SELF-ASSESSMENT REPORT FOR AUN-QA

ASEAN University Network

AUN-QA A Touch of Quality

The 168th AUN Quality Assessment at Programme Level

NLU BIOTECH DEPARTMENT OF BIOTECHNOLOGY

ENGINEER IN BIOTECHNOLOGY

http://biotech.hcmuaf.edu.vn

December 9 -12, 2019

SELF – ASSESSMENT REPORT

THE BIOTECHNOLOGY PROGRAMME

We hereby confirm to approve of this Self-Assessment Report of the Biotechnology Programme, which is offered by the Department of Biotechnology – Nong Lam University Ho Chi Minh City (Vietnam), to be assessed in accordance with the AUN-QA criteria in 2019.

Assoc. Prof. Le Dinh Don
Head
Department of Biotechnology

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LIST OF ABBREVIATIONS

AUF	Agence Universitaire de la Francophonie
AUN-QA	ASEAN University Network - Quality Assurance
Bio	Biotechnology
BioD	Department of Biotechnology
CEA	Center for Education Accreditation
CEFR	Common European Framework of Reference
CLO	Course Learning Outcome
Eng	Engineer
IT	Information Technology
Lab.	Laboratory
MARD	Ministry of Agriculture & Rural Development
MoET	Ministry of Education and Training
MSc	Master of Science
NLU	Nong Lam University Ho Chi Minh City
Ph.D	Philosophy of Doctor
PLO	Programme Learning Outcome
PO	Programme Objective
POHE	Profession-Oriented Higher Education
QMO	Quality Management Office
RIBE	Research Institute for Biotechnology and Environment
SAR	Self-Assessment Report
Sem.	Semester
SIDA	Swedish International Development Cooperation Agency
VEF	Vietnam Education Foundation
VILAS	Vietnam Laboratory Accreditation Scheme

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EXECUTIVE SUMMARY

Department of Biotechnology (BioD) of Nong Lam University Ho Chi Minh City (NLU) is an independent unit, with the principal function of education, research and technology transfer at the level of faculty. BioD acts in compliance with NLU policy on Quality Assurance, and it has been decided that Quality Assurance is one of principal tasks to improve quality of education and training as well as to meet Stakeholders' needs. In 2018, counseled by Quality Management Office of NLU, BioD gradually completed Self-Assessment Report (SAR), which was formed, using the data from year 2014, in alignment with assessment criteria of Guide to AUN-QA Assessment at Programme Level Version 3.0.

The Biotechnology (Bio) programme was established in year 2001 under the year-based system including 222 modules within four years. The programme was adjusted to the credit system consisting of 143 credits from the academic year 2008. After eighteen years of implementation, this programme is continuously revised and renovated based on the comparison with other national and international programmes as well as on the feedback from Stakeholders; employers, alumni, current students, lecturers and managers. The new 136-credit programme in year 2018 generates more time for lecturers and students to interact, to carry out research, internship and startup. The Bio programme covers all aspects of biotechnology, which are required by employers, and it equips students with the skills which are required in the developments of high technology in the country.

Students are screened at their enrollment and they are assessed through their entire learning process; inside classroom, outside classroom, and in society. An outstanding achievement of BioD is the establishment of the international student exchange programmes, including the international internship programme, which started after some years of development. BioD always attaches specially to soft skills, career skills, and professional ethics, which strengthen students' abilities to adapt to working conditions after graduation and to continuing learning practice.

The quality of education is provided by a team of lecturers, technicians, professors, who acquire a broad knowledge and professional skills of their fields. Most of them are educated in prestigious international universities. A total of 1.5% associate professors, 63.2% doctors, and 26.3% masters are the main resource for the programme. The appropriate teaching time also helps the lecturers enhance the teaching quality, which is based on scientific research, technology transfer, and start-up.

Teaching and learning conditions of NLU such as classrooms, libraries, laboratories, and work environments are constantly improved in quantity and quality. In particular, thanks to feedback of Stakeholders, NLU has made impressive strides in improving transmission capacity and connectivity facilities for online education, standardizing student living conditions and student support services.

Approximately, 75% of students graduating in 4 years, 8.6% in 5 years, and especially 10.8% of students graduating within only 3.5 years. The results show that the Bio programme is flexible, students are able to adapt and to choose self-determination curriculum for improving their knowledge and skills. The employment rate of graduates after 6 months of graduation is 82.3% and 95.0% after 1 year. This reflects the fact that BioD's education quality is relevant to current employers' needs, despite the fact "soft skills along with foreign language" is still BioD engineers' obstacle to job application. A wide range of job opportunities exist on the market, 55% of jobs are in the field of agriculture, 25% in testing labs, and 15% in microbiology and 5% in other works. This demonstrates that biotechnology education is relevant to the social needs.

Stakeholders' feedback is a decisive factor in revising the Bio programme. Accordingly (1) 2 credits were added to subject "research and university study skills"; (2) the compulsory specialized English was converted to elective in-depth English, namely English for medicine and pharmacy, English for applied biology; English for environmental biology in order to follow the current occupational trends; (3) more subjects are taught in English; (4) the assessment method for practical work and for thesis has been modified; (5) conditions for practice and internship have been standardized; (6) fostering and expanding capacity of lecturers. More laboratories have been built to "extend" the competing capacities of students and to "internationalize" research environment for students and lecturers.

The proposed programme is summarized and assessed in accordance with AUN standards to serve as the base for improving education quality in line with the current development of science and technology. The programme creates favorable conditions for foreign students in the region to access and to learn biotechnology programme of NLU. All BioD lecturers, researchers, technicians and students consensually implement and develop the training programme in biotechnology in accordance with AUN standards. The developed programme is based on the contributed feedback of Stakeholders and the kindly supports from NLU.

PART 1. INTRODUCTION

1.1 Summary of History and Development of Nong Lam University

Nong Lam University Ho Chi Minh City (NLU) founded in 1955 is a multidisciplinary state university under the management of the Ministry of Education and Training (MoET) [*Exh.1.1.1.a. Decision no. 118/2000/QĐ*]. NLU has been playing the role of education and training providing a huge human resource in the fields of agriculture, forestry and fishery, natural and social sciences and technology according to the need of society.

1.1.1 Mandates

Training human resources with undergraduate and graduate degrees in the fields of agriculture, forestry, fisheries; scientific research and cooperation with local and foreign partners; transferring the advances of science and technology to enterprises, farmers and producers generally.

1.1.2 Vision (to 2030)

Nong Lam University Ho Chi Minh City will become a research university of international quality.

1.1.3 Mission

Nong Lam University Ho Chi Minh City is a multi-disciplinary university committed to producing creative and highly qualified professionals, doing research, having extension, disseminating information, transmitting knowledge and transferring technology in order to meet the demands of sustainable socio-economic development in Vietnam and in Asia.

1.1.4 Strategic Objectives

Nong Lam University Ho Chi Minh City is striving to become a highly qualified university in education, research, dissemination of scientific technology and international cooperation as other advanced universities in the Asian region and in the world.

1.1.5 Organizational Structure and Management

The organizational structure of NLU is based on the general structure of the universities under the management of MoET in accordance with the Law on Higher Education and the Regulations of Universities. The university normally uses the management models with 3 levels as the following: 1/ university main campus, 2/ university sub-campus/faculties /functional offices and 3/ departments (Fig. 1.1). NLU currently consists of 15 faculties, 14 centers, and 1 institute to support for 59 specialized courses at undergraduate level, 1,376 master students in 16 programmes and 120 Ph.D students in 12 programmes. There is a wide diversity in the training methods including regular and non-regular, inter-college, and joint programmes. There are 2 advanced programmes, 5 high quality programmes, 5 international bachelor programme, 5 career oriented programmes (POHE). In 2014, NLU reviewed, revised, and improved all school curricula in accordance with MoET's regulations on the standardized output of the programmes and it was certified on 11 June 2018 by CEA. In the same year, NLU started the implementation of AUN standardized programmes involving veterinary medicine and food technology, which gradually enhance the quality of training that paved a solid way for other education programmes to be upgraded in 2019.

NLU has a team of highly qualified teaching and research staff with an average age of 38 – 40 years old. They are enthusiastic in their job and they carry out their duties with high morality, maintaining high level of teaching standard. 95.96% of non-academic staff have MSc degree or higher. 67.09% of academic staff including 2 professors, 34 associate professors, 142 doctors, and 396 masters, makes up the main work force carrying out teaching and research activities. By the year of 2020, 90% lecturers should have attained post graduate level, at least 20% of them will have doctor degree (6 professors, 40 associate professors); and by 2030 all

lecturers will hold post graduate degrees, among these more than 30% will have doctor degree (10 professors, 50 associate professors) [*Exh.1.1.1.b. Strategy for the development of NLU*]

The NLU has implemented training programmes following the guideline of learner-centered learning, with 18,040 students in total. The university takes in 4,500 new students per year (4,807/11,575 candidates selected in 2017-2018); the enrollment and graduation rate reached 85% and 89% respectively. Students are trained on social policies according to state regulations; they are well educated. They foster political theory, moral qualities, lifestyle, and soft skills. The NLU provides support to students to connect with companies/businesses to promote their professional knowledge, skills for them to confidently integrate and to meet the demands of the labor market. NLU has signed 140 MOUs/MOAs with universities, research institutes and non-governmental organizations to enhance research and technology transfer activities.

NLU manages and utilizes a total land area of 118 ha as the main campus, and one experiment site with the area of 19 hectares. In addition, the NLU has two campuses, which are located in Gia Lai and Ninh Thuan provinces. The university has 126 classrooms and four large auditoriums; 86 specialized laboratories; 03 practice buildings; 01 experimental farm with the area of 341,034 m^2, 01 research institute holds VILAS 17025. All the classrooms, lecture halls, laboratories are fully equipped for teaching and learning. The school library is regularly updated with materials, textbooks, and reference books. It links with domestic and international databases to best serve the needs of students, lecturers and staff in the university. The NLU strictly adheres to regulations on financial and accounting practice and on expenditures for public non-business units. Budget planning is reviewed and implemented on the basis of proposals from the units to meet the financial needs. The budget allocation process is open, transparent and reasonable for the implementation of NLU.

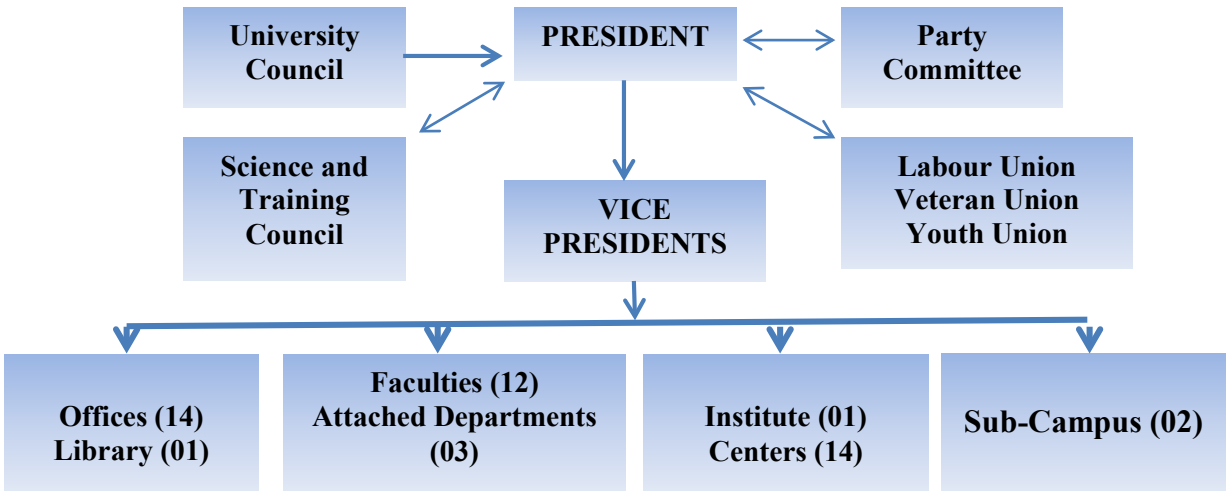


Figure 1.1 Organizational structure of NLU.

