performance, and workload	
297	TME.08.03.01	HUST Students information website – SIS
298	TME.08.03.02	HUST Credit training regulations
299	TME.08.03.03	Learning outcomes of learners on SIS
300	TME.08.03.04	List of class advisors
301	TME.08.03.05	Notification of meeting between HUST's leadership and students
302	TME.08.03.06	Decision on establishing the Board of Academic Advisor
303	TME.08.03.07	Facebook Fanpage of Board of Academic Advisor ,Working schedule
304	TME.08.03.08	Document for class advisor at Class Meeting 20171 STE
305	TME.08.03.09	Diary of Academic advisors
306	TME.08.03.10	Sample of evaluation forms for behavioral points for students
307	TME.08.03.11	Summary of class advisor assessment
308	TME.08.03.12	Summary of learning results for STE Students
309	TME.08.03.13	HUST Credit training regulations and study plan
310	***8.4. Academic advice, co-curricular activities, student competition, and other student support services are available to improve learning and employability***	
311	TME.08.04.01	Plan, Notification of Week of Student Activity from HUST, STE
312	TME.08.04.02	Proofs of prizes received by STE students in different competitions
313	TME.08.04.03	Announcement about scholarships Dept. of Politics and Student Affairs
314	TME.08.04.04	Information website for workshops, activities of Dept. of Politics and Student Affairs
315	TME.08.04.05	List of students and groups joining in research activities

316	TME.08.04.06	Decision, dossiers for student internship, exchange abroad
317	TME.08.04.07	Notification on meeting hold by enterprises cooperating with STE, HUST
318	TME.08.04.08	List of enterprises cooperating with STE/HUST
319	TME.08.04.09	Open Day, Admission Day Programme
320	TME.08.04.10	Assigment for staffs on Open Day, Admission Day Programme
321	TME.08.04.11	Extracurricular activities of HUST, STE's Youth Union and Students_ Association
322	***8.5. The physical, social and psychological environment is conducive for education and research as well as personal well-being***	
323	TME 08.05.01	Plane, Guide and other info of Ta Quang Buu Library
324	TME 08.05.02	List of key Laboratories of HUST and STE
325	TME 08.05.03	Bach Khoa Dormitory
326	TME 08.05.04	Document of facilities, upgrading and activities of related units at HUST
327	TME 08.05.05	Document of functions, activities of related units at HUST
328	TME 08.05.06	STE's Labs students registering for their students to do research, projects
329	TME 08.05.07	Links to different Contests for STE students
330	TME 08.05.08	HUST Bulletin on seminars, thematic seminors... from DPSA
331	TME 08.05.09	Students' extracurriculum activities
332	TME 08.05.10	Other activities of STE's Youth Union and Students' Association
333	**9. Criterion 9. Facility and infrastructure**	
334	***9.1. The teaching and learning facilities and equipment (lecture halls, classrooms, project rooms, etc.) are adequate and updated to support education and research***	
335	TME.09.01.01	HUST's Facilities
336	TME.09.01.02	Map guide of HUST campus

337	TME.09.01.03	List of equipment and books to monitor operating status and use at lecture halls
338	TME.09.01.04	Photo of self-studying room
339	TME.09.01.05	Wifi system at HUST
340	TME.09.01.06	Decision on installing the air conditioning system
341	TME.09.01.07	Images of Halls and meeting rooms
342	TME.09.01.08	Images for HUST's computer rooms
343	TME.09.01.09	E-learning classrooms
344	TME.09.01.10	Images of specialized classrooms and teaching models at STE
345	TME.09.01.11	Image of meeting rooms at STE
346	TME.09.01.12	Photo of a working room of Staffs at STE
347	TME.09.01.13	Surveyed results on the teaching and learning facilities and equipment
348	TME.09.01.14	Lecture hall equipment upgrading projects
349	TME.09.01.15	Lecture hall equipment upgrading projects
350	TME.09.01.16	Lecture hall equipment upgrading projects
351	TME.09.01.17	Building and renovation project of TC
352	TME.09.01.18	Building and repairing project of Block D6
353	TME.09.01.19	Investment project to build the lecture hall and research rooms D8
354	TME.09.01.20	WorldBank project
355	TME.09.01.21	Development plan of the second campus in Hung Yen province
356	***9.2. The library and its resources are adequate and updated to support education and research***	

