HANOI UNIVERSITY
OF SCIENCE
AND TECHNOLOGY

ASEAN
University
Network

AUN-QA
SELF-ASSESSMENT REPORT

BIOENGINEERING

June 2019

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INTRODUCTION

The School of Biotechnology and Food Technology (SBFT) is a training, scientific research and technology transfer organization in the field of Biotechnology and Food Technology, belonging to Hanoi University of Science and Technology.

With the goal of being a reliable address for training high quality human resources, scientific research and technological transfer effectively in the field of biotechnology and food technology, lecturers and staffs of SBFT have worked hard for its designated goals, building a dynamic and friendly environment, and training along with research, technology transfer and solving problems for the society.

Understanding of bioengineering is an important factor in the socio-economic development of Vietnam. This requires that quality training for scientific and technical staff to contribute to the country's scientific, technological and economic development is essential. Therefore, we look forward to participating into the qualified accreditation of the Bioengineering programme according to the standards of the Southeast Asian University Network. This is a good opportunity for us to reconsider the limited points, get the necessary adjustments and adaptation in order to improve the quality of programmes for engineers in the fields of biotechnological industry at School of Biotechnology and Food Technology, Hanoi University of Science and Technology.

This report has been completed according to the close guidance from Hanoi University of Science and Technology and Quality Management Office. On this occasion, we would like to thank that enthusiastic and valuable support. The direction board of the School of Biotechnology and Food Technology would like to thank all members of the School, Department including staffs, lecturers, researchers and students who have made positive and significant contributions throughout the process of completing this self-assessment report.

Assoc. Prof. Chu Ky Son
Dean of School of Biotechnology and Food Technology,
Hanoi University of Science and Technology

PART 1. INTRODUCTION OF BIOENGINEERING PROGRAMME AT SBFT OF HUST

1.1. Executive Summary of activity

Awareness of training quality and accreditation

As the leading technical training institution, HUST in general and SBFT are always interested in the quality of education and training. To improve the training quality in an institution with multidiscipline, self -assessment is among efficient ways to achieve the sustainable results.

In recent years, the University has actively implemented the quality management system in accordance with ISO9001: 2008 standards and in the same time University has afforded to be accredited by HCERES and evaluated some programs follow international standard (Southeast Asian Universities (AUN-QA)

SBFT is not out of this trend and perception, with 300 students a year in 2 fields of training Bioengineering and Food Engineering, 63 staffs recognized the importance of real quality in program, training/researching activities and relationship between lecturer and students, social activities to train qualified human resources for society

Key finding of the SAR

To meet the actual need for the human resource in the field of Bioengineering

- A system to collect the feedback of stakeholder will have to develop to the Learning outcomes of the program
- The expected learning outcomes reflect the needs of stakeholders, but it changes rapidly over time, so ELOs should be revised periodically and the programme as well.
- It is necessary to improve English capability among students while studying particularly in the field of science
- Closer linkage between employers and schools, between social needs and training objectives will help the programme more practical and meet the requirements of the society.
- Big practical volume in the programme is strength in the programme but also cause many difficulties in administrative procedure.

Action plan

- Encourage students to be more active in studying and researching through activities integrated in the lectures, through the Academic Advisory Committee, the Student Research Movement, and specialized clubs and through extracurricular activities.
- To develop alumni and stakeholder network
- The school plans to increase the number of research laboratories and increase the facilities for students to experiment and research.

Conclusion and Recommendations:

Bioengineering programme is recognized in the society because it delivers human resource in the bench top science. Quality of the programme should be evaluated and revised accordingly.

Organization and Approach of Self-Assessment Report

The general procedure for self-assessment of the BE programme is performed based on the set of AUN-QA standards version 3.0, including the following steps:

1. Determination of objective and scope of the self-assessment
2. Establishment of the self-assessment accreditation board
3. Planning self-assessment quality accreditation (QA)
4. Analysis of criteria, looking for information
5. Analysis and processing obtained information
6. Writing QA self-assessment report
7. Planning activities for improvement of the programme

Based on the documents, decisions of the University, AUN guidelines, QMO guidelines, SBFT has issued Decision No. 168 / QĐ-DHBK-VCNSH-CNTP dated August 15, 2017 for official self- assessment activity of Bioengineering Programme at SBFT with the working groups as followings:

1. Assoc. Prof. Quan Le Ha (Criterion 1 and 11)
2. Assoc. Prof. Nguyen Thi Minh Tu (Criterion 2 and 3)
3. Dr. Pham Tuan Anh (Criterion 4 and 5)
4. Assoc. Prof. Le Thanh Ha (Criterion 6 and 7)
5. Assoc. Prof. Truong Quoc Phong (Criterion 8 and 9)
6. Assoc. Prof. Nguyen Thi Thao (Criterion 10)
7. MSc. Nguyen Thi Ngan Ha (Evidence collecting)

The working group after collecting all the documents and proof related to training and education activities at SBFT the has prepared the report with a description of the work at the School followed the requirements of the standard according to the Guidelines issued by the Quality Management Office (QMO) of HUST.

To ensure the progress of the work, the team communicated using email, phone, and in-person meetings with school leaders, quality assurance team members

The self-assessment report was developed based on a set of standards, 11 criteria, 29 sub criterion used for assessing higher education institutions and research abroad

Each section and the final report as well are analyzed according to the SWOT model to look for the critical control point that has impact to the programme and the quality of the graduated students

The report consists of three main parts: the first part is the general introduction, the second part presents the main content of the self-assessment of the programme according to the 11 standard, the third part analyzes the strengths, weaknesses and the final is a list of evidences.

1.2. Brief History of University and School

1.2.1. Brief History of University

The Hanoi University of Science and Technology (HUST, here in after referred to as the Hanoi University of Technology) was established under the Decision No. 147 / ND of March 6, 1956 of the Minister of Education and Training [BE.00.01]. On the basis of the provisions of Decision No. 70/2014 / QĐ-TTg dated December 10, 2014 on the promulgation of the Statute of the University of the Prime Minister and the guidance of the Ministry of Education and Training, actively implementing the organizational structure in three levels: school level (School Council, Board of Directors, the system of functional departments), departments, institutes, centers, enterprises and the department level (with cadres) and students (with learners).

This organizational structure has clearly defined the relationships among the units in the school system: leadership and executive relations, coordination, counselling and peer relations. The HUST has also issued "Regulations on organization and operation of Hanoi University of Science and Technology" to unify the organization and management of all activities, approved by the University Council on 14/1/2017 [BE.00.02].

The mission of the university was first identified in 1999, reaffirmed in the Strategic Plan for Development of Hanoi University of Science and Technology in 2006-2020 and vision to 2030 and revised in 2008 at the Conference of Chief Officers The period 2008-2013. The mission of HUST is "*A commitment to human development, high-quality workforce training, scientific research, technological innovation and knowledge transfer that serves our country and global society*" and the vision 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*" [BE.00.03].

The training model of the school before 2009 is 5 + 1 + 3 (5-year training, 1year master and 3

year doctor). It has been replaced by 4 + 1 + 1 + 3 (4-year bachelor's degree, 1-year engineer and 3-year doctoral degree) or 4 + 2 + 3 (4-year bachelor's degree, 2-year master's degree and 3-year doctoral degree). This training model was first applied in Vietnam, close to the training models in the world and is now being introduced by the Ministry of Education and Training and the Law on Higher Education.

The university was given full autonomy by the Prime Minister of the Socialist Republic of Vietnam in October 2016 [BE.00.04]. Based on that, the university is rebuilding the charter university activities, restructuring the units in the school to ensure a streamlined, effective to successfully carry out the mission.

Quality assurance activities

HUST has showed great concern for Quality Assurance with early establishment of the Centre for Quality Assurance (CEQUA), now changed to Quality Management Office (QMO) upon the Decree No 1578-QĐ-ĐHBK-TCCB of September 30th 2008 signed by President of HUST, later it was renamed to a department of Quality Management Office. The main function of this department is to develop and implement quality assurance (QA) processes within HUST. HUST is the first university to implement Institution Quality Assessment based on Quality standards by MOET in 2006 and self-assessment and external audit basing on MOET's quality standards in 2009. Recently, HUST officially received HCERES's Decision on recognition of educational quality at institutional level (http://www.hceres.fr/) for five years from June 2017 to June 2022 without any further conditions.

To develop strategic plans for HUST to join international and regional QA networks, HUST is the member of AUN-QA in November 2015 and is the member of APAQA-HE in 2016.

For the accreditation to meet international criteria at Programme level, HUST has performed self-assessment for different undergraduate programs:

2009: Self-assessment and External audit of 2 high quality PFIEV engineering programs (Mechanical Engineering and Electrical Engineering) basing on CTI (Commission des titres d'ingénieurs) criteria.

2012 - 2013: Self-assessment and External audit of Communications and Computer Network programme basing on AUN-QA criteria under European peer review. Self-assessment of Mechatronics and Materials Engineering programs basing on ABET standards.

2013: Self-assessment of programs in Electrical Engineering, Electronic Engineering and Chemical Engineering basing on AUN criteria.

2014 - 2015: Self-assessment of 3 talented programs: Automatic control, electronics and telecommunication, organic and petro-chemical technology.

2015: Self-assessment of 2 high quality PFIEV engineering programs basing on CTI criteria. Self-assessment of 3 advanced programs on Mechatronics, Materials Science and Engineering and Biomedical Engineering programs basing on AUN criteria.

HEEAP2 project, Joint initiative by AUN, AQAN, DAAD, ENQA, HRK, SEAMEO RIHED with the view to strengthen the IQA & EQA capacity through dialogue and training events.

July 2017: Self-assessment and External l audit of 3 advanced programs on Mechatronics, Materials Science and Engineering and Biomedical Engineering programs basing on AUN criteria. To be qualified by international and regional standards in higher education and training, SCE has also performed different activities to review and self-assess undergraduate programs.

In October 2017, Self-assessment and External 2 audit of 4 programs on Mechatronics Engineering, Electronics and Telecommunications Engineering, Chemical Engineering and Electronics and Telecommunications Engineering

In 2018 HUST has implemented more 10 AUN-QA Self-Assessment reports of programme, include: printing engineering, Control and automation engineering, electrical engineering, transportation mechanical engineering, aviation engineering, mechanical engineering, food engineering and bioengineering.

1.2.2. Brief history of School of Biotechnology and Food Technology

The SBFT was established by Decision No. 2142 / QĐ-BGD & DT-TCCB, signed on June 15, 1999 and certificate of scientific and technological activities A-1326, signed on 25/6/2015 by the Ministry of Science and Technology [BE.00.05]. The School was established on the base of the development of scientific research and training of food technology of Hanoi University of Technology since its establishment in October 1956 and the Center for Research in Biotechnology (Decision No. 369 / QĐ of April 9, 1986) together with the certificate of scientific activities for the Center signed on March 25, 1993 [BE.00.06].

The SBFT consists of 5 departments and 2 centers

The school is composed of 63 cadres, including 46 teaching staff, 14 technicians, 3 administrative staff (according to human resources updated of December 2018). All faculty members have postgraduate qualifications, among them 2 professors, 18 associate professors, 22 PhDs, 4 masters [BE.00.07].

The school's vision, strategy and philosophy are agreed upon by the staff and lecturers in the Regulations and organization of the school through the meeting of the staff and the school's council [BE.00.08]. They are as follows:

Vision

- One of the leading organizations of the country in training, scientific research, consultancy and technology transfer in the field of Biotechnology and Food Technology linked with international integration

- SBFT is a reliable address to accumulate talented lecturers, researchers, students and domestic and international investors to study, to do research and cooperate in developing of science and technology

Strategy

- Innovate the programme and training method, apply new educational technology, to reach the regional and international accreditation standard

- Combination of training and scientific research activities towards international integration, meeting the requirements of the society

- Strengthening cooperation with domestic and foreign partners to promote the sustainable development in biotechnology and food technology.

Educational philosophy: Promote active learning - research – creative capacity.

Every year, the SBFT educates about 300 undergraduate students, 50 postgraduate students and 8 graduate students (average number of 5 years from 2012-2017). For undergraduate level training, there are 2 programmes: Bioengineering and Food engineering. For graduate level training: Bioengineering and Food engineering; 3 doctoral programmes: Biotechnology, postharvest technology and food technology.

In terms of scientific research, the SBFT is in charge of a number of state, ministerial and city level science and technology projects in the field of biotechnology and food technology [BE.00.09]. The SBFT always attaches great importance to the development of partnerships with partners in training, research, production and business in the field of biotechnology and food technology. SBFT has been cooperating effectively with universities, research centers and international organizations at home and abroad with the following specific objectives:

- Enhancing the effective cooperation with internal and external universities, research institutions, international organizations [BE.00.10]. to improve the quality of training,

combine training with scientific research and production practices, improve the quality of human resources.

-Develop the cooperation for strategic and practice- bearing research with domestic and external partners at national and regional level based on the principle of ensuring the interests of cooperative parties.

1.3. Introduction to the education program

Name of the Programme	**Bioengineering**
Education level	University
Major	Bioengineering
Degree	Engineer
Training Code	7420202 (varies according to Decision of Ministry of Education and Training No. 25/2017) Old version: 52420202 Decision No. 561 / QĐ-ĐHBK-ĐTĐH dated 25/04/2011 of Rector of Hanoi University of Technology)

The 2009 Bioengineering Programme was developed under the CDIO method and is based on the successor to the K48 - 2004 program, developed with feedback from various stakeholders. The development process of the 2009 programme is summarized as follows. First, the 2004 programme was evaluated. The 2009 programme is expected to result in learning outcomes based on stakeholder feedback and programme evaluation results in 2004. Then, based on the learning outcomes of the program, programme developing council [BE.00.11] has developed a programme structure that includes all the required courses, each of which contributes to the programme results. Finally, each teaching group (i.e a group of faculty who taught the same course) developed the curriculum for the course by modifying the list of curriculum materials for the 2004 programme to include updated content and meet expected learning outcomes. Until 2017, SBFT has performed survey for bachelor programme among students, researchers and stakeholder, especially with enterprises. Based on the obtained responses of the stakeholder, the learning outcomes have been detailed up to 3- level, and consequently the programme 2017 has been updated.

Academic programs in the field of biotechnology, besides of the general education block also equip students with science basic knowledge, basic theories and specialized techniques in the field of biotechnology, such as agricultural biology, environmental protection biology, food biotechnology, health …

On successful completion of the engineer's programme in Bioengineering, students will have:

1. A solid specialization knowledge to adapt well to various jobs in research, development and production in the wide field of Bioengineering.
2. Professional skills and personal qualities needed to succeed in careers.
3. Social skills needed to work effectively in multidisciplinary specialization and in the international environment.
4. The capacity to participate in project planning, designing, implementation and operating equipment used in the field of biotechnology.

PART 2. AUN-QA CRITERIA

Criterion 1. Expected learning outcomes

ELOs of the bioengineering programme are built on the basis of reflecting the vision and mission of the school. The vision and mission of the school has been announced to officials and learners. The curriculum publishes the expected learning outcomes of graduates. Each module and unit must be coherently designed to achieve relevant learning outcomes that are aligned with the program's expected learning outcomes.

Bioengineering is one specialization of the biotechnology area in that biological and technological knowledge are combined with techniques of processes in order to exploit the capacity of natural biological agents or new created agents in producing products for life. The combination of these two aspects of knowledge allows the application of the principles of the living system in the process of creating industrial-scale biotechnological products, without that, bio-products and biotechnological industries cannot be available.

Engineer in bioengineering works in the intersection of biological theories, technological knowledge and technical skills, connecting the two areas of Life Science and Technology with the mission of "Bringing technology to life" through exploiting the capacity of biological materials and materials and transforming into the series of products needed for human life.

From the characteristics of the program, ELOs of BE have been developed including the knowledge, skills (social and specialized skills), attitudes and professional responsibilities that expect students to achieve by graduation. The programme LOs are clearly formulated, translated into the program, made available to, and reflected requirements of stakeholders.

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

Starting from the mission and vision of HUST and strategic vision of SBFT, LO of the programme Bioengineering is built on the consideration and reflection of the vision and mission of HUST [BE.01.01.01].

With the mission of HUST “A commitment to human development, high-quality workforce training, scientific research, technological innovation and knowledge transfer that serves our country and global society ", it is clearly shown in ELOs of the programme Bioengineering

ELO are built in accordance with the general guidelines of HUST, implementing the procedures for building ELOs in 9 steps [BE.01.01.02].

The process is as follows: setting up a team of experts to build the ELOs for the program, making an implementation plan, designing a form to survey related parties, synthesizing comments from stakeholders and through the association for approval, finally the school’s council approved the ELOs of programme [BE.01.01.03].

The Programme developing Council developed the BE programme curriculum based on CDIO approach and Bloom's awareness scale to evaluate teaching and learning. The ELOs of the BE programme includes the knowledge, skills, attitudes, and professional responsibilities that learners achieve after completing the curriculum. Therefore, it can be said that the expected learning outcomes of the programme have been clearly developed and consistent with the vision and mission of HUST and SBFT. The learning outcomes are clearly presented at the beginning of the programme 2017 [BE.01.01.04] as follows:

Graduates of Engineer’s degree in Bioengineering must have the following knowledge, skills and competencies:

1. To have knowledge of a wide specialized bases for a good adaptation to jobs suitable to the specialization, focusing on the ability to apply basic and core knowledge of BE programme with industrial, environmental, medical, food biotechnological and biosafety testing orientations:

1.1 To be able to apply basic mathematics and science basis to participate in designing, calculating a system, a workshop or a production process of biological products.

1.2 To be able to apply basic knowledge of the industry serves as a foundation for research and solving technical problems in the industry

1.3 To be able to apply the core knowledge of the discipline combining practice and internship, while using the knowledge of quality management systems and good production practices, to participate in realizing and identifying problems related to technology, equipment and quality in producing biological products.

The ability to participate in production organization, design and evaluation of technological solutions, equipment and quality of biological products.

2. To have professional skills, personal skills and qualities to be able to learn at a higher level, the ability to learn to adapt to the continuous development of science and technology and to be able to learn lifelong practice:

2.1 To be able to identify technical issues in the global economic, environmental and social context.

2.2 To have an integrated analytical approach from which to formulate ideas on a project; participate in developing methods to implement the project in production, testing and services in the field of biotechnology.

2.3 Be able proactive, willing to take risks, showing flexibility, using creative thinking and thinking, being able to self-assess knowledge, skills and attitudes, Self-learning and lifelong learning.

2.4 To have an ability to manage time.

2.5 To have professional ethics, honesty and sense of responsibility, professional behavior, proactive in planning for their own careers, selecting and regularly updating information in the field of bioengineering.

3. To have communication skills, teamwork, international integration:

3.1 To have ability to actively and independently work and in teamwork with multidisciplinary collaboration environment.

3.2 To be able to communicate with domestic and foreign partners.

3.3 To have skills in using English effectively in specialized work and communicating with TOEIC score of 500 or higher.

4. To be able to create ideas, design, implement and operate in the corporate and social context:

4.1 To recognize of the role and responsibility of the engineer for the society, being aware of the impact of technical application on society, knowledge of state laws and regulations on the technical field, receiving be aware of historical and cultural contexts, be aware of topical issues and global development prospects.

4.2 Adhering to the diversity of corporate culture, mastering the business strategy, objectives and business plans, having the idea of technical commercialization, being able to adapt in different working environments.

4.3 To have ability to participate in building ideas on a research project; participating in the project implementation plan; applying knowledge and making design plans; participate in practical design.

5. To have political quality, awareness of serving people, having health, meeting the requirements of national construction and protection:

5.1 To have sufficient level of political theory according to the general programme of the Ministry of Education and Training.

5.2 To have certificates of Physical Education and Defense Education in accordance with regulation of the Ministry of Education and Training.

It can be seen that the above ELOs are described at the second level according to CDIO. Each response level of ELOs are used to describe the level that learners can achieve after graduating according to Bloom's cognitive scale. Example: Criterion 1.3 Graduates must have "Ability to apply the core and specialized knowledge of BE programme to design production lines, evaluate industrial biotechnology solutions."

In the 2017 improved program, the Bachelor-Master's integrated programme is built up between levels of study with the knowledge blocks and the optimal duration of teaching and learning for learners on the new output standard, and described at level 3 (showed in detail in evidence BE.01.01.04:

Thus, with the industry baseline knowledge standard presented in the ELO No.1 and knowledge, specialized competencies in the output standard No.4, professional skills and attitudes and social skills in the standard No.2 and No.3, engineers in bioengineering can fully meet the requirements for knowledge, skills and attitudes to work in different areas of the biotechnological industry. Therefore, they can contribute effectively to the cause of national industrialization and modernization as stated in the university's mission. In addition, ELOs No.5 reflects the university's mission of preserving national security and developing Vietnam's higher education system. In addition, the requirements for social skills needed to work effectively in international multi-disciplinary and environmental groups in No.3 and professional skills are defined in ELO No.4, especially in 4.1. and 4.2, that is an important aspect to ensure HUST becomes a reliable and attractive address for technology development. Domestic and foreign investors as pointed out in the university's and school's vision.

The ELO of the BE programme was approved in 2009 [BE.01.01.03]. Since then, SBFT has regularly collected feedback from teachers, students, and alumni about training activities and on the ELO [BE.01.01.05; BE 01.01.06]. Feedback from the labour market is also collected and analysed yearly… In 2017, ELO is adjusted and updated to satisfy the current needs of stakeholders and was approved [BE.01.01.04]. In the opinion of employers and alumni, the skills needed to design production lines and assess industrial biotechnology solutions need to be specified in ELO of the programme [BE.01.01.07]. These comments have been reviewed and expressed in the ELO of the 2017 Program.

ELO is introduced to students through career orientation sessions at the beginning of the new academic year and is disseminated to related parties through the University's and School's website [BE.01.01.08].

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

From the ELO description, it can be seen that ELO covers the knowledge and skills (also called professional skills) related to the industry, such as communication, presentation, discussion, and negotiation skills, judge, problem solving, information technology, work in groups. It can be seen that LO covers both professional knowledge and general knowledge. [BE.01.02.01]

Table 1.1 Matrix of Expected Learning Outcomes 2017 shows that knowledge of basic mathematics and science is covered in the ELO 1.1. The basic and core knowledge of the specialization are described respectively in ELO 1.2 and 1.3. The professional skills and qualities, as well as the social skills of an engineer are described in the ELO No.2, No.3. Conceive, Design, Implementation and Operate four-step specialized knowledge and skills (Awareness, Design, implementation and operation) according to CDIO is described in the ELO No.4. Political and ethical qualities according to Vietnam's special requirements are shown in ELO No.5.

In comparison with LO of the programme 2009, the ELO of the programme 2017 are clearer and closer bonding (seeing at evidence Matrix of expected Learning outcome 2009) [BE.01.02.02]. ELO of the programme 2017 are described with expecting to meet more the need of stakeholders

Table 1.1 Matrix Expected Learning Outcomes

No	Code	Credit	ELO															
			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	5.1	5.2
Law and politics																		
1.	Political theory+ General law	10				T	T	T	T	T				I			T	
2.	Physical education	5																T
3.	Civil service education	10																T
4.	English	6										I	T					
5.	General Education, Math and Basic science	35	T															
Basic and Major core subjects																		
6.	CH3316	2(2-1-0-4)	-	TU	T	T	T									TU		
7.	CH3318	1(0-0-2-2)		TU	T	T	T									T		
8.	EE2012	2(2-1-0-4)		T	T	T	I				I					T		
9.	ME2015	3(3-1-0-6)		T	T	T	I				I					T		
10.	BF2701	2(1-1-1-4)			TU	TU		U		U	U	U		ITU	TU			
11.	BF3711	2(1-1-1-4)	I					TU			TU			TU			U	
12.	BF3712	3(2-1-1-6)	T								T			T			T	
13.	BF3713	2(2-1-0-4)	TU	TU		TU	TU											
14.	BF4725	2(2-0-1-4)		TU		ITU		ITU								ITU		
15.	BF4726	2(2-0-0-4)		TI	TI	TI	TI				TI							
16.	BF3714	1(0-2-0-2)	U	U	U		U	U	U	U								
Biological knowledge																		
17.	BF2702	4(4-0-0-8)		I	TU	TU	TU		U		U		U					
18.	BF2703	2(0-0-4-4)	TU		TU	U		U			T		I			I		
19.	BF3701	3(3-0-0-6)	IT	IT	TU	TU	TU		U		U		U					
20.	BF3702	2(0-0-4-4)	U	TU	U													
21.	BF3703	2(2-0-1-4)			IT		IT	IT	IT	IT	TU			T			TU	
22.	BF3704	2(2-0-0-4)		TU	TU		TU											
23.	BF3705	3(2-2-0-6)			ITU		ITU	ITU	ITU	ITU	TU			T				
24.	BF3706	2(2-0-1-4)			IT		IT	IT	IT	IT	TU			T			TU	
25.	BF3707	2(1-0-2-4)	IT	IT	IT	U	IT	IT				U	U					
26.	BF3708	2(2-0-1-4)	TIU		TU	U		U		T		U						

Project work in biotechnology 2																		
27.	BF4727	2(0-4-0-4)				TU	TU	U						U		TU		
Social knowledge																		
Selective module, student choose only one module																		
Module 1: Environmental Biotechnology																		
28.	BF5701	2(2-1-0-4)	IT	ITU	TU	U	TU							U		TU		
29.	BF5702	3(0-6-0-6)	TU			TU		TU	TU									
30.	BF5703	2(1-2-0-4)	ITU	U	I		U							U		TU		
31.	BF5704	2(1-2-0-4)	IT	U			U							U		TU		
32.	BF5705	2(2-0-0-4)	ITU	U	I		U							U		TU		
33.	BF5542	2(2-0-0-4)	IT								T			TU				
34.	BF5706	2(0-0-2-4)	TU	TU	TU	TU	TU				TU	TU	TU	TU				
Module 2: Food Biotechnology																		
35.	BF5701	2(2-1-0-4	IT	ITU	TU	U	TU							U		TU		
36.	BF5707	3(0-6-0-6)	TU			TU		TU	TU									
37.	BF5512	3(3-0-1-6)	ITU	U	I		U							U		TU		
38.	BF4524	3(2-2-0-6)	IT	IT	ITU		U	TU	IT		T			TU		TU		
39.	BF5542	2(2-0-0-4)	IT								T			TU				
40.	BF5708	2(0-0-2-4)	TU	TU	TU	TU	TU				TU	TU	TU	TU				
Module 3: Industrial Biotechnology																		
41.	BF5701	2(2-1-0-4	IT	ITU	TU	U	TU							U		TU		
42.	BF5709	3(0-6-0-6)	TU			TU		TU	TU									
43.	BF5711	2(2-0-0-4)		ITU	ITU	U	TU					U				TU		
44.	BF5712	2(2-0-0-4)	ITU	U	U	U		U				U						
45.	BF5713	2(2-0-0-4)	ITU	U	I		U							U		TU		
46.	BF5542	2(2-0-0-4)	IT								T			TU				
47.	BF5714	2(0-0-2-4)	TU	TU	TU	TU					TU	TU	TU	TU	TU	TU		
Module 4: Molecular biological and cell Engineering																		
48.	BF5701	2(2-1-0-4)	IT	ITU	TU	U	TU							U		TU		
49.	BF5715	3(0-6-0-6)	TU			TU		TU	TU									
50.	BF5716	2(2-0-0-4)	ITU	TU	ITU													
51.	BF5717	2(2-0-0-4)		TU	TU	TU	TU				TU			TU	TU			
52.	BF5722	2(2-0-0-4)	TU	TU	TU	TU	TU				TU	TU	TU		TU			

53.	BF5718	2(2-0-0-4)	TU	TU	TU	TU					TU	TU	TU	TU	TU	TU		
54.	BF5719	2(0-0-2-4)	TU	TU	TU	TU	TU				TU	TU	TU	TU				
Selective courses																		
55.	EM2104	2(2-1-0-4)	IT	IT					TU					TU				
56.	BF5721	2(2-1-0-4)	IT	TU	TU				TU			TU				TU		
57.	BF5525	2(2-1-0-4)	I	ITU	TU	TU			TU									
58.	BF5722	2(2-0-0-4)	TU	TU	TU	TU	TU				TU	TU	TU		TU			
59.	BF5723	2(2-0-0-4)	TU	TU			TU			TU		TU	TU			TU		
60.	BF5724	2(2-0-0-4)	TU	TU	TU													
61.	BF5725	2(2-0-0-4)	I	I		TU	TU				TU	TU				TU		
62.	BF5542	2(2-0-0-4)	IT								T			TU				
63.	BF5726	2(1-1-0-4)	TU	TU	TU		TU				TU		TU		TU			
64.	BF5521	2(2-0-1-4)	TU	TU	TU	TU	TU				TU	TU	TU		TU			
65.	BF5701	2(2-1-0-4	IT	ITU	TU	U	TU							U		TU		
66.	BF5703	2(1-2-0-4)	ITU	U	I		U							U		TU		
67.	BF5704	2(1-2-0-4)	IT	U			U							U		TU		
68.	BF5705	2(2-0-0-4)	ITU	U	I		U							U		TU		
69.	BF5512	3(3-0-1-6)	ITU	U	I		U							U		TU		
70.	BF5713	2(2-0-0-4)	ITU	U	I		U							U		TU		
71.	BF5711	2(2-0-0-4)		ITU	ITU	U	TU					U				TU		
72.	BF5712	2(2-0-0-4)	ITU	U	U	U		U				U						
73.	BF5716	2(2-0-0-4)	ITU	TU	ITU													
74.	BF5718	2(2-0-0-4)	TU	TU	TU	TU					TU	TU	TU	TU	TU	TU		
75.	BF5717	2(2-0-0-4)		TU	TU	TU	TU				TU			TU	TU			
76.	BF5702	3(0-6-0-6)	TU			TU		TU	TU									
77.	BF5707	3(0-6-0-6)	TU			TU		TU	TU									
78.	BF5709	3(0-6-0-6)	TU			TU		TU	TU									
79.	BF5715	3(0-6-0-6)	TU			TU		TU	TU									
80.	BF5706	2(0-0-2-4)	TU	TU	TU	TU	TU				TU	TU	TU	TU				
81.	BF5709	2(0-0-2-4)	TU			TU		TU	TU									
82.	BF5714	2(0-0-2-4)	TU	TU	TU	TU					TU	TU	TU	TU	TU	TU		
83.	BF5719	2(0-0-2-4)	TU	TU	TU	TU	TU				TU	TU	TU	TU				
Technical practice and Bachelor thesis																		

84.	BF5981	4(0-0-8-8)			TU	U	U	U						U	U	U		
85.	BF5982	12(0-24-0-24)					TU	U	U	U		U	U	U	U	U		
TOTAL:		**160 credits**																

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

As mentioned above, when the developing programme ELOs, the CDIO curriculum development board has developed a programme describing ELOs details in the second level. After that, the ELOs of the draft programme was presented at a workshop organized by SBFT in June 2009 with the participation of stakeholders including representatives from industries, alumni and master students and lecturers to receive feedback on the results from the related parts [BE.01.03.01]. In addition, according to the requirements of the Ministry of Education and Training on Political and Ethical Quality of Students Graduated, the ELO No 5 has been added to four CDIO standards. ELOs are also described from the perspective of stakeholders, focusing on learners' achievements rather than subjective intentions of teachers. Moreover, with Bloom's classification used to describe the level of achievement as well as using specific numbers for TOEIC scores, ELOs are defined as observable and measurable results, can be proved and assessed. Therefore, the expected results of ELOs clearly reflect the requirements of learners, employers, and MOET.