1.2 General Introduction of the Department of Biotechnology

The Department of Biotechnology (BioD) was established in 2001 [*Exh.1.1.2. Decision no. 240*] and It was considered as one of the top priority sectors for investment and development enabling Vietnam to pursue its strategies on science and technology development to attain the international level in a 20-year timeframe. After 18 years of development, more than 1,092 Engineers and 155 Masters have graduated, who contribute to the national socio-economic development. This is an impressive result of the tireless efforts of all staff of BioD. Knowledge and skills the students received are built on traditional agriculture to advanced technology such as gene technology, fermentation technology, cell technology, microbiological technology,

biochemical technology, embryo technology [*Exh.1.1.3. Programme in biotechnology, 2018*]. The BioD has successfully developed biotechnology programmes from the undergraduate to graduate levels responding to students needs with diverse programmes as inter-college programme, joint programme, and advanced programme [*Exh.1.1.4.a. Special Programme*], which improves professional knowledge and skills to satisfy the requirements of both students and their future work. In addition, our trend of developing in-depth knowledge and skills will provide students the opportunity to develop their future career in line with the development and requirement of society; the new-major environmental biotechnology [*Exh.1.1.4.b. Environment biotechnology*], is established along with development-oriented in Applied Biology (year 2020) and Biomedical Engineering toward 2030. [*Exh.1.1.5. Action plan for BioD*]

The Bio programme consists of 136 credits allocated into 08 semesters and additional summer sessions, including fundamental knowledge and practical skills, basic knowledge and practical research skills, specialized knowledge and professional skills, which are offered in the principle of "accumulation". The programme structure is revised based on the comments, evaluations, and suggestions of employers, alumni, lecturers and students, in alignment with regulation of MoET as well as the vision and mission of NLU. The students attend active training programmes, which include events on Youth Union directions, 5 seminars on soft skills, 2 study tours, and 4-week on-site industrial training, in addition to completing the graduation thesis. The students will qualify as "The Degree of Engineer in Biotechnology" after attaining the English and IT levels, along with good manners and conduct [*Exh.1.1.6. Decision no 2730*].

The successful programmes of the Master degree in biotechnology (2006), and Ph.D degree in biotechnology (2014) [*Exh.1.1.7. Postgraduate programme in BioD*], indicate the experience of lecturers and the considerable improvement of BioD's research capacity. Students always enhance their "quality" and "skill" to meet the teaching requirements and fulfill the assigned tasks; startup model of students is inspired and demonstrated by startup model of lecturers, as many as commercialized products. Remarkably, BioD students have successfully participated in the internship programme with international universities and the BioD is a globally recognized institute, which is shown in a number of French students coming for study and exchange culture [*Exh.1.1.8. List of foreign students to study*].

All staffs and students, who used to or are working and studying in the BioD, are determined to achieve the goal of bringing the department to a distinguished center for highly-qualified education, scientific research, technology transfer and international exchange. The continuous investment in facilities combined with the development of qualified and skilled lecturers enable BioD to achieve the strategic goals set by the NLU and to integrate itself into advanced biotechnology programmes in the world.

Slogan: Technology Seeding

Under the slogan of "Technology Seeding", academic, non-academic and technical staff of the department collectively pledge to contribute the knowledge, technical know-how on biotechnology in the production of the products, to meet the requirement of all customers. The BioD always works closely and cooperatively with all stakeholders involved anytime and from anywhere in order to improve the product quality and to develop better processes.

Logo:

1.2.1 Vision to 2030

The NLU Department of Biotechnology has orientated itself toward one of the most distinguished biotechnology centers of Southeast Asia.

Mission:

Mission of NLU Department of Biotechnology is to train qualified and acknowledgeable experts in fields of biotechnology, applied biology and environmental biotechnology at undergraduate and graduate levels, to apply biological techniques in high-tech agricultural area, habitat preservation and to develop new bio-products to serve the community.

1.2.3 General objectives

(1) Continuously enhancing the quality of biotechnology education on par with other prestigious universities in the Southeast Asia and globally; (2) strongly promoting basic research and application; (3) actively transferring research and education products to commercial sectors; and (4) being a leading partner with other national and international units working in biotechnology.

1.2.4 Specific objectives

a. To train highly-qualified human resources involved in biology, biotechnology and environmental biology in the Southeast Asia.

b. To disseminate biotechnological knowledge and techniques into commercial sectors, especially in three regions of Vietnam: Southern, Central and Highland.

c. To increase a cooperation and development in education, research and technology transfer with national and international universities, research institutes, enterprises/companies in the fields of biology, biological technology and environmental biology.

The educational philosophy: Ethics – Creativity – Integration

To fulfill its function the department employs the educational philosophy of equipping its graduates with professional ethics, creativity minds and readily to integrate into the society and community domestically and internationally.

1.3 Self-Assessment of AUN-QA Criteria at the Programme Level

Adopting the evaluation of the AUN-QA criteria at the programme level of Faculty of Veterinary and Animal Science and Faculty of Food and Technology, the NLU President decided to conduct evaluation and certification of AUN-QA criteria for the Biotechnology Programme (programme code: 7420201) that has been managed directly by Department of Biotechnology [*Exh.1.1.9. Decision no 2802/QĐ-ĐHNL-TCCB*]. Self-assessment work has been conducted since 2017 and collection of evidences carried out since 2014 could be considered as pre-activities of AUN-QA criteria assessment [*Exh.1.1.10. NLU's Quality Assurance Handbook, 2017*].

The Self-Assessment Report (SAR) in Biotechnology is based on the results of the department's eighteen-year development and establishment, from a regular programme into a credit programme; the quality of the teaching programme has been recognized in the country; and it plays an important role in the national development of science and technology. The programme certification by the AUN criteria is urgently and necessarily required to improve the programme quality aiming at reaching advanced techniques and technologies, which are employed at the Network of Asian Universities.

The SAR has been prepared at the BioD level and consulted by the Quality Management Office (QMO) as well as the data sources of supportive evidences from the different functional offices/centers supporting teaching and learning at the NLU (Fig. 1.2). In order to properly prepare the SAR, the BioD established groups and personnel who participate in activities of the SAR. It also sent some of them to AUN's training courses [*Exh.1.1.11. Certificate of AUN*

training].and it distributed the information of AUN-QA standards to all students and staffs [*Exh.1.1.12. AUN training activities*]

1.4 Processes, Methods and Tools for the Self-Assessment

The NLU President signed a Decision of AUN self-assessment plan on September, 09 2015 [*Exh.1.1.13.a. Action plan for AUN-QA in 2016-2018*], which requires the participation of all faculties and departments within the University, following the PDCA guideline of AUN-QA (ver. 3.0) and focusing on the following topics:

The chairman of the self-assessment council shall generally manage and assign tasks and duties to related groups and members of the group.

QMO coordinates the organization of workshop and survey activities to collect comments of lecturers, students, alumni and employers

The self-assessment council meets periodically to check implementation progress, to review results and comments, and assigns tasks of cross evaluation to each group.

Self-assessment board of the BioD will be responsible for promulgating guidelines and implementing self-assessment plans to all staff, lecturers, and students [*Exh.1.1.13.b. Decision on the promulgation of AUN*]. After completion of the self-assessment report, the BioD will organize meetings to internally present results of SAR in order to receive opinions and ideas from the BioD staff and students, and to complete the self-assessment report before sending it to QMO for evaluation.

The AUN Self-Assessment Report by the BioD includes: Summary of self-assessment results, Self-Assessment Report, and approved documentations.

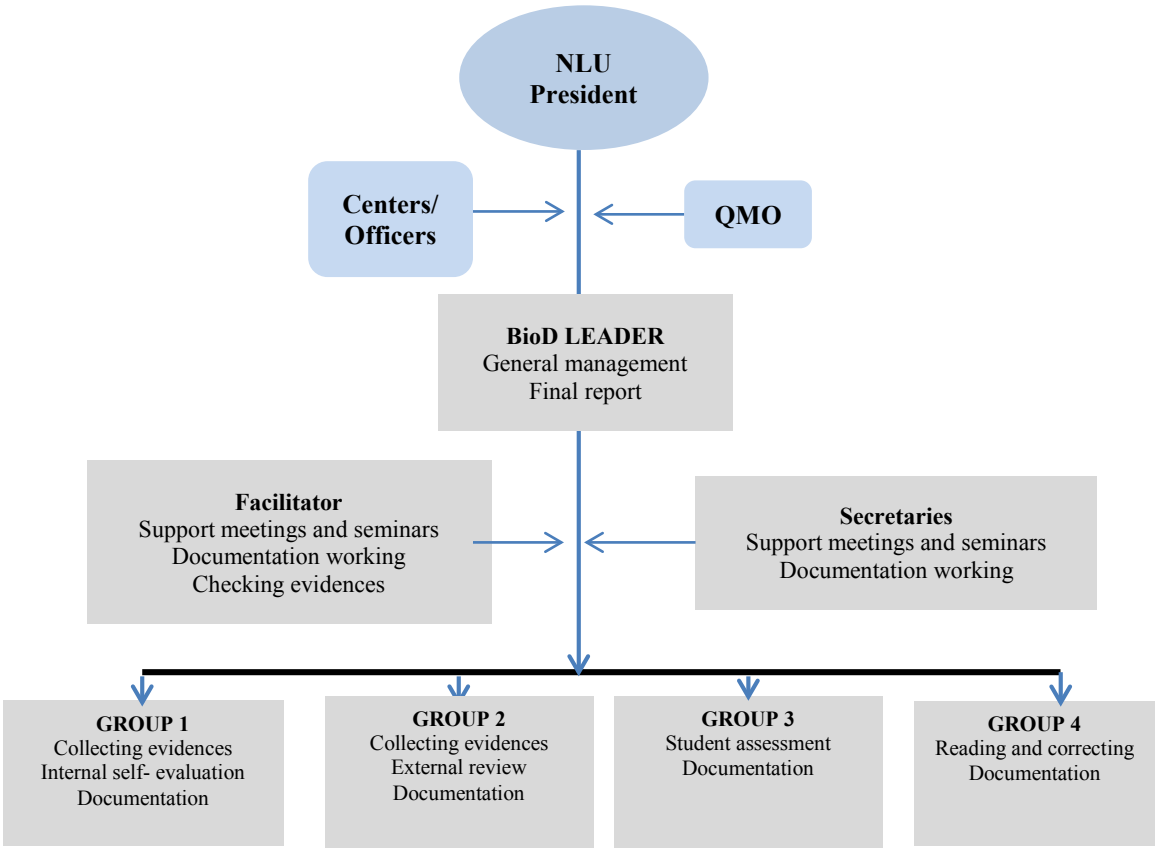


Figure 1.2 Self-assessment activities in Department of Biotechnology.

PART 2. ASSESSMENT OF AUN-QA CRITERIA AT PROGRAMME LEVEL

2.1 Criterion 1- Expected Learning Outcomes

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

The programme is designed to train talented engineers who will have profound knowledge, skillful expertise and good ethical qualifications in the biotechnology major, and who are able to adapt with a continuous development of technology in the globalization trend. The programme has been offered since 2001 following four amendments; 2008-2010-2014-2018, to meet (1) different requirements for credit-based training from MOET and from NLU [*Exh.2.1.1.a: Decision No.17/VBHN-BGDĐT*], [*Exh.2.1.1.b:Decision No.1712/QĐ-ĐHNL-ĐT*], (2) demands for labor resources for high technology [*Exh.2.1.2: Directive No. 50-CT / TW*], (3) reflecting the biotechnology programme of University of Newscatle (Australia), International University of National University Ho Chi Minh City, and Can Tho University [*Exh.2.1.3: Comparison of biotechnology programmes*]**,** and (4) satisfying the vision and mission in the development plan of the NLU [*Exh.2.1.4: Decision No. 3301/ĐHNL-HC*] (Table 2.1).

Table 2.1 Alignment between the POs with BioD and NLU's vision and mission

<table>
<tr><th colspan="2">University → Department</th><th colspan="2">→ Programme</th></tr>
<tr><td>NLU's vision
Nong Lam University Ho Chi Minh City will become a research university of international quality</td><td>BioD's vision
Department of Biotechnology has orientated itself toward one of the most distinguished biotechnology centers of Southeast Asia</td><td rowspan="5">Programme Objectives</td><td>PO1: Good knowledge of the origin of life that is based on biological knowledge at levels of cell and molecule</td></tr>
<tr><td rowspan="4">NLU's mission
Nong Lam University Ho Chi Minh City is a multi-disciplinary university committed to producing creative and highly qualified professionals, doing research, having extension, disseminating information, transmitting knowledge and transferring technology in order to meet the demands of sustainable socio-economic development in Vietnam and in Asia</td><td rowspan="4">BioD's mission
Department of Biotechnology is to train qualified and acknowledgeable experts in fields of biotechnology, applied biology and environmental biotechnology at undergraduate and graduate, to apply biological techniques in high-tech agricultural area, habitat preservation and to develop new bio-products to serve the community.</td><td>PO2: Ability to apply of biological techniques into basic and applied research in the field of biotechnology</td></tr>
<tr><td>PO3: Ability to develop and implement research proposals in the field of biotechnology</td></tr>
<tr><td>PO4: Ability to create biological products that meet social demands</td></tr>
<tr><td>PO5: Awareness of ethical standards and occupational skills to adapt to highly competitive working environments and to stay relevant in the Vietnam and Southeast Asia job market.</td></tr>
</table>

PLOs of the programme 2018 are based on the outcomes of programme 2014, as stated on knowledge, skills, and attitude, after revised into PLOs clearly and added more PLOs based on the stakeholder's requirements.