357	TME.09.02.01	Image of Ta Quang Buu library
358	TME.09.02.02	Library map
359	TME.09.02.03	Library resourse
360	TME.09.02.04	Link for online database of Library
361	TME.09.02.05	Link for information of Multimedia room
362	TME.09.02.06	Link for open time of library
363	TME.09.02.07	Training lecture of skills for using library
364	TME.09.02.08	Manual guide for using library
365	TME.09.02.09	Library website
366	TME.09.02.10	Process of developing library resourse
367	TME.09.02.11	List of updated documents
368	TME.09.02.12	Survey results on library information needs
369	TME.09.02.13	Department library at STE
370	***9.3. The laboratories and equipment are adequate and updated to support education and research***	
371	TME.09.03.01	List of labs and practice workshops at STE
372	TME.09.03.02	Sample images of rules, fire extinguishers, laboratory safety guidelines
373	TME.09.03.03	List of main equiments of lab at STE
374	TME.09.03.04	Link for STE's facilities
375	TME.09.03.05	Equiment notebook of Laboratory
376	TME.09.03.06	Decisions on allocating funds for purchasing new equiment and repairing at STE
377	TME.09.03.07	Proceduce for purchase, repair, maintenance of equipment and

		supplies
378	TME.09.03.08	Constract on renovating and upgrading the laboratory
379	TME.09.03.09	Documents of handover and acceptance of equipment from school funding sources
380	TME.09.03.10	Decisions and official letters of funding from the research project
381	TME.09.03.11	Decisions on equipment granting from sponsors
382	TME.09.03.12	Decision of investment project of automobile laboratory
383	TME.09.03.13	List of equipment of investment project of automobile laboratory
384	TME.09.03.14	Images of providing a truck to STE by HINO company
385	TME.09.03.15	World Bank project
386	TME.09.03.16	Survey result from students on laboratory facilities and laboratory equipment
387	TME.09.03.17	Document to require updating facilities and equipment for Lab of Fluid power & automation engineering
388	TME.09.03.18	Image of Lab of Fluid power & automation engineering
389	TME.09.03.19	Document for arranging facilities at STE
390	TME.09.03.20	Document for requiring additional equipment for Lab of Fluid power & automation engineering
391	***9.4. The IT facilities including e-learning infrastructure are adequate and updated to support education and research***	
392	TME.09.04.01	Link for multimedia room
393	TME.09.04.02	Wifi system at HUST
394	TME.09.04.03	Link for accessing mailboxes system of staffs and students at HUST
395	TME.09.04.04	Link for E-office information

396	TME.09.04.05	Document on setting up Office 365 Plus
397	TME.09.04.06	Training management system
398	TME.09.04.07	Financial management system
399	TME.09.04.08	Image of large computer rooom at STE
400	TME.09.04.09	Image of small computer rooom at STE
401	TME.09.04.10	List of main equiments and softwares of labs at STE
402	TME.09.04.11	Link for Information network center
403	TME.09.04.12	Plan to maintain the School information system
404	TME.09.04.13	Survey result from students on HUST's information technology system
405	***9.5. The standards for environment, health and safety; and access for people with special needs are defined and implemented***	
406	TME.09.05.01	Photo of a laboratory at STE
407	TME.09.05.02	Training information on fire prevention
408	TME.09.05.03	Operating regulations of health centers
409	TME.09.05.04	Official documents on regular health check
410	TME.09.05.05	Official documents on disease prevention
411	TME.09.05.06	Survey result on health centers
412	TME.09.05.07	Information link on HUST’s domitory
413	TME.09.05.08	Photos of HUST’s cafeteria
414	TME.09.05.09	Photos of stadium, swimming pool, multi-purpose stadium
415	TME.09.05.10	HUST's sport clubs
416	TME.09.05.11	Link for HUST’s service center