On June 18, 2013, together with HUST, SBFT organized another workshop to receive feedback from businesses about the current programme and introduced the new training model of HUST [BE.01.03.02]. The main interest of representatives from businesses is the level of English as well as other soft skills of SBFT's graduates. These feedbacks have been reviewed to update the teaching content as well as to improve the 2017 program. In addition, after graduating from the programme in 2014, 2015, 2016, 2017 and 2018, graduates are required to fill out the survey form to gather job information and feedback on the program, the school and the university [BE.01.03.03].

The program's ELOs are easily accessible by stakeholders on the University website and the School [BE.01.03.04]. In addition, during the "Open day" events of HUST, SBFT often distributed leaflets to present the programme, to introduce job opportunities and to attract new students [BE.01.03.05]. Graduates in BE programme can work in the fields of biology, environmental technology, agriculture, health ... Participating in teaching and researching at universities, colleges and research institutes Consulting investment, technology transfer in the field of architectures. Information on employment records and job opportunities for graduates from SBFT are also posted on the SBFT's website, as well as the social network [BE.01.03.06] and is introduced in more detail in the course: "Introduction to Biotechnology". It can be said, so stakeholders can access the ELOs and employment profiles in many ways.

In the latest 2017 Adjusting Program, expected learning outcomes better reflect employers and alumni requirements for career skills and some complementary skills (teamwork and communication) [BE.01.03.07]. The above requirements are derived from survey results from employers and alumni based on the important role of graduates' knowledge and skills; Among them, professional knowledge and working skills, self-study and data processing are evaluated as the most important; the ability to apply knowledge to work, foreign language ability to work in an international environment in ELO No 3, career skills in ELO No 4, especially 4.1 and 4.2 to help students realize their lifelong learning considered the most effective solution of personal self-improvement for each person with the process of socio-economic development.

Criterion 2. Programme specification

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

The programme of Bioengineering is fully described and updated, provides the necessary information for stakeholders including those who are preparing for university, formal students, alumni, lecturers and recruiters. The programme 2009, after several years of implementation, in order to better meet the requirements of society and University development, some courses were adjusted from 2014 and the whole programme was updated in 2017.

The programme description has been developed with the following main contents: Part 1 - Introduction of the programme and the name of the program. Part 2 – Expected learning outcomes, Training time and the course structure, Admissions, Training process, Graduation

requirements, Grades, Part 3 - Programme content includes Module description, course syllabus. In the 2017 program, the detailed outline has been improved to further define the teaching content accordingly.

Description of the Programme was developed by a group decided by the Principal of HUST No. 311 on October 20, 2009 and updated to be changed again on May 5, 2017 [BE.02.01.01]. Specific information related to programme management includes the programme name, training level, training sector, industry code, diploma type, according to Decision No. 561/QĐ-ĐHBK-ĐTĐH dated April 25 / 2011 by Rector of Hanoi University of Technology [BE.02.01.02]. SBFT collected the opinions of stakeholders to contribute to the Programme during 2018, 2019 [BE.02.01.03]. Staff contributions were carefully reviewed and reflected in Programme [BE.02.01.04]

Table 2.1 Brief information on programme

1. University	Hanoi University of Science and Technology
2. School	School of Biotechnology and Food Technology
3. Audit organization	Evaluation Council - HUST
4. Degree	Engineer in Bioengineering (5 years)
5. Major	Bioengineering
6. Training School	School of Biotechnology and Food Technology
7. Training objective	**General Objective** To ensure for learners being healthy; professionally responsible and being adapted to the work environment in bioengineering industry. To train learners to be moral and to have knowledge at engineering's degree, mastering the natural and social principles. To provide students with professional skills, being capable in doing research and developing application of science and technology in the field of biotechnology **Specific Objective** Graduates of the Engineer of Bioengineering program: To have strong basic knowledge to adapt well to various jobs such as in research, development and production in the wide field of Bioengineering To have professional skills and personal qualities needed to succeed in careers To have social skills needed to work effectively in a multidisciplinary team and in an international environment Competence in project planning, design, implementation and operation of biotechnological equipment
8. Expected Learning Outcomes	(see Expected Learning Outcomes in Table 1.1, Criterion 1)
9. Training code	7420202
10. Legal grounds	Regulations of the Ministry of Education and Training and Hanoi University of Technology
11. Teaching, learning and evaluation strategies	* Learning and teaching strategies: Promoting the active learning capacity - research - creativity * Teaching methods: - Outline the objectives of the modules on the knowledge and skills students need to acquire - How to think, analyse and synthesize issues, propose ideas through questions and answers in class and related exercises. - Presentation - Group discussion - Practice and Solving real problems * Learning methods: - Review previous lectures, prepare answers to questions in exercise books or references when teachers teach - Active lesson learning, selective writing, participates in discussions, interaction between students and teachers in the class.

	- Finding information actively, reading references related to other modules under the guidance of teachers; self-study planning; * Test and assessment methods: + Quick check + Homework + Practice exercises + Report and group / individual presentation by project + Oral examination or writing test
12. Total Credit	160 (engineer)
13. Training mode	Full time
14. Teaching language	Vietnamese
15. Training time	5 years
16. Adjustment:	5/5/2017
17. Website	sbft.hust.edu.vn

Information of the programme is provided to all stakeholders including learners, teachers, managers about training objectives, expected learning outcomes, as well as course structure. This information provided help prospective students, as well as teachers to have active and effective teaching plans to help integrate knowledge in a logical manner This is also published on the website, it helps the stakeholders to see more about job opportunities for students after completing BE programme.

Graduates of SBFT can work in the fields of biology, environmental technology, agriculture, health ... or participate in teaching and researching at universities, colleges and research institutes; consult, invest, technology transfer in the field of bioengineering. Information on employment documents and opportunities for graduates from SBFT is also posted on SBFT's website, as well as social networks [BE.02.01.05].

Currently School aims to attract foreign students studying the BE programme and exchange students from partners, some subjects have been taught partially in English [BE.02.01.06].

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

Description of the programme provides all necessary information related to the University and School, Programme name, Learning outcomes, academic objectives....(Table 2.2), [BE.02.02.01]. The Programme description is disseminated to all stakeholders as well as on the website of SBFT [BE.02.02.02]. In addition, the Programme description is also introduced to all students at the beginning of each academic year [BE.02.02.03]. Students can get useful information in the Programme description. Moreover, employers can also find from the Programme description the necessary information on human resources to meet market needs.

In order to respond to changes in special technical knowledge particular in technological aspect, the syllabus is updated each semester if needed according to the requirements when surveys occur [BE.02.02.04]. The update is carried out according to plan and managed by the department and subject/major groups Table 2.2

Table 2.2 Summary of course adjustment [BE.02.02.05]

Semester	**Code**	**Course**	**Date**	**Hour**	**Class**	**Opinion**
Student						
2015 - 2016	BF4155	Techniques for producing plant bioactive compounds	21/10/2015	4	TC406	Should add more examples, exercises, updated references, practical information Need to interact more with students
2015 - 2016	BF3199	Cell biology (BF3113 has been split to BF 3199 and BF3119 Immunology)	28/9/2015	4	T410	If possible, provide exam review content Interact more with students Teaching too fast

Lecturer						
2018 - 2019	BF3711, BF3712	Process and equipment in Biotechnology I and II	4/1/2019			The experiment needs to adhere to the requirement of biotechnology specificity Adjust the outline, follow the requirements of credit and biotechnology expertise

Every year, HUST and SBFT evaluate the teaching and learning process through predictive or unannounced activities. The participants who are the leadership of School, leader of department and teachers in the subject teaching group, attend a subject class. After that, the students in the class are also required to answer survey. For all the surveys, evaluation was based on ability of teacher to deliver the lesson quoted as "pedagogic" and science/technology/technique content quoted as "knowledge". Each surveyor has obtained Assessment form in which criteria for pedagogic and knowledge are described with their score respectively [BE.02.02.06]. The final scores of pedagogic and knowledge were average calculated accordingly. Adjustment based on opinions of students and lecturers (scheduled). Moreover, additional information for subjects that are not investigated from the classroom as scheduled was collected as well.

In 2017, additional reviews for 3 courses of BF2112, 4175 and 3121 from the 20162A semester were assessed based on pedagogic and knowledge scores. Those scores were given by teachers attended in these classes, pedagogic score for teaching methodology, interaction with students and knowledge score for lesson content, practical issues and examples related to the lesson…. The scores of BF2112, 4175 and 3121 are presented in Table 2.3

Table 2.3 Summary of survey information for the courses in 2017

N^o	**Code**	**Course**	**Time**	**Room**	**Day**	**Week**	**Pedagogic**	**Knowledge**
1	BF3023	Introduction to Food engineering	0830-1150	TC-402	Mo	27	4.16	3.98
2	BF2112	Introduction to Biotechnology	0645-1005	TC-307	Thu	29	4.18	3.98
3	BF4175	Microbial biomass technology	0645-1005	T-410	Thu	30	4.2	4.24
4	BF3023	Introduction to Food engineering	0830-1150	TC-402	Fri	28	4.2	4.02
5	BF3816	Heat process and equipment, I	0830-1150	TC-402	Wed	27	4.04	4.06
6	BF3121	Process and equipment in biotechnology	1230-1550	D9-106	Tue	29	3.26	3.66
7	BF4416	Automatic machine in Food manufacturing	1415-1735	D5-202	Wed	27	4.78	4.52

Table 2.4 Summary of survey information for the courses in 2016-2

Code	**Course name**	**Time**	**Room**	**Day**	**Pedagogic**	**Knowledge**
BF5110	Toxicology	0645-0915	T-410	Tue	3.74	3.92
BF2110	Biochemistry	0735-0915	TC-306	Wed	4.65	4.71
BF5133	Waste water bio treatment	0645-1005	T-507	Thu	4.46	4.58
BF5151	Amino acid technology	0645-0915	T-410	Fri	4.3	4.26
BF5112	Bio-tech in solid waste treatment	1230-1500	D5-405	Tue	4.36	4.4

Information gathering 5 courses 5110; 2110; 5133; 5151; 5112 from the 2016_2 semester was assessed and achieved for pedagogic 3.74 points; 4.65; 4.46; 4.3; and 4.36 / 5, for knowledge 3.92; 4.71; 4.58; 4.26 and 4.4; respectively. These results reflect the good satisfaction of learners.

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

The programme description, in addition to being published on the website of SBFT, every year it is also distribute through all the events of the University including consulting and leaflets.

Programme are widely available in the following activities: Industry Orientation for graduates [BE.02.03.01]; Promote programs for students who are ready to enrol on the Open day; Admission counselling [BE.02.03.02]; Experience one day as a HUST student (November to April every year); Annual activity of the SBFT (November-December every year) [BE.02.03.03] or Academic Counselling at the Academic Advisory Desk (Room 201, Building C4) with the Advisory Group of professor experienced in training and researching in bioengineering programme [BE.02.03.04].

Criterion 3. Programme structure and content

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

The structure and content of the learning programs has been established according to the vision and mission of HUST.

To build the program, it is necessary to clearly identify the Expected Learning outcomes (ELOs). Programme is designed based on the ELOs. All modules are distributed in 10 semesters based on the principles of placement of modules, in which the previous semesters are prerequisite for the following semesters. The combination of different teaching methods (for example, lecture, group discussion, exercise, etc.) and the learning requirements of students for each module are clearly stated in the syllabus which help students to design a reasonable study plan to achieve ELOs. The list of modules is in Vietnamese and English, ELOs of the programme is also widely and clearly published on the School's website....

Each subject in the programme includes objective, ELOs of the subject and evaluation criteria to build the Program's ELOs. This is clearly defined in the detailed syllabus of the modules and the matrix of the modules to indicate the achievement of each course's contribution to the ELOs of the entire Programme.

Table 3.1 Knowledge blocks in the 2009 and 2017 bioengineering programs

N°	**PROGRAM**	**2009**		**2017**	
		Number of CRE	%	Number of CRE	%
I	**Basic training**	**51**	**31,88**	**53**	**33,13%**
1.1	Maths and basic science	35			
1.2	Political theory	10			
1.3	Physical education	(5)			
1.4	Defence-security educations	(10)			
1.5	English	6			
II	**Basic and Major core subjects**	**59**	**43,12%**	**45**	**39,37%**
III	**Internship**	**2**		**2**	
IV	**Optional**	**8**		**16**	
V	**Specialization**	**40**	**25%**	**44**	**27,5%**
5.1	Selective-1	14			
5.2	Selective -2	14			

5.3	Final thesis	12			
Total		**160**		**160**	

In 2009, programme of bioengineering had ELOs according to CDIO approach analysed to level 2; however, at this stage the opinions of related parties are not comprehensive. By 2017, the School has been conducting surveys and consult stakeholders, especially enterprises. Based on those stakeholders' responses, the ELOs have been detailed to level 3, clarifying the requirements and the programme has been changed, updated.

Next, the SBFT conducted a comparison of the 2009 programme with the frame of the equivalent programme of some universities in the world such as Swiss Federal Institute of Technology Lausanne (Switzerland); TU Berlin University (Germany), BOKU University (Austria) [BE.03.01.01], and then discussing with Master programme in bioengineering of Nagaoka University (Japan) in order to expand the future plan study of SBFT students at postgraduate level [BE.03.01.02]. The results show that the proportion of specialized subjects needs to be increased. Accordingly, the programme of the bioengineering in 2017 will be built in accordance with the guidelines of the Hanoi University of Technology with the rate of professional knowledge accounting for 27.5%, an increase of 2.5% compared to the bioengineering programme 2009 (Table 3.1). The 2017 programme has focused more on free elective courses and specialized knowledge blocks.

According to Table 3.2, bioengineering programme 2017 at HUST has a structure and knowledge blocks that are quite similar to those of Universities from Switzerland, Germany, and Austria, however depending on job characteristics in Vietnam, the knowledge blocks oriented in technical depth and technology application so the rates are also changed to meet the actual conditions. For example, social knowledge and special skills are noted in the 2017 programme while it is in the development phase. Technical Knowledge and specialized orientation in Biotechnology are equally distributed and Basic knowledge and Core knowledge has a reasonable rate (23.7% and 18.3% respectively).

Table 3.2 Comparison of knowledge blocks in HUST's Bioengineering programme and other foreign Universities

No	**Structure**	**ECTS***	**%**	**ECTS**	**%**	**ECTS**	**%**	**Credit***	**%**
		EPFL		TU Berlin		BOKU		HUST	
1.	Mathematics	38	22.3	21	10,2	10	6,1	15	11.5
2.	Physics	12	7	-	-	3	1,9	6	4.6
3.	Chemistry	10	6	21	10,2	33	26	10	7.6
4.	Biological knowledge (core)	14	8.2	84	41	42	26	24	18.3
5.	Specialization	21	12.3	36	17,6	20,5	20,4	16	12.2
6.	Math, Informatics	6	3.5	(18)		2	1,2	4	3
7.	Technical	20	11.7	18	8,8	36,5	22,2	18	13.7
8.	Internship	16	9.4	24	11,8	15	9,2	11	8.4
9.	Social knowledge	8	4.7		-	TC		8	6.1
10.	Soft skill	25	14.7		-	TC		19	14.5
	Total	**180**		**204**		**162**		**131**	

1credit=1,5 ECTS*

Data were collected from the website of EPLF, Switzerland; TU Berlin, Germany; BOKU Austria in 2017 when the HUST Bioengineering programme starting to be revised

The ELOs are also survey by Nagaoka's Professor, Tokyo University of Marine Technology and Science for their comments [BE.03.01.03]

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

For the 2009 program, to evaluate the contribution of each module in achieving the ELOs standards for each given syllabus. The level of contribution to the output Criterions of the

programme is determined by 3 types: GT (only introduction), GD (teaching) or SD (requires students to use and practice).

Each syllabus describes the level of response to the ELO and it is represented as follows: GD: Teaching, SD: Use, GT: Introduction. In the summary table of the contributions of the modules to the ELOs it showed the rate SD (use) is relatively high. This indicates that the Programme must operate relatively large volumes of practices such as Experimental, Exercises, Practice and Research to meet programme requirements. However, specific knowledge and soft skills blocks, the points that employers require are not shown.

In the 2017 program, the ELOs is up-to-date, consequently the subjects are also built based on ELO goals and requirements. The skill matrix summarizes the response to ELOs [BE.03.02.01].

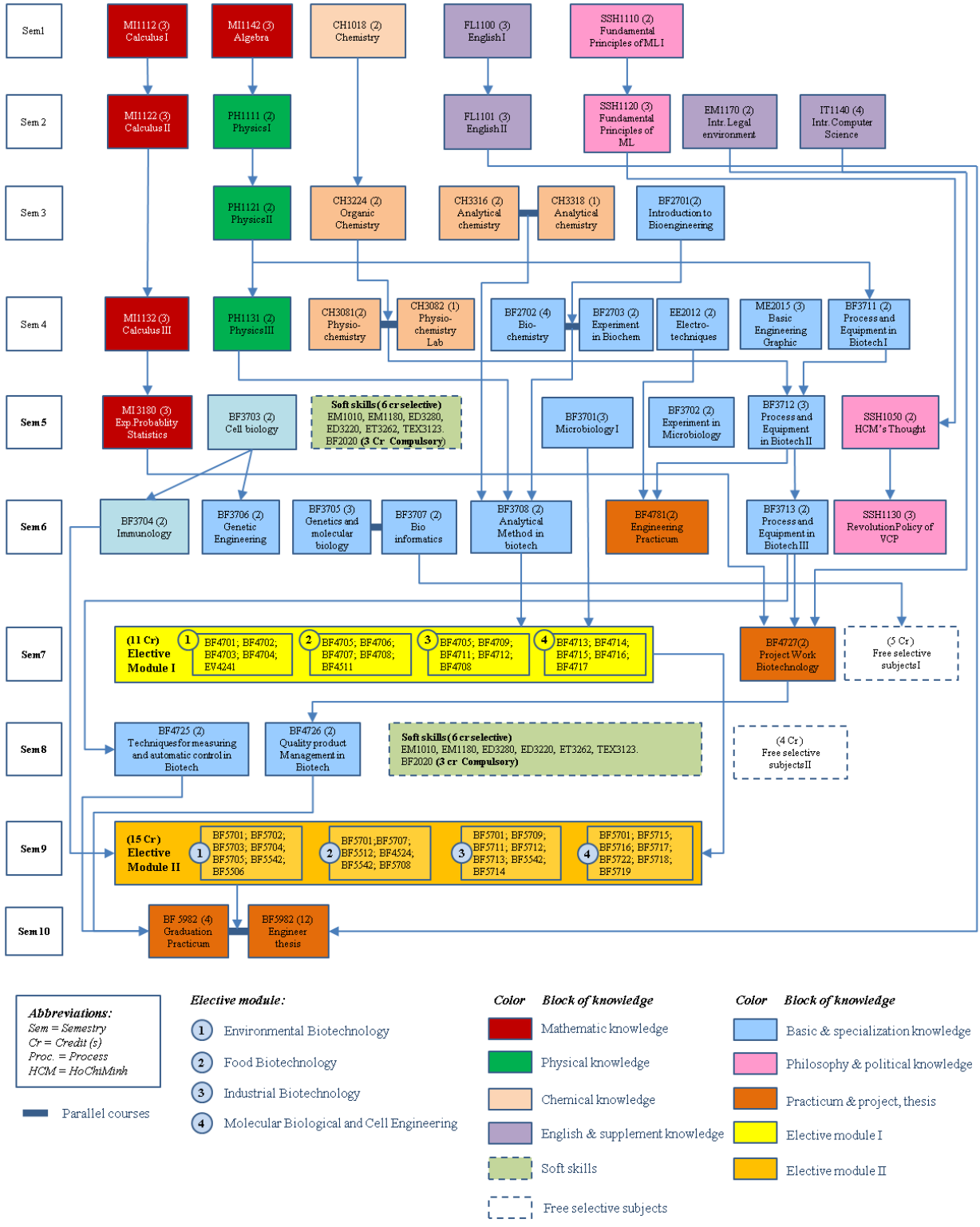
Matrix of Learning Outcomes (Criterion 1.2) shows that the subjects have contributed fully to the requirements. 100% of subjects / modules in the programme are compatible and cooperated to the specific contribution of each subject / module to achieve ELO. (For example, when developing a syllabus, it is necessary to clearly describe what the module contributes to the knowledge, skills, degree of autonomy and personal responsibility of the learner to achieve the ELOs).

All the subjects / modules in the study programme define the combination of teaching and learning methods, appropriate testing / evaluation methods and support each other to ensure the achievement of ELOs. (Details see the syllabus in each subject).

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

The Bioengineering programme is built according to the general knowledge blocks, basic knowledge, and specialized knowledge and is taught for 4 and 5 years. Subjects as well as its allocation by semester are represented by block diagrams to help lecturers and students understand the sequence of teaching and learning as well as the relationship between subjects. In addition, programme also ensures practical knowledge and skills for students such as English communication skills and soft skills.

The 2017 programme compared to 2009 has completed a set of Expected Learning outcomes, meeting the requirements of occupational skills for graduates of Bioengineering, the provisions of the law Higher education and other requirements. In the process of implementation, the 2017 programme is continuously changed and updated at the University and School level [BE.03.03.01] according to professional requirements and training implementation. Basically, the frame structure as well as the volume distribution of the program's knowledge blocks is changed and updated in the 2017 programme [BE.03.03.02]. The frame designed sequenced based on each semester and consisted all subjects.



Name of the courses are seen in Table 1.1

Figure 3.1 Curriculum map of engineer's programme 2017

With this structure and content, BE programme has welcomed foreign students to exchange

The Bioengineering sector programme is updated and adjusted according to the Table 3.4 to adapt to the changing labour market requirements in general and the Bioengineering industry in particular and also to stick more closely to the education strategy of University of Science and Technology [BE.03.03.04].

Table 3.3 List of foreign students exchanged in the period from 2008-2018 [BE.03.03.03]

Year	Foreign students exchanged	Institution- Country
2008	3	Institution of AgroCampus Ouest- France
2009	2	Institution of AgroCampus Ouest- France
2010	2	AgroCampus Ouest – France; AgroSup Dijon - France
2011	1	AgroSup Dijon- France
2012	7	Université de Liège- Belgique; Nagaoka University- Japan; AgroCampus Ouest and AgroSup Dijon - France
2013	10	Université de Liège- Belgique; Nagaoka University- Japan; AgroCampus Ouest and AgroSup Dijon - France
2014	5	University Claude Bernard Lyon 1 - ISPB- Faculty of Pharmacy – France; Nagaoka University- Japan; University of Burgundy- France
2015	1	AgroSup Dijon - France
2016	1	Nagaoka University- Japan
2017	2	Nagaoka University- Japan
2018	3	Gifu University- Japan; Chungnam University- Korea; Nagaoka University- Japan

Foreign students are exchanged regularly every year from 2008 to 2018, they came from France and Japan to SBFT for doing research and internship.

Table 3.4 Summarize the contents of updating the Bioengineering programme

Year	Updating content
2009	Starting of the programme
Adjustment at the University level	
2013	Adjust the credit structure of a number of courses, to more appropriately distribute exercises and experiments (CV 24/5/2013, BF2112; BF3113)
2016	Adjustment of Internship and Graduation Course (CV126 August 8, 2016, BF5820, 5821), to separate the two contents for flexible registration, as well as to allocate time between classes period and learning progress appropriately
2017	Adjusting elective subjects (CV 22/3/2017), updating and adjusting subjects, adding 9TC soft skills
2017	Revising: Programme 2017 of Bioengineering has been revising for ELOs, courses' frame
Adjustment at the School level	
2014	BF3112 Microbiology Lab
2015	BF3012 Food microbiology BF3013 Lab of Food microbiology
2016	BF4155 Techniques for producing plant bioactive compounds
2016	BF3199 Cell biology
2017	BF3116 Gene Technique
2017	Revising: Programme 2017 of Bioengineering has been revising for ELOs, courses' frame
2018	Revising: Programme 2017 of Bioengineering has been revising for syllabus

Criterion 4. Teaching and learning approach

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

The HUST's mission in the period from 2017 to 2025 is: "*A commitment to human development, high-quality workforce training, scientific research, technological innovation and knowledge transfer that serves our country and global society*"; and the vision 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*". In order to broadly disseminate to teachers and students as well as to prospective students and their parents, this mission and vision has been posted on the school website. Based on the mission and vision, SBFT's educational philosophy is established and published: "*to promote active learning – research – creativity*", it was posted on SBFT's website for all officials, students and interested people could be easily accessed [BE.04.01.01]. Every year, on the civic activities day, the

Deputy Director in charge of programme and education introduces and explains the philosophy of education as well as the objectives of the programme for SBFT students [BE.04.01.02.]