When the BioD students finish the programme, they will be able to:

- PLO1: Possess basic knowledge of natural and social sciences, and biological processes relating to life and living environments of organisms.
- PLO2: Possess comprehensive basic principles of molecular, biochemical, microbiological and cellular techniques.
- PLO 3: Possess knowledge of basic methods that are applied in fields of biological sciences.
- PLO4: Apply biological techniques in research and production of biological products in meeting social demands.
- PLO5: Use biological instruments/ tools and computational software in research relating to biological fields.
- PLO6: Establish precise diagnosis methods and tests based on biological and genetic techniques.
- PLO7: Analyze trends of biotechnology development by integrating research results which have been published by national and international scientists.
- PLO8: Establish a research team as well as conduct the proposed projects.
- PLO9: Propose approaches to solve real-life problems using biological knowledge, techniques and tools.
- PLO10: Communicate with students the basic knowledge and advanced techniques related to biology.
- PLO11: Apply basic principles of the biotechnology to develop novel and highly competitive products.
- PLO12: Establish processes for technological transfer of new biological products in order to serve the communities and meet social demands
- PLO13: Plan and conduct biological researches to the standards, which are acceptable in Vietnam.
- PLO14: Comply with professional ethical standards, and rules and regulations of national and international laws.
- PLO15: Resolve issues related to work and tasks in effective, positive and flexible ways.
- PLO16: Fulfill the social responsibility, keep up to date with new development and be ready to establish work serving the community.

Table 2.2 Relationships between POs and PLOs in biotechnology programme

POs	PLOs															
	1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**	**13**	**14**	**15**	**16**
PO1	x	x	x													
PO2				x	x	x										
PO3							x	x	x	x						
PO4											x	x	x			
PO5														x	x	x

PLOs 1, 2, and 7, 8, 9, 10: the students need to complete 77 credits of general and fundamental subjects, including knowledge and skills.

PLOs 3, 4, 5, 6, and 11, 12, 13: the students need to complete 59 credits related to professional knowledge and skills subjects, ranging from 2nd semester of 2nd years to the 2nd semester of 4th year (Table. 2.2).

PLOs 14, 15, and 16: related to ethics and professional awareness, are distributed in multiple subjects of complementary and social knowledge. These courses, combined with social activities and internships, help the formation of the sense of community services.

PLO3, 8, 9, 13 and PLO15 are related to the student's ability to plan, to evaluate and to improve the effectiveness of the works. The students are able to work independently or in a team with self-responsibility and responsibility for the group; PLO14 and PLO15. PLO9, 13, and 15 are related to the abilities such as self-orientation, self-defending, and giving an individual conclusion on the works.

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

PLOs of the programme are organized into blocks of knowledge, skills, and attitudes. The specific outcomes including knowledge, skills, and attitudes serve as a foundation for developing of professional knowledge and skills, ensuring the smooth connectivity among the educated programmes and levels. Besides, the block of social knowledge, policies, security and defense help students build consciousness about the responsibility to live ethically and to serve the community in response to globalized and diverse career development, but always keeping the Vietnamese culture (Table 2.3).

Table 2.3. Subject specific and generic learning outcomes grouped by knowledge, skills, attitudes and lifelong learning

Knowledge – Skills – Attitudes		PLOs	Subject generic	Subject specific
Basic knowledge	Mathematic, Social, Ecology, Law	PLO1 PLO2	X	
Professional knowledge	Cell biology, Molecular Biology, Genetics, Microbes, Experimental analysis, Vaccines, Tissue culture	PLO3 PLO4		X
Basic skills	Communication, Biochemistry, Team-work, Basic practicals, Learning methods	PLO7 PLO8 PLO9 PLO10	X	
Professional skills	Labs instrument, Genetic engineering, Advanced PCR, Bioproduct development, Advanced microbiology	PLO5 PLO6 PLO11 PLO12		X
Attitudes	Social and ethical activities, Thesis, and Internships	PLO13 PLO14		X
Lifelong learning	Scientific knowledge and skills, Learning and communication skills, Perception of life-long learning	PLO15 PLO16	X	

The generic learning outcome is concentrated on soft skills for improvement of the ability of the students in working and living after graduation. The communication, creativity, critical thinking, problem solving, and co-operation are mainly transferred into the teaching and learning activities from the first semester to final thesis presentation, from inside of classroom to outside of NLU's campus.

2.1.3 The expected learning outcomes clearly reflect the requirements of the stakeholders

The curriculum structure and the PLOs meet the requirements of the stakeholders. The programme is built on the opinions of stakeholders. In the context of intellectual economy and globalization of the labor force, it is a vital requirement for students to learn with a standardized level of IT and foreign language [*Exh.2.1.5. Decision No.1104/QĐ-ĐHNL-ĐT*]. Career skills,

life skills, and attitude sensitivities are also requirements of the employers. The programme always allows time for students to practice soft skills through seminars, to participate in social activities based on the evaluation and suggestion from employers in internship course [*Exh.2.1.6. Report on internship activities*]. The programme also allows time for student transfer; it focuses on advanced professional skills and career internships, as well as start-up activities [*Exh.2.1.7. Start-up activities in 2018-2019*].

The course "Essential Skills in University Study"" is added to help the students to know how to learn and to finish an educational programme at university level. Thesis working is revised and packed into a process including 07 steps and assessment rubrics, which is published in the programme specification and disseminated to all of third year students [*Exh.2.1.8. New process for thesis working*]. The English competence of the students is improved by increasing the courses which are taught in English [*Exh.2.1.9. List of the courses using the English for teaching*]. Stakeholders take concern on the PLO 4, 11, 12, and 14, 15, 16, that reflect the ability of students after graduation; to develop the new bio-products for social needs, fulfill the social responsibility and comply with professional ethical standards. Alumni and students take more concern on PLO 1, 2, and 10; knowledge and skills of students in biotechnology (Table 2.4)

Every two years, the BioD programme is evaluated and revised based on the stakeholder feedback and requirements of MoET [*Exh.2.1.10. Circular No. 07/2015/TT-BGDDT*].

Table 2.4 PLO clearly reflecting the requirement of stakeholders

PO	PLO	Students	Academic staff	Alumni	Employers
PO1	*PLO1*	***	***	***	**
	PLO2	***	***	***	**
	PLO3	**	***	**	**
PO2	*PLO4*	***	***	***	***
	PLO5	**	***	**	***
	PLO6	**	**	**	*
PO3	*PLO7*	**	**	**	**
	PLO8	**	**	**	**
	PLO9	**	***	**	***
	PLO10	***	***	***	**
PO4	*PLO11*	***	***	***	***
	PLO12	***	***	***	***
	PLO13	**	**	**	*
PO5	*PLO14*	***	***	***	***
	PLO15	***	***	***	***
	PLO16	***	***	***	***

** means requirement in part, ** means requirement, *** means high requirement.*

2.2 Criterion 2 - Programme Specification

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

The programme has been offered since 2001 based on Regulations of MoET dated February 11, 1999, following the year-based system [*Exh.2.2.1.a. Decision no. 04/1999/QĐ-BGDĐT*]. It is formulated based on the frame programme assigned by MoET with basic and professional courses. The needs of stakeholders to meet with social development, therefore, the programme has been revised four times to help improving the competence of students according to outcomes, it is not the accumulation of course certificates. On this direction, Bio programme

is changed from 222 modules to 143 credits (2008), and to 140 credits (2010), to 135 credits (2014), and to 136 credits (2018), to help students acquire and apply knowledge, practice skills, and develop independent through a self-study. The Bio programme specification is clearly presented in version 2018. Here is the necessary information about the programme such as:
Degree awarding institution: Nong Lam University Ho Chi Minh City
Training unit: Department of Biotechnology
Degree title: Engineer in Biotechnology
Name and code of the programme: Biotechnology, 7420201
Type of training: Full-time, credit-based

Brief introduction of the programme: 136 credits (101 compulsory and 35 elective credits), of which 45 credits are in general knowledge and skills block, 45 credits in fundamental knowledge and skills block and 46 credits in specialized knowledge and skills block (10 credits for graduation thesis). The average training time is 4.0 years, however, students can shorten or extend completion time of their study programme in accordance with their personal conditions. Elective credits are structured in 10 specialized groups, which are characterized by the in-depth knowledge or skills navigating the student to the future work after graduation.

Engineers graduated from the programme are capable of working in various sectors and fields, particularly in agriculture, biology, livestock, and medical center, as well. The engineers could teach at other universities and/or colleges, work for companies with production and commercialization of biological products, or establish startup themselves. Additionally, the engineers could also continue to pursue the postgraduate programmes at national and international institutions.

Curriculum: The programme curriculum (Appendix 3)

Course syllabus: Collection of the course syllabus

Study environment: Classroom, laboratory, net house, experiment sites, library, academic clubs, consultant, Youth Union, Student Support Counseling Center, dormitory, health care, photocopy service, sport clubs, and start-up.

Requirements and enrollment criteria: The students who wish to attend the Bio programme have to pass a national entrance examination held by the MoET [*Exh.2.2.1.b. Circular no. 03/2015/TT-BGDĐT*], and their exam scores must be equal or higher than the standard scores of the combined subjects of group A00 (Mathematics, Physics, Chemistry), B00 (Mathematics, Chemistry, Biology), or A02 (Mathematics, Physics, Biology). However, candidates can be admitted to the course depending on their awards [*Exh.2.2.1.c. The promulgation no. 772/ĐHNL-ĐT*].
Information channels that help review feedbacks and improve quality: Stakeholder consultations conducted by the NLU Quality Management Office and BioD.
- The updated programme in 2008: with the learner-centered principle, the programme was converted from 222 modules of the 2001 programme to 143 credits with a 4-year programme. Thirty new subjects were added, 19 subjects were deleted due to the rename and integrating. Highlights of the programme were (1) a number of elective courses in the block of knowledge and skills that allow students to select were based on job orientation; (2) the names of the subjects were specified, helping the employers in evaluation and selection of students; (3) the credit-based system was used in the first time [*Exh.2.2.1.d. The programme version 2008*].
- The updated programme in 2010: with Learning Outcomes packed in blocks; knowledge, skills, and attitudes, the version 2010 was reduced the lecture time and increased the amount of

time spent on scientific research, social work, and self-study. The proposed curriculum decreased to 140 credits with a 4-year programme [*Exh.2.2.1.e. The programme version 2010*].
- The updated programme in 2014: following the plan to continue increase the ratio of time for science research and soft skills training, as well as enhancing self-study hours, the programme was reduced to 135 credits for 4 years in 2014. With this modification, students can complete the programme within 3.5 years and many students have successfully completed internship programmes with Kasetsart University and Rangsit University (Thailand) from 3 weeks to 4 months [*Exh.2.2.1.f. List of international internships*]. Learning Outcomes of the version 2014 were still packed in blocks; knowledge, skills, and attitudes.
- The updated programme in 2018: The programme has been prepared since 2017, to standardize the programme and harmonize into the regional and international human resources. The programme will be constructed in requirements of MoET and on the survey results, the weaknesses of biotechnology students due to lack of professional skill and English. The programme will focus more in professional English to help students in reading the materials and career skills required by employers. PLOs are formulated clearly.

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

The structure and position of the course are arranged for students to easily register for the course and establish their own academic timetables for the completion of the whole programme. There are four types of the course; theory course, theory and practical course, practical course, and internship course. The PLOs are translated into the courses through the course learning outcomes (CLOs) and stated in the course specification [*Exh.2.2.2: Sample of course specification version 2018*] The contribution of each course to achieve some PLOs is at different levels such as non supportive, supportive and highly supportive. The syllabus contents are designed by lecturers and must be evaluated by the BioD Advice Council. That helps the course contains all the information needed for lecturers and students. Information of the course specification is represented as follows:

- General information includes course title, code of course, number of credits, compulsory or elective cousre.
- Brief description of the course summarized main contents of the course.
- The course goal, CLOs and contribution of the course to PLOs
- Teaching and learning methods.
- Assessment methods, CLO assessment matrix, rubrics and evaluations.
- Textbooks or references of the course.
- Structure and content of the course, Lesson Learning Outcomes satisfy CLOs
- Requirements of the lecturer and information about lecturer
- Date on which the course specification was written and leaders who approved it.