417	TME.09.05.12	Link for security room
418	TME.09.05.13	Investment project to build the lecture hall and research rooms C8
419	TME.09.05.14	Academic Advisory Board and Class Advisor
420	**10. Criterion 10: Quality Enhancement**	
421	***10.1. Stakeholders' needs and feedback is used as input data to build up and developed education programme***	
422	TME.10.01.01	Regulation of university system
423	TME.10.01.02	The Automotive Design and Manufacturing Engineering (ADME) programme of Chulalongkorn University http://www.ise.eng.chula.ac.th/academics/adme/curriculum
424	TME.10.01.03	MEng Automotive Engineering Programme of University of Brighton https://staff.brighton.ac.uk/reg/cr/Progspecs/Computing_Engineering_and_Mathematics/2017-18/MEng_Automotive_Engineering.pdf
425	TME.10.01.04	Minute of meeting of the SAC
426	TME.10.01.05	Decision on establishing the School of Transportation Engineering
427	TME.10.01.06	Training curriculum of HUST
428	TME.10.01.07	Sample of the survey questionnaire about the academic programme
429	TME.10.01.08	List of companies participating in the survey questionnaire about the academic programme
430	TME.10.01.09	Report on the results of the survey of employers
431	TME.10.01.10	Minute of meeting of the SAC
432	TME.10.01.11	Sample of the survey questionnaire about the academic

		programme
433	TME.10.01.12	The academic programme of TME approved in 2009
434	TME.10.01.13	Academic programme of the TME in 2017
435	TME.10.01.14	Decision 1578-QĐ-ĐHBK-TCCB to establish Center for quality assurance (Cequa)
436	TME.10.01.15	Sample of the student's survey questionnaire about academic advisors, and classroom advisors
437	TME.10.01.16	Board of Deans Meeting Schedule with Students 2016-2017
438	TME.10.01.17	Sample of the survey questionnaire about academic advisors, and classroom advisors
439	TME.10.01.18	The academic programme of TME approved in 2009 https://ctt-daotao.hust.edu.vn/Upload/DTDH/files/Ch%C6%B0%C6%A1ng%20tr%C3%ACnh%20%C4%91%C3%A0o%20t%E1%BA%A1o/Khung%20CT%C4%90T/CTDT2012-nhom1tu%20K58-13012015(1).pdf
440	TME.10.01.19	Programme Specification on website: http://ste.hust.edu.vn/en/academics/undergraduate-training-program/
441	TME.10.01.20	Sample of questionnaire feedbacks from stakeholders
442	TME.10.01.21	Minute of meeting of the SAC
443	TME.10.01.22	Sample of the student's survey questionnaire about the academic programme
444	TME.10.01.23	Report on the student's survey questionnaire about the academic programme
445	TME.10.01.24	Invitation letter to survey about the academic programme
446	TME.10.01.25	Report on the results of the survey of employers in 2016

447	TME.10.01.26	Output standard in the 2009 Approval Programme
448	TME.10.01.27	Conference Report of Officers of the STE in 2011
449	TME.10.01.28	Conference Report of Officers of the STE in 1.2016
450	TME.10.01.29	Conference Report of Officers of the STE in 12.2016
451	TME.10.01.30	Conference Report of Officers of the STE in 2018
452	TME.10.01.31	Report on the student's survey questionnaire about the academic programme
453	TME.10.01.32	Invitation letter to survey about the academic programme
454	TME.10.01.33	Report on the results of the survey of employers in 2016
455	***10.2. The curriculum design and development process is established and subjected to evaluation and enhancement***	
456	TME.10.02.01	Minute of meeting of the SAC
457	TME.10.02.02	Report on the student's survey questionnaire about the academic programme
458	TME.10.02.03	Approval for assessment of 29 undergraduate programs from 2016 to 2020
459	TME.10.02.04	Minute of meeting of the SAC
460	TME.10.02.05	Sample of the survey questionnaire about academic advisors, and classroom advisors
461	TME.10.02.06	Report on the teacher's feedbacks about the academic programme
462	TME.10.02.07	Report on the results of the survey of employers in 2016
463	TME.10.02.08	Report on the student's survey questionnaire about the academic programme
464	TME.10.02.09	Minute of meeting of the SAC