SBFT educational philosophy has covered the entire content of the Bioengineering training program. The programme has been designed to promote and enhance students' active learning and research, such as asking students to conduct seminars on science and technology issues related to course content [BE.04.01.03]. Combining a variety of teaching methods (presentations, group discussions, seminars, situations, exercises) along with the use of modern technical means to support (projector, video...) to create an interesting learning environment, attracting students to study quality [BE.04.01.04]. The training programme integrates teaching and learning activities with business activities. In the specialized project, the students are encouraged to research the market using products related to the biotechnology field [BE.04.01.05] or motivate students to contact biotechnology companies and apply for their internship [BE.04.01.06].

In particular, SBFT always encourages students to participate scientific research from the 3rd year. When students joint to the research groups in SBFT, they are assigned research topic and must use the knowledge receiving in the school to solve this scientific question. This kind of activity boots the students to be creative and shown them the important of basic knowledge. Many research projects of students have been awarded high prizes in the scientific research competition of Hanoi University of Science and Technology and Ministry of Education [BE.04.01.07], there have been research projects that are highly appreciated and applicable in life [BE.04.01.08].

In order to further promote students' self-study, research and creativity, student clubs have further been created, managed by students. Participating in FOBIC Club, students can learn and practice in field of biotechnology and food. In addition, they often organize seminars on Bio and food science as well as visit the bio or food company..., While specialized English club focus on enhancement of four English skills of SBFT students, particularly English in the field of food and biology.

SBFT believes that learning is most meaningful when each individual is given opportunities for the development of cognitive abilities; society; behaviour and technical expertise and believe in the values of lifelong learning: individual learners need to create and expand their own knowledge and skills to promote their creative potential, thereby implementing the aspirations to develop oneself and create new values for society. SBFT is not only a reliable training address, providing high-quality human resources in the field of biotechnology and food technology in the country and in the Asia region, also providing research and technology development solutions for company, ready to meet the requirements of development and production.

Figure 4.1 FOBIC members make the pizza

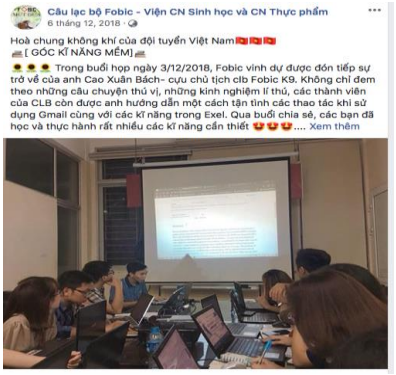


Figure 4.2 FOBIC members learn and practice soft skills

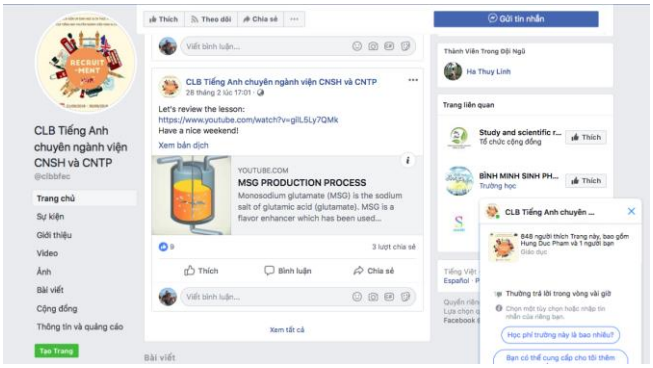


Figure 4.3 Facebook page of Specialized English Club

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

Based on our philosophy and objectives of education, SBFT has set up a framework programme that includes a minimum of 132 credits for Biotechnology bachelor training programme and 160 credits for the Biotechnology engineer training programme to accumulate to meet the standard out. The framework programme is occasionally revised if necessary (must be through the Council School) and is posted on the school website for wide dissemination [BE.04.02.01]. From this framework, SBFT has developed into a detailed syllabus for each subject including [BE.04.02.02]:

- Conditions for participation in the course: giving knowledge requirements for students participated before enrolling in this course.
- Objectives and output standards of the subject: students' skills and knowledge will be accumulated after the course.
- Detailed content and plan.
- References: introduce students to books, reference materials to use as well as reference in the course.
- Learning methods and tasks of students: introducing learning methods and requirements for students throughout the learning process.
- Evaluation: evaluation methods, ration between process points and final exam point.

Every year, SBFT carry out survey the graduated students [BE.04.02.03], and the enterprises' opinions about the programme [BE.04.02.04] to assess the appropriateness and responsiveness of the training programme for the demands of society.

Based on the opinion survey [BE.04.02.05], from the academic year of 2019 (K62), the Bioengineering training programme is divided into 04 sub-modules in according with the career orientation of the students, including:

- Environmental biotechnology orientation
- Food technology orientation
- Industrial biotechnology orientation
- Orientation of molecular biology and cells

A number of new subjects have been introduced to meet the diverse needs of society such as fermentation technology, animal cell technology, virus cultivation [BE.04.02.06]. In order to increase the soft skill for our students, several subjects are additionally added such as: soft skill; Technical writing and Presentation.

About teaching activities

Teaching and learning activities as well as teaching schedule are stipulated in detail syllabus. The teaching activities of each module meet the requirements of the output standard, which is a solid professional knowledge base to adapt well to various jobs such as research and application development, science and technology in biotechnology, professional skills and the ability to apply knowledge into practice. In order to achieve these requirements, teaching and learning

methods offered by the School aim to active learning, helping students actively acquire knowledge and apply them into practice.

Combining many teaching methods is a way to help students acquire knowledge effectively. In teaching activities, support facilities such as projectors, microscopes, softwares... are generally used by teachers to bring the highest teaching efficiency. Besides, always focusing and aiming at improving students' self-study ability, presentation skills - presenting a problem, our exercises are always designed to require learners to explore and exploit knowledge, present in class [BE.04.02.07], this activity can be in groups of 2-4 students. In the presentation sessions, teachers always have to attend, give ideas, suggest to the group to show more deeply and clearly the problem. Other students are also encouraged to participate by giving discussion questions. Through these activities, many necessary skills of student are improved such as self-studying, critical thinking, team working...

In order to increase professional skill, besides equipping the basic knowledge as mention above, the bioengineering training programme is particularly focused on practical subjects. In several subjects, the times are divided into theory time, exercise and practical time [BE.04.02.08]. There are also may many subject requiring students fully working on laboratory [BE.04.02.09]. A practical class has maximum 20 students to ensure the highest efficiency. Students are given practical instruction and must study before the practice time. At the beginning of the day, teachers have to explain the theory in detail as well as the detail practicing steps. Teachers must be present during practice hours to promptly answer and guide students. After practice time, students have to write and submit reports [BE.04.02.10].

Professional skill of student is also improving through internships. In bioengineering training programme, students have three opportunities to practice in factories related to biotechnology:

- *1st*: In the subject of biotechnology introduction, the students firstly explored some available pilot scale equipment in the CRDB (Center for Research and Development in Biotechnology), then they have to review on its application in industrial scale. At the end of the course, students have one day to visit factories [BE.04.02.11].

- *2nd time*: Students have 2-3 weeks to learn about technology, equipment and work position at factories. Objective is providing students to understand about the linkage between knowledge accumulated in SBFT and job requirements [BE.04.02.12].

- *3rd time*: When students realize final thesis. Students will have 2-3 weeks of internship at the factory related to thesis project [BE.04.02.13].

The dynamism, creativity and seriousness of students are important criterions of the learning outcome. With the aim of increasing these qualities, as soon as the third academic year, students are encouraged to join research groups of SBFT.

Table 4.1 Number of SBFT's student participating in research

Academic year	Student number participated in research	Number of projects
2014 – 2015	125	36
2015 – 2016	74	35
2016-2017	60	19
2017-2018	45	36

Self-study is one of important skills of learning outcome. In order to promote students' self-study skill, our programme was designed based on credit, and its flexibility. The training programme has compulsory subjects for students to fully accumulate basic knowledge, along with it, there are many elective subjects that allow students to choose modules that match their interests and orientation career [BE.04.02.14]. To help students make the right choices, the school academic advisory board is available for advice at the desk, email or Facebook. They are qualified and enthusiastic lecturer assigned to become advisor for students [BE.04.02.15].

Every year, HUST and SBFT evaluate the teaching and learning process through predictive or unannounced activities [BE.04.02.16]. The participants who are the leadership of School, leader of department and teachers in the subject teaching group, attend a subject class. After that, the students in the class are also required to answer a questionnaire related to the teaching method,

educational programme [BE.04.02.17]. These ideas are gathered and sent to teachers in order to enhance the quality of teaching. At the end, the participants discuss directly to the lecturer for the purpose of improving the quality of teaching and learning

Table 4.2. Some opinion of students following the evaluated acitivities (%)

Academic year	Subject code	Subject	Date	Time	Place	Student opinion
2015-2016	BF4155	Techniques for producing Bioactive compounds	21/10/2015	9h20	TC406	-Add examples, exercises, updated references, practical information -More interact with students
2015-2016	BF3199	Cell biology	28/9/2015	9h20	T-410	-Provide content for exam preparation -More interact with students -Slowdown the teaching speed
2015-2016	BF2010	Biochemistry	28/9/2015	9h20	T-406	- Combine teaching by projector with writing on the board
2015-2016	BF4155	Techniques obtaining bioactive compounds	21/10/2015	9h20	TC-408	- Add practical examples - Teaching methods need to appeal to students
2016-2017	BF3114	Environmental ecology	07/04/2017	15h00	D9-106	- Text on the slide should be easier to see
2016-2017	BF4151	Biological engineering for waste treatment	3/10/2016	9h20	TC-209	- Add practical examples
2016-2017	BF3125	Bioinformatics	7/11/2016	10h05	TC-208	- Add more exercise

At the end of each subject, HUST survey the student opinion such as [BE.04.02.18]:

- Teachers provide complete information about the module (learning output, learning methods, forms of assessment, learning materials, ...)?
- The content of the lecture (or discussion, exercise) is well arranged and sticking to the syllabus?
- Is the lecturing skills and communication of teachers clearing?
- How do lecturers give lectures to explain how you are learning?
- Did teaching methods make students excited, attracting students to actively participate in learning?
- Effective lecturers organize classes and use facilities (tables, projectors, internet ...)?
- Assessing the difficulty level of the content in the module?
- Requirements for students' efforts to complete the module?
- The usefulness of the materials provided, instructions for understanding the content of the modules?
- How useful are the exercise hours, discussion (already, or will)?
- Is checking and evaluating suitable to requirements, content of the module and teaching content?

The result is send to SBFT and teacher in order to improve the teaching quality.

In addition, HUST took the opinion of graduated students about the training program, the content of the programme structure, the ratio between theory and practice, internship duration ... to improve the training programme [BE.04.02.19].

Annual feedback from the industry also helps the SBFT in changing teaching methodology and programme[BE.04.02.20]. According to the industrial survey, English proficiency of student was still poor. SBFT has promoted various activities of the Specialized English Club such as requires good English professors to participate the club activities [BE.04.02.21]; Promoting

international cooperation as well as receiving foreign students to the laboratories are also activities to promote the ability to use English [BE.04.02.22].

With the above teaching and learning strategy, the percentage of good and excellent graduates achieving high rates is shown in Table 4.3

Table 4.3 Classification of students based on academic achievement (%)

Academic year	**Total**	**Student Rate (%)**						
		Outstanding (3.6-4)*	***Excellent*** (3.2-3.59)*	***Good*** (2.5-3.19) *	***Average*** (2-2.49) *	***Weak average*** (1.5-1.99) *	***Weak*** (1.0-1.49) *	***Least*** (<1.0) *
K 55 (2010-2015)	34	0	5.9	64.7	29.4	0	0	0
K 56 (2011-2016)	41	0	4.9	80.5	14.6	0	0	0
K 57 (2012-2017)	28	0	17.9	71.4	10.7	0	0	0
K58 (2013-2018)	62	0	11.3	72.6	16.1	0	0	0

4.3. Teaching and learning activities enhance life-long learning

The teaching and learning activities at SBFT are designed to promote and train students' lifelong learning, which is an important part of our educational philosophy and objectives.

Firstly, to achieve this goal, students need to be fully equipped with basic knowledge, self-study and thinking skills. Bioengineering training programme is designed to provide students with full knowledge of mathematics, science and biotechnology.

Figure 4.4 FOBIC members visited VIFICO Company

Regarding the ability of self-study, for many subjects, students must do the exercises and present in the class. This activity can be done individually, but teachers always encourage students to realize in teamwork. This activity aims to help students for developing the working skill, training how to present and solve their problems. Students learn and practice several skills such as exploring and searching in scientific document libraries (library, Science direct; spingerlink...), reading and making overviews and reports (world, excel, endnote ...); and presenting before class (ability to use presentation software, present and speak in public). All of these activities are aimed at motivating students to study on their own.

Moreover, students are encouraged to participate in research activities. This is an opportunity for students to develop deeper into the knowledge and skills that have been trained and encourage the exploration and discovery. This activity also aims to provide students with skills in solving problems in science and technology [BE.04.03.1].

In the training programme at SBFT, students have many opportunities to practice at the factory. Here, students can learn technology, be trained using their knowledge to solve

technological problems in factory, in this way, students understand the importance of basic knowledge in the real life [BE.04.03.2]

Specialized English club... are places for students' self-trainers such as teamwork, leadership, and ability to solve problems. Especially, at FOBIC club, students could be experienced the application of theories into real production. The ultimate goal is for students to see the importance and companion of science and technology theory with real production [BE.04.03.03].

Moreover, the programme was designed to promote the SBFT students to continuously study for Master program. The Bachelor – Master integration programme allows for 1/2 year shortening compared to separate Bachelor, Master training programs [BE.04.03.04].

In results, more 77% SBFTs' alumni found continued learning to be necessary for their work [BE.04.03.05]. In addition, many bioengineering programme graduates have studied master and doctoral programs of many countries [BE.04.03.06].

Criterion 5. Student assessment

Assessing students is extremely important in ensuring the quality of teaching and learning, as well as the level of student's achievement.

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

Input Evaluation

In order to attend the bioengineering programme, students must pass national examinations. The objectivity and fairness of this national exam always ensures the quality of the entrance students of SBFT.

Assessment in the learning process

The assessment is following the regulations of HUST [BE.05.01.01] and SBFT regulation [BE.05.01.02]. A subject having two or more credits is assessed from two component points which are process points and final exam point. Less than two credits can combine process points and final point or use only the final assessment.

Process points could be evaluated in the form of midterm exams, seminar...Particulaly, for encourage the class attendance of students; it could be used to minor evaluate the process points. The process and final exam points are assessed on a scale of 10.

Table 5.1 Plus or minus process points

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

The final point is calculated from the process point and final exam point with the weight that was mentioned in the syllabus of object. It is rounded to a decimal point and converted to a literal point. To calculate the average points, grade points are converted into scores by scale 4.

Table 5.2 Regulations on converting points

Grade point scale on scale 10	0.03-3.9	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
Point of conversion	F	D	D+	C	C+	B	B+	A	A+
Score converted	0	1	1.5	2.0	2.5	3.0	3.5	4.0	4.0

At SBFT, a subject always has at least two lecturers for forming a teaching group for this subject, including one team leader. In the first week of the semester, the subject group must discuss the content of the course again, suggesting necessary changes. In this meeting, the group of teachers will also agree on the time, duration of exercises, forms of testing, ways to encourage students ... [BE.05.01.03].

The form of assessment and the ratio between process points and final exam point are specified in the detailed syllabus of the subject and are designed to fit the learning outcomes of the subject. However, the subject group may also propose necessary changes in order to increase the quality of the subject. Students are announced at the first session of the course, but can also actively refer to the SIS page [BE.05.01.04].

Student assessment will reflect students' skills as well as assessing students' achievement compared to the output.

At SBFT, students are evaluated based on various ways to achieve the output of the program, as follows:

The level of awareness of students is often assessed by multiple choice method which the advantage that the number of big questions can cover many knowledge [BE.05.01.05]. Meanwhile writing exam is often used to assess analytical skills, problem solving [BE.05.01.06].

Skills of analysing, criticizing and resolving industrial incidents are the important requirements of the learning output. Therefore, the bioengineering training programme is designed with 03 training internships for students to participate at the factory from the 3rd year to the 5th year. After each internship, students have to do the reports and defend before the council (2 lecturers) and answer the question related to the bioprocess, particularly the technical problems and how to solve it [BE.05.01.07].

Practical skills: Practical subjects require students to attend all courses, so the process point is varying from 0.3 to 0.4 [BE.05.01.08]. In order to increase the pressure for students to enhance practical skills, many subjects have practical part in the final exam [BE.05.01.09]. After practical course, students need to synthesize, analysis data and write reports.

In terms of ***communication skills and the search scientific information***: several subjects require students do the seminar, then they are evaluated through presentations, discussing specific science and technology issues in the classroom [BE.05.01.10].

Focusing on the ***skill of designing a biological process***: The ability to design a biological process is particularly important. In the project of process and equipment, and project of project, students are equipped knowledge from designing a equipment to a production line. At the end of the course, students must submit a report on equipment calculations as well as production lines and detailed drawings. Students defend their ideas before a council [BE.05.01.11].

With the aim of ***strengthening English skill*** for students, the school requires students to achieve a TOEIC score corresponding to each academic year. Students will be limited to the credits for the next school year if they do not meet the corresponding English score for the academic year [BE.05.01.12].

Graduation thesis assessment:

Students could choose one of two forms of graduation project: research or design one biotechnology process. This selection is entirely based on a voluntary and the future career orientation of each student. Graduation defending process is according to Article 13 of University training regulation [BE.05.01.13] and graduation project guidelines of SBFT [BE.05.01.14].

The Graduation Evaluation Council consists of 5 experts, established by the Director of SBFT, and the instructor is not being in the council to ensure fairness and objectivity. The student's graduation project is pre-evaluated by the reviewer. Students defend in front of the council the whole project during 15 minutes and then answer the boards' questions. The Council evaluate based on criteria such as the content on the presentation, presentation ability, and scientific content, answering questions. The point of the instructor and reviewer is counted as the process point, the average score of the board will be the final exam point [BE.05.01.15].

The assessment method is generally survey after the end of the course to be a requisite for revisions to ensure fairness and objectivity [BE.05.01.16]. These surveys are generally carried out by HUST, and the results are transferred to SBFT and the teachers in order to do some necessary modifications

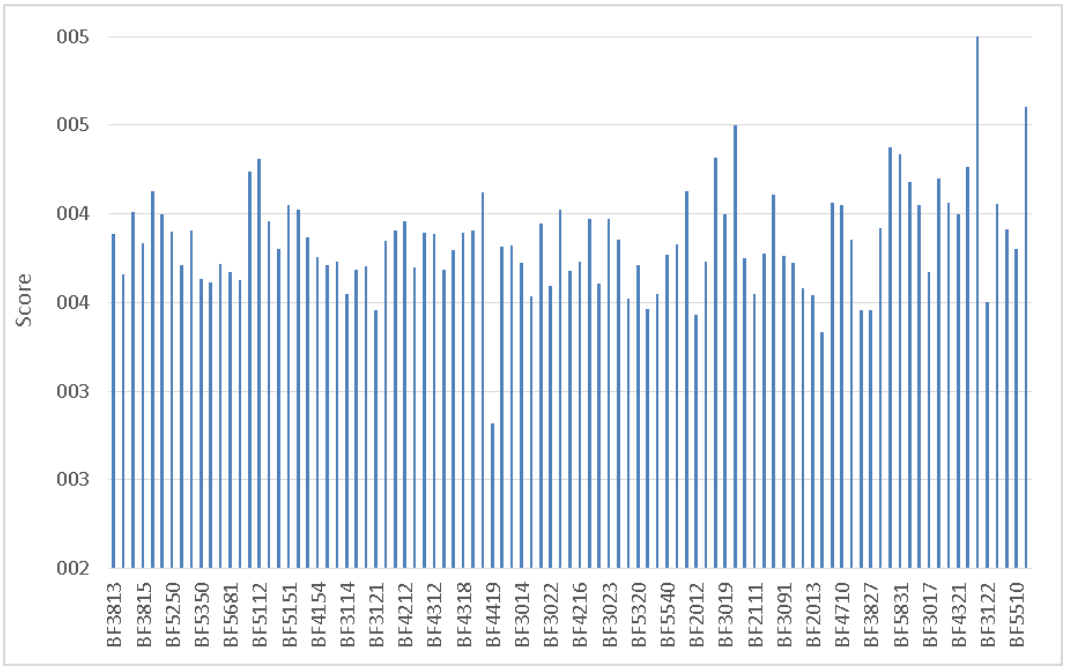


Figure 5.1 Students' points for the assessment is consistent with the requirements and content of the course

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

At HUST, at the beginning of the academic year, the school has informed calendar for the whole year. In this calendar, time to start or finish of the semester, as well as exam time are fixed [BE.05.02.01].

At the beginning of a semester, all information about the subject such as duration, assessment method, weigh of process points and final exam points are generally announced by the lecturers so that all students can know and make their specific study plans [BE.05.02.02]. HUST examines that process through investigating student opinions at the end of the subject; These reviews are generally returned to the SBFT and teachers [BE.05.02.03].

In some subjects, students are awarded point to the process point or final exam point if they do seminars related to course content and those seminars are highly appreciated [BE.05.02.04]. For microbiology experiments, the final assessment includes both practical and oral examination with a ration point of 5/5. As soon as starting the course, all students are informed in detail the assesement in order to achieve high final results.

The final exam schedule is announced by the training department on the website before the end of the semester so that students have appropriate exam preparation plans to achieve high performance [BE.05.02.05].

Table 5.3 Regulating the Credit accumulated by academic year

Year	**Credit**	**TOEIC result**
1st	0-31	General English (FL1100, FL1101)
2nd	32-63	300
3th	64-95	350
4th	96-128	400
Before receiving a graduation project		500
TOEIC required		500

For graduation projects, guidelines on content, writing, presentation of tables, drawings, references ... are posted on SBFT website for students to use as soon as prepare for the project [BE.05.02.06].

For English language proficiency requirements, specific requirements are shown in Decision No. 127 / QĐ-DHBK-DTĐH signed on October 20 2014. This decision is announced on the website as well as student document to help students having plan to meet the qualification requirements for each academic year.

Duplication exam schedules are reported to the subject lecturer or academic advisory board to make the necessary adjustment. Results of the assessment of subjects are announced on each student's personal website [BE.05.02.07].

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

The method of assessment of each subject is specified in the detailed syllabus of the subject and is reported to the class by the lecturer at the beginning of the semester so that all students can make detailed study plans for themselves. Method of assessment, ratio of process points and final exam points are unified in all groups of lecturers in charge of subjects to ensure fairness for students [BE.05.03.01].

To ensure the validity and fairness of the exam questions, the questions after being prepared according to the form are approved by the subject group leader, before giving to students [BE.05.03.02].

The method of assessing the subject is quite diverse such as: multiple choice, essay writing, practice exams, oral exam.... these methods are used flexibly to evaluate students to ensure quality and reliability as well as compliance with output standards. Micro-organism practise subject combines two methods of oral examination and practice exam. The question bank is established by all micro-organism lecturers and used in all microorganisms practical classes for ensuring objectivity and fairness [BE.05.03.03]. In other example, the subject of process and equipment combines the multiple-choice and writing to evaluate the knowledge gained by students after the end of the course [BE.05.03.04].

During the assessment process, the number of exam teachers is proportion with the number of students to avoid examination cheating [BE.05.03.05]. Exam papers are printed and distributed to students, students must sign the examination paper after doing the test. Exams are taken strictly according to regulations to avoid cheating [BE.05.03.06]. Quality assurance office (formerly) sends people to supervise to ensure that examination is done in accordance with regulations. Students who are sick or have unexpected problems and unable to take the exam can apply to be performed for the next round.

The lecturer judges based on the preceded answer, and the examiner must sign on the exam paper to be responsible. The exam questions, exam paper is stored in department for 2 years to re-check if any complaints about test scores have.

In the evaluation form sent to students after finishing the course, after graduation, SBFT and HUST have consulted on the assessment method to ensure fairness and objectivity [BE.05.03.07], the results obtained as a premise for improving student assessment such as: From the academic year of 2019, SBFT will organize the examination of practical biochemistry subject in the same day to ensure objectivity and fairness [BE.05.03.08].

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

In HUST, the feedback the assessment to student is considered important way to improve the learning.

Exercise sessions are designed to help students recognize the misunderstandings and have appropriate adjustments to have a better learning method.

The mid-term exam results should be sent to students before the end of the module and appropriate explanations should be done to help students correct all the errors and misunderstandings. The final exam results must be posted on the student information system within 15 days after the exam [BE.05.04.01]. The date to submit scores is recorded in a notebook at SBFT office [BE.05.04.02]. Students can view their scores directly when entering their personal page in HUST website [BE.05.04.03].

For the graduation project, the graduation point is published immediately after the protection session including the instructor's score, the reviewer's score, and the average score of the board.

The student's GPA and CPA will be calculated immediately after the test scores are entered. Based on the GPA and CPA scores as well as the number of credits that failed during the semester, students will be informed what academic warning they have under the provisions of articles 19 of the HUST training regulation 2018 [BE.05.04.04]. Knowing the situation in right time, students could have a suitable plan for the next semester to be able to lower their warning and improve their academic results. Students at warning level 2 are invited to meet the academic advisor in order help t hem make suitable plans [BE.05.04.05].

From the second semester of the 2018-2019 scholar years, the score will be directly posted in the HUST website system by the subject lecturer who will be responsible for the time and scare that they bring up [BE.05.04.06].

After each year of study, SBFT organizes a civic event to summarize the semester and awards the best academic students. This activity aims to promote our students.

Figure 5.2 Assoc. Quan Le Ha awards the best students

For the graduation project, the graduation point is published immediately after the protection session including the instructor's score, the reviewer's score, and the average score of the board.

After each year of study, SBFT organizes a civic event to summarize the semester and awards the best academic students (Figure 5.2). This activity aims to promote and inspire our students.

5.5. Students have ready access to appeal procedure

Before 12/2018, according to Article 10 of HUST training issued 2014, if student does not agree with an exam result [BE.05.05.01]. Firstly students should directly contact the lecturer to check again the result. If the student is not satisfied with the answers from the teacher, they may ask for a review at SBFT office within 1 week from the publication of the score. To make an appeal procedure, students go to the office to fill out an appeal form [BE.05.05.02]. Then this appeal document is transferred to the head of department to organize the re-check. In case of changing point, a changing point form must be sent to the HUST training office accompanying by a photo of the exam paper. Particularly for oral test or defense interviews, the appeal request shall not be considered. Students can regularly track personal grade data on the SIS system [BE.05.05.03]. This process is widely disseminated to students at civil meetings [BE.05.05.04], in student book [BE.05.05.05] or informed by academic advisor members.