Course syllabus is evaluated, modified and updated annually by lecturers based on student feedbacks and achievements of research activities. All changes in content such as learning materials, teaching and assessment methods must be approved by the Head of the Department [*Exh.2.2.2.b:Procedure of developing course syllabus*].

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

The programme descriptions and course syllabus are published on the BioD's website to be widely disseminated to stakeholders (Table 2.5). This form is also printed in the Student Handbook and is posted on the bulletin board of BioD. [*Exh. 2.2.3.a: BioD Student Handbook*]. The hard copies of the programme and course specifications are available at the office of the

BioD for academic and support staff information. Additionally, one copy of that is held in Youth Union's office and one is in Reading room to help students set up the learning schedules.

Table 2.5 Ways for communication to stakeholders

Programme specification via					Stakeholders	Course specifications via			
Website	Facebook of Alumni/Youth Union	Student Handbook	Social media / events	Class meeting		Website	Staff Handbook	Social media/ events	Class meeting
X	X	X		X	Students	X	X		X
X			X		Potential students	X			
X			X		Student relatives	X			
X	X	X			Alumni	X	X		
X		X	X		Employers	X	X	X	
X		X			Staff	X	X		
X					The society	X			

The programme specification is presented for freshmen in the first seminar of the first academic year; POs, PLOs, vision, mission, programme structures and requirements. Lecturers have to introduce and explain the course specification to students in the first class; relationships LLO - CLO - PLO – PO and course contents, and assessment methods [*Exh.2.2.3.b: A sample of course syllabus*]. Additionally, the programme and course specification also are communicated to employers through workshops to get feedback from them. Facebook is an available way to disseminate the programme specification to students and Alumni [*Exh.2.2.3.c: Facebook of Youth Union and Alumni*]. Social media or events are good opportunities for the representatives of BioD or AAO providing the information of programme specification [*Exh.2.2.3.d. Online meeting*]. Besides that, Website of BioD is mainly way to provide all of information relating to the programme; http://biotech.hcmuaf.edu.vn/.

2.3 Criterion 3 - Programme Structure and Content

Developed as a "stacking up" system of knowledge and skills that allows students to accumulate, to create professional foundations, to develop creative thinking, and to develop highly specialized career after graduation (Fig. 2.1). The percentage of elective subjects allocated in blocks of knowledge and skills is at the level, which satisfies the depth and the potential of advance education in order to meet the requirements of the stakeholders in the global development trend.

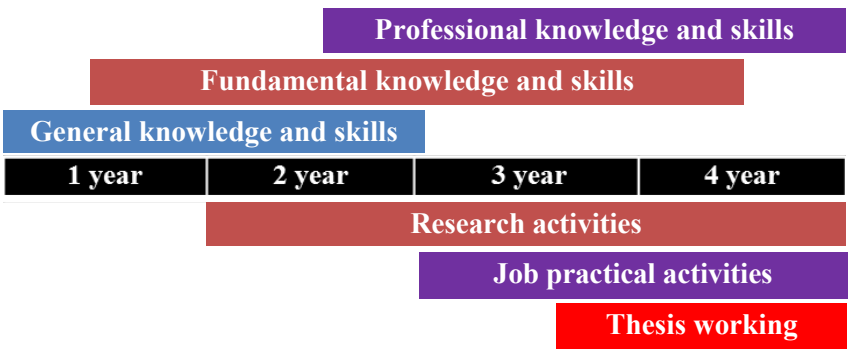


Figure 2.1 Stacking up system accumulated the knowledge, skills and attitudes.

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

Table 2.6 Constructive alignment of the Bio curriculum with the PLOs

PO	PLO	Knowledge and skills	Course's name	Learning methods
PO1	*PLO1*	Basic knowledge	Mathematics, Chemistry, Biology, Physics, English	Lectures, Assignments (and self-directed learning)
	PLO2			
	PLO3	Professional knowledge	Introduction of Biotechnology, English for Biotechnology 1, Biological Laboratory safety Management, Molecular Biology, Research Methodology, Bioinformatics, ISO quality management	Lectures, Assignments, Computers, Laboratories, Study tours, Seminars, E-learning (and self-directed learning)
PO2	*PLO4*			
	PLO5			
	PLO6			
PO3	*PLO7*	Basic skills	Experiment in Microbial Biology, Essential Skills in University Research and Education, Fermentation Technology I, Genetics Engineering I, Biotechnological Equipment and Techniques	Lectures, Laboratories, Assignments, Computers, Seminars
	PLO8			
	PLO9			
	PLO10			
PO4	*PLO11*	Professional skills	Microbiological Testing, Waste Treatment Technology, Plant Cell Culture, Advanced PCR, Applied Pharmaceutical Chemistry, Molecular Diagnostic Tests in Livestock Diseases	Lectures, Laboratories, Assignments, Study tours, Working in Net houses, Experiment sites, Seminars
	PLO12			
	PLO13			
PO5	*PLO14*	Awareness	General Law, Internships. All courses, Youth Union activities, Co-curriculum activities, Ho Chi Minh Ideology	Lectures, Laboratories, Assignments, Job working, Social joining, Seminars, Reading, Presentation, Self-defense, Writing
	PLO15			
	PLO16			

Version 2018 of the programme, POs and PLOs were upgraded on version 2014 leading to some courses were changed. Based on the publised PLOs of curriculum, lecturers determined course objectives, CLOs, teaching methods, as well as proper evaluation methods for their responsible subjects. The level of effect and contribution of the course on the whole curriculum are determined in a matrix of courses - PLOs of the programme [*Exh.2.3.1.a: Matrix course and PLOs of the programme*]. The assessment methods should be stated clearly in the course syllabus and in co-curriculum activities [*Exh.2.3.1.b: Evaluation of student's attitude by Youth Union*]. Lecturers are assigned to review, improve or design new courses for the programme based on the feedback of the stakeholders [*Exh.2.3.1.c: New courses in programme*]. The constructive alignment of the Bio curriculum with PLOs is presented through the courses and learning methods, as shown in the Table 2.6. Learning activities from lecturer to students; listening is mainly, move to active behavior of the student such as presentation, cooperation, and leadership.

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

The curriculum is established on the basis of the objectives and PLOs which have been stated. PLOs are packed into PO, respectively, in that each course, CLO, is sharing knowledge and skill with others to form PLO (Table 2.7).

The lecturers are responsible for the quality of their lectures and materials in the lab. or in the classroom according to CLOs. Table 2.8 is shown that the microbial biology course is supporting 3 PLOs, high supporting 5 PLOs, and 8 PLOs are not supporting. The course provides the knowledge of microbial cell's structure, function, and reproduction (PLO 1, 2, 3); the positive and negative effects of microorganisms in human life (PLO 4, 6, 9, 11, 14).

Table 2.7 Number of courses contributing to PLOs

PO	PLO	Knowledge and skills	Courses (High support)
PO1	*PLO1*	Basic knowledge	38
	PLO2		58
	PLO3	Professional knowledge	46
PO2	*PLO4*		48
	PLO5		34
	PLO6		15
PO3	*PLO7*	Basic skills	36
	PLO8		28
	PLO9		34
	PLO10		25
PO4	*PLO11*	Professional skills	23
	PLO12		22
	PLO13		16
PO5	*PLO14*	Awareness	21
	PLO15		15
	PLO16	Attitudes	50

After learning, students can develop awareness of the importance as well as the side effects of microbes (PLO 11, 14), and create microbial products at laboratory scale (PLO 6, 11, 14). The learning results are evaluated according to standards and objectives of the courses [*Exh.2.3.2.a: Samples of the course syllabus*]

Table 2.8 Contribution levels of the Microbial Biology (211138, 02 credits) to PLOs

Contribution levels of the course to PLOs															
PLOs															
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
x	*X*	*X*	*x*		*X*			*x*		*X*			*X*		

X = highly supportive, x = supportive

Table 2.9. Number of credits contributing to English competence of BioD's students

Year 1		Year 2		Year 3		Year 4		English levels
Sem.1	Sem.2	Sem.1	Sem.2	Sem.1	Sem.2	Sem.1	Sem.2	
4	3			Self-study, English Centers				Basic level
	1	1	2	English club, Self-study, Reading English references for research, Internships				Professional level
		2	2	Research writing, Reading English references for Thesis, International Internships				Course level
4	4	3	4	Sum (15 credits)				

The courses for improving the English proficiency (contributing to PLO 3, 5, 7, and 13) are logically sequenced in the programme structure; English level 1, level 2, English for Biotechnology 1, 2, and Special English for medicine, environment, and biology[*Exh.2.3.2.b: List of English courses changing*]. That helps the students to read the scientific papers and protocols, to join with lectures, seminars, and conferences in English, to improve the research ability, and to upgrade the thesis quality and international internships (Table 2.9).

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

The programme is logically structured with a good balance of general, fundamental, and professional knowledge and skills as shown in Table 2.10. A total of 136 credits including 101 compulsory and 35 elective credits are structured in 10 specialized groups, which are characterized by the in-depth knowledge or skills navigating the student to the study area and the future work after graduation. In general, the block fundamental knowledge allows 50% time for practice, but in the block of professional knowledge, time allocated for lecture is only 40% and the remaining 60% is designated to practical work. The skills are fortified with 45 elective courses focused on analytical skills, product manufacturing and laboratory skills with molecular tools, and with upgrading the skills. 11 credits for social-political courses (Philosophy of Marxism and Leninism, Political economics of Marxism and Leninism, Scientific socialism, History of Vietnamese communist party, Ho Chi Minh's Ideology) and 2 credits for General Law provide students with understanding of their liability to community and country. In addition, Youth Union takes care on social activities, a proof for being full-grown, such as Green summer campaign, Children smile programme, Blood donor campaigns, and etc. A total of 500 students annually join these co-curriculum activities, which help their positive thinking and active lifestyles [*Exh. 2.3.3.a: List of activity items of Youth Union*].

Table 2.10 Programme structure containing a good balance between knowledge and skills

Knowledge and Skills	Course studied	Theory hours	Practice hours	Credits	
				Number	Percentage
Generic knowledge and skills	20	555	270	45	33.09
Fundamental knowledge and skills	18	525	300	41	30.15
Elective fundamental knowledge skills	5	60	0	4	2.94
Professional knowledge and skills	8	135	180	15	11.03
Elective Professional knowledge and skills	40	225	480	31	22.79
Total	**91**	**1,440**	**1,230**	**136**	**100**

The curriculum contains prerequisite courses as conditions for students to register the new courses in the later semesters. The courses are sequentially arranged from the first year to fourth year and from generic to professional knowledge and skills (Table 2.11). It is very easy for the student to plan a study schedule for the whole programme in four years [*Exh. 2.3.3.b: Learning programme of the students*], and to choose the subjects which meet the skill requirement of her/his jobs in the future. The research activities (from 1st semester, 2nd year), internships (2nd semester, 3rd year), and thesis working during 6 months (3rd - 4th year) are showing of integration in the curriculum. The students have to apply their knowledge, skills, and ethics obtained from previous courses to finish the works.

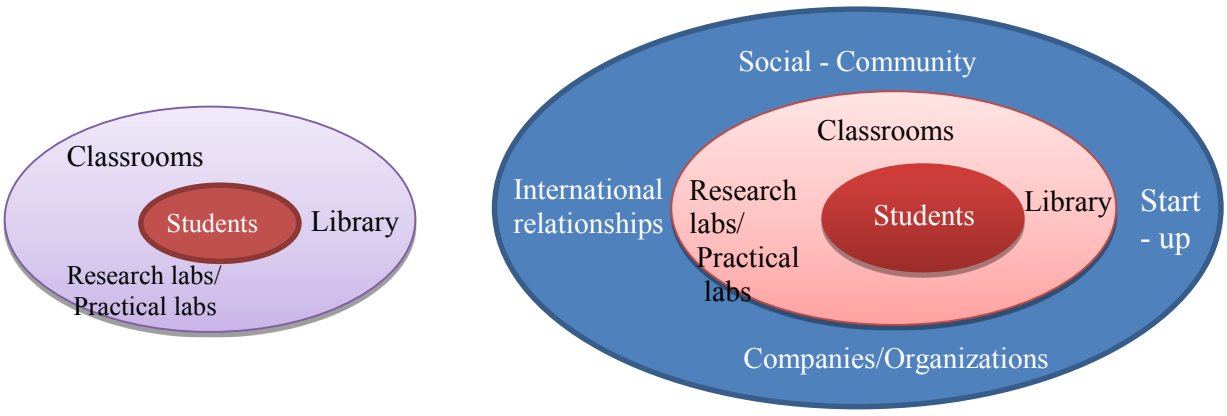
Table 2.11 Curriculum sequenced and integrated in semester/year

Year 1		**Year 2**		**Year 3**		**Year 4**		**Knowledge and skills**
Semester		**Semester**		**Semester**		**Semester**		
1	**2**	**1**	**2**	**1**	**2**	**1**	**2**	
21	**17**	**5**	**2**					Generic knowledge and skills
	7	**11**	**12**	**6**	**4**	**5**		Fundamental knowledge and skills
			2	**10**	**15**	**9**	**10**	Professional knowledge and skills
21	24	16	16	16	19	14	10	**Sum (136 credits)**

The Bio curriculum was reviewed and updated in 2008 (143 credits), 2010 (140 credits), 2014 (135 credits), and 2018 (136 credits), which was every 2 - 3 years according to requirements from MoET, NLU, and stakeholders in order to comply with the developing orientation of the country. From feedback of the students and employers, the duration of internships is increased more 1 week, starting from academic year 2018 and a new course "Essential Skills in University Study" started with 2 credits. This course is transferred to students via E-learning. Another new course which is named Biological Laboratory Safety Management helps lab. working and researching skills of the students, this course is taught in semester 2 in the first year. The professional English course in 2018 programme is taught earlier one semester than 2014 programme. Expected results are the students trained on high-tech subjects, on problem solving, team working, and community serving. Their comments and suggestions are considered in the modification and upgrading of the curriculum.