465	TME.10.02.10	Academic programme of the TME in 2017
466	TME.10.02.11	Regulation of university system https://www.hust.edu.vn/documents/37913/91704/QCDTTC2014_quy_che_dao_tao_tin_chi%281%29.pdf/5a7fcb95-18d8-4c42-b83f-d98c7c5ba971
467	TME.10.02.12	Regulation of university system https://www.hust.edu.vn/documents/37913/91704/QCDTTC2014_quy_che_dao_tao_tin_chi%281%29.pdf/5a7fcb95-18d8-4c42-b83f-d98c7c5ba971
468	TME.10.02.13	Outline of academic programme of TME in 2017 daotao.hust.edu.vn/Upload/DTDH/files/Ch%C6%B0%C6%A1ng%20tr%C3%ACnh%20%C4%91%C3%A0o%20t%E1%BA%A1o/Khung%20CT%C4%90T/CTDT2012-nhom1tu%20K58-13012015(1).pdf
469	TME.10.02.14	Programme Specification on website: http://ste.hust.edu.vn/en/academics/undergraduate-training-program/
470	TME.10.02.15	Website on training of HUST: https://en.hust.edu.vn/academics
471	TME.10.02.16	Website on training of STE http://ste.hust.edu.vn/en/academics/
472	TME.10.02.17	Sample of the survey questionnaire about academic advisors, and classroom advisors
473	TME.10.02.18	https://www.hust.edu.vn/documents/37913/91704/QCDTTC2014_quy_che_dao_tao_tin_chi%281%29.pdf/5a7fcb95-18d8-4c42-b83f-d98c7c5ba971
474	TME.10.02.19	Invitation letter to survey about the academic programme
475	TME.10.02.20	Official letter on adjustment of academic programme

476	TME.10.02.21	Documents on STE's student internship in Japan in 2018
477	***10.3. The teaching and learning processes and student assessment are continuously reviewed and evaluated to ensure their relevance and alignment***	
478	TME.10.03.01	Sample of pedagogical certificate
479	TME.10.03.02	Conference Report of Officers of the STE in 2011
480	TME.10.03.03	Sample of lecture on body frame technology
481	TME.10.03.04	Exam schedule for the 20171 semester
482	TME.10.03.05	Exam schedule for the 20172 semester
483	TME.10.03.06	Exam schedule for the 20181 semester
484	TME.10.03.07	Regulation of university system https://www.hust.edu.vn/documents/37913/91704/QCDTTC2014_quy_che_dao_tao_tin_chi%281%29.pdf/5a7fcb95-18d8-4c42-b83f-d98c7c5ba971
485	TME.10.03.08	Website of Student Information System http://sis.hust.edu.vn/
486	TME.10.03.09	Decision 1578-QĐ-ĐHBK-TCCB to establish Center for quality assurance (Cequa)
487	TME.10.03.10	Regulations on organization and quality assessment in lecturers' course
488	TME.10.03.11	Sample of attendance and audit of the teaching
489	TME.10.03.12	Report of attendance and audit of the teaching in 2015-2016
490	TME.10.03.13	Sample of Examination Papers
491	TME.10.03.14	Sample of marking guides
492	TME.10.03.15	Sample and guides especially for internship
493	TME.10.03.16	Sample of graduation council