From 2019, following the Article 6 of new HUST training document issued on December 2019 [BE.05.05.06]; the appeal procedure is simplified by submit an appeal request to SBFT office. SBFT establish a monitoring book which includes information on the time of submission of students as well as feedback time.

Criterion 6. Academic Staff Quality

The SBFT has a tradition being one of leading faculty in the country in Bioengineering, with many leading professors such as Prof. Hoang Dinh Hoa and Prof. Nguyen Van Cach. Currently, many staffs of the School have been trained from advanced countries to confidently follow the previous generations, maintain and develop effective teaching and learning activities for the training course of Bioengineering.

6.1. The planning of academic staff (including recruiting, appointment, termination and retirement plans) are carried out to meet the demand for training, scientific research and supporting activities.

The staffs of the SBFT are highly qualified, fully meeting the teaching and scientific research tasks of SBFT. SBFT recruit staffs in accordance with the Higher Education Law [BE.06.01.01] and Guidelines for recruitment of staff of HUST [BE.06.01.02].

Most lecturers participating in the Bioengineering programme have doctoral degrees from prestigious Universities in the world. All lecturers have extensive knowledge to be able to teach for undergraduate and postgraduate programs [BE.06.01.03]. The teaching staffs are very enthusiastic. Lecturers use different teaching methods for each specific subject [BE.06.01.04]. 100% of lecturers have university pedagogical training certificates [BE.06.01.05]. In the period 2015-2017, the rate of students assessing teaching activities at a good and very good level is in the range of 76.8-86.4% [BE.06.01.06].

Table 6.1 Assigning tasks of staffs

Positions	**Tasks**
Lecturers	- Teaching activities: designing and updating lectures, preparing and developing programmes, teaching methods and teaching facilities in class; perform teaching activities, assess students' learning process. - Research activities: develop and propose research topic, conduct research and publish research results; compilation and publication of books, book chapters; participate in academic activities such as conferences, workshops, symposiums; guide students - Other activities: support students; join professional associations, scientific councils ...
Technicians	- Teaching support activities: instruction for practice and experiment - Sampling, testing, measuring, recording and analysing experimental results. - Maintaining and operating equipment in the laboratory as well as guiding the operation of labs for students. - Provide all technical support needed for the laboratory to operate as required and ensure safety procedures and laboratory safety testing. - Participate in other activities: support enrolment, support for examination…

Academic staff of SBFT includes lecturers, technicians and administrative staffs. Their duties are described (Table 6.1). There are two undergraduate programme at SBFT: Bioengineering and Food Engineering. Therefore, lecturers and technicians of SBFT are divided in two main areas Biotechnology and Food Technology. The division is however not strictly since some of them belong to both programme.

Planning of academic staff plays a key role in the implementing the training, research and supporting activities of the School. At the start of each Dean's term, leaders of SBFT will plan human resources i.e. total number of staffs, the percentage of staff with the national titles such as Associate Professor, Full Professor, the ratio of staff with doctorate degree, the ratio of support staff with Master and Doctorate degree, number of staff reaching retirement age. Table 6.2 represented plans of human resources for 2015-2019 [BE.06.01.07].

Table 6.2 Planning of academic staff during 2015-2019 of the SBFT in Bioengineering

Year	**2015**	**2016**	**2017**	**2018**	**2019**
Total number of staff	29	29	29	29	29
Number of lecturers	20	20	20	20	20
Number of technicians staff	6	6	6	6	6

Number of administrative staff	3	3	3	3	3
Ratio of Full Professors/lecturers	2 (10%)	2 (10%)	2 (10%)	2 (10%)	1 (5%)
Ratio of Associate professors/lecturers	10 (45%)	10 (50%)	10 (50%)	9 (45%)	9 (45%)
Ratio of lecturers with doctorate degree (including professors)	19 (95%)	19 (95%)	19 (95%)	19 (95%)	19 (95%)
Ratio of technicians staff with master degree or higher	5 (83%)	5 (83%)	5 (83%)	5 (83%)	5 (83%)
Ratio of technicians staff with doctorate degree	0	0	1(17%)	2(33%)	2(33%)
Number of faculty reaching retirement age/ number of technicians staff reaching retirement age	0	0	1	1	1

* Support staff of the school are those in charge of teaching laboratory classes.

** Under the provisions of Vietnamese labour law, the retirement age for men is 60 and women is 55. PhD holders and associate professor can retire at 65 for men and 60 for women while full professor can work until 67 for men and 62 for women.

The lecturers of SBFT are responsible for teaching 51 specialized modules [BE.06.01.08]. Generally, one lecturer is in charge of 2-3 modules in the Program. Moreover, each lecturer is also responsible for guiding 3-4 students to undertake graduation thesis [BE.06.01.09]. The teaching hours is within the limits of the school's requirements and the SBFT staff can spend time doing research and other academic activities. Scientific research activities at the SBFT have achieved remarkable achievements. Since 2015, the SBFT has implemented more than 30 research projects with total funding of over 10 billion VND [BE.06.01.10]. Each year, researchers in the SBFT publish over 65 articles in international and domestic journals, as well as present more than 20 reports at conferences and seminars national and international. Since its founding, SBFT staffs have had more than 1,000 publications in journals, conferences and seminars, among that more than 100 publications on international journals and workshops [BE.06.01.11].

School’s staffs also participate in other activities such as developing curriculum and quality management.

The average age of School lecturer in BE in 2017 is 45 ensuring that the academic staffs are highly qualified. The staffs are equally distributed among age <40, 40-50, >50 representing the good planning of academic staff without gap between generation.

Based on the number of staff reaching retirement age, teaching workload, the departments submit proposals for recruitment needs, which is for 5 years ahead [BE.06.01.12]. The recuitment plan is shown Final report of the school year, which is read and discussed every year on the begin of School year at official meeting of all staffs [BE.06.01.13].

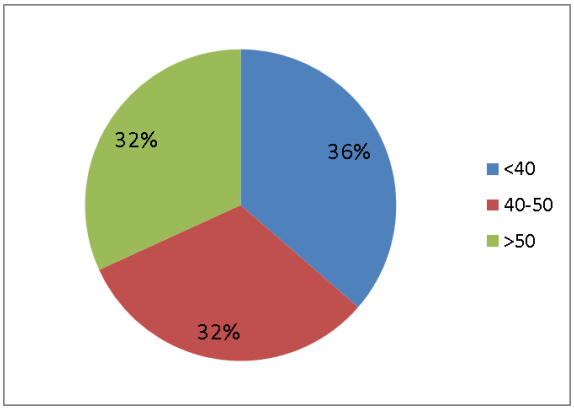


Figure 6.1 Age distribution among lecturers

Based on the proposals of all the departments, the School will summarize and send the recruitment needs of the whole School to the Human Resource Department of University [BE.06.01.14]. Table 6.3 represents the recruitment plan for the past five years and the recruitment results.

The retirement policy is based on the Government Decree on Retirement Procedures for Trainers [BE.06.01.15]. The retirement age is 60 (for men) and 55 (for women). However, the professors can extend the contract for 10 years; the associate professors can extended for 7 years [BE.06.01.16] and work as guests of the School's honour if the unit work and staffs agree to continue the work [BE.06.01.17].

Table 6.3 Number of lecturers of BE recruited since 2014 [BE.06.01.04]

Year	Recruitment Needs	Number of new lecturers	Full name of faculty and country for doctorate training
2014	1	1	Nguyen Truong Giang Dr from Russia
2015	0	0	
2016	0	0	
2017	0	0	
2018	1	1	Le Tuan Dr from France
2019	1	1	Dam Thuy Hang Dr from USA

To ensure the quality of new staff, the School has the policy to give the priority to candidate with Doctorate degree and graduated from developed country [BE.06.01.18]. The common situation of public university was the difficulty of recruiting high quality academic staff due to low salary. Therefore, the School has a policy of selecting excellent students from the School, encouraging those going abroad for doctoral studies and recruit them. For example, student Nguyen Thanh Hoa of K48 [BE.06.01.19]. University has policy to recruit high qualified academic staff overall of the year to facilitate the candidate to work immediately without waiting [BE.06.01.20]. Finally, this difficulty is hopefully overcome when HUST is completely autonomous by Decision 1924/QĐ-TTg dated 06/10/2016 of the Government [BE.06.01.21] in which the University will be autonomous in paying staff salary. According to the new internal spending regulations [BE.06.01.22], the salary of the staff could increase based on their workload in teaching, scientific and support services as well as their KPI. This regulation is hopefully to motivate the staff and give the chance for recruiting high qualified staff.

During working, the lecturers received many opportunities to upgrade to achieve the titles of lecturer, principal lecturer, senior lecturer, associate professor, professor [BE.06.01.23]. The upgrading of the main lecturer level and senior lecturers of the lecturers comply with state regulations [BE.06.01.24].

The University and School leaders motivate and facilitate staff with PhD degree and sufficient qualification to apply for a title at the National Council for Professor Titles [BE.06.01.25]. Special criteria for title candidates Professor and Associate Professor are public on the internet (http://www.hdcdgsnn.gov.vn/) [BE.06.01.26].

The criteria for leading position are clearly defined by HUST [BE.06.01.27]. SBFT follows the instruction process planning leading position [BE.06.01.28].

Table 6.4 Number of applicants for the national titles of Associate professors, full professors of SBFT on Bioengineering during 2012-2017

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
2012	02	02	Le Thanh Ha Nguyen Lan Huong
2013	0	0	
2014	01	01	Nguyen Van Cach
2015	01	01	Truong Quoc Phong
2016	0	0	
2017	0	0	

6.2. Staff-to-student ratio and workload of staff are measured and monitored to improve the quality of training, research and other support activities

At present, the School has a total of 20 full time lecturers (i.e., academic staff) including 2 full professor and 10 Associate professors as shown in Table 6.5 [BE.06.02.01]. In the Table 6.5 only 19 full time lecturers were calculated since 1 full time lecturer had temporary resigned for PhD course in Japan.

Table 6.5 The number of academic staff and their FTEs (2017-2018)

Category	**Man**	**Female**	**Total**		**Percentage of PhDs**
			Headcounts	FTEs (*)	
Professors	2	0		2	Professors
Associate Professors	2	8		10	Associate Professors
Full time Lecturers	7	0		7	Full time Lecturers
Part time Lecturers	0	0			Part time Lecturers
Visiting Professors /Lecturers	0	0			Visiting Professors /Lecturers
Technicians	0	6		6	Technicians
Total				25	Total

(*) FTE – Full Time Equivalent is a unit which indicates the workload of an employed person. A 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 a FTE of 0.2

Table 6.6 Staff-to-student ratio

Year	**FTE accumulation of academic staff**	**FTE accumulation of academic learners***	**Ratio of staff/learners**
2017-2018	25	267	1/10.7
2016-2017	25	282	1/11.3
2014-2015	25	283	1/11.3
2013-2014	24	257.3	1/10.7
2012-2013	24	201	1/8.4

(*) FTE student has to take 24 credits load per semester. On average, SBFT students take 18 credits load per semester. The FTE accumulation is calculated by the accumulated number of students in 4 years (i.e., second to fifth year) times 0.75.

Table 6.6 showed that the teaching staff to student ratio (Ratio of staff/learners) fully meets the requirements under the Circular 32/2015 / TT-BGDT of Ministry of Education and Training (MOET) dated on December 16, 2015, which should be less than 1/20 (for sector V - Engineering). This ratio is around 1/22 around the Vietnam according to report of Hanoi University of Internal Affairs [BE.06.02.02].

With the policy of maintaining the current number of lecturers and students of the University and the School, this ratio will be stable for many years and fully meet the standards and is lower than that of some other Schools in HUST (from 1/15 to 1/17 by School of Electrical Engineering).

Table 6.7 Workload of staffs according to regulation of HUST and MOET

Position	**FTE (hours/ week)**	**Required teaching time (hours/year)**	**Required research time (hours/year)**
Prof./Assoc. Prof	40	320	600
Lecturers	40	280	400
Researchers	40	-	120
Technicians	40	-	100
Administrative staffs	40	-	-

(*) FTE student has to take 24 credits load per semester. On average, SBFT students take 18 credits load per semester. The FTE accumulation is calculated by the accumulated number of students in 4 years (i.e., second to fifth year) times 0.75.

Table 6.7 present the required working time according to regulation. Every year, the teaching workload and scientific workload for each lecturer is calculated [BE.06.02.03], [BE.06.02.04] according to HUST regulation [BE.06.02.05]. This information is used for rewarding and human resource planning.

Reasonable work arrangement facilitates SBFT's staff to have enough time to conduct research activities. As a result, the number of scientific publications at SBFT averaged 65-70 published / year [BE.06.02.06].

6.3. Criteria for the recruitment staffs and selection of lecturers (including ethics and specialization) for nomination are identified and disseminated publicly

The recruitment process is widely publicized on the website of HUST [BE.06.03.01] and through website of School [BE.06.03.02]. Candidates are evaluated based on scientific ability and behaviour through CV, diplomas and certificates, scientific overview reports and interviews. HUST requires candidates with Doctoral degrees for lecture position at professional School [BE.06.03.03]. HUST require candidates very clearly about both professional and ethical aspects shown in the Recruitment regulations and staff recruitment standards [BE.06.03.04].

The recruitment process at the SBFT is carried out according to the regulations of the HUST [BE.06.03.05]. Applicants must meet the criteria of the HUST. To ensure the quality of teaching and research, the SBFT also have some additional requirements [BE.06.03.06].

6.4. Competences of academic staff are identified and periodically evaluated

The competences of School's academic staff are evaluated on three main areas of activity: teaching, research and support services such as homeroom teachers and academic advisors.

For teaching, following requirements are evaluated:

- Complete the teaching workload assigned
- Well implement teaching schedules; meet the learning outcomes of the course
- Apply pedagogical methods for improving the effectiveness of teaching
- Periodically update knowledge and new teaching methods

The implementation of the instructional schedule is monitored by the Quality Management Office (QMO) and in 2018 the Legal Ombudsman conducted this supervision according to Regulation on Organizing and Implementing of classroom observation [BE.06.04.01]. At the beginning of each semester of the academic year, SBFT will send to QMO the teaching timetable that includes the Lecturer Name, time and location of class [BE.06.04.02]. The assignment of Teaching based on lecturer's capacity that is updated every year into document of ISO [BE.06.04.03]. Based on that teaching timetable, the teaching workload of each lecturer is assigned and evaluated at the end of every school year [BE.06.04.04]. The workload is calculated according to Internal Spending Regulations of HUST 2612/QĐ-ĐHBK-HCTN signed 08th September 2014 until 08/2018 and is changed now to newly 1646/ QĐ-ĐHBK signed on 22nd August 2018 [BE.06.04.05]. If the lecturer changes the lectures' time, it is required to inform QMO at least 1 day before the lecture schedule, using the form of changing teaching time [BE.06.04.06] All information about absent lecturers, absent but not compensated the teaching hours or being late for the class will be sent to the SBFT to remind teachers as well as used to evaluate lecturers [BE.06.04.07].

Assessment of pedagogical skills is done by QMO. At the end of each semester, QMO will summarize and analyse the students' feedback on teaching attitudes, teaching methods, professional skills of lecturers [BE.06.04.08] using the evaluation form of QMO [BE.06.04.09].

Pedagogical skills are assessed through announced classroom observation or unannounced one. The SBFT will prepare a plan for the announced classroom observation of each semester and send it to QMO to monitor [BE.06.04.10]. Observers include the School's leaders, Department's leaders, and representatives of academic groups [BE.06.04.11]. After each lesson, the staff will now fill out the assessment form, including academic outcomes, the effectiveness

of the teaching method and expertise of lecturer [BE.06.04.12]. In addition, students' assessment forms are distributed and collected [BE.06.04.13]. For unannounced hours, QMO will select based on student feedback or previous evaluations [BE.06.04.14]. QMO will establish an evaluation team consisting of members of University's pedagogical advisory board [BE.06.04.15]. The evaluation steps are similar to those for the announced observation classroom. Table 6.8 present the summary of Classroom Observation for 4 school years based the summary of each semesters of the school year [BE.06.04.16].

Table 6.8 Summary of Classroom Observation Results of SBFT

Academic Year	**Announced classroom observation**			**Unannounced classroom observation**		
	No. of Observation	**Pedagogical Grade**	**Professional Grade**	**No. of Observation**	**Pedagogical Grade**	**Professional Grade**
2017-2018	3	4.50	4.55	3	4.65	4.76
2016-2017	4	4.45	4.43	4	4.36	4.38
2015-2016	5	4.66	4.7	0	0	0
2014-2015	4	4.55	4.7	0	0	0

*The maximum Pedagogical Grade is 5.

The Pedagogical Grade is calculated from assessment form which is given to observers. The assessment is based on the following criteria: the ability to manage the class, ability to communicate, reasonable combination of teaching methods, promote the activeness of the learners

Newly recruited lecturer (intern-lecturer will be allowed to attend pedagogical training courses [BE.06.05.17]. He/she will spend one probationary year under the guidance of an experienced instructor [BE.06.04.18].

During this time, he will have two probationary lectures and one lecture after completing probationary year [BE.06.04.19]. All these lecturers will be assessed for teaching competences by the same procedure as is done for faculty lecturer. After probationary year, the newly recruited lecturers have to complete the lecture plan and get good reference from the experienced instructor [BE.06.04.20]. The assessment will carry out for further next year ensuring the teaching competence of newly recruited lecturer

For scientific research, each teacher must complete the University's specified research workload, which is calculated according to Internal Spending Regulations of HUST 2612/QĐ-ĐHBK-HCTN signed 08 September 2014 until to 08/2018 and is changed now to newly 1646/ QĐ-ĐHBK signed on 22 August 2018 [BE.06.04.21]. Scientific research hours include participating in the implementation of scientific projects or published articles in peer reviewed journals / proceedings. At the end of each study year, the department will calculate the workload of scientific research and submit it to the School to evaluate the completed workload upon request [BE.06.04.22].

Competence of staff members are evaluated through their contrast with companies. The School’s staffs have a lot of contact with the companies and implement average 3-4 contract every year. This helps improve the professional skill of staff [BE.06.04.23].

For supporting jobs, the most important is managing student classes. Each young lecturer will be assigned to manage 1-2 classes [BE.06.04.24]. Student management staff duties are described in Article 14 of the Regulation of Student Advisory Committee and Management under Decision No. 117 dated December 26, 2014 by the President of HUST [BE.06.04.25].

The performance of the homeroom teacher is evaluated through meetings, reports and student satisfaction assessments [BE.06.04.26].

At the end of academic year, staffs are classified in A, B and C via evaluation in teaching, research and support services (task completion, professional ethics, international publication, number of patents, feedback data, teaching records ..) according to the internal regulations of HUST [BE.06.04.27]. From 08/2018 each officer will complete an individual self-assessment the at the end of the semester [BE.06.04.28]. At the end of the study year, on the basis of the self-assessment of each individual, the Department and the School in charge of such officials will review to classify officials as a basis for reviewing emulation titles [BE.06.04.29].

6.5. Training and development needs of academic staff are identified, and activities are implemented to meet the requirement

Every year, based on needs of training and professional development of lecturers, the School plans to train staff. The training includes dispatch qualified staffs with master's degrees to study doctoral degrees in the home country or abroad [BE.06.05.01], short-term training course to improve their professional skills [BE.06.05.02], pedagogical skills [BE.06.05.03], English proficiency [BE.06.05.04].

The School has seen the importance of technology transfer, so it has planned to send lecturers to train on technology transfer [BE.06.05.05] and plan to establish technology transfer team at the SBFT to support Lecturers, promote technology transfer. In addition, officials were sent to train on writing skills of scientific articles in English [BE.06.05.06].

Table 6.9 Summary of Training Situation of SBFT

Year	**2012**	**2013**	**2014**	**2015**	**2016**	**2017**	**2018**
Dispatches for PhD study abroad and in the home country						1	
Dispatches for short-term training abroad		3	3	1	2	2	4
Short term training in pedagogy	2	1	2		10	3	3
Short term training in English						6	5

To meet the professional work, the School appoints 2-3 staff to attend the National and International Conference every year to announce the results and grasp the trend in the world [BE.06.05.07].

Newly recruited instructors will be allowed to attend pedagogical training courses [BE.06.05.08].

Every year lecturers participate in training courses and in projects to improve professional skills, access modern teaching methods such as HEEP project, COMET involved in Short-term courses and training in active teaching methods to improve teaching quality. HUST also organizes pedagogical professional classes and certifies teachers to participate and organize sample lessons from the School of Technical Education and the School of Foreign Languages. Recently School send staff to train new pedagogical method Blended learning [BE.06.05.09].

Figure 6.2. School staffs visited TH-True milk factory

The School encourages staff to visit factories regularly to update the actual situation; to help lectures integrate with reality;to orient the lessons for production research to promote technology transfer (Figure Figure 6.2).

6.6 Effective work management including rewards and recognition is implemented to motivate and support training, research and service

In order to encourage the lecturers to have outstanding achievements in teaching, scientific research and other support activities, HUST issued and applied specific regulations on emulation and commendation as follows [BE.06.06.01]

- For lecturers who have completed all assigned tasks, they will be considered for the title of Advanced Labour. The review is conducted from the Department level at the end of each academic year [BE.06.06.02].
- 15% of the staff of the School with the most outstanding achievements are considered for the title of Emulation soldiers at the University level and can be nominated for consideration of higher-level emulation titles such as ministerial and state levels. This title is used as criteria for consideration of pre-term salary or priority when appointing staff. The review is conducted at the Department level at the end of each academic year and taken to the School level for consideration before sending to the University [BE.06.06.03].
- Every year, 10% of the School's officers have outstanding achievements in their work and are awarded the title of Emulation soldier at the school level or higher to be considered for pre-term salary increase 1 year ahead of schedule [BE.06.06.04]. As a rule, the salary cycle is 3 years.

The criteria for each title are clearly specified in the regulation [BE.06.06.05].

Table 6.10 Summary of the reward situation of the School

Emulation title	**2014**	**2015**	**2016**	**2017**	**2018**
Emulation soldiers at the University level	05	05	03	05	05
Emulation soldiers at the Ministry level		03	02		
Advanced Labour	27	27	26	27	27
Merit of Minister of Education					02
Certificate of Merit from the Prime Minister			01		
Elite Teacher	01			01	
National Teacher					
Labour Medal			01		

Officials who are rewarded with honours are rewarded according to the school's internal spending regulations. One of the most incentives for scientific research is that the University can reward up to 10 million VND for one ISI paper, 2 million VND for one Scopus paper and 1 million VND for other paper [BE.06.06.06]. This regulation motivated the staff to publish more. The number of publication per staff increased from 1.43 in 2017 to 1.68 in 2018, specially the ISI publication increased from 6 to 8 [BE.06.06.07].

In addition to the University's awards, officials are also approved for the title by the Party and Trade Union for achievements in the year.

In addition, according to current government regulations, officials can register for higher state emulation titles such as the Certificate of Merit from the Government, the Labour Medal (first, second, third), and noble titles such as the Elite Teacher and National Teacher [BE.06.06.08].

It can be said that the regulations on commendation of the school and the state have really promoted its effectiveness, motivating teachers to fulfil their tasks well.

6.7. Establishment, monitoring and comparison of the types of research activities and the quality of these activities for improvement.

The research activities of the lecturers include being project leader or participating in research projects, participating in scientific conferences/seminars/workshop, publishing scientific articles domestic or international.

Research Projects:

Scientific research activities at the SBFT have also achieved remarkable achievements. Since 2016, the SBFT has implemented more than 30 research projects with total funding of over 10 billion VND [BE.06.07.01]. Table 6.11 summarised the quantity of research projects from 2016-2019 at different level.

Table 6.11 Number of research projects of SBFT at different level during 2016-2018

Project types	**Quantity**		
	2016	2017	2018
Bilateral project	05	05	02
International cooperation	02	02	02
State level	05	06	07
Ministry-level	08	06	02
Nafosted	0	02	02
Province-level	02	02	01
University level	10	15	09

Conferences/Workshops/Seminars

From 2015 to 2018, the SBFT organized a number of national and international conferences / seminars in the field of biology and food technology. Conferences are demonstrated on the website http://sbft.hust.edu.vn/ under session WORKSHOP & SCIENCE PROJECTS [BE.06.07.02]

Table 6.12 The number of scientific conferences organized by SBFT from 2015-2018

Year	**Conferences/workshops**
2015	2
2016	1
2017	2
2018	3

Besides, SBFT organizes scientific seminar every week to exchange the idea, results between lectures [BE.06.07.03]. The seminars help lectures to strengthen their knowledge and collaboration between lecturers such improves the research capacity of staff.

Reasearch for Education

The students can participate in Research project of School staff and defence their work on the final thesis [BE.06.07.04]. These student's activities help students improve their knowledge and bring them priority for applying a job after graduating. Conference of Scientific research of students, which is organized every year [BE.06.07.05], encourages student participating in scientific project. The phenomena of scientific publication where students are the first authors and co-author become popular [BE.06.07.06]

The number of published scientific papers and the research workload will be declared annually by the staff at the School level and sent to the University for monitoring [BE.06.07.07].

Each year, researchers in the SBFT publish over 65 articles in international and domestic journals, as well as present more than 20 reports at conferences and seminars national and international [BE.06.07.08].

In the last four years, the number of SBFT published articles is summarized in Table 6.13

Table 6.13 Summary of published papers by SBFT

Year	**Research papers**					**Total** National conference proceedings	**Number of publications per lecturer** ISI journals
	National journals	National conference proceedings	ISI journals	Other international journals	National journals		
2018	57	09	08	2018	57	09	08
2017	33	10	06	2017	33	10	06
2016	54	14	06	2016	54	14	06
2015	52	05	06	2015	52	05	06

Criterion 7. Support staff quality

To create the best conditions for students to study and solve problems arising in the learning process, in addition to the teaching staff, the SBFT has a support staff to help students complete

the programme. At SBFT, the support staffs are assessed as meeting the requirements of support activities for learners.

7.1. The planning of support staff (in libraries, laboratories, information technology facilities and student services) is carried out to meet the needs of education, research and services

The support staff is proposed based on the number of students, number of retired staff. The support staff can be divided into two categories: staff at the university level are in charge of supporting students of the whole university and are planned by the corresponding department of the university, while the support staff at the school level are in charge of teaching laboratory classes of the school's education programmes and are planned by the school.

Support staff at the University level

1. Library:

Librarians are qualified to meet the requirements of the education programme. Ta Quang Buu library has 36 librarians, 100% of them have university and postgraduate degrees, 17 of them are holding master degree [BE.07.01.01]. The staff had basic training, 18.4% of librarians meet the standards of main librarians. They are regularly trained in short-term and long-term training courses in Vietnam and abroad and have professional certificates required by the job [BE.07.01.02].

Therefore, library staffs are qualified and appropriate in meeting the needs of students. Libraries open 7 days a week, except summer holidays [BE.07.01.03]. All employees are very enthusiastic and attentive to serve readers. The survey of 200 students in Mai 2017, with votes collected 173 votes. Feedback of 68 satisfied students accounted for 39% and 45 very satisfied students accounted for 26% and 3 dissatisfied students accounted for 2% for the service quality of library staff [BE.07.01.04].

The function and mission of library is clearly defined on the website https://www.hust.edu.vn/web/vi/thu-vien-ta-quang-buu [BE.07.01.05]. The duties of librarians include: Information and library management for training, scientific research and technology transfer; Exploiting, supplementing, managing and developing the library's information resources from domestic and foreign sources to meet the needs of training, scientific research and technology transfer; Organizing, managing and developing information and materials services in the library. [BE.07.01.06]; Manage and operate the library's digital information equipment and systems. In addition, there is a separate website of Ta Quang Buu library http://library.hust.edu.vn/.