2.4 Criterion 4 - Teaching and Learning Approach

Teaching and learning strategy was changed from the "closed" education model, which is limited by the knowledge and skills of lecturer, to the "opened" model, which is based on the knowledge and information from society, companies and from other countries. It is career oriented as well as opening a career orientation "independently" for students (Fig.2.2).



2000 to 2008 2014 to 2018

Figure 2.2 Teaching – Learning models formulated in 2001 and renewed in 2014.

2.4.1 The educational philosophy is well articulated and communicated to all stakeholders

Teaching and learning model 2014 indicates that the curriculum focuses on encouraging the students to build their own oriented educational programme, which is based on the core values of lifelong learning in high challenge environment. Ethics, Creativity, Integration is the education philosophy of BioD [*Exh.2.4.1.a: Educational philosophy*]. This philosophy is based on the fact that biotechnology involves techniques to modify and change the genetic materials, which relates to the origin of the organisms, with the intention is to eliminate the couses, which affect public health and living environment seriously. *Ethics* emphasizes on biosafety and rule standards, that are integrated into the international recognitions and continually oriented to develop professional knowledge and skills, to learn to *Integration*. Research is a key skill that biotechnology engineers need to be trained in the way for life-long learning. *Creativity* is an attribute only achieved when students participate continually in research activities. On this orientation, the teaching and learning methods are changed from classroom to lab, from lab to the social and from national to international learning. The BioD strategic plan with regional and international integration is (1) establishing a series of laboratories for research activities at a recognized standard [*Exh.2.4.1.b: Development of Vilas*], (2) developing the high quality groups of scientific staff, who are well trained, (3) promoting the international internships for students and applying the English language and IT into the curriculum. The educational philosophy of the programme is disseminated to all parties such as lecturers, students, employers and the whole society through workshops, seminars, website, and leaflets [*Exh.2.4.1.c: Website of BioD showing*]. New students are introduced to the philosophy of education, vision and mission of the BioD in the meetings annually [*Exh.2.4.1.d: Minute of meeting of new students*].

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

Teaching activities are based on textbooks, reference materials, research database, practice tools, and practical models. The teaching schedule of the lecturers is in according to their duties and position [*Exh. 2.4.2.a: Teaching plan of biotechnology*]. Learning activities include listening, viewing, presenting, reading subject materials, report writing, working on specialized equipment and instruments. Students have to observe the timetable and schedule of the academic year and to set their own goals [*Exh. 2.4.2.b: Learning plan of biotechnology*].

The research activities and internships are planned in advance to be timely executed and managed. Foreign exchange activities are based on the MOUs and there is a strict process for candidate selection, documentation, progress reports [*Exh.2.4.2.c: A process of exchange students*].

Teaching activities are organized inside and outsite classroom. Lecturers follow teaching strategy, performing activities based on PLO, student instruction and assessment. Lecturers guide and evaluate group assignments, visiting and internship reports, seminars and E-learning (www.edmodo.com) [*Exh.2.4.2.d: List of the e-learning courses*], to supervise students to do scientific research, student projects and thesis, to learn foreign language, and startup, to assist students in co-curriculum activities and social works, and also to pass on the knowledge and soft skills to students in seminar form.

The learning environment inside the university campus is established to respond to the programme outcomes such as to enrich knowledge and professional skills in class, to learn knowledge and skills from labs, fields [*Exh. 2.4.2.e: List of 2nd year students entering into the labs*], to expand knowledge from libraries and Reading room. Culture and sports are mainly activity of Youth Union, which helps enhance the consciousness of team work, community service, and health [*Exh. 2.4.2.f: List of social activities*].The learning environment outside the university campus included: companies, which are good places for the students to familiarize

with the real working conditions, to life skills and working life [*Exh. 2.4.2.g: List of institutions receiving the BioD students*]. Society is a component that strongly impacts on students; Start-up is one activity that helps the students who can themselves start their own career right after graduation; and international activity helps the students to approach the modern knowledge and life skills based on English language environment (Table 2.12).

All activities of teaching and learning are based on foreseen plans managed by the Academic Affairs, Property Management Office, Planning and Finance Office, International Cooperation Office, Scientific Research Management Office to make sure that students meet the PLOs.

Table 2.12 Mapping teaching and learning methods with PLOs

PO	PLO	Knowledge and skill	Teaching methods	Learning methods
PO1	*PLO1* *PLO2* *PLO3*	Basic knowledge	Lecture; discussion; questions-answers; demonstration; study assignment, seminar	Lecture; discussion; seminar; questions-answers; lab work; self-directed learning
PO2	*PLO4* *PLO5* *PLO6*	Professional knowledge	Lecture; discussion; questions-answers; demonstration; study assignment, seminar	Lecture; discussion; seminar; questions-answers; lab work; study tours, self-directed learning
PO3	*PLO7* *PLO8* *PLO9* *PLO10*	Basic skills	Lecture; discussion; questions-answers; demonstration; study assignment; seminar; tutorial method	Lecture; discussion; seminar; questions-answers; lab work; study tours, self-directed learning.
PO4	*PLO11* *PLO12* *PLO13*	Professional skills	Lecture; discussion; demonstration; seminar; tutorial method; study assignment; project work, internships, net house work, field work	Lecture; Discussion; seminar; questions-answers; lab work; internship; project work; experiment doing, writing, reading, self-directed learning
PO5	*PLO14* *PLO15* *PLO16*	Awareness	Lecture; discussion; study assignment; seminar, field work	Lecture; discussion; seminar; lab work; internship; social joining; self-directed learning

2.4.3 Teaching and learning activities enhance life-long learning

A characteristic of the biotechnology field is always updated with novel equipment and technologies. Therefore, the curriculum must be designed to train the students for self-study competence, for which the skills such as critical thinking, problem solving, teamwork, communication and negotiation skills, analytical skills, creativity, and intercultural skills are embedded throughout the teaching and learning activities of the programme.

For improving the multilingual competence; students, lecturers, and instructors have to keep themselves up to date with modern materials, English language competence, international and national training courses [*Exh.2.4.3.a: List of training courses*]. The curriculum is updated with a number of subjects provided in English and by visiting experts [*Exh.2.4.3.b: Agreement of visiting lecturers*]. Foreign language clubs and international exchange programmes are co-curriculum activities to motivate students as well [*Exh.2.4.3.c: Report on international internships*].

Thesis writing (30 - 50 pages/thesis) and subject's reports and presentations in the classes will improve the literacy competence of the students, these activities are conducted in the basic and professional courses [*Exh.2.4.3.d: Regulations for thesis working*]. Research is a

particularly learning activity for students to fill up the gaps in teamwork, reference searching, data evaluation, presentation and writing skill. In biotechnology, 100% of the second year students should be in the labs for practicing or doing a research for enhancing the creativity and for improving the competence in science and technology. [*Exh.2.4.3.e: Regulations for students entering the labs*]. The third year students are requested to take 4 weeks out of the university for internships, it is a compulsory course (2 credits). All of the students should work in companies, research institutions, hospitals, business sectors to enhance the personal, social and learning to learn competence [*Exh.2.4.3.f: Report on national internships*]. The programme allows 31% time for students to be involved the social learning via Youth Union related activities and other co-curriculum activities to improve their communication skill, teamwork, responsibility and leadership [*Exh.2.4.3.g:Evolution competition of Youth Union*].

Students are encouraged and coached to start-up their own business based on the research activities and expert's advices. The course "Development and Commercialization of Bio-products" is opened to third year students, when the students understand approaches to planning and management of projects, including both processes and resources. In addition, students can participate in other activities at the Technology and Business Incubation Center to seed or direct their start-up [*Exh.2.4.3.h: Website of TIC*]

2.5 Criterion 5- Student Assessment

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

The responsibility of the assessment of student's learning outcomes has been shifted from "teacher" (formerly the major evaluator) to "the employer". This is carried out over a long period of time from admissions to the thesis presentation. In BioD, working for the thesis is compulsory with 100% students have to performance during 6 months in seriousness and concentration. The students have to complete 90 credits and GPA > 2, to attend 5 seminars of soft skills and 2 study tours, and online check a questionnaire relating to 16 ethical principles; such as respect for intellectual property, social responsibility, legality, animal care, and human subject protection. A thesis process consists of 7 steps; writing a research outline, defense for outline, progress reporting, result reporting, writing thesis, final defense, thesis correction, and thesis completion for submitting. For thesis evaluation, the diagnostic assessment is used to evaluate the research outlines for identifying the gaps in the knowledge, skills, and literacy competence [*Exh.2.5.1.a: Evaluation of thesis outline*]. The formative assessment is used to measure results of research working in progress [*Exh.2.5.1.b: Evaluation of thesis progress*]. Finally, the success of the thesis is assessed on the summative way based on the evaluations that sum up the learning achievements from supervisors, reviewers, thesis's committee with three members, one of them is employer [*Exh.2.5.1.c: Thesis committee*].

Internships revised from the course "laboratory work" in the programme 2014 is evaluated by the employers to find out the strengths, weaknesses, knowledge and skills of the students, and also suggestions for improving; the evaluate scale is 1 = unsatisfactory; 2 = satisfactory; 3 = good; and 4 = very good [*Exh. 2.5.1.d: Internship evaluation*]. English competence of students is assessed carefully on various levels; placement test, English 1 and 2, professional English by using Multiple Choice Question Forms applied in diagnostic, formative and summative assessments [*Exh. 2.5.1.e: English examinations*].

Student progress assessment is evaluated regularly from the first year to the final year. The evaluation is carried out in many different forms such as classroom activities, group exercises, social contribution, research activities, seminars, internships, final thesis, and especially by different organizations and experts (Table 2.13).

Once the students have completed all the courses offered by the Programme, their IT standard, the English proficiency, and the personal conduct, will be assessed. Assessment is formally conducted by the Departments and by the University four times per year. Students passing marks for graduation are based on these assessment results [*Exh. 2.5.1.f: A process of the evaluation of graduation*].

Table 2.13 Student assessments alignment with the PLOs

PO	PLO	Knowledge and skills	Assessment methods	Assessment items
PO1	*PLO1* *PLO2* *PLO3*	Basic knowledge	Assignments/Examinations, CLO assessment matrix, Course Assessment Rubrics	**Theory** course: Diligence, Presence in class, Participate in class activities **Interim**: Contents, Presentation, Answering, Group working **End term**: Multiple choice questions, Orals, Essays, and Presentation **Thesis**: presentation, self-defense, writing and reading skills, research ethics
PO2	*PLO4* *PLO5* *PLO6*	Professional knowledge	Assignments/Examinations, CLO assessment matrix, Course Assessment Rubrics, Rubrics for theory courses, Rubrics for practical courses	
PO3	*PLO7* *PLO8* *PLO9* *PLO10*	Basic skills	Assignments/Examinations, CLO assessment matrix, Course Assessment Rubrics, Rubrics for practical courses	
PO4	*PLO11* *PLO12* *PLO13*	Professional skills	Assignments/Examinations, CLO assessment matrix, Course Assessment Rubrics, Rubrics for practical courses, Process for thesis evaluation	
PO5	*PLO14* *PLO15* *PLO16*	Awareness	Process for internships and thesis evaluation, Process for co-curriculum activities	

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

All the courses in the programme have syllabus. The syllabus shows students all the necessary information such as timeline, assessment methods, regulations, weight distribution and the rubrics for assessment [*Exh.2.5.2.a: A rubric of theory course*]. The assessment timeline is also announced to students at the beginning of each course and the results will be published on the schedule time, one month after examination date via website of Academic Affairs office or on the bulletin board at BioD [*Exh.2.5.2.b: Website for accessing the scores*]. In the first lecture, the lecturers must inform the students of the timelines, assessment methods, grading system, and assessment criteria in accordance with the rubrics specified in the syllabus.