494	TME.10.03.17	Sample and guides especially for project and thesis writing
495	TME.10.03.18	https://www.hust.edu.vn/documents/37913/91704/QCDTTC2014_quy_che_dao_tao_tin_chi%281%29.pdf/5a7fcb95-18d8-4c42-b83f-d98c7c5ba971
496	TME.10.03.19	Report on the student's survey questionnaire about the academic programme
497	TME.10.03.20	Report on the results of the survey of employers in 2016
498	***10.4. Research output is used to enhance teaching and learning***	
499	TME.10.04.01	Summary of research projects of STE from 2014 to 2017
500	TME.10.04.02	Example of a School project proposal in 2017
501	TME.10.04.03	Notice of research support programs of the AUN SEED-Net Project in 2017
502	TME.10.04.04	Implementation Guidelines For Collaborative Research Program with Industry (CRI) - Japanese Fiscal Year 2018
503	TME.10.04.05	Implementation Guidelines For Collaborative Research Program for Common Regional Issues (CRC) - Japanese Fiscal Year 2018
504	TME.10.04.06	Example of HUST's project
505	TME.10.04.07	Regulations on Selecting, implementing and evaluating research projects at the HUST
506	TME.10.04.08	Example of scientific article of STE's staff
507	TME.10.04.09	Award for Honda fuel-saving vehicle team
508	TME.10.04.10	Summary of research projects of STE from 2014 to 2017
509	TME.10.04.11	Website about research products of STE http://ste.hust.edu.vn/en/research/products/
510	TME.10.04.12	Website about research projects of STE http://ste.hust.edu.vn/en/research/projects/

511	TME.10.04.13	Example of student research project
512	***10.5. Quality of support services and facilities (at the library, laboratory, IT facility and student services) is subjected to evaluation and enhancement***	
513	TME.10.05.01	Sample of the student's survey questionnaire about the academic programme
514	TME.10.05.02	Report on the student's survey questionnaire about the academic programme
515	TME.10.05.03	Investment project of automobile practice laboratory
516	***10.6. The stakeholder's feedback mechanisms are systematic and subjected to evaluation and enhancement***	
517	TME.10.06.01	Invitation letter to survey about the academic programme
518	TME.10.06.02	List of companies participating in the survey questionnaire about the academic programme
519	TME.10.06.03	Workshop on output standards organized by STE in 2016 http://ste.hust.edu.vn/nhung-con-so-biet-noi-tai-hoi-thao-ve-chuan-dau-ra-cua-cac-chuong-trinh-dao-tao/
520	TME.10.06.04	List of companies participating in the survey questionnaire about the academic programme
521	TME.10.06.05	Sample of questionnaire survey of employers
522	TME.10.06.06	Report on the results of the survey of employers
523	TME.10.06.07	Website on how to use the TEAM Hust system
524	TME.10.06.08	Website on how to use the YAMMER Hust system
525	TME.10.06.09	Guidelines for developing the 2017 academic program
526	TME.10.06.10	The academic programme of TME approved in 2009
527	TME.10.06.11	Report on the results of the survey of employers
528	TME.10.06.12	Sample of students' feedback on teaching activities

529	TME.10.06.13	Sample of the alumni feedback questionnaire on the academic programme https://docs.google.com/forms/d/e/1FAIpQLSePLWPkG1tfm-7eoez4_YB4y9EB2pIOcsXpcyAMOSwZ6HXEJQ/viewform?c=0&w=1
530	TME.10.06.14	Workshop on output standards organized by STE in 2016 http://ste.hust.edu.vn/nhung-con-so-biet-noi-tai-hoi-thao-ve-chuan-dau-ra-cua-cac-chuong-trinh-dao-tao/
531	TME.10.06.15	Report on the alumni feedback questionnaire on the academic programme
532	TME.10.06.16	List of companies participating in the survey questionnaire about the academic programme
533	TME.10.06.17	Sample of the survey questionnaire about the academic programme
534	TME.10.06.18	Conference Report of Officers of the STE in 1.2016
535	TME.10.06.19	Conference Report of Officers of the STE in 12.2016
536	**11. Criterion 11: Output**	
537	***11.1. The pass rates and dropout rates are established, monitored and benchmarked for improvement***	
538	TME.11.01.01	List of dropout students in the first year
539	TME.11.01.02	Report on the results of the survey of employers
540	TME.11.01.03	Conference Report of Officers of the STE in 12.2016
541	TME.11.01.04	Conference Report of Officers of the STE in 2018
542	TME.11.01.05	Report of STE's Dean in 2019
543	***11.2. The average time to graduate is established, monitored and benchmarked for improvement***	
544	TME.11.02.01	Regulation of university system