2. Information Network Center

The staffs of the Information Network Center consist of 17 officers. They are well trained to meet the requirements of the job. They are PhD, MSc in Computer Science or Bachelor of Science in Computer Science [BE.07.01.07]. Their duties (as described in website https://www.hust.edu.vn/trung-tam-mang-thong-tin [BE.07.01.08]) are :

- Manage the school information system including intranet infrastructure, Internet, external connections, University portal, Business information systems
- Consult on Information and Communication Technology
- Train skills for users and technicians

In addition, SBFT has its own IT staff. They have developed SBFT website [http://sbft.hust.edu.vn]. The website is always kept updated and managed directly by the IT team of SBFT to give latest information for both students and teachers.

3. University Training Department

Specialists of the University Training Department have University degrees and above and currently have 12 staff (1 Doctors, 3 Masters and 8 Bachelor) [BE.07.01.09] to meet the mission required for supporting students in the management and use of accounts on the student information system, used for registration and study results; answering questions of students about class schedule, exam schedule, reservation and transfer points (https://www.hust.edu.vn/web/vi/phong-dao-tao-dai-hoc) [BE.07.01.10]. Specialists of the

University Training Department also deal with entrance and exit procedures, temporarily leave and back to the University procedures, graduate recognition and diplomas.

4. Student portal

Staff of student portal have 15 staff members (3 Masters and 11 Engineers and Bachelors) who are equipped with full professional knowledge as well as skills [BE.07.01.11]to support the students from entering the University until graduation; the administrative formalities such as making the student's ID, medical insurance, tuition fee, scholarship; confirmation of loan contract; management of training point, reward and punishment (https://www.hust.edu.vn/web/vi/phong-ctct-ctsv) [BE.07.01.12].

5. Health and Health Care Service Center

The Health and Health Care Service Center has 5 doctors, 16 nurses [BE.07.01.13]. Graduated with a specialization in medicine, medical staff are qualified to assist students in medical examination, treatment, examination and supply of drugs in accordance with health insurance or sent to a hospital in the necessary case. The survey on April 2017 showed that from 126 staffs, 55 staff accounted for 43.7% satisfied and 57 staffs accounted for 45.2% very satisfied with the service attitudes of the doctors and nurses, only 2 staff accounted for 1.6% dissatisfied. From 349 students, 160 students accounted for 45.8% satisfied and 138 students accounted for 39.5% very satisfied with the service attitudes of the doctors and nurses, only 3 staff accounted for 0.8% dissatisfied [BE.07.01.14].

6. The sports and culture center

The Sports and cultural center consists of 6 members. It ensures a qualified professional knowledge for continuous supporting the student in registering to the clubs and guidance during training to improve their health [BE.07.01.15].

7. Dormitory center and HUST service center

The dormitory center consists of 22 members [BE.07.01.16]and the HUST service center has 11 members https://www.hust.edu.vn/web/vi/trung-tam-phuc-vu-bach-khoa, ensuring the human resource to manage service activities of the student [BE.07.01.17]. Every year, HUST collects students' feedback on student support activities including reception time, working attitude, attitudes towards students, service spirit and professional ability. The result is about 90% agreeing that the professional ability of the support staff is good [BF 07.04.18].

8. SBFT's support staffs

The duties of technicians are:

- Teaching support activities: instruction for practice and experiment
- Sampling, testing, measuring, recording and analysing experimental results.
- Maintaining and operating equipment in the laboratory as well as guiding the operation of labs for students.
- Provide all technical support needed for the laboratory to operate as required and ensure safety procedures and laboratory safety testing.
- Participate in other activities: support enrolment, support for examination…

The planning of support staff that teach laboratory classes is carried together with the planning of lecturers as described in section 6.1. According to HUST regulation, SBFT has stopped recruiting new support staff since 2011 and focused on improving the competence of the existing staff. Currently, the laboratory staff is sufficient in quantity and quality to meet the requirements of the education programme of BE. There are 6 laboratory staff including 2 Doctors and 3 Masters [BE.07.01.19]. Similar to the Lecturer, the list and capabilities of the Technical Staff are also updated annually at ISO's VB9 [BE.07.01.20]. In addition, the lecturers accompany with laboratory staff to develop practical exercise to improve quality of teaching and meeting the expected learning outcomes. The laboratory technicians are thoroughly trained on laboratory safety and machinery operation regulations. Officers can provide students with the highest level of support. The survey results show a positive assessment of students about the work of technicians [BE.07.01.21].

Table 7.1 Numbers and qualifications of support staff (Updated in May 2018)

Support staff	Qualification			Total
	Bachelor	Master	PhD	
Library	18	18		36
Laboratory staff of SBFT	1	3	2	6
IT service	3	13	1	17
Administration at HUST	4	7	4	15
Administration at School	0	3	0	3
Other services (student affairs, medical service, dormitory, cultural center …)	37	6		43
Total	63	50	7	120

On the other hand, several laboratory members also participate in scientific research and publish scientific papers [BE.07.01.22]. That fact demonstrates the high qualifications of the support staff.

Administrative staffs of SBFT include 3 staffs members [BE.07.01.23]. Their duties are administrative work concerning support service for students and staffs such as word editing, organising timetable for leaders, records managements…. Currently, the administrative staff is sufficient in quantity and quality to meet the requirements of the education programme of BE

7.2. Recruitment and selection criteria

Recruitment and selection criteria for appointment, deployment and promotion are clearly identified, documented and communicated [BE.07.02.01]. The selection of teaching assistants is open to the public, mainly based on the professional knowledge and ethical behaviour of the applicant as required by the position [BE.07.02.02]. The recruitment, appointment and promotion regulations of the SBFT are implemented in accordance with the regulations of HUST [BE.07.02.03] and in accordance with the government's code of recruitment, usage, and management in government's entities, 29/2012/NĐ-CP, dated 12/04/2012 [BE.07.02.04]. The human resource plan is proposed by the needs of the departments, according to the training needs, based on the number of students, the number of employees coming and retired. The quality of applicants is seriously assessed through 3 rounds: record review, interview and probation. This recruitment, appointment and promotion process is widely communicated to all candidates and employees on the University's website. In recent years, according to the University's policy, the University has stopped recruiting technical staff. According to new policy, the duties of technicians could be replaced by PhD and Master students. However, other support staff of the University such as library, division, school and accountancy division have been standardized according to autonomy needs. Based on the policy of exploiting the available capacity of staff, the School has facilitated or sent staff training to meet the School 's work such as training in accounting and laboratory operations [BE.07.02.05].

7.3. Competences of support staff are identified and evaluated

Responsibilities of experts and support staff are widely publicized in the Hiring regulations of HUST and are evaluated annually at the end of the year [BE.07.03.01].

The assessments are passed at the department level, School and then the University level at the same time and similar to the teaching staff [BE.07.03.02].

Most of support staffs working at the SBFT hold master's and doctoral degrees. SBFT has created conditions for officials to study and improve their qualifications [BE.07.03.03]. Participating in research project, they get a lot of experiences to support students in experimental work in the laboratory and practical surveys [BE.07.03.04].

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

In order to support the staff training, at the beginning of each academic year, every department under the University such as Ta Quang Buu library, department of undergraduate academic affairs, student portal office, dormitory and medical center, have to revise the current status of staff and have specific plans for training and development. For short-term courses training, depending on the particularly professional knowledge, staff will be assigned to

participate in accordance with regulations and procedures for sending trainee to improve professional skills of the University [BE.07.04.01].

The staffs working in SBFT laboratories are considered to have need-based training at the beginning of each semester. If there is a new subject or a new practice in the subject change, the laboratory staff will be trained. SBFT encourages technical staff to study further to have higher qualification [BE.07.04.02]. Currently, 2 staffs have a PhD degree, 3 have Master degree. Technical staffs are encouraged to participate in scientific research with lecturers to practice skills and improve expertise [BE.07.04.03].

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

Every year, support staff self-assesses to complete their tasks with reports checked at the departmental level. All departments hold inspection meetings where individuals self-assess and review their work with the advice of their colleagues and their managers [BE.07.05.01]. HUST has issued and applied specific regulations on competence and commendation, in which support staff also receive different types of rewards including titles of advanced workers, emulation soldiers and pre-term salary increase [BE.07.05.02]. Due to the characteristics of the work, the achievement of the technical staff of the School is often lower than that of the Lecturers (the volume of Teaching and scientific research). In order to ensure fairness, in the past 3 years, the School has a policy of devoting 1% (i.e 1 rate) to its technical and support staff.

HUST is a technical university, so it is considered that Scientific Research is the focus. Since 2017, the reward and encouragement also stated the criteria to achieve the university level and ministerial-level emulation soldiers is to participate in the implementation of Scientific research [BE.07.05.03].

Criterion 8. Student quality and support

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

HUST has a clear enrolment policy. Annually, the admission notice is publicly launched by written book and on the website system of HUST [BE.08.01.01]. HUST issues enrolment policy based on the regulations of the Ministry of Education and Training [BE.08.01.02].

The enrolment criteria of SBFT are determined annually based on social needs, infrastructure and human resource of SBFT. The criteria must be registered to the HUST.

Students are recruited to HUST based on the scores of the combination of university entrance examinations in group of Mathematics, Physics, Chemistry (C54 – C62), group of Mathematics, Chemistry, Biology (C59 – C62) and group of Mathematics, Chemistry, English (C60 – C62). From 2010 (Course 55) to 2016 (Course 61), students who wanted to study Bioengineering had to enrol in group of majors: Chemistry, Biotechnology and Food Technology, and Environment; after that, basing on the results of the first year and the aspiration of each student, they were admitted to Bioengineering programme.

In national examination, the entrance score for Bioengineering programme of HUST in 2017 was lower than that at Ho Chi Minh University of Science (HCMUS). However, the entrance score for Bioengineering programme of HUST in 2018 was higher than that of Hanoi University of Science (HUS) and HCM University of Science (Figure 8.1) (The programme of HUS and HCMUS named Biotechnology) [BE.08.01.03]. It may explain the quality of new coming student in Bioengineering of HUST was better in comparison with HUS and HCMUS from 2017 to 2018.

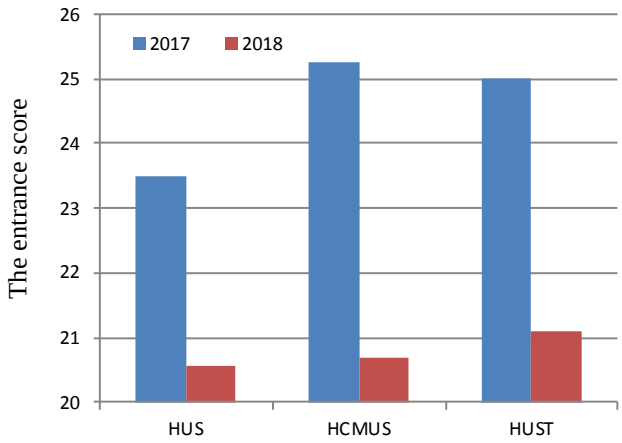


Figure 8.1 The university entrance scores for Bioengineering of Hanoi University of Science (HUS), HCM University of Science (HCMUS) and Hanoi University of Science and Technology (HUST).

Detailed enrolment information is publicly available on the enrolment webpage of HUST [BE.08.01.04] as well as the SBFT [BE.08.01.05]. In addition, there is also a direct consultation through the enrolment day held annually in the last 3 years and especially the event "One day is a HUST student" [BE.08.01.06]. To prepare for the enrolment plan in 2019, the SBFT collaborated with the HUST to organize 3 laboratory experiences for students from high schools to promote the study opportunities and enrolment policies.

From 2017 (K62), the enrolment policy continues to change in which students are assigned to the school no longer they are enrolled in the university based on the student's wishes, number of enrolments and previously announced criteria [BE.08.01.07]. With this admission policy, the SBFT always recruits the students (Table 8.1) and recruits students with high examination results equivalent to the two National Universities (Figure 8.1). The enrolment policy in the field group then having classification based on the results of the first year (from K55-61) [BE.08.01.08] may lead to some students enter the field but not in accordance with aspirations. From K62 with direct recruitment into the School, 100% of admission students are the right aspiration.

Table 8.1 The number of second year students enrolled and the total number of students studying on Bioengineering at SBFT from 2012-2017

Academic year	**Number of students**					
	First year	**Second year**	**Third year**	**Fourth year**	**Fifth year**	**Total**
2012-2013 (K57)	600 (this number for all the student majoring in Chemical engineering, Environmental engineering, Food engineering and bioengineering)	48	23	34		
2013-2014 (K58)		71	48	23	34	**176**
2014-2015 (K59)		56	71	48	23	**198**
2015-2016 (K60)		98	55	71	48	**272**
2016-2017 (K61)		82	98	55	71	**306**
2017-2018 (K62)	79	70	82	98	55	**384**

Admission notices will be sent to successful candidates by post and successful candidates must agree to abide by all regulations and rules of HUST and spend full time for study [BE.08.01.09].

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

The criteria and methods for selecting students of Bioengineering programme of SBFT are defined with following conditions [BE.08.02.01]:

- Condition 1: students have to pass the university entrance exam

- Condition 2: student has the university's entrance exam score which higher than prescribed level of HUST
- Condition 3: student has aspiration to study Bioengineering at SBFT
- Condition 4: student has the university's entrance exam score which is higher than prescribed level of SBFT

The above admission process requires students to register for the Bioengineering programme before taking the university entrance exam. Thus, the opportunity for choosing of Bioengineering programme competes with many disciplines at many different universities across the country. The minimum score of students who pass the entrance examination for Bioengineering at HUST (Figure 8.1) is always the highest rank compared to other top universities in Vietnam in the same field.

The curriculum and study schedule of the Bioengineering programme is announced on the university website and is provided to students in September. Learning schedule shows the time to study in class and the learning process to be graduated [BE.08.02.02]. In the regulations HUST, students actively register the number of credits, and each student must register a minimum of 14 credits in a semester to be considered for scholarships and other rewarding regimes and to assign complement the learning volume in the semester.

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

The curriculum at SBFT is based on a credit system with a fixed number of 160 credits for all students of Bioengineering up to K61, however the number of credits is 131 for students from K62 [BE.08.03.01]. The number of credits registered for a semester is flexible for each student. However, HUST recommends that each student must register a minimum of 14 credits for a semester to be eligible for scholarship and other awards. There is a limitation in the number of maximum credits the student can register in a semester. If a student receives a warning in academic performance at level 1 the students can register at most 18 credits (instead of regular maximum 24 credits) in one semester and if the warning level is 2, the number of credits is 14 [BE.08.03.02]. This regulation helps students to spend more time on one course so as to have better results.

Academic performance and workload of students are monitored via the Student Information System (SIS) of HUST [BE.08.03.03]. On the SIS system, the study status of each student is announced quickly to student. This monitoring system permit students, SBFT's Board of Directors and the Academic Advisory Board of SBFT access to the student accounts to track and update their results. Learning schedule, registration and test schedule are announced on the SIS system.

SBFT conduct two coordinated channels to monitor and timely give advice to students. The first channel is the coordinated activities of SBFT and Department of Politics and Student Affairs (DPSA) with homeroom teacher. In regulation of DPSA the homeroom teachers have to frequently meet the students in class. Homeroom teacher [BE.08.03.04] and students can contact together through email, phone call and even meeting at the office of SBFT to address problems during studying period. The advising system is very useful for first or second year students because homeroom teacher can give advices and provide information relating to carrier orientation. Furthermore, homeroom teacher can help student overcome changes in psychology when moving from high school to university.

The second channel is performed by Academic Advisor Board (AAB) of SBFT [BE.08.03.05]. A member of the AAB is always present at SBFT's office to advise instantly the students in both learning and life. Besides, supporting service of the AAB is also provided via online Q&A system on the school website [BE.08.03.06]. The student's academic situation is regularly updated by AAB. Whenever the students having difficulties in study the AAB will directly meet the students to find solutions for improving their training and learning outcomes [BE.08.03.07]. The advising system ensures that the students have a good study condition and

are qualified for graduation. Advisory issues are documented in the advisory diary [BE.08.03.08]. It allows the school to assess outstanding issues and provide full solutions.

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

Besides academic counselling activities mentioned above, the consultancy related to accommodation, living condition, healthcare, extracurricular activities of HUST and SBFT, student rewards and vocational guidance are also conducted. These consultant activities mostly focus on the freshmen and the last-year students and are launched on website of HUST in page of calendar and website of SBFT [BE.08.04.01]

At beginning at each semester, SBFT organizes a student meeting called "week of civic activity" for all students [BE.08.04.02]. The head of SBFT, head of departments, academic advisers, and supportive staff are present to address questions from students related to curriculum, regulation, research, finance, individual problem, international students, family, health, spiritual life, safety and security, religion, etc. The results of previous semester will be summarized and rewards for the best students are announced.

a

b

c

d

Figure 8.2. a) Miss HUST 2018 – Nguyen Thi Minh Thu, student of BE-K61. b) Students won first prize at the student scientific conference of SBFT during 2017-2018. c) Men' football tournament of SBFT 2018. d) Specialized English Olympics of SBFT'students.

SBFT also provide an online student supportive service system which provide students with different services such as student certificate, invitation letter, copy of transcript, certificate of graduation, general document forms [BE.08.04.03].

For extracurricular activities, SBFT have two clubs of FOBIC (Food and Biotechnology Club) and Specialized English [BE.08.04.04]. Through activities of these clubs, students will be updated with knowledge out of lectures and working skills. Annually, HUST and SBFT organize a scientific workshop for students [BE.08.04.05] to present their research results and also provide chance for students to practice the presentation skill. All students of SBFT also participate in extracurricular activities of the Youth Association, Student Union such as football competition (BKFS Cup), music, dancing, Miss "Source of Beauty", etc [BE.08.04.06].

The Department Student Affairs of HUST regularly organize theme workshops for HUST students such as workshop on Women development for female students, workshop on

reproductive Health, workshop on current Vietnam and world politics [BE.08.04.07]. HUST also provide scholarships to students based on their academic performance and family income [BE.08.04.08].

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

Students are always a top concern and provided with the best conditions to develop during training time at HUST. The SBFT always creates a friendly environment between teachers and students.

HUST with an area of 25.6 hectares provides good conditions for the teaching, learning and research activities of students. Besides lectures in classroom, students of HUST can exchange lessons together at chairs under the shade of trees at the HUST campus [BE.08.05.01] with safety conditions [BE.08.05.02]. The Wi-Fi is free and available for students and staff in the HUST campus [BE.08.05.03].

Annually, the school often organizes extracurricular activities related to music, sports, and other cultural activities ... Students are exercised to improve constitution at the stadium with artificial grass, swimming pool at campus [BE.08.05.04]. The HUST polyclinic unit is located on the campus with the necessary equipment to carry out the initial medical examination for the staff and students of the University. The physical examination for staff and students is also annually carried out [BE.08.05.05]. The medical examination and treatment for staff and students are well responded with more than 85% of respondents being satisfied or very satisfied with the service at HUST polyclinic unit [BE.08.05.06].

Criterion 9. Facilities and infrastructure

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

The HUST with an area of 25.6 hectares provides good conditions for the teaching, learning and research activities of students including lecture halls, laboratories, libraries, practice workshops, computer rooms, a dormitory, a medical center and sports & culture center, offices, centers. The entire campus is secured with security and environmental sanitation. WIFI covers all areas of the campus.

Lecture Halls

At present, HUST campus has 265 lecture halls with total area from 40-160m2 located in the area of D/T/B1/TC buildings [BE.09.01.01]. Each lecture hall of HUST is equipped with a WIFI network, wireless audio system, projection screen, and blackboard. Almost all classrooms are equipped with air-conditioner. The projectors for teaching activities are available for all lecture halls [BE.09.01.02]. These facilities are considered to be very good conditions for learning and teaching activities, therefore almost satisfied needs of students and teachers. With projectors equipped in 100% classes, teachers can use electronic lectures to teach students. This teaching method helps students more receptive and memorable.

The laboratory system for specialized training of Bioengineering of the school consists of 10 laboratories directly under the control of the departments and centers [BE.09.01.03]. All laboratories have regulation; and list of working students and laboratory activities are supervised by teaching staff. Laboratory entry and activities are recorded in room diary [BE.09.01.04]. Every month, laboratories will have meeting to assess activities (hygiene, chemicals, working process, and equipment status). The feedback of lecturers and students are sent directly to the department leader. Damaged equipment or need to be maintained is planned to be repaired, maintained in each semester and sent to the equipment assistant of the school [BE.09.01.05]. Damaged devices that cannot be repaired are reported to the equipment assistants of the school and the school will send a liquidation request to the Facilities Department of University [BE.09.01.06]. Fan system, lights are annually surveyed and repaired by the school [BE.09.01.07].

In laboratories, students can use chemicals and laboratory tools to conduct experiments. Safety conditions (blouse, gloves) are fully equipped. Each laboratory can provide enough conditions for 5 - 20 students. Students are instructed about laboratory safety before conducting experiments and always are controlled by instructors, tutors, researchers, supervisors [BE.09.01.08]. More than 90% of students in the 2018 survey said that the school's facilities meet their learning needs [BE.09.01.09].

Office

One hundred percent of the school's staff have desks in the offices located at building C4, B1 and B4. Working conditions for staff are well equipped with computers, printers, free internet access, air conditioners and other necessary equipment [BE.09.01.010]. The departments and centers directly manage the use of these facilities. Departments and centers annually have plan to maintain and repair those devices.

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

The electronic library Ta Quang Buu of HUST was put into use in October 2006 with an area of 15,000 m2 with modern equipment meeting the international standards. Reading rooms have an area of 100 to 500 m^2 [BE.09.02.01]. Library software and document classification system used in the library meet current advanced standards. The library is equipped with 150 computers connected to the Internet, enabling employees and students to search for electronic documents. All materials in the library are attached to magnetic chips; rare documents are protected by RFID [BE.09.02.02].

The library is regularly updated with original documents and electronic documents to ensure that the information is updated according to the needs of staff and students. In addition, the library also receives books and magazines funded annually from various sources. Information system for the library assures convenience for readers. The working hours of the library are from 7:30 to 21:00 all weekdays [BE.09.02.03].

Document information:

- Number of books: 398,464 copies; Title of the book: 99,278 (Textbooks, reference books in Vietnamese and English ...)
- Number of papers/journals: 1769 journals
- Electronic documents: 03 electronic databases
    - The database of Proquest central journals
    - The database of Ebooks Ebrary
    - The database of ScienceDirect
- Endogenous documents: Doctoral thesis (165 copies)

The School of Biotechnology and Food Technology has a specialized library of biotechnology books including 50 printed books and 90 electronic books [BE.09.02.04].

Document resources are updated frequently and synchronized with the study programme to meet the training and research needs of both staff and students in the entire University. The library plans to supplement and update reference resources based on user needs. For easy access, reference materials are managed through the library database and can be searched through the library's homepage [BE.09.02.05]

Multimedia room: From Monday to Friday

- Morning: 08:00 - 11:30
- Afternoon: 13:30 - 16:30

During national holidays, the library is at serves according to the university’ announcement. In order to enhance the quality of service, the library plans to receive feedback from readers

annually, then evaluates feedback as the basis for developing plans to meet the needs of readers in the coming years.

Environment and Safety in the Library:

Some reading rooms of the library are equipped with air-conditioners, creating a favorable environment for users to use the library. The floors of the Library are equipped with fire extinguishers, fire alarms, a team of professional hygienists and medical centers for staff and students. In addition, when the library under an emergency, there are technical staff and 24/24 security guard to rescue in emergency.

All employees are very enthusiastic and attentive to serve readers. The survey of 220 students in 2016-2017, with collected 202 feedback votes, there were 167 satisfied students accounted for 83% and 17 very satisfied students accounted for 8% and 18 dissatisfied students accounted for 9%. The survey in May 2018 showed that 91% of the students agreed that the service attitude of librarians was good and very good and 93% of interviewee said that they to be satisfied with the service and service time of the library [BE.09.02.06].

According to HUST regulations, all schools annually send a list of new specialized textbooks to Ta Quang Buu Library to provide specialized books. The School of Biotechnology and Food Technology also sent to the Library an additional list of new specialized books for students' study and research and staff of the SBFT [BE.09.02.07].

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

Research and practical laboratories are well equipped to provide the best conditions for students to undertake practical courses and researches. The HUST has 185 laboratories [BE.09.03.01]. The laboratory system of university is divided into two groups: basic laboratories for physical and chemical objects including 49 laboratories with an area of 1,765 m^2; Specialized laboratories for specialized subjects include 104 laboratories with an area of 7,814.46 m^2.

The SBFT has 15 laboratories located at C4, C10, B1 and B4, which serve students to perform practical courses and do research. There are 10 laboratories located at C4, C10 and B1 buildings serving for the Bioengineering program. The Center for Research and Development in Biotechnology has more than 200 modern equipment located at 4 clusters of laboratories (DNA manipulation, Proteomics, Fermentation and Downstream Processing) with an area of 500 m^2; The Center for Training and Food product development has 61 equipment located at an area of 800 m^2; Department of Microbiology-Biochemistry has two laboratories with 104 equipment with an area of 170 m^2; Biotechnology department has laboratories equipped with 32 equipment with an area of 120 m^2 [BE.09.03.02].

The laboratories of the SBFT are equipped with modern equipment and are comparable to laboratories in developed countries. The laboratories are also for exchange students therefore laboratory names and regulations are bilingual. Activities of laboratories are directly supervised by the technical staff. There are regulations and diary for laboratories and main equipment [BE.09.03.03]. The maintenance and repair of equipment are concerned and periodically checked [BE.09.03.04]. Some laboratories have equipped their own cameras to support management and training. The school has proposed to university to build camera system in all laboratories [BE.09.03.05]. Reports on the status and planning proposals are also compiled and sent to the Facilities Department and university' leadership. In the laboratory, there are working procedures and the general laboratory diary: working time, laboratory user, responsible person, and handover of equipment after time. In order to ensure fire safety, laboratories have rule and regulation of fire and fighting. There is a need for training on first aid for victims. The SBFT has self-assessed and re-evaluated the actual situation of laboratories every year to have plans to repair and overcome problems.

Annually, the School's laboratory receives international students to study and research. Some students of the school also received scholarships for Master / PhD programs in Korea and Japan right after graduation and easily adapted to new research conditions abroad [BE.09.03.06].

Laboratories welcome all students who are passionate about scientific research to study and research.

During the 2018-2019, the school planned and surveyed the bioengineering students' satisfaction with the laboratory. According to the feedback conducted in February and March 2019, in 50 survey forms more than 90% of surveyed students respond positively on the ability of the laboratories. The results of the assessment are as follows (Figure 9.1) [BE.09.03.07]

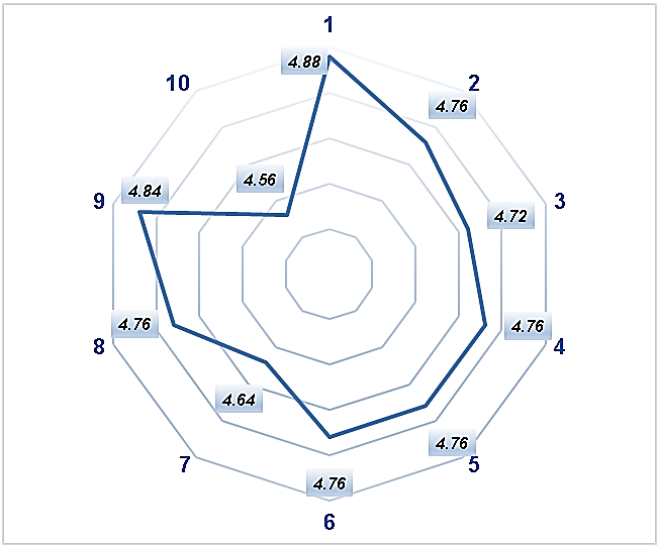


Figure 9.1 Evaluation of student's satisfaction (maximum point of 5.0) for LAB

1. Students are provided with full information about the purpose, requirements, content of the experiment, practice

2. Students are guided and answered fully and clearly, promoting the activeness and initiative of students

3. Guidelines for experiment, full and appropriate practice

4. Content and number of experiments, practice in accordance with the approved outline

5. There are work schedules, labs, activity books, laboratory rules

6. Laboratory safety (Standard fire protection, fire extinguishers, fire alarm system, fire protection process ...)

7. Chemical safety

8. Personal safety

9. Landscape sanitation

10. Laboratory equipment in good condition

In the laboratories for the Bioengineering, the school has checked, counted and asked to change expired fire extinguishers [BE.09.03.08]; installed new rule of fire and fighting, installed and checked the first aid box in 2018 [BE.09.03.09].