Assessment method such as written tests, multiple choice questions, essays, orals, homework assignments, course projects, and graduation thesis all have a clear rubric table. In addition, the weight distribution is divided according to the course goals and contribution levels of the course to PLOs. The conventional grading system for a theory course is diligence: 10%; mid-term examination: 30%; final examination: 60%, and a practice course is diligence: 20%; report for lab works: 60%; final examination: 20%. Internship course is weighted as 60% of stakeholder's assessment and 40% of student's report and seminar presentation.

For graduation thesis, the BioD provides to students the Regulations relating to the thesis work and defense. In the second semester of the third academic year, the students should know (1) a regulation for students to work for thesis, (2) a schedule for presentation of research

outlines, seminar on thesis writing, seminar on research results, and for thesis defense, (3) the thesis assessments; weight distribution, grading, and rubrics, are communicated to students in the seminars. [*Exh.2.5.2.c: Evaluation forms for thesis*]. The thesis score will be published immediately after the BioD Council has reached a consensus, it appears on bulletin boards.

Evaluation is based on excellent performance in scientific research such as research activities, reward achievements, conference/meeting participation, and involvement level to scientific papers, points from 0.1 to 0.5 on graduation score added [*Exh. 2.5.2.d: Regulations on extra scores*]. Co-curriculum activities are evaluated in the first semester from 01 September to 28 February and the second semester from 01 March to 30 August. The assessment scale is explicit and communicated to students [*Exh. 2.5.2.e: A process and method for attitude evaluation*]. A comprehensive assessment, which determines the graduation and completion of the curriculum is performed at two levels; Department and University according to criteria and published grading scheme [*Exh.2.5.2.f: Standards for evaluation on completing*]

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

Lecturers regularly adjust and improve the methods of examination and assessment to be more aligned with the PLOs of the course and the curriculum such as seminars assessment, practical subject assessment, thesis evaluation, and co-curriculum activities are also adjusted and improved [*Exh.2.5.3.a: Practical courses evaluation scale*]. The learning achievements are assessed according to the student's results after an activity, a course, a semester, an academic year, and the programme, and they are based on the knowledge, skills, attitudes and responsibility competence of the students. That makes sure the validity of assessment.

In order to ensure the reliability and equality of students, the grading scales are designed into 8 levels reflecting achievements and are presented by a 4-point scale, which is represented by the letters (A, B +, B, C +, C, D +, D and F) [*Exh. 2.5.3.b: Student's Hand book*]. In some of the courses the minimum resolution of 0.25 for grading are used with a clear scale to increase the reliability of assessment results. Internship assessments are from the supervisors focusing on weakness and strength of the students during the course of the study. Particularly, the thesis evaluation is based on supervisor's assessment, reviewers and three scientists, one of them is visiting expert or employer [*Exh. 2.5.3.c: Scales for thesis presentation*]. Students will be assessed during learning process based on the average GPA and cumulative Grade Point Average (cGPA) for each semester and each year. Graduate degrees are Excellence with GPA from 3.60 to 4.00; Good from 3.20 to 3.59; Satisfactory from 2.50 to 3.19; and Fair from 2.00 to 2.49. Co-curriculum assessments are graded clearly with activity's marks from 1 to 10, and carried out one a year. [*Exh. 2.5.3.d: Evaluation scale for co-curriculum*].

The exam schedule of the courses is clearly shown on BioD's bulletin board and it is transferred to the students via personal email, about 10 days before the examination [*Exh. 2.5.3.e: Examination schedules*]. Academic warning and dismissal procedures are disclosed and confirmed to each student and published [*Exh. 2.5.3.f: List of students in academic warned*]. The results of English and IT assessment are always up to date and that allow students to complete the programme based on the output standards [*Exh. 2.5.3.g: Websites showing the results*]. Every year students graduate in March, June, September and December, at NLU, but they defense their thesis in March and August in the Department [*Exh. 2.5.3.h: A plan of thesis presentation*].

2.5.4 Feedback of student assessment is timely and helps to improve learning

Assessment is supporting the learning activities of students to ensure the comprehension of the programme content and the study timeline. It is the basis for lecturers to upgrade the course

contents, teaching methods, and assessment methods. It is the basis for making plans to install new equipment, to improve learning conditions, and facilities for teaching and learning activities [*Exh.2.5.4.a: List of chemical and equipment for practical teaching*]. Feedbacks from thesis's evaluators, supervisors, and reviewers help to open the courses "Essential Skills in University Study" (code: 211140), to add a seminar on "Scientific paper writing" in 2019. Learning attitude of students in foreign language, in term of English reading and writing, is concerned based on suggestions from lecturers. Therefore, professional English course is divided into four specific English courses, helping to improve English competence of the students [*Exh.2.5.4.b: Programme curriculum 2018*]. At the end of the course, the BioD organizes the survey to collect the feedback of the course during the study from students, to timely adjust the content of the course as well as the teaching methods [*Exh.2.5.4.c: A form for practical evaluation*].

2.5.5 Students have ready access to appeal procedure

Result of the exams is published as first at BioD for the students preview and finding the mistakes if any [*Exh.2.5.5.a: Process for publishing the results*]. If students are not satisfied with their scores or with wrong score counting, they can request for checking directly to BioD office. Head of BioD will decide who will respond for remarking or recounting. Result will be sent to the student at the earliest time possible. If it is not satisfied, a lecturer will work on it as a referee and he/she remark according to detailed scheme answers. At University, the deadlines for requesting results inquiries and re-marking are within one week after the exam results are announced by the AAO [*Exh.2.5.5.b: Complaining procedure*]. Thesis process takes long time to finish, therefore three times for appeal are after research outline, research results, and final presentation, to help resolving the student's proposition timely and fairly [*Exh.2.5.5.c: a process for thesis]*. Besides that, most complaints on the teaching and learning process of the students are solved by advisors via email, verbally, and Facebook communication. The face-to-face explanation is performed at BioD's office, between the students and academic support staff, or the students and Head of BioD.

2.6 Criterion 6 - Academic Staff Quality

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

Improving the quality of staff members is executed by (1) recruiting outstanding graduates for master/PhD education [*Exh. 2.6.1.a: List of scholarships*], (2) direct recruiting good scientists, who are able to perform in-depth studies, (3) further training at advanced levels, and upgrading the professional skills [*Exh. 2.6.1.b: A plan for upgrading of quality of lecturers*]. After 18 years of development, the BioD has a team of qualified lecturers. Seventy percent of them were trained overseas, such as; in Australia (2 staff), in France (3 staff), U.S.A. (6 staff) and Japan (6 staff). 70% of lecturers speak English fluently and they published international articles. Ph.D lecturers increase year by year and there is not any bachelor degree lecturers, currently. To meet the student needs, the BioD plans to invite lecturers not only from universities/institutes, but also from business companies to improve knowledge with new concepts [*Exh.2.6.1.c: Experts and visiting professors*]. The BioD human resource plan is annually revised according to a number of lecturers coming back from oversea or leaving for position (Table 2.14). Teaching assistant and support staff are needed in the year 2020, because of BioD considering to open a new programme on "applied biology". Associate professors should be developed steps by steps to meet with role and duty of high-tech education programme in the country [*Exh.2.6.1.d: A plan for upgrading the lecturers to higher certificates*].

Table 2.14 The development of human resource for BioD programme

Staff	2017	2018	2019	2020	2021	2022
Support staff	**2**	**2**	**2**	**3**	**3**	**3**
Academic staff	**22**	**19**	**19**	**23**	**24**	**25**
Assoc. Prof.	2	2	3	4	4	5
Ph.D.	13	12	13	15	16	16
MSc.	7	5	3	3	3	3
Eng.	0	0	0	1	1	1

The plans for retirement, pension, and dismissal (if any) have been clearly documented and implemented. This ensures that every staff is well and fairly treated in accordance to their contribution to the development of NLU [*Exh.2.6.1.e: Retirement decision*]. However, the retired staffs are invited to attend the annual celebration at NLU or to teach for and to do research with the student of biotechnology [*Exh.2.6.1.f Agreement of retired lecturers*]. Their dedication is gratefully appreciated.

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

Most of the lecturers in the Bio programme have been teaching courses relevant to biotechnology for several years so they have valuable teaching experiences. The total number of the lecturers involving the programme is 4 Assoc. Professors, 19 Ph.D, and 19 MSc; including visiting and part-time lecturers (Table 2.15).

Table 2.15 Total staffs satisfying to deliver the curriculum adequately

Staff	2014	2015	2016	2017	2018
Assoc. Prof.	3	4	4	3	4
Ph.D.	18	17	19	19	19
MSc.	23	22	18	20	19
Eng.	4	4	3	0	0
Total	**48**	**47**	**44**	**42**	**42**

Table 2.16 The ratio between students and lecturers from 2014 – 2019

Academic Year	Total FTEs of Academic Staff	Total FTEs of Students	Staff to student (Ratio)
2014 - 2015	36.8	845	1/22.96
2015 - 2016	37.6	853	1/22.69
2016 - 2017	38.2	757	1/19.82
2017 - 2018	41.0	736	1/17.95
2018 - 2019	38.2	831	1/21.75

The ratio between students and lecturers is more than 20 in academic year 2018-2019, due to one staff who was leave for position and another one went out for study [*Exh.2.6.2.a: Circular no. 32/2015/TT-BGDDT*] (Table 2.16 and 2.17). Besides, scientists, businessmen, and experts contribute a lot of works for the soft skills via seminars [*Exh.2.6.2.b: Activities of soft-skill seminars*]. The compulsory working hours are set upon the classification in terms of scientific title/degree, and specification of each lecturer. Lecturers have to undertake the required working hours with an average of 300 teaching hours per year, and published as many as possible international papers per year [*Exh. 2.6.2.c: Regulations on teaching hours*].. The type of work and workload are always shared and publicized. [*Exh. 2.6.2.d: Job descriptions of BioD staff*].

Table 2.17 Number of academic staff and FTE of academic staff (September 1, 2019)

Items	Male	Female	Head count	FTE	%PhD
Professor	0	0	0	0	
Assoc. Professor	3	1	4	7.2	100
Full-time lecturer from BioD and RIBE	7	10	17	29	70.6
Part-time lecturer from other faculties	3	0	3	1	66.7
Visiting lecturer	3	1	4	1	25
Total	16	12	28	38.2	

Note: FTE equivalent coefficient for full time lecturer (1 Associate Prof. = 3; PhD = 2; MSc = 1); for part-time or visiting lecturer (1 Associate Prof. = 0.6; PhD = 0.4 and MSc = 0.2).

With 95% of lecturers having the laboratories, four of them meet the VILAS 17025: 2005 (Microbial Technology, Molecular Biology, Analytical Chemistry, and Fertilizer Analysis), and are showing an extremely powerful in research activities. Time for research is twice as long as teaching. This is determined for our staff of the programme. However, it is only 3% of the time is dedicated for student consulting activity. It is relatively not enough (Table 2.18).

Table 2.18 Work load of lecturers contributing to biotechnology yearly

No.	Contents	2015-2016	2016-2017	2017-2018
1	Total working time (week/year; 40 hrs/week)	44.00	44.00	44.00
2	Consumed time for research activity (week)	17.58	17.58	17.58
3	Consumed time for student consulting activity (week)	1.38	1.38	1.38
4	Consumed time for Lab management (week)	5.50	5.50	5.50
5	Consumed time for teaching activity (week)	6.70	6.80	6.35
5.1	*PhD*	*8.45*	*7.10*	*6.63*
5.2	*Eng., MSc*	*5.00*	*6.40*	*6.00*
6	% time for research activity	39.95	39.95	39.95
7	% time for student consulting	3.14	3.14	3.14
8	% time for Lab management	12.50	12.50	12.50
9	% time for teaching	15.23	15.45	14.43
9.1	*Ph.D.*	*19.20*	*16.14*	*15.07*
9.2	*Eng., MSc*	*11.36*	*14.55*	*13.64*
10	% time for other activities	29.18	28.95	29.98

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

Personnel recruitment is based on the actual needs of the curriculum and, research and follow the direction and regulations of NLU and Department [*Exh.2.6.3.a: Process for staff recruitment*], and the MoET. Recruitment announcement is shown on the NLU website and on the mass media; tuyencongchuc.vn and Thanh nien newspaper. That helps the candidates to know the job requirements and the deadline for submitting the documents to the NLU Personnel Office. Process of recruitment is followed the Decision on 2702/QĐ-ĐHNL-TCCB, including the examinations and evaluations.