		https://www.hust.edu.vn/documents/37913/91704/QCDTTC2014_quy_che_dao_tao_tin_chi%281%29.pdf/5a7fcb95-18d8-4c42-b83f-d98c7c5ba971
545	TME.11.02.02	Report on the student's survey questionnaire about the academic programme
546	TME.11.02.03	Report on the results of the survey of employers in 2016
547	TME.11.02.04	Conference Report of Officers of the STE in 12.2016
548	***11.3. Employability of graduates is established, monitored and benchmarked for improvement***	
549	TME.11.03.01	List of companies participating in the survey questionnaire about the academic programme
550	TME.11.03.02	Workshop on output standards organized by STE in 2016 http://ste.hust.edu.vn/nhung-con-so-biet-noi-tai-hoi-thao-ve-chuan-dau-ra-cua-cac-chuong-trinh-dao-tao/
551	TME.11.03.03	Report on the results of the survey of employers in 2016
552	TME.11.03.04	Report of STE's Dean in 2019
553	TME.11.03.05	Report on Alumni employment status survey
554	TME.11.03.06	Conference Report of Officers of the STE in 12.2016
555	***11.4. The types and quantity of research activities by students are established, monitored and benchmarked for improvement***	
556	TME.11.04.01	Summary of research projects of STE from 2014 to 2017
557	TME.11.04.02	List of STE's laboratories
558	TME.11.04.03	http://ste.hust.edu.vn/en/divisions/laboratory-of-internal-combustion-engine/
559	TME.11.04.04	Report on the students' scientific conferences in the school year 2015 - 2016
560	TME.11.04.05	Website for the 2017 Student Scientific Conference Summary

561	TME.11.04.06	Example of a HUST's project
562	TME.11.04.07	Certificate of Hydraulic Excellence 01
563	TME.11.04.08	Certificate of Hydraulic Excellence 02
564	TME.11.04.09	Award for Honda fuel-saving vehicle team
565	TME.11.04.10	List of research topics / projects conducted by the STE's staffs
566	TME.11.04.11	Conference Report of Officers of the STE in 12.2016
567	TME.11.04.12	List of articles of STE's staffs during 2015-2016
568	TME.11.04.13	List of articles of STE's staffs during 2016-2017
569	TME.11.04.14	Conference Report of Officers of the STE in 1.2016
570	TME.11.04.15	Conference Report of Officers of the STE in 12.2016
571	TME.11.04.16	Conference Report of Officers of the STE in 2018
572	TME.11.04.17	Website about the 2016 National Conference of Hydrology
573	TME.11.04.18	Conference Report of Officers of the STE in 12.2016
574	TME.11.04.19	Conference Report of Officers of the STE in 2018
575	***11.5. The satisfaction levels of stakeholders are established, monitored and benchmarked for improvement***	
576	TME.11.05.01	List of companies participating in the survey questionnaire about the academic programme
577	TME.11.05.02	Report on the results of the survey of employers' feedback on graduates
578	TME.11.05.03	Report on teacher feedback
579	TME.11.05.04	Report on the alumni feedback questionnaire on the academic programme
580	TME.11.05.05	Report on Alumni employment status survey

581	TME.11.05.06	Regulation of university system https://www.hust.edu.vn/documents/37913/91704/QCDTTC2014_quy_che_dao_tao_tin_chi%281%29.pdf/5a7fcb95-18d8-4c42-b83f-d98c7c5ba971
582	TME.11.05.07	Report on the results of the survey of managers' feedback
583	TME.11.05.08	Report on the results of the survey of employers' feedback on graduates
584	TME.11.05.09	Sample of feedback of Foreign Teacher
585	TME.11.05.10	List of STE's staffs is studying in foreign countries
586	TME.11.05.11	Report on teacher feedback