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

Computer network system of HUST was built in late 1997 with the initial network infrastructure funded by NTT (Japan), using 155Mbps ATM network technology with fiber optic transmission system. In 2002, the computer network was upgraded and transformed into 1Gbps optical network. From 2003 to 2013, the network infrastructure system was continuously expanded to all Faculties / Institutions, Centers / Departments in the university, from the C1 to the E, F and the farthest location was the Bach Khoa stadium, house A with a network radius of nearly 1km. Up to 2016, the number of network connection points is over 10,000 network nodes (with the number of computers currently connected at about 4,000 times each).

Network Information Center (BKNIC) of HUST performs the managing function of the information system of the university, technical management, operating Intranet infrastructure systems, English and Vietnamese websites of the university, support and technical management

for the websites of the units in university and perform the function of research & deployment of ICT solutions of the university [BE.09.04.01].

Students use computer labs to perform experiments for computer-related courses. Annually, there are 3-5 courses of E-learning online classes for students of the whole university [BE.09.04.02].

The HUST's internal information network is equipped with an optical cable network covering all areas of the campus, some of which are covered by WIFI networks. The total bandwidth is about 2Gbps in the domestic area and 100Mbps on the international scale.

The main online services include:

- University website: http://www.hust.edu.vn
- School website: http://sbft.hust.edu.vn
- Email service for all staff and students: abc@hust.edu.vn
- Portal of Training Department: https://ctt-daotao.hust.edu.vn/
- Student and alumni portal: http://sis.hust.edu.vn/
- Online conference
- Internal service
- E-learning: https://bknic.hust.edu.vn/acu
- B-learning
- Microsoft Team
- E-office: https://bknic.hust.edu.vn/eoffice

In addition to computer equipment for administrative management, study and research, the HUST has facilitated lecturers and students to use internally connected computers and the internet to exploit online materials for teaching and research activities [BE.09.04.03]. The HUST's network has more than 6,000 computers connected to high-speed transmission lines for lecturers, graduate students and postgraduate students to exploit information on the Internet to serve teaching, learning, research and public transfer. technology. Bach Khoa Information Center (BKIC) has a team of technicians to support and guide staff, lecturers and students to use computer equipment, computer software as well as repair IT incidents [BE.09.04.04].

Communication Network Center has a network repair diary and annual repair reports [BE.09.04.05]. To get feedback on service quality, the Communication Network Center has implemented a service quality survey form for all units [BE.09.04.06].

The SBFT also equipped an online study room at 201A-C4 with capacity of 40 people, equipped with equipment such as projector, camera, microphone, big screen, audio recorder, DVD player, wifi for performing online lectures, online discussions with foreign partners [BE.09.04.07]. Internet-connected desktop computers were also equipped for the departments, research centers, the school office to serve lecturers and staff in the management of training and scientific research. The total number of desktop computers are 21, and additionally there are 10 computers in the laboratories to connect with equipment, for training and research.

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

Safety policies of HUST: To build and maintain a safe and healthy environment in the entire University, to set up effective procedures in case of fire, evacuation and accident. HUST requires 100% of students and employees to have health insurance. Any problems regarding to health, students and staff go to the medical center of HUST for medical examination. HUST Medical Center has 04 patient rooms and 20 hospital beds with the full range of specialties such as Orthodontics, Internal Medicine, clinical laboratory ... to ensure the initial medical examination and treatment for all students; 24/24 emergency for emergency cases and common medical examination [BE.09.05.01]. The medical center carries out fully and actively the prevention of diseases, environmental sanitation and food hygiene and safety. The operation of the medical center is effective for students, have been detected many cases of critical cases to have timely inter-hospital transfer of patients.

Health care for students and staff are often concerned by the University. The health of staff is tested annually by University Medical Center [BE.09.05.02]. This periodic health checkup helps staff and students get the best possible health conditions for their learning and teaching [BE.09.05.03].

The number of students who undergo medical examinations in different cases tends to increase over the years, the data is shown in Table 9.1. The first column shows the number of students who undergo medical examination after they enter university. In the second column, the number of students who had a health check before graduation. The third column contains the number of students receiving medical examination during office hours. The fourth column is the number of students with medical examinations in an emergency. Through this it can be seen that the health care for students is conducted continuously, stably, meeting practical needs.

Table 9.1 Number of students received medical examination (Unit: Person)

Year	Entrance Examination	Graduation Examination	Office-hour Examination	Emergency
2011 - 2012	5,138	3,258	12,213	394
2012 - 2013	5,509	3,012	15,982	452
2013 - 2014	5,720	4,597	16,271	312
2004 - 2015	6,294	4,435	17,568	579
2015 - 2016	5,270	4,438	17,901	684

The SBFT always puts the safety and health of the staff, faculty and students first. The school has issued regulations and reference rules for affiliated laboratories [BE.09.05.04]. In laboratories for the bioengineering, the school has checked, statistics and replaced expired fire extinguishers [BE.09.05.05], installed new rule of fire and fighting, installed and checked first aid boxes in 2018 [BE.09.05.06]. The installation and classification of chemicals to avoid fire and explosion are also of interest. In 2016-2017 the school has received specialized waste storage devices from the university and distributed to laboratories. The management of chemicals and waste is reported annually to the school [BE.09.05.07]. Hazardous wastes are then collected and processed in general instruction of university.

All laboratories have direct managers to contact in case of an emergency [BE.09.05.08]. Laboratories at C10 and B1 are arranged to pay attention to support the movement of people with disabilities (located on the first floor, with access and elevators). Students who have health problems or need emergency assistance will be assisted by the laboratory staff and will be transferred to the University Medical Center. Students with psychological problems will be counseled and assisted by the Student Management Department and the Advisory Board [BE.09.05.09].

The school has organized training on fire prevention and fighting, for officials until 2018 [BE.09.05.10]. From 2015 to 2018 Bach Khoa Service Center cooperates with the Protection Department to organize training for the departmental staff of HUST in Thong Nhat park. From 2019, the fire prevention and fighting issue is managed by Facilities Department and has a training plan after the 2019 lunar year [BE.09.05.11].

Regarding the HUST's security work, the Protection Department was renamed by Security Department, which is a new improvement, with a new function to ensure safety and security on campus. Security Department officials have a certificate of protection [BE.09.05.12] to quickly solve emergency situations on campus.

In addition, in 2019 the HUST has a university-wide surveillance camera and a monitoring and management system at the Security Department [BE.09.05.13].

Criterion 10. Quality improvement

Quality improvement is one of the main principles of any quality management system and the general model of quality improvement is shown in Figure 10.1. At the SBFT, this process is not an exception. Since the whole school has adopted the ISO 9000 quality management system, the quality of the training programme including the teaching and learning processes of students has

been continuously improved thanks to systematic evaluation of activities. That is, by receiving feedbacks from stakeholders such as students, faculty staffs, employers, managers (including the scientific council and the board of directors as well as professional groups). The results of feedbacks and evaluations are the basis for quality improvement. Based on that, SBFT has continuously applied new updates or improvements needed to achieve the training objectives while adapting to the rapidly changing requirements of labour market and the MOET's regulations.

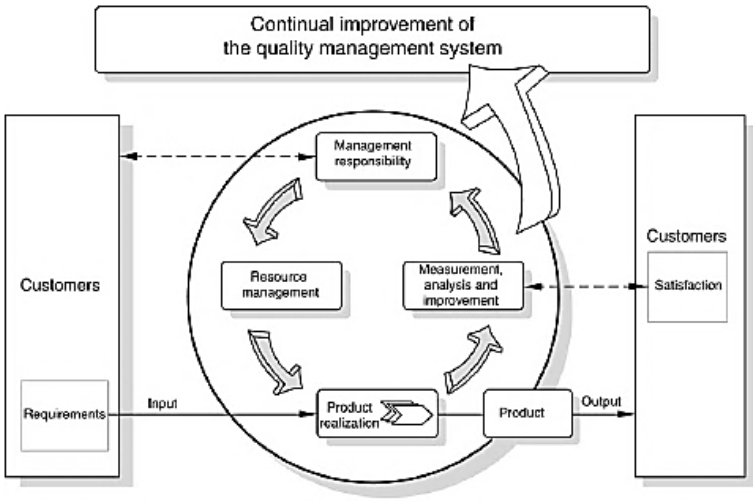


Figure 10.1 Quality Management Model

10.1. Feedback from stakeholders' needs is used as a basis for programme design and development

Previously, the method of collecting feedback from stakeholders was not systematic. In 2012, QMO is assigned to take comments from students about the courses but did not survey all the programs. Since 2016, HUST considers stakeholder feedbacks as an important source of information to improve the quality of training programmes. HUST assigned the Training Department to organize feedbacks on training programmes, lecturers and courses from students after completing each course [BE.10.01.01]. The Student Affairs Department is responsible for obtaining feedbacks from the student's alumni and the university-wide business [BE.10.01.02]. In addition, HUST established Facebook Alumni Association of Hanoi University of Technology (HUST Alumni) and connected more than 10 thousand alumni of the university. This is the official address of the FB social network for students of HUST with the purpose of: building a communication channel to connect and share information among alumni generations: to create solidarity, close, mutual support among generations of HUST students; organize and participate in activities to support students who are studying at the University and alumni to update, monitor the activities, development steps of the University [BE.10.01.03].

Figure 10.2 Alumni network is connected via the school's website

In addition, HUST organized a dialogue between university leaders and students [BE.10.01.04]. This is an annual forum organized to promote the spirit of democracy and exchange between the university leaders and students about the achievements and limitations after one year of study, students are encouraged to comment on the subject study, thereby improving the quality of teaching and service quality of the units, contributing to the overall

development of the University. Since then, HUST has a plan to request adjustment of the detailed outline and layout of the balanced curriculum on content, theoretical knowledge, practice and in-depth knowledge, elective courses. Through a team of Academic Advisers, Student Association, Youth Union, HUST also encourages students to discuss and reflect on ideas about the curriculum.

Information on the labor market and employers is an important source of information for designing curriculum because graduates need to meet the needs of society. Every year, the school is organized ''HUST's return day' to link the generations of students to face-to-face meetings and alumni as entrepreneurs.

Figure 10.3 Dialogue between students and school leaders

The Bioengineering programme was developed in 2009 and has been officially taught since 2011 for a Bachelor and Engineer of Bioengineering degree. From the academic year of 2017, the programme is designed and put into use based on the comments of stakeholders. The design and development of the training programme is carried out by a team of experts on the development of SBFT's programme, with the support of the School Council and professional groups. The development of the programme is guided by HUST through different activities: the training seminar was organized for the development of the programme [BE.10.01.05]; the decision to approve the programme framework of Decision 333/QĐ-DHBK-DTĐH [BE.10.01.06], and the programme was approved in accordance with the decision 561 / QĐ-DHBK-DTĐH issued on April 25, 2011. The detailed syllabus was further developed by the teaching group of the individual course with the approval of head of department managing the course.

Feedback from alumni and employers is provided through many channels such as alumni network, internship network, with businesses in the field of training and technology transfer [BE.10.01.07]. Table 10.1 summarizes the surveys conducted by SBFT to gather feedback from stakeholders including students, alumni, teachers and experts.

Table 10.1 Survey on the needs of Stakeholders on the Bioengineering programme

Stakeholders taking the survey	Purpose of the survey	Scope	Frequency	Method of survey
Students	Survey on the course's quality	All the courses	Every two semester	Questionnaires Direct communication with students in the Citizen's week, between school Deans and students, through the Academic Advisors and Students Tutoring channels
Alumni	Survey on the impact of the training programme on the satisfaction of the job	Annual meeting	Once a year	Questionnaires Face-to-face meeting (meeting notes)

Enterprises and authority agencies using the graduates	Survey on the needs of enterprises on the necessary knowledge, skills and attitudes of graduates working for the enterprises	Annual meeting (job fair, university anniversary meeting)	Once a year	Paper questionnaire Online survey
Faculty staff	Survey on the satisfaction of lecturer on the operation of the courses	All lecturer	Once a year	Questionnaires distributed during the Conference of employee

Every year, the SBFT receives the comments from graduates [BE10.01.08], and the opinions of the business about the curriculum [BE.10.01.09] to assess the relevance and responsiveness of the programme to the requirements of society. SBFT also took opinions about the expected learning outcomes from peers such as international expert [BE.10.01.10], university lecturers [BE.10.01.11] and students [BE.10.01.12]. Based on the survey of enterprises and former officials on Bioengineering programme [BE10.01.13], from the school year of 2019 (K62), the Bioengineering programme is divided into four modules in accordance with the following career orientation of students upon graduation, include:

- Environmental biotechnology orientation
- Food technology orientation
- Industrial biotechnology orientation
- Orientation of architectures and cells.

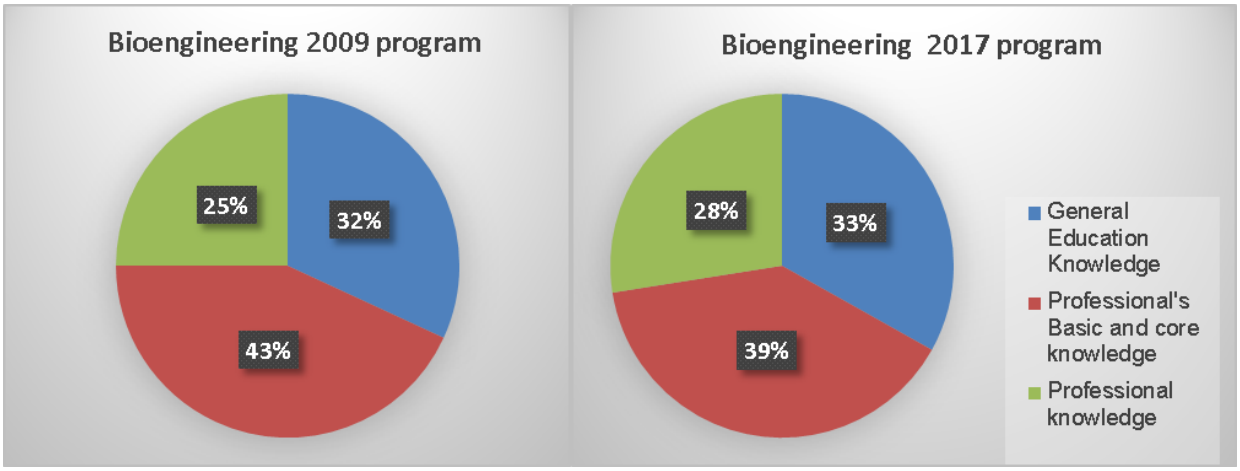


Figure 10.4 Comparison between the knowledge blocks ratio (percentage of credits for each knowledge block out of the total credits) in the BE program 2009 and 2017

A number of new subjects have been added into the training programme to meet the diverse needs of society such as fermentation technology, animal cell culture technology [BE10.01.14]. However, feedbacks from stakeholders showed that the proportion of specialized subjects should increase [BE 10.01.15]. Accordingly, by 2017, the new programme was revised and developed under the guidance of HUST [BE.10.01.16]. The programme development council has been established to develop the 2017 programme taking into the decision of School council [BE.10.01.17]. Therefore, the professional knowledge of the Biotechnology programme currently accounts for 28% compared to the 25 % in the 2009 Bioengineering programme (Figure 10.4).

10.2. The curriculum design and development process is established and must be evaluated and improved

Based on the undergraduate programme developed in 2009, the implementation of the curriculum of the subjects is assigned by the Department Head and the subject-specialized teaching group (with the head of the professional team monitor the content of the teaching module) [BE.10.02.01]. Feedbacks from stakeholder surveys is important information for improving the curriculum. The results of the survey are reported, analyzed, evaluated and finally

presented at the School Council, meeting at the beginning of the school year. In parallel with this, the detailed syllabus of the subjects is discussed and agreed upon in the teaching group meetings under the leadership of the Department Head at the beginning of the school year [BE.10.02.02]. The School's Council, based on the results of the surveys and reports from the expert groups and proposals of the department head, will review, evaluate and propose improvements to the curriculum. The changes in the programme are reported to the University's Training Department [BE.10.02.03] and the changes were recorded [BE.10.02.04]. In addition, the course syllabus for each subject will be reviewed by the team at the beginning of the school year. Modifications or changes in the course content are recorded and reported to the Dean [BE.10.02.05]

In addition, in the survey's questionnaires of graduating students as well as graduates, HUST took the opinion of students about the training program, the content of the programme structure, the ratio between theory and practice, internship duration ... to improve the programme [BE.10.02.06].

Annual feedbacks from enterprises also helps SBFT in changing teaching methods [BF.10.02.07]. With a reflection on communication ability, presentation ability, English proficiency of the students is still poor. The SBFT has also promoted the activities of the Specialized English Club, which requires teachers with good English proficiency to participate in exchanging and reinforcing English for students [BE10.02.08], [BE.10.02.09], [BE.10.02.10]; Promoting international cooperation, exchanging SBFT students abroad [BE.10.02.11], as well as receiving foreign students for internships at the School's laboratories is also one of the School's programs to promote student's English proficiency [BE.10.02.12].

10.3. The process of teaching and learning and student assessment are continuously reviewed and evaluated to ensure compliance with the program

Improve teaching methods

The quality of training is improved through continuous assessment of teachers' pedagogical methods and their in-depth knowledge of assigned teaching activities. Each semester SBFT cooperates with the Quality Management Office (QMO: the former name was CEQUA) to organize class observation hours with the participation of teachers and specialized teaching groups (Table 10.2). The form of the announced schedule is organized by the SBFT, while the unannounced hours are organized by the QMO. At each session, there is a personal assessment from teachers and students attending the class. After finishing the meeting, there was a meeting organized by the SBFT leader with lecturers scheduled and other lecturers [BE.10.03.01]. According to this activity, the knowledge and pedagogy of each teacher is assessed, and improved, and other faculty staff and specialization teaching groups can learn and share experiences in teaching knowledge and skills. This is one of the most important features to continuously improve the quality of teaching activities. At the same time, the Board of pedagogical advisor was established to support teaching activities [BE.10.03.02].

The assessment of the teaching process is done through the lectures' observation. QMO works with SBFT's quality assurance team to plan the schedule (announced or unannounced). Results are used to evaluate the teaching activity of faculty staff [BE.10.03.03]. The evaluation is done according to the standards based on the school's general assessment form provided by the QMO. Students participate and evaluate the module through student feedback to the module at the end of the semester [BE.10.03.04]. In addition, SBFT and the Training Department also organize surveys to get students' opinions on teaching activities [BE.10.03.05], [BE.10.03.06]. The opinions taken are all processed and evaluated to improve the quality of teaching (Table 10.3).

Table 10.2 Summary of estimated hours according to academic years [BE.10.03.01]

No	Academic year	Number of class observation hours	Number of lecturers being observed and evaluated	Total number of students evaluating the courses and lecturers
1	2014-2015	11	29	110

2	2015-2016	6	20	60
3	2016-2017	11	30	110
4	2017-2018	6	10	60

Table 10.3. Examples on the comments of students on course and teaching methods

Sem-ester	Code of Course	Name of the course	Date	Time	Class-room	Comment of students
2014-2015	BF2012	Food Microbiology	12/3/2015	8h15	T408	Use more projectors or similar devices; Need to interact more with students; Add some more content; Should add more practical examples
2015-2016	BF4155	Techniques for producing plant bioactive compound	21/10/2015	9h20	TC406	Should add more examples, exercises, updated references, practical information; Need more interact with students
2015-2016	BF3199	Cell biology	28/9/2015	9h20	T-410	If possible, provide content for exam preparation; Interact more with students Teaching too fast

Improve student quality

The evaluation of students is carried out in accordance with HUST's regulation [BE.10.03.07]. Course assessment is conducted according to the standard procedure of the SBFT. Records, tests, process transcripts and semester test scores are submitted to the department and stored at the Department managing the subject. The assessment method is clearly stated in the course outline and disseminated to students before starting the module [BE.10.03.08]. To reflect the quality of students participating in the modules, the content of the module assessment is designed to keep abreast of the requirements of knowledge and skills that students need to achieve after the conclusion end the session. Depending on the nature of the modules, the method of assessment may vary (tests, reports, essays), but they are agreed on the method in the professional and subject groups. Students 'assessment results will be the basis for ranking students at the end of the training program, ensuring accurate, objective and honest assessment of students' learning results.

The pedagogical and the content of lectures are evaluated and discussed by other lecturers after the class observation [BE.10.03.09].

10.4. Research results are used to improve the quality of teaching and learning

Research activities are widely deployed in SBFT's departments and research centers. The lecturers participate in many research projects following different research directions and these research directions are published on the SBFT's website and updated annually [sbft.hust.edu.vn]. Number of research topics and scientific articles at all levels of the SBFT are compiled annually [BF.10.04.01]

Students throughout SBFT are encouraged to join research groups with supervisors who are lecturers of the school. Each supervisor will focus on training students to research their research orientation, allowing students the opportunity to gain in-depth knowledge besides the knowledge gained in class. Research directions will be communicated to students through information on the SBFT's website, where students can choose the appropriate research direction and supervisor [BE.10.04.02]. In addition, during the course of the study (study materials, market, lab work) students will have the opportunity to practice and use analytical equipment, with additional skills and methods needed. set for future work. In particular, students participating in the study also have the opportunity to improve soft skills such as teamwork, presentation and reporting skills. Each year, students participating in the study will report the research results at the Student Scientific Conference held in May every year [BE.10.04.03] and are awarded the school and ministerial level awards. for their research achievements [BE.10.04.04].

An effective research environment is a motivation for students to participate in researching and promoting passion and enthusiasm for future work. Therefore, students will be more motivated and serious in the process of learning and career orientation in the future. Therefore,

every year, the School sends a number of students with excellent academic and research achievements abroad training [BE.10.04.05]. The research activities also contribute to the improvement of teaching activities in terms of deepening the knowledge of lectures, helping them to get more insights into real problems that can transfer to students. On another hand, lecturers can improve their English skills that can teach students in the English specialize courses [10.04.06].

10.5. Quality of support services (libraries, laboratories, information technology and student support services) is assessed and improved

In the survey of training programs and student learning environment described in Table 10.1, there are questions regarding student support services [BE.10.05.01]. The University conducts monitoring and evaluation of the effectiveness of the support services of the library [BE.10.05.02], the laboratory [BE.10.05.03], [BE.10.05.04], the information technology system [BE.10.05.05] and other supports (students dormitory, learner advice, student work, extracurricular activities, ...) [BE.10.05.06], [BE.10.05.07], medical center [BE.10.05.08]. The results of the survey process are collected and analysed for evaluation and improvement purposes. Quality improvement of library support services, laboratories, IT systems and other support services has been implemented [BE.10.05.09].

10.6. Stakeholder feedback mechanisms are systematic and evaluated and improved

Quality assurance system according to ISO 9001: 2008 is set up throughout the school, so when developing the questionnaires, handling and managing stakeholders' feedbacks, it is also implemented uniformly according to the requirements of the standard, under the guidance of the QMO. In other words, the feedback mechanism of the stakeholders is systematic, evaluated and improved according to the specific process. ISO 9000's internal assessment twice a year helps us to find the inappropriate points to improve the quality of the programmes.

Previously, the method of collecting feedbacks from stakeholders was not systematic. Since 2016, HUST considers stakeholder feedback as an important source of information to improve the quality of programmes. At the University level, HUST assigned the Training Department [BE.10.06.01], [BE.10.06.02], Student Affair Department and Quality Management Office to organize feedback on university programmes, lecturers and courses from students at the end of semester, student's alumni and the university-wide business [BE.10.06.03]. At school level, since 2016 the feedback from different stakeholders is collected more regularly from different events.

The collection, selection, processing and use of feedbacks are carried out in the correct order and science. Diversified use methods, reliable tools used, comparable opinions of stakeholders [BE.10.06.04]. In the meeting, the university leaders annually publicize the results of feedback from stakeholders and have solutions to improve the use of assessment results to adjust the curriculum, adjust the teaching - learning activities and activities support and other quality improvement activities [BE.10.06.05].

Criterion 11. Output

The dropout rate and the passing rate of the programme though not included in the quality goal of the academic year at the beginning of each academic year [BE.11.00.01] will be summarized at the end of the academic year to make sure to make appropriate measures that will be taken to improve student learning outcomes.

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

Students in the Bioengineering programme at the SBFT require 160 credits to graduate. The programme is designed for students to complete in 10 semesters (5 years). As stated in criterion 8.3, the school has a monitoring system to monitor students' progress and academic results so that statistics record the drop-out rate and dropout rate for each semester as well as for the entire course. As a result, the annual dropout rate and graduation rate are determined, monitored and

reported to the school's scientific council [BE.11.01.01]. This result is used as a basis for proposing measures to improve the quality of teaching and learning.

Table 11.1 Passing rates and dropout rates of students in 5 recent years

Academic year (*)	**Percentage (*) of students completed first degree after the number of Year, %**					**Percentage (*) of Dropout students, after the number of Year, %**					
	4	5	5.5	> 6	**Total**	2	3	4	5	>5	**Total**
K 54 (2009-2014)	4.35	56.52	8.70	8.70	78.26	4.35	4.35	8.70	0	4.35	21.74
(23 students)	1	13	2	2	18	1	1	2	0	1	5
K 55 (2010-2015)	0	43.75	10.42	16.67	70.34	0	4.17	0	10.42	14.58	29.17
(48 students)	0	21	5	8	34	0	2		5	7	14
K 56 (2011-2016)	0	53.52	11.27	9.86	74.65	14.08	5.63	4.23	0.00	1.41	25.35
(71 students)	0	38	8	7	53	10	4	3	0	1	18
K 57 (2012-2017)	0	71.93	10.53	0.00	82.46	7.02	5.26	5.26	0.00	0.00	17.54
(57 students)	0	41	6	0	47	4	3	3	0	0	10
K58 (2013-2018)	0	63.92	14.43	-	78.35						
(97 students)	0	62	14	-	76	0	0	0	0	-	

** Calculated according to the number of students enrolled each academic year*

Table 11.1 shows that the average dropout rate per year in the 5-year programme accounts for 3.5% to 6% per year. The dropout rate was low; the school conducted an investigation to determine the following reasons for dropouts:

1. Students choose a specialization that is not a passion for them to retake the college entrance exam to pursue other majors after a year or two. For example, the candidates for Block B (math, chemistry, and biology) passed with scores higher than 26 but dropped by Medical Universities. Those have changed schools after 1 year of study, making the dropout rate as high as 14%.