Rewarding and welfare policies of NLU always take into consideration achievement such as [*Exh.2.6.3.b: Regulations for staff evaluation*], successful publication of scientific

articles, excellent teaching [*Exh. 2.6.3.c: Promulgation No. 1895/ĐHNL-NCKH*] and special contribution. NLU is always to encourage outstanding staff to apply for the title of People's Teacher/Meritorious Teacher at Government level.

In addition to the requirements for diplomas/certificates such as the Master degree, English language certificate, the certificate of information technology, the philosophy, and the educational skills, the probationary lecturer must submit a report to BioD at the end of the first year. A recommendation letter on the suitability of the lecturer is issued by BioD, which is sent to NLU to formalize his/her employment with BioD [*Exh. 2.6.3.d: Process for evaluation of probationary lecturer*].

BioD understands that academic freedom is a motivation for academic staff to keep career passion and dedication. BioD and RIBE are providing for the staff; the room for lab establishing, funding for research, teaching for master programme, PhD student's supervisor, and conference joining. [*Exh. 2.6.3.e: List of lab managers*]

2.6.4 Competences of academic staff are identified and evaluated

According to the lecturer standard stipulated by the Education Law and the MoET on ethics and professional standards, lecturers must meet the following criteria: foreign language skills; Master – Ph.D degree appropriate to the field of teaching and researching; computer skills; completed pedagogical certificate, philosophy, and teaching theory; Ethics, dedication, collective spirit, self-learning throughout life [*Exh. 2.6.4.a: Education laws*]. Competences of academic staff are evaluated based on their position and duty, and on the recommendation of special mission from the Head of BioD or NLU President. The lecturers have to ensure that the lecture is conformed with the syllabus of the course followed by PLOs of the programme and he has to carry out the scientific research and technology transfer according to the regulations of the NLU [*Exh.2.6.4.b: NLU's Regulations on duties*].Teaching competence of academic staffs is evaluated every semester via students' feedback [*Exh.2.6.4.c: A sample of feedback*] and via staff meeting at the end of academic year [*Exh.2.6.4.d: Report on the achievements*]. Meanwhile, academic staffs are also evaluated on other activities by labor union of BioD and NLU [*Exh.2.6.4.e: A sample of evaluation form*]

All staff have to fill their own self-evaluation performance forms according to their assigned tasks [*Exh.2.6.4.f: A process of emulation*] and have to understand that teaching, researching, and community serving are their duties, and always strive to achieve basic competencies in (1) conducting a course for teaching, (2) active teaching methods, (3) communication, (4) solving the problems and making the decisions, (5) IT usage, (6) negotiation ability, (7) self-study and self-orientation [*Exh.2.6.4.g: Staff's Handbook*].

2.6.5 Training and development needs of academic staff are identified and activities are implemented to fulfill them

BioD and NLU are always aware that staff's training and development related to the staff competences and the success of education programme. Staff and lecturers, are always encouraged to submit their own training plan to BioD; such as national or international course, short or long term training. BioD will decide based on the strategy of development of BioD staff, staff competences needed to upgrade, staff position, and staff aspiration. Table 2.19 indicates that NLU approves one to two staffs for training every year during 2001 to 2019, based on the funds/scholarships from national or international sources**.** NLU and BioD ensure the job and salary for staffs after training [*Exh.2.6.5.a: NLU's Regulations on training*]

Table 2.19 Funds/scholarships for training human resources in biotechnology

No.	Scholarship Resources	MSc.	Years	Ph.D.	Years
1	American Government			2	2007, 2016
2	AUF	2	2001, 2006	1	2005
3	Australian Government	1	2015	2	2017, 2019
4	French Government			1	2009
5	Japanese Government	2	2003, 2007	6	1997, 2003, 2005, 2009, 2013, 2014
6	Nong Lam University - Ho Chi Minh City	5	2002, 2007 2011, 2013 2017	2	2014
7	SIDA	1	2005	1	2007
8	Taiwan Government			1	2006
9	Vietnamese Government			1	2016
10	Vietnamese Government (322)	4	2007, 2013	2	2010, 2013
11	Vietnamese Government (MARD)	3	2008, 2011		
12	VEF			2	2009, 2010
	Total	**18**		**21**	

The academic staffs of BioD, who have not received Ph.D degree yet, are encouraged to look for opportunities to take part in long training period to improve their professional knowledge, especially study at high reputation universities in Australia, Japan, USA. To meet with MoET regulations, the lecturers should be trained in pedagogical skills, education management and leadership [*Exh.2.6.5.b: List of the staff upgrading*]. Particularly, training courses are offered related to equipment operations [*Exh.2.6.5.c: Pictures showing*], biosafety and ISO regulations [*Exh.2.6.5.d: Vilas certification*] and scientific conferences. In BioD, we manage to organize two international training courses per year on average [*Exh.2.6.5.e: List of national and international*].The NLU supports funds to allow academic staffs to attend national level meeting and some part of funds for international level conference.

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

Incentives and rewards are provided by both of NLU and the BioD to encourage academic staff to carry out research. The University also makes fund available to help pay a page-charge for staffs who could publish their research output in the high-quality journal [*Exh.2.6.6.a: NLU Decisions on the financially rewarding*] and to give the funds for research projects conducting by young staff [*Exh.2.6.6.b: NLU Decisions on the project rewarding*]. In order to be considered for the title and emulation of each level, lecturers must have excellent labor achievements, be recognized by peers and by the BioD and university councils of Emulation and Reward, have works published in scientific journals or presentations at conferences or seminars, do not have any violation to the laws, and fully participate in academic events, develop the workshops organized by the BioD and the university [*Exh.2.6.6.c: NLU Decisions for rewards and honors*]. According to regulations, staff salary will be considered for a salary increment or be placed on a higher salary scale more frequent, if he or she is awarded associate professor/professor. The University has an allowance of 2,000,000 VND/month for lecturers with PhD degree or 3,000,000 VND/month for Associate Professors [*Exh. 2.6.3.d: The process of emulation*]. Every year, the NLU has the Lunar New Year gifts

for the retired staffs and working staffs. When any staff is in difficult situations, the NLU always provides some financial support [*Exh.2.6.6.e: NLU Labor Union policies*].

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

Research activities are obligatory works for academic staff and stated in the NLU Regulations of working regimes and are absolutely necessary for BioD as announced in mission and vision. According to the University policy, the academic staff is to conduct research study based on the process of an implementation research project, which is instructed and considered by the University Scientific-Board. Good career promotion is given to young scientists [*Exh.2.6.7.a: Decision on research activities for young staff*]. The BioD staff performs of various kinds of research projects and, to make sure that all of academic staffs conduct the projects annually. Particularly, the projects funded from the companies are strongly encouraged for the staff joining. The number of bio-products resulted from research activities is increased yearly and some of which are transferred successfully to private companies and to NLU's Incubation Center (https://tbi.hcmuaf.edu.vn/). A product for commercialization is benchmarked for labs and for staffs (Table 2.20).

Scientific publication is a mandatory task for academic staff and a criterion for University ranking for evaluation of staff competence. The staffs are encouraged to publish the papers in international journals with high impact factors and to join with national and international conferences.

Table 2.20 Research projects and product transfers of staffs in biotechnology

Year	Res. grant	R&D	Inter. project	Nafosted	Local Gov'	Central Gov	Uni. grant	Com. project	Bio-products
2013	20	3	1	0	7	4	9	1	1
2014	16	0	2	2	4	5	3	0	2
2015	25	0	3	3	6	8	4	0	3
2016	20	1	4	1	3	5	4	2	4
2017	6	0	1	0	2	2	1	2	5
Total	**87**	**4**	**11**	**6**	**22**	**24**	**21**	**5**	**13**

The quantity of publications is steadily increasing from 2015 to 2017 as shown in Table 2.21. NLU's plan for improvement of quantity of research activities is discussed and processed such as: (1) converting research activities into research working hours, (2) converting the standard teaching hours and research hours, (3) increasing the funds of commendation and awards. BioD promotes the staffs on research activities by supporting the new equipment, new project writing, excellent teamwork, and providing the undergraduates and graduates for the project working [*Exh.2.6.7.b: A plan for improvement of research activities*]

Table 2.21 Scientific publications of lecturers (BioD and RIBE)

Publications	2013	2014	2015	2016	2017	2018	Total
Scientific papers (ISI + Scopus)	9	8	6	2	9	2	36
Scientific papers in English	0	3	0	1	7	8	19
Scientific papers in Vietnamese	8	24	21	21	32	34	140
Conferences	5	5	4	9	2	7	32
Total	**22**	**40**	**31**	**33**	**50**	**51**	**227**

Laboratory fostering ISI papers, master and PhD students are considered favorably for new equipment and more funds. Highly qualified Lab's leaders are more likely to have high

research competence, and are good advisors for student's research orientation [*Exh.2.6.7.b: Laboratories Handbook*] (Table 2.22).

Table 2.22 Number of academic staff involving the research activities of students

Academic staff advised for students	2012-2013	2013-2014	2014-2015	2015-2016	2016 - 2017
NLU's fund projects	17	10	12	6	3
Private's fund projects	1	2	4	5	5
Total	**18**	**12**	**16**	**11**	**8**

The community serving is one of the main tasks of the staff to realize the mission and vision of NLU and BioD. A lot of the service contracts and agreements between NLU with provinces had been formulated, then after that, BioD staff connected and performed the contracts, responsibility and effectively. For example, NLU has signed the research and transferring agreements with more than 30 provinces, indicating that NLU takes a role for agricultural development of provinces (*http://srmo.hcmuaf.edu.vn/srmo-23371-1/vn/ban-ghi-nho-hop-tac.html.*)

2.7 Criterion 7 - Support Staff Quality

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

The staff are responsible for the activities at the Centers and Offices such as international education, applied informatics, student service, and health care, seriously considers the suitability of learning and living conditions for students at the university in general or in biotechnology department in particular. With 22 support units, the students are given the best supports in terms of materials, English skills, scholarships, study abroad guidance, and school health counseling (Table 2.23). In addition, NLU regularly conducts inspections and supervises the activities of support staff to provide effectively solutions for improving the service quality. NLU is planning to establish the Information and Communication Unit to fulfill the needs for service [*Exh.2.7.1.a: A plan for establishing of ICU*].

When an imbalance between workforce and workload occurs, Head of the Units requests the recruitment of new staffs via the Personnel Office to the Board of President. Once the request is approved, the operating unit set up a recruitment and selection process. In BioD, Staff supporting education activities includes 01 secretary, 02 academic officers, and advisors, who are responsible for all the courses offered to students based on clear procedures [*Exh. 2.7.1.b: List of advisors*]. In order to give advice to more students, some extra tasks are assigned [*Exh. 2.7.1.c: Extra-works of staffs*]. The laboratory system of biotechnology is divided into three levels: (1) VILAS 17025 standard labs., (2) Professional labs., and Practical labs., that are managed by BioD and RIBE [*Exh. 2.7.1.d: Laboratories Handbook*] . The capacity of laboratories is determined by the maximum number of undergraduate and graduate students who are able to use equipment for their studies. The net houses and experiment sites are located in campus, making it easy for activities of teaching and learning [*Exh. 2.7.1.e: List of net house*]. Most of labs leaders hold a relevant professional degree, therefore, they also participate in supporting and advising the students conducting the research.

For safety reason, BioD is planning a group of staff for teaching on laboratory's rules and biosafety [*Exh. 2.7.1.f:List of staff*]. For e-learning, BioD offers 1 Ph.D. staff who is responsible for programme maintaining in cooperation with Center for Applied Informatics [*Exh. 2.7.1.g:Assignment the E-learning team*]. Center for Student Support and Business Relation is responsibility for job finding and scholarship introducing to the students. The center is a bridge between NLU and donors. Furthermore, all staff often have opportunities to be

trained to advance their skills on using the equipment and new techniques.