2. Students go abroad to study

3. Students who drop out of SBFT for poor academic performance (ie: receive Level 3 warnings)

4. Students must drop out of college because of health problems or family problems A number of measures have been taken for the third and fourth reasons, the programme is designed for students to receive support and advice from the school's supervisor and advisory board (such as certify that poor families are exempted from tuition fees, scholarships for families in need, etc.) before deciding to drop out of college. In addition, as mentioned, each semester, the academic advisory council invites students to have level 1 and level 2 warning warnings to the office for direct counselling to help students reduce the level of caution and thus reduce the chance of dropping out. Thus, according to the statistical results in Table 11.2, the graduation results of students have improved in the course of K57, the graduates have a better rate than the courses K56 and K55; the number of average graduates decreases significantly. Despite, no outstanding students, but total of excellent and good students were more than 80% from the cohort 56 to 58.

Table 11.2 The academic results of graduated students [BE.11.01.02]

Academic year	**Total***	**Student Rate (%)**		
		Excellent (3.2-3.59)	Good (2.5-3.19)	Average (2-2.49)
K 54 (2009-2014)	14	35.7	50.0	14.3
K 55 (2010-2015)	34	5.9	64.7	29.4
K 56 (2011-2016)	38	4.9	80.5	14.6
K 57 (2012-2017)	41	17.9	71.4	10.7
K58 (2013-2018)	62	11.3	72.6	16.1

**Total number of graduated students by 5 years*

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

Table 11.3 shows the percentage of graduates of Bioengineering programme in 5 years. Along with other parameters, this ratio is considered and given in the plan to propose quality improvement measures. In general, the statistics in Table 11.3 show that for the cohort 54, over 70% of students graduate 5 years. However, for the K55- K56 cohort, there are less than 44% of graduates within 5 years. The big difference between cohort 54 and the next cohort is due to a change in HUST regulations. For K54 cohort, students can register for graduation thesis without passing 450 TOEIC points but for K 55, K 56 and K57, students can only register for graduation thesis when their TOEIC scores beyond 450. Although the output requirements of foreign languages are lower than HUST's international and student requirements, mainly coming from rural areas with low language learning programs, it is still difficult to Meet that extending their time to graduate. However, the school still maintains this level of output requirements with a target plan to improve the foreign language level of graduates, in order to meet international standards.

Table 11.3 Statistics of graduates after by five years under the standard study plan

Year	Ratio Graduates by five years to the graduated students (%)	Ratio Graduates by five years to the total students (%)
K 54 (2009-2014)	72.2	56.5
K 55 (2010-2015)	61.8	43.8
K 56 (2011-2016)	71.7	53.5
K 57 (2012-2017)	87.2	71.9
K 58 (2013-2018)	81.6	63.9

Therefore, the entry requirements may be subject to additional foreign language requirements to ensure and improve quality. As mentioned in Part 5, to help students plan to study English during their time at university, do not include them in the final semester, avoiding the risk of not having enough English proficiency before receiving a thesis. Graduated, the regulations on English proficiency are issued under Decision No. 127 / QĐ-ĐHBK-ĐTĐH October 20, 2014.

Another reason for graduates after more than 5 years is that some students who have completed all requirements to graduate still want to improve their CPA and continue to study, as well as study the second degree in another semester to improve scores for some courses.

In addition, there are cases where students with poor academic results make them delay credit completion time and are forced to leave school in the worst case. In order to avoid such cases, the programs of monitoring students' academic performance, training and improving the quality of learning as mentioned in Criterion 8 are thoroughly applied. To help students reduce their graduation time, the Academic Advisory Board collects student lists with level 1th and 2nd academic warnings [BE.11.02.01] and invites them to the live counselling office. [BE.11.02.02].

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

In addition to the survey results of graduates and alumni conducted by HUST, the school also has its own annual career surveys for graduates, employment-related surveys and student satisfaction level on the programme. Survey results of K57 (June 2017) show that 76% of surveyed students have jobs within 3 months after graduation protection and 88% of respondents are satisfied with the programme [BE.11.03.01].

Most graduates are highly appreciated by their technical knowledge and understanding, as well as soft skills through employers' opinions, partners and setting up cooperation agreements with businesses, domestic and foreign universities [BE.11.03.02].

As a result, many domestic and foreign companies and universities are working closely with SBFT on programmes, scholarships, internships and recruitment [BE.11.03.03]. In addition, the school holds meetings with companies to provide students with the opportunity to meet employers and apply for jobs on campus [BE.11.03.04]. The results confirmed that the SBFT has achieved its training objectives.

SBFT also encourages students to study abroad for better career development. Every year, 2% of SBFT students study in Europe, Japan and Korea. The university has a policy to support students to participate in scientific research with international universities, research centers and internship programs [BE.11.03.05]. These collaborations allow to improve knowledge and skills as well as create opportunities to write scientific papers and scholarships. The SBFT and the HUST also support confirming ratings for students in need.

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

The SBFT encourages students to participate in scientific research by organizing research tasks in the School and cooperating with the outside world. SBFT Students participated in annual Student Scientific Research Conference and won many awards in higher level competitions [BE.11.04.01]. All kinds of activities related to research are encouraged and rewarded in the Student Scientific Research Conference [BE.11.04.02].

Table 11.4 Number of students doing research graduate project by academic year

Academic year	Total of graduates	Number of students doing research project	Percentage of students doing research project
2013-2014	11	7	63
2014-2015	36	27	75
2015-2016	41	29	70
2016-2017	68	41	60
2017-2018	62	45	72

In particular, with the modern laboratory model of biotechnology at HUST, excellent students and enthusiasts have the opportunity to work in laboratories, resulting in more students with product results. Some students are the main authors or co-authors of scientific papers. The number of students who make graduation projects based on the results of scientific research throughout the learning process is always higher than 60%.

Table 11.4 shows that the number of students participating in the scientific research was over 59%. This result is due to the supports, policies that have been implemented, the recognition of high achievement in research work of students on the SBFT website, the reward and award for the activities of the students' scientific conference [BE.11.04.03]. Policy may be improved: providing bonus point for the final project of the student winning in competition of scientific research.

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

Overall, the SBFT's programme is highly valued by stakeholders including staff, alumni of the school, domestic and foreign employers through satisfaction reflected in the evaluation results that have been synthesized and analysed [BE.11.05.01].

a. Student opinions

SBFT annually sends a curriculum evaluation form to students to collect feedback to evaluate programme [BE.11.05.02]. Direct dialogue between students and the Direction Board, Advisor Team, and staff of School is also employed. Students appreciate the enthusiasm and friendliness of most teaching and technical staff. The drawbacks or the comments to improve the study program, infrastructure, teaching and learning approach are considered seriously.

b. Alumni

Feedbacks from alumni on how the basic knowledge and skills gained during their study have impact on their career are precious to our School [BE.11.05.03]. Most of students graduated from our school have found jobs relevant to their major or have studied further for their Master or PhD and then have become researchers or experts in universities, research institutes in Vietnam or abroad.

c. Opinion of the employer

The programme also received positive feedback from the labour market. The most evident evidence is that employers are returning to our school each year and are increasingly looking for qualified students who meet the quality requirements of both employers

Most employers are satisfied with the knowledge of graduates, as well as the ability to self-study, analyze and solve problems, along with their skills. In soft skills, the main recommendations of employers are the enhancement of teamwork, communication and the ability to master a presentation. Reflections of employers are always considered serious. For example, to increase teamwork skills as well as master a presentation, skills are taught and taught in a specialized syllabus as instructed by the instructor. Our students are always appreciated by universities, research institutes, schools where they work [BE.11.05.03]. The statistics from this survey partly confirm that graduates from SBFT are highly rated by Vietnamese institutions. And the adequate of SBFT's programme has been approved by the amount of graduates BE programme accepted for entrancing in PhD and Master programme of Abroad Universities in Asia, Australia, Europe [BE.11.05.04].

Most of graduates are highly appreciated by their technical backgrounds and comprehension, and soft skills. As a result, many companies are cooperating closely with SBFT on training, scholarship, internship and recruitment programs. The results confirm that SBFT has achieved its training objectives.

Besides of that the rate of newly graduated students having jobs is over 90% [BE.11.05.05]

According to the statistics of investigating students who have just graduated from the programme BE on the level of satisfaction with the program, there are over 90% satisfied, that meets the academic year plan and quality goal of SBFT.

PART 3. STRENGTHS AND WEAKNESS ANALYSIS

3.1. Strengths, weakness and action plan

Criterion 1. Expected Learning Outcomes

Strengths

ELOs were developed based on the CDIO principle incorporating the vision and mission of HUST. It can be measured by Bloom's Taxonomy. It is reviewed and updated. The ELOs are aligned to the vision and mission of HUST.

The ELOs cover both specific and generic subjects that is clearly reflected in the structure, content and syllabus, as well as teaching and assessment methods. The programme is designed to promote students' lifelong learning.

Website published clearly career and job prospects

The graduated students have:

Strong knowledge to adapt well to different jobs' requirements as research, development, advising and management, and production in the board field of Biotechnology

Social skills needed to work effectively in a multidisciplinary team and in an international environment

Professional skill to meet the requirements of the business

Political and ethics qualities, awareness of serving the people, good health to meet the requirements of building and defending the motherland

Weakness

Feedbacks from external stakeholders such as employers and alumni should preferably be done in a more. Building a feedback system.

ELOs have established based on CDIO, and in this programme they are complicated, thus they must be revised as scheduled in 2020. Then courses frame and courses descriptions will be revised accordingly

Action plan

Building a feedback system to collect opinion from the stakeholders periodically and regularly (such as alumni, students, faculty, and employers)

ELOs, courses' frame and courses 'description must be revised in 2021

Criterion 2. Programme Description

Strengths

The programme specification reflected the expected learning outcomes

The programme specification is comprehensive and contains all necessary information and is well disseminated to students.

The programme specification made available to the stakeholders on the website, help them to see the capacity and skills after graduation.

Website also has a brief description of the history of the modules and updates information and activities of SBFT.

English version of the programme posted on the website with news updated that aimed at attracting international students, student-exchanged from other university

The course specification can be further improved by providing details on the assessment plan which show the alignment between course learning outcomes, teaching strategies and assessment methods

Group of subjects is developed for each module to ensure the management of teaching content and assignment.

The programme specification helps staff to prepare the curriculum for the teaching process.

Weakness

There are few opinions of stakeholders.

Website has not briefly described the history of updated modules.

Action plan

Periodically survey stakeholder about the program

Criterion 3. Programme Structure and Content

Strengths

The programme is allocated based on the ratio of general knowledge, industry and specialized bases. Soft skills have also been implemented in the example programme of group work, presentation, using English in reference.

The programme is designed with relevant modules, reinforcing other modules

The content of the programme provides general knowledge, industry and specialized facilities, and inter-level helps students easily choose the appropriate level for graduation 4 or 5 years and also able to study Master favourably.

Basic knowledge and specialized majors help students choose the right one to continue studies or work.

The content of most experimental / practical exercises meets the requirement of strengthening theoretical knowledge based on existing equipment.

The programme structure clearly demonstrates professional knowledge and skills such as basic modules, supplemental modules, specialized modules, experimental modules, essays, internships and graduation projects.

The programme has many elective modules and is easy to adjust or update.

The programme has aligned the courses to the ELOs in a matrix form specifying the category of teaching activities associated with the course, the new programme is adjusted to increase practical knowledge and soft skills for students.

Weakness

Feedbacks from the students and the employers should preferably be done in a more.

Student's ability to speak English is limited

Action plan

Using of TOEIC as the instrument for measuring English efficiency of the students since TOEIC concentrates on reading and listening.

Periodically carry out survey on program

Promoting more extensive programs that attract prospective students, international students or student-exchanged.

Criterion 4. Teaching and Learning Approach

Strengths

Lecturers have combined flexibility between modern and traditional teaching methods for students: students have participated in lectures and asked professional knowledge and also be trained presentation skills and teamwork skills.

HUST prioritize the use of facilities such as practice labs, equipment, libraries and learning resources for students.

Teaching and learning activities motivate students to practice their skills and improve their lifelong learning.

Teaching assistants, practical staff receive advanced and postgraduate training.

Weakness

Proposing policies to encourage students to conduct scientific research, publish newspapers and write research report with lecturers

Due to the volume of practice, the demand for chemicals, consumables and modern equipment sometimes does not meet the teaching needs.

Need to develop student’s practical knowledge

Action plan

Encouraging students to conduct scientific research, to publish newspapers and writing books with academic staff.

Activities are integrated in lectures and science research students motivate students to be more active in learning and research, plus specialized clubs and extracurricular activities and advisory board

Criterion 5. Student Assessment

Strengths

Students are evaluated based on many criteria including professional knowledge, presentation skills, English skills and IT skills in order to ensure results reflect the capacity and quality of students.

Students are informed of their formative assessment, results and time to have a suitable study plan. The results and answers of the course are open to all students to ensure fairness for all students.

Weakness

Some score results sometimes late because of some objective factors

Some subjects need to clearly announce how to evaluate students

Action plan

Assessment of soft skills should be made more explicit.

Pay attention to learners' feedback to adjust accordingly

Clearly announce how to evaluate students, how to reflect the skills of students.

Criterion 6. Academic Staff Quality

Strengths

Lecturers at SBFT are well-trained, with a large proportion of post-graduate training, practice and training in advanced countries such as England, France, USA, Japan and Russia.

The lecturers are involved in annual scientific research in the topics of State, Ministry, HUST or equivalent, which helps lecturers always update their knowledge to convey to students.

Lecturers are well-trained, with a large proportion of post-graduate training, practice and training in advanced countries such as England, France, USA, Japan and Russia.

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Lecturers are rewarded in time to recognize the contribution in education

Weakness

Keeping the young staff with good professional skills and enthusiasm for the profession is still a matter of the SBFT's managers.

Action plan

Plans for increase of students in the programme or even upgrading of research may be considered in planning for the number of research staff. Performing student’s feedback

Workload may have to be benchmarked with other Vietnamese Universities and University based or school-based structures. There are policies to foster teachers' funds.

Creating conditions for young lecturers to participate in scientific research topics and write scientific papers.

Organizing scientific seminars to update information and techniques and modern equipment for officials

Criterion 7. Support Staff Quality

Strengths

Although the number of staffs is not much, it still ensures the administrative work and timely resolves the problems of students and academic staff, creating the best conditions for teaching and researching

The staffs that are in charge of the practice are well-trained, professional, responsible and enthusiastic with their work (they also are PhD, MSc),

Weakness

The staff has not regularly participated in training courses to improve their professional skills

Work is sometimes overloaded

Action plan

The policies improving the staff

Paying attention to professional development

Criterion 8. Student Quality and Support

Strengths

Under the direction of the HUST, the Academic Advisory Committee and Student Management are active regularly to support learners.

The student union and staff union with the participation of young lecturer are a bridge to help students organize effective extracurricular activities and scientific research.

Clubs such as FOBIC, specialized English clubs are active and regularly help students to learn more social knowledge, soft skills and connections.

The SBFT has a scholarship fund and awards scholarships on every occasion of citizen activity to encourage students to have good study plans and typical Union activities.

Information about scholarship and job opportunities is posted regularly on the University's website. In addition, the connection between students and businesses has also been designed and implemented to ensure students can choose opportunities after graduation or work or continue to study in graduate.

Weakness

Some extracurricular activities are irregular and not diverse to support students (scholarships, career orientation, support to practice, work ...)

Action plan

Enhance regular and diverse extracurricular activities to support students.

Renovate landscape and environment to be cleaner and more beautiful.

Criterion 9. Facilities and Infrastructure

Strengths

The HUST arranges classrooms with sufficient space, lighting, ventilation and air conditioner for classes. Each classroom is equipped with projectors for teaching and learning activities of teachers and students.

The HUST arranges a specialized team to manage the program, set up a teaching plan and help students. Official staff and student management office work quite effectively.

The HUST Library has a huge source of textbooks and references.

The entire HUST has equipped with wifi system to create favourable conditions for teachers and students in teaching and learning.

The SBFT was equipped with international standard laboratory system sponsored by World Bank.

Weakness

Wi-Fi network is not stable, transmission speed is not high.

Modern equipment for novel research directions needs to be invested

Action plan

Upgrade facilities, some experimental equipment is too old and need to be replaced. Renovate too old rooms

Suggest the HUST to support the purchasing process of chemicals and materials to meet the training requirements.

The HUST plans to build new buildings to increase the number of research labs and enhance equipment for experimental and research students.

Strengthen extracurricular activities with diverse forms to support career-oriented students and interns

Criterion 10. Quality improvement

Strengths

The content of the modules is adjusted and updated every year, showing the flexibility of the curriculum.

Organize evaluation of the module according to the plan for the forecasting time, consult students upon graduation

Weakness

Continue to organize and organize large-scale consultations with former students and employers through workshops to provide a basis for additional shortcomings of the programme.

It is necessary to build a closer relationship between employers and schools, between social needs and training goals. Every year, we maintain a career day activity to connect the close relationship between employers and School of Biotechnology and Food Technology

Action plan

Build a feedback system; continue to organize and organize large-scale consultations with former students and employers through workshops to provide a basis for additional shortcomings of the programme. There is analysis after new results.

Criterion 11. Output

Strengths

Recent survey results show that 76% of students have a job within 3 months after graduation and 88% are satisfied with the programme.

Most graduates are highly regarded for their technical knowledge and soft skills from employers' ideas, partners and established cooperative agreements with local businesses and other universities.

Students can use the modern lab BEFT specialized at HUST. Good and passionate students have the opportunity to work in laboratories, resulting in many students having good results. There are some students who are the main authors or co-authors of scientific articles. The number of students doing research projects on graduation based on the results of scientific research throughout the learning process has always reached a higher rate of 60%.

Weakness

The rate of graduates achieving high results is unstable between courses.

English level of students in the first years is not good.

Inviting foreign lecturers is limited.

Action plan

Develop a feedback system to consult stakeholders including students, businesses, research institutions and recruitment agencies.

Plan to update the programme after analyzing feedback from stakeholders.

Do annual student survey of programme quality

Analyze after obtaining new results.

3.2. Self-Assessment Checklist

Criterion/ Criterion	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					x		
1.2. The expected learning outcomes cover both subject specific and generic (i.e. transferable) learning outcomes					x		
1.3. The expected learning outcomes clearly reflect the requirements of the stakeholders					x		
Overall evaluation of criterion	5.0						
2. Programme specification							
2.1 The information in the programme specification is comprehensive and up-to-date					x		
2.2 Course specification fully informative and up-to-date					x		
2.3 The programme and course specifications are communicated and made available to the stakeholders.					x		
Overall evaluation of criterion	5.0						
3. Programme Structure and Content							
3.1. The curriculum is designed based on constructive alignment with the expected learning outcomes					x		
3.2. The contribution made by each course to achieve the expected learning outcomes is clear.				x			
3.3. The curriculum is logically structured, sequenced, integrated and up-to-date					x		

Overall evaluation of criterion	4.6						
4. Teaching and Learning Approach							
4.1 The educational philosophy is well articulated and communicated to all stakeholders					x		
4.2 Teaching and learning activities are constructively aligned to the achievement of the expected learning outcomes					x		
4.3 Teaching and learning activities enhance life-long learning					x		
Overall evaluation of criterion	5.0						
5. Student Assessment							
5.1. The student assessment is constructively aligned to the achievement of the expected learning outcomes					x		
5.2. The student assessments including timelines, methods, regulations, weight distribution, rubrics and grading are explicit and communicated to students				x			
5.3. Methods including assessment rubrics and marking schemes are used to ensure validity, reliability and fairness of student assessment					x		
5.4. Feedback of student assessment is timely and helps to improve learning					x		
5.5. Students have ready access to appeal procedure				x			
Overall evaluation of criterion	4.6						
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						x	
6.2. Staff-to-student ratio and workload are measured and monitored to improve the quality of education, research and service					x		
6.3. Recruitment and selection criteria including ethics and academic freedom for appointment, deployment and promotion are determined and communicated						x	
6.4. Competences of academic staff are identified and evaluated						x	
6.5. Training and developmental needs of academic staff are identified and activities are implemented to fulfil them					x		
6.6. Performance management including rewards and recognition is implemented to motivate and support education, research and service					x		
6.7. The types and quantity of research activities by academic staff are established, monitored and benchmarked for improvement					x		
Overall evaluation of criterion	5.45						
7. Support Staff Quality							
7.1. Support staff planning (at the library, laboratory, IT facility and student services) is carried out to fulfil the needs for education, research and service					x		
7.2. Recruitment and selection criteria for appointment, deployment and promotion are determined and communicated					x		
7.3. Competences of support staff are identified and evaluated				x			
7.4. Training and developmental needs of support staff are identified, and activities are implemented to fulfil them					x		
7.5. Performance management including rewards and recognition is implemented to motivate and support education, research and service					x		
Overall evaluation of criterion	4.8						
8. Student Quality and Support							
8.1. The student intake policy and admission criteria are defined, communicated, published and up to date					x		
8.2. The methods and criteria for the selection of students are determined and evaluated					x		
8.3. There is an adequate monitoring system for student progress, academic performance, and workload					x		
8.4. Academic advice, co-curricular activities, student competition, and other student support services are available to improve learning and employability					x		
8.5. The physical, social and psychological environment is conductive for education and research as well as personal well being					x		

Overall evaluation of criterion	5.0						
9. Facilities and Infrastructure							
9.1. The teaching and learning facilities and equipment (lecture halls, classrooms, project rooms, etc.) are adequate and updated to support education and research					x		
9.2. The library					x		
9.3 The laboratories and equipment are adequate and updated to support education and research					x		
9.4. The IT facilities including e-learning infrastructure are adequate and updated to support education and research					x		
9.5. The standards for environment, health and safety; and access for people with special needs are defined and implemented				x			
Overall evaluation of criterion	4.8						
10. Quality enhancement							
10.1. Stakeholder's needs and feedback serve as input to curriculum design and development					x		
10.2 The curriculum design and development process is established and subjected to evaluation and enhancement					x		
10.3. The teaching and learning processes and student assessment are continuously reviewed and evaluated to ensure their relevance and alignment					x		
10.4. Research output is used to enhanced teaching and learning					x		
10.5. Quality of support services and facilities (at the library, laboratory, IT facility and student services) is subjected to evaluation and enhancement.				x			
10.6. The stakeholder's feedback mechanisms are systematic and subjected to evaluation and enhancement				x			
Overall evaluation of criterion	4.6						
11. Output							
11.1. The pass rates and dropout rates are established, monitored and benchmarked for improvement					x		
11.2. The average time to graduate is established, monitored and benchmarked for improvement					x		
11.3. Employability of graduates is established, monitored and benchmarked for improvement					x		
11.4. The types and quantity of research activities by students are established, monitored and benchmarked for improvement					x		
11.5. The satisfaction levels of stakeholders are established, monitored and benchmarked for improvement					x		
Overall evaluation of criterion	5.0						

Overall points: 4.8

PART 4. APPENDICES

LIST OF FIGURES

LIST OF TABLES

LIST OF ABBREVIATIONS

ABET	Accreditation Board for Engineering and Technology
AQAN	ASEAN Quality Assurance Network
Assoc. Prof	Associated Professor
AUN-QA	ASEAN University Network – Quality Assurance
BE	Bioengineering
BKNIC	Bach Khoa Network Information Center
CDIO	Conceive-Design-Implement-Operate
CEQUA	Center for Quality Assurance
CRE	Credit (s)
CTI	Commission des Titres d'Ingénieurs
CV	Curriculum Vitae
DAAD	German Academic Exchange Service
ECTS	European Credit Transfer System
ELOs	Expected learning outcomes
ENQA	European Association for Quality Assurance in Higher Education
EPFL	Swiss Federal Institute of Technology Lausanne
FTE	Full Time Equivalent
HCERES	The High Council for Evaluation of Research and Higher
HCMUS	Ho Chi Minh University of Science
HUS	Hanoi University of Science
HUST	Hanoi University of Science and Technology
MOET	Ministry of Education and Training
NAFOSTED	National Foundation for Science and Technology Development
N^{o}	Number
NTT	Nippon Telegraph and Telephone
PFIEV	Programme de Formation d'Ingénieurs d' Excellence au Vietnam
Ph.D	Philosophy Doctor
Prof	Professor
QMO	Quality Management Office
RFI	Radio Frequency Identification
RIHED	Regional Centre for Higher Education and Development
SAR	Self-Assessment Report:
SBFT	School of Biotechnology and Food Technology
SEAMEO	Southeast Asian Ministers of Education Organization
SIS	Student Information Systems

LIST OF EVIDENCES

Introduction

N°	Code	Evidences
1.	BE.00.01	Decree No. 147/ND dated March 6, 1956 on the establishment of Hanoi University of Science and Technology
2.	BE.00.02	Regulations on organization and operation of Hanoi University of Science and Technology
3.	BE.00.03	Vision and mission of HUST
4.	BE.00.04	Decision on autonomy of HUST by the Prime Minister of the Socialist Republic of Vietnam in October 2016
5.	BE.00.05	Decision on establishment of SBFT and Certificate of scientific and technological activities for the SBFT
6.	BE.00.06	Decision on establishment of Center for Research in Biotechnology mentioned in Certificate of scientific activities for the Center
7.	BE.00.07	List of SBFT staff, 12/2018
8.	BE.00.08	Vision and Mission of the SBFT, excerpt from Regulation of Organization and Activities
9.	BE.00.09	List of the research project
10.	BE.00.10	Cooperation with international organizations
11.	BE.00.11	Decision to establish a council of 2009 higher education programs in bioengineering

Criterion 1

12.	BE.01.01.01	Approvement of ELO bachelor's programme 2017 with level 2
13.	BE.01.01.02	Guidelines for building ELOs (excerpt from the guidelines for developing programme 2017)
14.	BE.01.01.03	Approvement of programme 2009's LO
15.	BE 01.01.04	Approvement of programme 2017's LO
16.	BE 01.01.05	Survey form for student
17.	BE 01.01.06	Survey form for alumni
18.	BE 01.01.07	Expected learning outcomes for Bioengineering programme 2017
19.	BE 01.01.08	ELOs description on website
20.	BE.01.02.01	Course syllabus (sample for 1 subject)
21.	BE 01.02.02	Matrix of expected Learning outcomes 2009
22.	BE.01.03.01	Minutes of meetings with businesses
23.	BE.01.03.02	Working schedule and meeting minutes with businesses
24.	BE.01.03.03	Alumni feedback forms and results for Course 54, 44, 56, and 57
25.	BE.01.03.04	Links to webpage where Programme Expected learning outcomes are published
26.	BE.01.03.05	Leaflets of SBFT distributed to students during Open day events.
27.	BE.01.03.06	Link to webpages where Information about the job profile and job opportunities for students graduated from SBFT are posted
28.	BE.01.03.07	Survey on EOLs and frame course from alumni and stakeholders

Criterion 2

29.	BE 02.01.01	Legal grounds of the program, including 2009 and 2017 program
30.	BE 02.01.02	2009 and 2017 programme and official document for establishment and development of 2017 program
31.	BE 02.01.03	Meeting minutes
32.	BE 02.01.04	2017 program
33.	BE 02.01.05	Website link for job opportunities http://sbft.hust.edu.vn/vi/news/category/108-co-hoi-hoc-tap-va-viec-lam-sau-tot-nghiep.html
34.	BE 02.01.06	Lecture in English Biotechnology Introduction
35.	BE 02.02.01	2009 and 2017 programme and official document for establishment and development of 2017 programme
36.	BE 02.02.02	Link of programme description at SBFT website http://sbft.hust.edu.vn/vi/news/category/36-mo-hinh-dtdh-cua-vien-cnsh---cntp.html
37.	BE 02.02.03	Programme courses delivered to students
38.	BE 02.02.04	Collecting opinions of students and lecturers (scheduled)
39.	BE 02.02.05	Story adjustment of the program

40.	BE 02.02.06	Assessment form for professional competence of academic staff by students
41.	BE 02.03.01	Link of programme description at SBFT website http://sbft.hust.edu.vn/vi/news/category/37-dao-tao-ky-thuat-sinh-hoc-va-ky-thuat-thuc-pham-tai-truong-dai-hoc-bkhn.html
		Orientation for K63 promotion http://sbft.hust.edu.vn/vi/news/391-thong-bao-dinh-huong-nganh-cho-sinh-vien-k63.html
42.	BE 02.03.02	Information on collaborated programme for Japanese language http://sbft.hust.edu.vn/vi/news/385-thong-tin-ve-buoi-gioi-thieu-chuong-trinh-lien-ket-dao-tao-tieng-nhat-hust---aidem-2018.html
		Programme course for programme of Bachelor in bioengineering (From promotion K62) http://sbft.hust.edu.vn/vi/news/category/242-khung-chuong-trinh-cu-nhan-nganh-kttp-va-Bioengineering -ap-dung-tu-k62.html
		"tour" University experience – future orientation for students
		One day as HUST student at SBFT http://sbft.hust.edu.vn/vi/news/414-truong-dhbk-ha-noi-to-chuc----tour----trai-nghiem-dai-hoc-----dinh-huong-tuong-lai-cho-hoc-sinh-thpt.htm http://sbft.hust.edu.vn/vi/news/361-chuong-trinh----mot-ngay-la-sinh-vien-bach-khoa----tai-vien-cnsh---cntp.html
		Annual activity of the School of Biotechnology and Food technology (November-December every year) 2014 – 2015 ttp://sbft.hust.edu.vn/vi/news/8-tuan-sinh-hoat-cong-dan-nam-hoc-2014-----2015.html
43.	BE 02.03.03	Annual activity of the School of Biotechnology and Food technology (November-December every year) K62 promotion http://sbft.hust.edu.vn/vi/news/348-tuan-sinh-hoat-cong-dan-k62.html
44.	BE 02.03.04	Minuite and supporting documents of Advisory Group

Criterion 3

45.	BE 03.01.01	Frame courses of EPF, Switzerland, TU Berlin, Germany, Boku, Austria https://www.epfl.ch/education/bachelor/programs/life-sciences-engineering
46.	BE 03.01.02	Frame courses of Nagaoka University
		World ranking of EPFL 2012 – 2019 by Top Universities https://www.topuniversities.com/node/2329/ranking-details/world-university-rankings/--2018.
		Ranking of Universities in the fields of bioengineering https://www.usnews.com/education/best-global-universities/biology-biochemistry
47.	BE03.01.03	Opinion of Professor from foreign University on the Programme (Nagaoka, Japan, and Tokyo University of Marine Science and Technology, Japan)
48.	BE 03.02.01	Matrix summarizes the response to ELOs
49.	BE 03.03.01	School proposal to University to adjust some course of program
50.	BE 03.03.02	Documents on courses updating
51.	BE 03.03.03	Results of the survey on the students graduated in June 2017
52.	BE 03.03.04	Education strategy of University of Science and Technology

Criterion 4

53.	BE.04.01.01	HUS's mission and vision; SBFT's educational philosophy https://www.hust.edu.vn/su-mang-tam-nhin-gia-tri-cot-loi; http://sbft.hust.edu.vn/vi/news/category/241-tam-nhin---chien-luoc-va-triet-ly-giao-duc-.html
54.	BE.04.01.02	Introduction of the Vice director in charge of training
55.	BE.04.01.03	Student seminar
56.	BE.04.01.04	CD: antibiotic mechanism video made by SBFT student
57.	BE.04.01.05	Project of specialization about the market survey
58.	BE.04.01.06	Data of student contacting themselves for internship
59.	BE.04.01.07	Number of students doing scientific research
60.	BE.04.01.08	Bean sprouts machine made by SBFT student
61.	BE.04.02.01	Bioengineering training programme http://sbft.hust.edu.vn/vi/news/category/37-dao-tao-ky-thuat-sinh-hoc-va-ky-thuat-thuc-

		pham-tai-truong-dai-hoc-bkhn.html
62.	BE.04.02.02	Subject syllabus
63.	BE.04.02.03	Graduated student survey form
64.	BE.04.02.04	Businesses survey form
65.	BE.04.02.05	Proof of reason for changing program
66.	BE.04.02.06	Bioengineering training programme from K62
67.	BE.04.02.07	Student seminar
68.	BE.04.02.08	Subject syllabus including exercise and practise
69.	BE.04.02.09	Ratio between theoretical subject and practical subject
70.	BE.04.02.10	Practical subject report
71.	BE.04.02.11	List of internships at the factory
72.	BE.04.02.12	Syllabus of Technical internship subject
73.	BE.04.02.13	Syllabus of Final internship subject
74.	BE.04.02.14	Bioengineering training programme including the elective subjects
75.	BE.04.02.15	List of academic advisory boards
76.	BE.04.02.16	Evaluation of teaching process
77.	BE.04.02.17	Student survey form in course
78.	BE.04.02.18	Student survey form after the course
79.	BE.04.02.19	Graduated student survey form
80.	BE.04.02.20	Business feedback
81.	BE.04.02.21	Specialized English club https://www.facebook.com/pg/clbbfec/posts/
82.	BE.04.02.22	Student exchange http://sbft.hust.edu.vn/vi/news/288-danh-sach-sinh-vien-nuoc-ngoai-thuc-tap-tai-vien-cnsh---cntp-.html
83.	BE.04.03.01	Student seminar
84.	BE.04.03.02	Internship
85.	BE.04.03.03	FOBIC club https://www.facebook.com/Câu-lạc-bộ-Fobic-Viện-CN-Sinh-học-và-CN-Thực-phẩm-898012336910307/
86.	BE.04.03.04	SBFT education program - Flyer
87.	BE.04.03.05	Alumni survey
88.	BE.04.03.06	List of SBFT students continuously studying aboard

Criterion 5

89.	BE.05.01.01	Article 5, HUST training regulation 2018 Article 8, HUST training regulation 2014
90.	BE.05.01.02	SBFT regulation of exam preparation and examination
91.	BE.05.01.03	Report of subject group meeting
92.	BE.05.01.04	SIS: ration between process point and final exam point http://sis.hust.edu.vn/ModuleProgram/CourseLists.aspx
93.	BE.05.01.05	Multiple-choice exam question
94.	BE.05.01.06	Writing exam question
95.	BE.05.01.07	Internship syllabus
96.	BE.05.01.08	Syllabus of practical subject
97.	BE.05.01.09	Practical exam
98.	BE.05.01.10	Syllabus of subject including seminar requirement
99.	BE.05.01.11	Syllabus of specialization project
100.	BE.05.01.12	HUST's English level requirement
101.	BE.05.01.13	Article 13 – HUST's training regulation 2018 Article 14 – HUST's training regulation 2014
102.	BE.05.01.14	Guidelines of graduation project writing
103.	BE.05.01.15	Guideline of Graduation project evaluation
104.	BE.05.01.16	Student survey form after course
105.	BE.05.02.01	Calendar for academic year

106.	BE.05.02.02	Lecturer presentation
107.	BE.05.02.03	Survey of students opinion
108.	BE.05.02.04	Student seminar
109.	BE.05.02.05	Examination time
110.	BE.05.02.06	Guideline of graduation project report
111.	BE.05.02.07	Score updated on Student's page (SIS)
112.	BE.05.03.01	Report of subject group meeting
113.	BE.05.03.02	SBFT regulation of exam preparation and examination
114.	BE.05.03.03	Micro-organism practical exam
115.	BE.05.03.04	Exam of process and equipment subject
116.	BE.05.03.05	HUST exa organization rule
117.	BE.05.03.06	HUST and SBFT exam organization rule
118.	BE.05.03.07	Student survey form after course
119.	BE.05.03.08	Report of Biochemistry group meeting
120.	BE.05.04.01	Article 27 – HUST training regulation 2014
121.	BE.05.04.02	Notebook recording the date of submitting scores
122.	BE.05.04.03	Student page on SIS
123.	BE.05.04.04	Article 19 – HUST training regulation 2018
124.	BE.05.04.05	Student at warning level 2 met the academic advisor
125.	BE.05.04.06	Guideline for online note submission
126.	BE.05.05.01	HUST training regulation 2014
127.	BE.05.05.02	Appeal form
128.	BE.05.05.03	Student page on SIS
129.	BE.05.05.04	Introduction of the Vice director in charge of training
130.	BE.05.05.05	Student book
131.	BE.05.05.06	HUST training regulation 2018

Criterion 6

132.	BE.06.01.01	Regulations of lecturer's requirements
133.	BE.06.01.02	Regulations on Recruitment and training personnel of HUST
134.	BE.06.01.03	Teaching capacity of Lecturer
135.	BE.06.01.04	Sample of Courses syllabus
136.	BE.06.01.05	Pedagogical qualification of lecturers
137.	BE.06.01.06	Assessment Feedback of Student on teaching activities
138.	BE.06.01.07	Plans of human resources for 2011-2015 2015-2019
139.	BE.06.01.08	Teaching assignment
140.	BE.06.01.09	Assignment for final thesis guidance
141.	BE.06.01.10	List of research projects of School from 2010-2016
142.	BE.06.01.11	List of publications of School from 2010-2018
143.	BE.06.01.12	Proposals for recruitment needs of departments
144.	BE.06.01.13	Report in 26th Staff Conference of School
145.	BE.06.01.14	Proposals for recruitment needs of School
146.	BE.06.01.15	Decree 29/2012/NĐ-CP on staff recruitment and management
147.	BE.06.01.16	Decree 141/2013/NĐ-CP on detailed regulations and implementation guidelines of High Education law
148.	BE.06.01.17	School Report on Working time extension for lecturer
149.	BE.06.01.18	Proposals for recruitment needs of School
150.	BE.06.01.19	Decision to dispatch staffs PhD learning abroad
151.	BE.06.01.20	Internal Information on Staff recruitment
152.	BE.06.01.21	Decision 1924/QĐ-TTg about HUST autonomous
153.	BE.06.01.22	Internal Spending Regulation of HUST
154.	BE.06.01.23	List of staff participating in pedagogical class for title upgrade
155.	BE.06.01.24	Circular 08/0218/TT-BGDĐT on upgrading title of staff
156.	BE.06.01.25	Information on title consideration agenda for Professor and Associate Professor
157.	BE.06.01.26	Circular 16/2009/TT-BGDĐT on Professor and Associate Professor Title Consideration
158.	BE.06.01.27	Regulations of working regime of HUST

159.	BE.06.01.28	Regulation on the appointment, resignation, resignation, dismissal of leaders of units of the University of HUST
160.	BE.06.02.01	List of staff on Biotechnology of School
161.	BE.06.02.02	Report on lecturer/student ratio
162.	BE.06.02.03	Teaching workload and scientific workload calculation for lecturer
163.	BE.06.02.04	Scientific workload of lecturers of School
164.	BE.06.02.05	Decision on Changes in Working regime of HUST
165.	BE.06.02.06	List of publication of SBFT
166.	BE.06.03.01	Recruitment information of HUST on website
167.	BE.06.03.02	Recruitment information of SBFT on website
168.	BE.06.03.03	Recruitment requirements of SBFT in 2019
169.	BE.06.03.04	Recruitment and Selection criteria of HUST
170.	BE.06.03.05	Staff Recruitment procedure of HUST
171.	BE.06.03.06	Recruitment requirements of SBFT in 2019
172.	BE.06.04.01	Decision on Procedure for class attendance
173.	BE.06.04.02	Teaching assignment
174.	BE.06.04.03	Teaching capacity of lecturers
175.	BE.06.04.04	Teaching workload and scientific workload calculation for lecturer
176.	BE.06.04.05	Decision of Internal spending Regulation of HUST
177.	BE.06.04.06	Announced form for class time changes
178.	BE.06.04.07	Feedback on checking going to class on time of lecturer
179.	BE.06.04.08	Student's feedback on QMO's survey of academic competence of SBFT's academic staff
180.	BE.06.04.09	Assessment form for professional competence of academic staff by students
181.	BE.06.04.10	Plan for class attendance of Department and School
182.	BE.06.04.11	List of staff attending to class attendance
183.	BE.06.04.12	Assessment form for professional competence of academic staff by teaching staff
184.	BE.06.04.13	Assessment form for professional competence of academic staff by students
185.	BE.06.04.14	Student's feedback on QMO's survey of academic competence of SBFT's academic staff
186.	BE.06.04.15	Decision on setting up pedagogical advisory board
187.	BE.06.04.16	Minute of class attendance
188.	BE.06.04.17	Decision to dispatch staff to pedagogical training
189.	BE.06.04.18	List of guidance-lecturer for new recruited staff
190.	BE.06.04.19	Planning for class attendance of new recruited staff
191.	BE.06.04.20	Course syllabus of new recruited staff for probation ending
192.	BE.06.04.21	Internal Spending Regulation of HUST
193.	BE.06.04.22	Teaching workload and scientific workload of lecturers of School
194.	BE.06.04.23	Contract of Scientific Research Cooperation
195.	BE.06.04.24	Decision on setting up pedagogical advisory board
196.	BE.06.04.25	Decision on Regulation of pedagogical advisory board and student class management
197.	BE.06.04.26	Minute of assessment of staffs taking-in-charge management of student class
198.	BE.06.04.27	Procedure for classification of academic staff after each semester before 2018
199.	BE.06.04.28	Procedure for classification of academic staff after each semester from 2018
200.	BE.06.04.29	Minutes of the emulation in the Department
201.	BE.06.05.01	Decision to dispatch staffs to Master, PhD learning abroad
202.	BE.06.05.02	Short term training course for professional skills
203.	BE.06.05.03	Plan to send trainers to pedagogical training
204.	BE.06.05.04	List of staffs trained in English courses
205.	BE.06.05.05	Plan to dispatch staffs to training on technology transfer
206.	BE.06.05.06	List of staffs trained in English writing course for scientific publication
207.	BE.06.05.07	Proof of international conference attendance
208.	BE.06.05.08	List of new recruited staffs dispatch to pedagogical training
209.	BE.06.05.09	Proof for new pedagogical method (B-learning) class held by HUST
210.	BE.06.06.01	Regulations on reward of emulation and commendation
211.	BE.06.06.02	Minutes of the emulation in the Department
212.	BE.06.06.03	Minutes of the emulation in the School
213.	BE 06.06.04	Guidance for pre-term salary increase

214.	BE.06.06.05	Guidance on reward of emulation and commendation 2017-2018
215.	BE 06.06.06	Decision on issuing internal regulation of HUT 2612 / QĐ-DHHK-HDTH
216.	BE.06.06.07	List of international publications of School
217.	BE 06.06.08	Regulations on reward of emulation and commendation at national level
218.	BE.06.07.01	List of projects of School
219.	BE.06.07.02	List of conferences held by SBFT: Sbft.hust.edu.vn section "Conference and Scientific Projects"
220.	BE.06.07.03	List for seminars held at SBFT
221.	BE.06.07.04	Decision on committee creation for student final thesis
222.	BE.06.07.05	Proof for Student Scientific Conference
223.	BE.06.07.06	Proof of publication by student
224.	BE.06.07.07	Proof of publication of School
225.	BE.06.07.08	List of publication of School

Criterion 7

226.	BE.07.01.01	Librarian staffs
227.	BE.07.01.02	List of librarian staffs with professional certificate
228.	BE.07.01.03	Library working hour
229.	BE.07.01.04	Results of student feedback on librarian activities
230.	BE.07.01.05	Mission and Function of library
231.	BE.07.01.06	List of scientific books of SBFT at library
232.	BE.07.01.07	Information Network Center staffs
233.	BE.07.01.08	Mission and Function of Information Network Center
234.	BE.07.01.09	Undergraduate Academic Affairs staffs
235.	BE.07.01.10	Mission and Function of Undergraduate Academic Affairs
236.	BE.07.01.11	Political and student affairs staffs
237.	BE.07.01.12	Mission and Function of Political and student affairs
238.	BE.07.01.13	Center for Medical and Health care staffs
239.	BE.07.01.14	Results of feedback on Center for Medical and Health care activities
240.	BE.07.01.15	Sports and culture center staffs
241.	BE.07.01.16	Center of dormitory staffs
242.	BE.07.01.17	Mission and Function of Center of Support
243.	BE.07.01.18	Results on student feedbacks for Center of dormitory
244.	BE.07.01.19	Technicians staff of BE-SBFT
245.	BE.07.01.20	Teaching capacity of SBFT's technicians
246.	BE.07.01.21	Assessment form for experimental class for students
247.	BE.07.01.22	Proof of technician staff participating in research project
248.	BE.07.01.23	Administrative staff of SBFT
249.	BE.07.02.01	Recruitment information
250.	BE.07.02.02	Regulation of Recruitment process of HUST
251.	BE.07.02.03	Recruitment and selection criteria of HUST
252.	BE.07.02.04	Decree 29/2012/NĐ-CP on staff recruitment and management
253.	BE.07.02.05	Certificate of accounting and laboratory operations training
254.	BE.07.03.01	Regulations on emulation and commendation for support staff each year
255.	BE.07.03.02	Report on emulation and commendation of Department
256.	BE.07.03.03	Decision to dispatch support staff for MsC. and PhD study
257.	BE.07.03.04	Publication of support staff
258.	BE.07.04.01	Decision on dispatching support staff to training
259.	BE.07.04.02	Decision to dispatch support staff for MsC. and PhD study
260.	BE.07.04.03	Publication of support staff
261.	BE.07.05.01	Report on emulation and commendation of Department
262.	BE.07.05.02	Decision on the reward of emulation titles
263.	BE.07.05.03	Regulations on emulation and commendation for support staff each year

Criterion 8

264.	BE.08.01.01	Enrolment regulations of HUST
265.	BE.08.01.02	Enrolment policy

266.	BE.08.01.03	The benchmarks of universities
267.	BE.08.01.04	Admissions information of HUST
268.	BE.08.01.05	Admissions information of SBFT
269.	BE.08.01.06	One day is a HUST student
270.	BE.08.01.07	Enrolment criteria of HUST
271.	BE.08.01.08	Decision of student enrolment of SBFT
272.	BE.08.01.09	The regular training regulations
273.	BE.08.02.01	Enrolment criteria of HUST
274.	BE.08.02.02	The curriculum and study schedule
275.	BE.08.03.01	The curriculum and study schedule
276.	BE.08.03.02	The regular training regulations
277.	BE.08.03.03	Student Information System – SIS
278.	BE.08.03.04	Lists of homeroom teachers
279.	BE.08.03.05	Decision of Academic Advisor Board - AAB
280.	BE.08.03.06	Working schedule of AAB
281.	BE.08.03.07	Invitations from the AAB are sent to students with academic alert levels 1 and 2
282.	BE.08.03.08	Diary of the AAB
283.	BE.08.04.01	Consultant activities
284.	BE.08.04.02	Student consultant activities of SBFT
285.	BE.08.04.03	Online supporting service
286.	BE.08.04.04	FOBIC
287.	BE.08.04.05	Student scientific Symposium
288.	BE.08.04.06	Extracurricular activities of students
289.	BE.08.04.07	Notice on the website of the Office of Political Affairs and Student Affairs
290.	BE.08.04.08	Scholarships
291.	BE.08.05.01	Image of HUST campus
292.	BE.08.05.02	Security constract
293.	BE.08.05.03	Free wifi
294.	BE.08.05.04	HUST campus
295.	BE.08.05.05	The physical examination for staff and students
296.	BE.08.05.06	The feedback for the healthcare service of HUST

Criterion 9

297.	BE.09.01.01	List of classroom
298.	BE.09.01.02	Picture of classroom
299.	BE.09.01.03	List of office and laboratory
300.	BE.09.01.04	Laboratory journal
301.	BE.09.01.05	Maintenance and repair plan of equipment in 2018
302.	BE.09.01.06	Suggest liquidation of broken equipment
303.	BE.09.01.07	Plan to fix lighting system 2018
304.	BE.09.01.08	Laboratory safety and laboratory regulations
305.	BE.09.01.09	The results of summarizing the evaluation cards of students' satisfaction
306.	BE.09.01.10	computer, internet, air conditioning and other equipment for staffs
307.	BE.09.02.01	List of Reading Rooms at the Library
308.	BE.09.02.02	Digital library website http://Dlib.hust.edu.vn
309.	BE.09.02.03	Instructions for use at the Library, working hours on weekdays
310.	BE.09.02.04	List of specialized biological engineering books
311.	BE.09.02.05	Search website of Ta Quang Buu library
312.	BE.09.02.06	The survey results of the library's effectiveness in supporting readers
313.	BE.09.02.07	The list of new specialized books required per year
314.	BE.09.03.01	Summary of laboratories throughout the University
315.	BE.09.03.02	Status report of laboratories
316.	BE.09.03.03	Laboratory journal
317.	BE.09.03.04	Maintenance and repair plan of equipment in 2018
318.	BE.09.03.05	Proposing of installing camera

319.	BE.09.03.06	List of students receiving foreign scholarships
320.	BE.09.03.07	The results of summarizing the evaluation cards of students' satisfaction
321.	BE.09.03.08	Request to change fire extinguishers
322.	BE.09.03.09	Installation of first aid cabinet and fire command in 2018
323.	BE.09.04.01	The mission of the Information Network Center of Hanoi University of Technology
324.	BE.09.04.02	E-learning classes
325.	BE.09.04.03	Staff and student are able to use computer with intranet and internet access
326.	BE.09.04.04	Support technician team and instruction of BKIC
327.	BE.09.04.05	Network repair diary and annual repair records
328.	BE.09.04.06	Service quality survey forms of units throughout the university
329.	BE.09.04.07	Online class 201A-C4
330.	BE.09.05.01	Introduction of Bach Khoa medical center
331.	BE.09.05.02	Official letter on annual medical examination for students and staff
332.	BE.09.05.03	Minutes of inspection on disease prevention, food safety and hygiene
333.	BE.09.05.04	Laboratory Rules
334.	BE.09.05.05	Request to change fire extinguishers
335.	BE.09.05.06	Installation of first aid cabinet and fire command in 2018
336.	BE.09.05.07	Report on the use of chemicals and waste of laboratory
337.	BE.09.05.08	List of emergency contacts
338.	BE.09.05.09	Student management board and academic counselor of the school
339.	BE.09.05.10	2018 training of fire protection
340.	BE.09.05.11	Decision on establishment of fire prevention and fighting board; Report on fire prevention and fighting; Fire protection training plan for 2019
341.	BE.09.05.12	Security department staffs with security certificates
342.	BE.09.05.13	Camera system for school-wide surveillance, monitoring and management in security rooms

Criterion 10

343.	BE.10.01.01	Example of the survey of the training department after the end of the module
344.	BE.10.01.02	Example of the survey of Student Affair Department of for graduates and businesses
345.	BE.10.01.03	Official website for students and alumni of HUST
346.	BE.10.01.04	Dialogue between university leaders and students
347.	BE.10.01.05	Workshop on design and developing undergraduate programme 2009
348.	BE.10.01.06	Decision to issue the framework of 2009 higher education programme
349.	BE.10.01.07	Minute of the meeting of the 2009 programme development council
350.	BE.10.01.08	Comments from graduates on the programme
351.	BE.10.01.09	Survey questionnaire on business needs of students graduating from bachelor's degree in biological engineering
352.	BE.10.01.10	Survey of the expert on expected learning outcomes (from international lecturers)
353.	BE.10.01.11	Survey of the Lecturer on the expected learning outcomes (from domestic lecturers)
354.	BE.10.01.12	Survey of the Student on the expected learning outcomes (from students)
355.	BE.10.01.13	Comments of enterprises and former officials on Bioengineering programme
356.	BE.10.01.14	Summary of scheduled class observation activities
357.	BE.10.01.15	Dispatch sent to the university leaders proposed to adjust the contents of the training program
358.	BE.10.01.16	HUST Guidelines on the 2017 programme development
359.	BE.10.01.17	Minute of the meeting of the 2017 programme development council
360.	BE.10.02.01	Teaching Assignment Table
361.	BE.10.02.02	Minutes of the meeting on the course adjustment
362.	BE.10.02.03	SBFT’s proposal to the Training Department for course adjustment
363.	BE.10.02.04	History of course adjustment
364.	BE.10.02.05	Minutes of the meeting of the teaching group on the adjustment of the course outline/syllabus
365.	BE.10.02.06	Comments of graduates
366.	BE.10.02.07	Comments of businesses
367.	BE.10.02.08	English Club

368.	BE.10.02.09	List of students participating the English club
369.	BE.10.02.10	List of lecturers teaching at the English club and teaching schedules
370.	BE.10.02.11	Sample of decision to send SBFT student to another country for exchange programme
371.	BE.10.02.12	List of International Exchange students
372.	BE.10.03.01	Training regulations of Hanoi University of Technology
373.	BE.10.03.02	Decision of the University to establish the Pedagogical Consultation Board
374.	BE.10.03.03	Scheduled class observation plan
375.	BE.10.03.04	Assessment forms for students to the quality of courses
376.	BE.10.03.05	Teacher evaluation form (assessed by students)
377.	BE.10.03.06	Assessment results from students for all courses
378.	BE.10.03.07	Training regulations of Hanoi University of Technology
379.	BE.10.03.08	Sample of Course syllabus specifying the evaluation method
380.	BE.10.03.09	Teacher evaluation form (assessed by other lecturers) and the meeting minute of the teacher evaluation
381.	BE.10.04.01	List of research activities on the SBFT's website
382.	BE.10.04.02	Faculty directory specifying the research directions
383.	BE.10.04.03	List of students participating in scientific research conference
384.	BE.10.04.04	List of students awarded for scientific research students as shown on the website of the school
385.	BE.10.04.05	Sample of decision to send excellent student to exchange programme
386.	BE.10.04.06	List of lecturers teaching in the english specialization club and teaching plan
387.	BE.10.05.01	Student survey form on the service quality
388.	BE.10.05.02	Results of monitoring and evaluating the effectiveness of the library's support services
389.	BE.10.05.03	Results of the evaluation of laboratories
390.	BE.10.05.04	List of equipment and laboratories of SBFT
391.	BE.10.05.05	Form of survey on the service quality of Information Center
392.	BE.10.05.06	Survey on the quality assessment of dormitory
393.	BE.10.05.07	Summary of the survey on the quality assessment of dormitory
394.	BE.10.05.08	Results of the survey on the service quality of Medical center
395.	BE.10.05.09	Report of the President presenting on the Annual General Meeting of the University
396.	BE.10.06.01	SBFT's survey form for graduated students from SBFT
397.	BE.10.06.02	HUST's survey form for the quality of teaching
398.	BE.10.06.03	Survey form for enterprises on the competencies of HUST graduated students
399.	BE.10.06.04	HUST's survey form for graduated students
400.	BE.10.06.05	Report of the President presenting on the Annual General Meeting of the University

Criterion 11

401.	BE.11.00.01	Quality goal of academic year
402.	BE.11.01.01	Decision for graduation, interruption studying - Annual
403.	BE.11.01.02	Graduation results
404.	BE.11.02.01	List of students with warning level 1-2
405.	BE.11.02.02	Diary of academic Advisory Board
406.	BE.11.03.01	Survey for alumni
407.	BE.11.03.02	MOU Enterprise- School – HUST
408.	BE.11.03.03	Scholarship and recruitment information
409.	BE.11.03.04	Jobfair2018 information at the School website
410.	BE.11.03.05	Exchange students list to Foreign University
411.	BE.11.04.01	List of Students doing research at School
412.	BE.11.04.02	Students doing research event
413.	BE.11.04.03	List students doing research with merits and certificate
414.	BE.11.05.01	Page for student survey
415.	BE.11.05.02	Page for alumni's feedback
416.	BE.11.05.03	Page for employers' feedback
417.	BE.11.05.04	List of graduates BE programme accepted for entrancing in PhD and Master programme of Abroad Universities
418.	BE.11.05.05	The rate of newly graduated students having jobs