Table 2.23 Facility staffs contributing to student activity and life

No	Support staff	Highest Educational Attainment					Total
		High School	B.A	M.A.	Ph.D.	Assoc Prof.	
1	Sport Hall	1	0	1	0	0	2
2	Office of Student Affairs	0	3	4	0	0	7
3	Office of Academic Affairs	1	9	6	0	0	16
4	Office of Post Graduate Training	1	4	3	1	1	10
5	Office of Administration	3	5	2	0	0	10
6	Office of International Cooperation	0	1	2	1	0	4
7	Office of Planning and Finance	0	8	2	0	0	10
8	Office of Quality Management	0	3	3	0	0	6
9	Office of Scientific Research Management	2	2	1	0	2	7
10	Office of Property Management	48	8	4	0	0	60
11	Office of Legality	0	2	2	0	0	4
12	Office of Personnel	0	4	3	0	1	8
13	Library	1	12	1	1	0	15
14	Health Care Center	3	1	0	0	0	4
15	Center for International Education	0	2	1	1	0	4
16	Student Service Center - Dormitory	28	6	3	0	0	37
17	Center for Student Support and Business Relation	1	2	3	0	0	6
18	Center for Foreign Studies	0	0	3	0	0	3
19	Center for Applied Informatics	1	2	2	0	0	5
21	Center for Technology Business Incubation	1	0	1	0	0	2
21	Labor Union Office	0	2	1	0	0	3
22	Youth Union Office	0	3	0	0	0	3
	Total	**91**	**79**	**48**	**4**	**4**	**226**

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

Announcement of the recruit position is always made available on the web site of the NLU, in which position requirements are described clearly. [*Exh.2.7.2.a: Procedure for recruitment of NLU*]. Candidates for each position should be tested and interviewed according to NLU regulations [*Exh.2.7.2.b: Regulations on criteria for selection*]. Their duties are well done and described in the final report submitting to BioD and NLU for signing a long term contract [*Exh.2.7.2.c: Decision on assigning*] The promotion of support staff is based on their number of service years, working performances, as well as the satisfaction of students and colleagues. Under the labor law, after a three-year period of employment, the employee's salary will increase at a fixed rate. In the special case, if any employee makes an outstanding contribution, their wages will be increased as approved by the University Board [*Exh.2.7.2.d: Wage policies*]. The leadership's positions for Department/Faculty/Office/University are planning and determining every year for all staff, based on NLU's Regulations and MoET.

2.7.3 Competences of support staff are identified and evaluated

Competencies of supporting staff are evaluated via the recruitment process such as the qualification of applicants, for example: a Bachelor degree or a higher degree; English for reading; experiences in administrative work. In BioD, the support staff of the laboratories hold Master degree or higher in biotechnology/biology; they have commanding level of professional English in the field of biotechnology/biology; they also participate in supporting/ advising students on research activities and practical teaching. They also have opportunities to be trained in order to meet the requirements of the NLU and BioD [*Exh.2.7.3.a: Qualifications and certificates*]. Competencies of support staff are evaluated based on their duties and responsibility. The work of BioD support staff is listed with 33 items to meet the activities of teaching and learning yearly [*Exh.2.7.3.b: Job description*]. However, in some cases, professional staffs, who are responsible for scientific research, start-up, soft skills, and learning methods, help students effectively. The feedbacks and dialogues between leaders and students help improve the services and fill up the gaps of support positions [*Exh.2.7.3.c: Face-to-Face discussion*].

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

The NLU is responsible for the management of support staff training activities, which include finance, supplies, and educational services. The number of support staffs in each unit is decided by NLU based on suggestion from leader's units. The University has a strategy to improve the level of faculty members based on staff development plans of Faculties and Departments [*Exh.2.7.4.a: Announcement on pedagogical skills*]. After being approved by the University Board, support staff are allowed to go for studying and he/she is still receiving all support policies [*Exh.2.7.4.b: Financial supports for training*]

Following the NLU regulations, the Unit plans to improve the staff qualification through self-training, pursuing higher level or short-term internship/ attending training course in professional skills, foreign language, IT, and soft skills. The role of support staff now expands to deliver information and communication. In addition, NLU also offers appropriate rewards when there are new effective initiatives in order to encourage innovation and self-improvement of specialized knowledge. These initiatives also serve as the important criteria for staff assessment annually [*Exh.2.7.4.c: Emulation and rewards for support staff*].

2.7.5 Performance management including rewards and recognition and implemented to motivate and support education, research and service

The support staff working for all departments/centers/units/offices is required to fill the self-assessment forms, and they are evaluated by the leaders on four aspects such as general standards, professional work, corporate work, and innovations [*Exh.2.7.5.a: Evaluation forms for support staffs*]. The criteria for these aspects are quality, quantity, timelines, productivity, achievement motivation, responsibility, team work, and systematic job planning. All support staffs have the same opportunity to participate in scientific research, technology transfer and other activities in their unit. They can have salary increment depending on personal aspiration and specific qualification.

Motivate and support for staff, the working facilities are upgraded effectively and the working environments are developed in the BioD and NLU [*Exh.2.7.5.b: Facilities for support staff working*]. BioD is always focusing on modifying and upgrading the work environments; in which working culture is formulated based on the feedbacks from the support staff.

2.8 Criterion 8 – Student Quality and Support

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

The quality of biotechnology students is determined by exam scores that are obtained from the national examination. Candidates from all parts of Vietnam are chosen according to

the score of one of three subjects; A00 (Mathematics, Chemistry, Physics), B00 (Mathematics, Chemistry, Biology), and A02 (Mathematics, Physics, Biology), ranking from top to down [*Exh.2.8.1.a: Regulation on enrollment*]. Candidates are Ethnic minorities to be given priority points for admission and also candidates approved for national and international awards are readily admitted. The group subjects and the number of student intakes can change and can be updated yearly, and such change is announced on public media such as leaflets, websites, newspapers, TV [*Exh.2.8.1.b: Website showing*]. Admission of each programme is reviewed through 3 steps: (1) Department/Faculty will submit the student intake policy for each education programme based on the teaching and learning conditions; (2) The NLU's Scientific and Training Council will preview and provide suggestion for each programme; (3) MoET will base on the capacity provided by NLU to issue the official admission capacity for NLU's programmes [*Exh.2.8.1.c: NLU's student intake policy*]. In addition, new students have to take a grading English test for appropriate English class matching with their English competence.

On this regulation, BioD is approved to increase the student intake in 2018 – 2019, due to enhancing its quality (Table 2.24). School fee exemption is approved for the students from low-income families, from minority regions, and so on [*Exh.2.8.1.d: NLU's policies for school fee*]. Besides that, NLU has enrollment policies that attract students such as offering scholarships, priority accommodation dormitory for students from disadvantaged areas and martyr families. The scholarships provided from companies and organizations are used for poor students overcoming difficulties [*Exh.2.8.1.e: NLU's policies for scholarships*].

Annually, NLU and BioD use a variety of information channels such as local enrollment counseling, online counseling, verbally, websites, and published information relating to annual admission on mass media. In addition, NLU is joining in the Admission Day of the MoET held at high schools in many provinces. Particularly, NLU is successful to organize Open Day events, Work Festival Days, and Exhibitions. This is also an opportunity for students, potential students, and relatives to know about NLU. Based on the feedback of BioD new students, the mass media are good ways to deliver the NLU to potential students; accounting for 64% enrolled students. Meanwhile, 70% of students accessed the website of NLU and 10% of students are advised from Alumni and relatives, before they decided to apply for Bio programme [*Exh.2.8.1.f: Feedback from new students 2019*].

Table 2.24 Intake of First-Year Students (last 5 academic years)

Academic Year	Applicants		
	No. Applied	No. Offered	No. Admitted/Enrolled
2014-2015	1,653	160	186/312
2015-2016	908	160	210/250
2016-2017	772	130	110/216
2017-2018	1,073	130	167/183
2018-2019	1,864	135	190/223

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

Criteria and methods for recruiting students are determined by the department and clearly stated in the training programme curriculum, as well as in the enrollment policies, which are widely announced every year [*Exh.2.8.2.a: NLU's enrollment scheme*]. Currently, NLU and BioD have two enrollment methods; the first method is based on the national high school exam results, which follows the process of MoET published yearly [*Exh.2.8.2.b: Decision no. 2832/BGDDT-GDD*]. The score is decided by the admission council based on the student intake, the base score decided by the MoET and by NLU. The second method is the direct enrolment, which is based on the excellent awards of potential students at national or

international competitions. Admission Board of NLU evaluates and nominates the candidates and NLU President will approve the new students who are nominated.

In comparison with other biotechnology programmes, Bio-NLU is in the top five with highest cut-off-score in the last five years (Fig.2.3). The student intake of BioD is increased due to enhancing of the training capacity of the BioD recently (Table 2.25). Moreover, the Bio programme of NLU is always attractive to the high school students; in term of number of preferences enrolling to BioD (around 1.000 applicants).

NLU is responsible for informing eligible students no later than the beginning of September every year so that new students can complete the admission process. Welcoming events for new students are posted in the NLU's schedule. On that day, BioD collects the information from new students for admission activities in the next years [*Exh.2.8.2.c: Wellcome Meeting with the new students*].

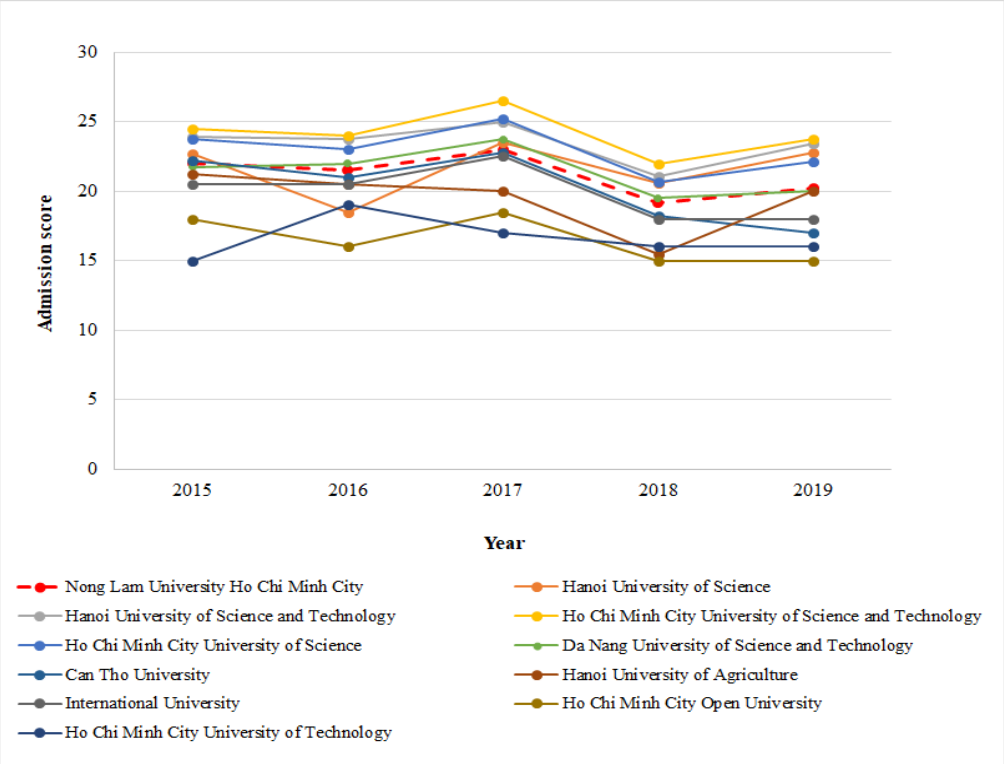


Figure 2.3 Admission score of universities offering Biotechnology in Vietnam

Table 2.25 Total number of BioD students in last 5 academic years (September 2019)

Academic Year	Students					
	1st	2nd	3rd	4th	>4th	Total
2014-2015	186	236	154	197	72	845
2015-2016	210	186	236	129	92	853
2016-2017	110	197	151	201	98	757
2017-2018	167	101	187	144	164	763
2018-2019	190	167	96	181	197	831

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

Student will be assessed during learning process. This is based on the average GPA and cumulative Grade Point Average (cGPA) for each semester and each year [*Exh. 2.8.3.a: Student's Handbook*]. Academic warning and dismissal procedures are disclosed and confirmed to each student and published [*Exh. 2.8.3.b: List of students in academic warned*]. The results

of English and IT assessment are always up to date and that allow students to complete the programme based on the output standards [*Exh. 2.8.3.c: Websites showing the results*]. Every year students graduate in March, June, September and December, at NLU, but they defense their thesis in March and August in the BioD. Graduate degrees are Excellence with GPA from 3.60 to 4.00; Good from 3.20 to 3.59; Satisfactory from 2.50 to 3.19; and Fair from 2.00 to 2.49.

The students can register the courses, monitor the learning and exam schedules and other notices of the Offices/Units, via the homepage https://pdt.hcmuaf.edu.vn/. BioD students can receive the information from the emails of advisors/officers and from Head of BioD too. The study work load of BioD students is adjusted to decrease gradually the number credits per semester, allowing the research and social activities to increase. In total, students spend 31% of their time for class and 37.2% for self-study and research (Table 2.26). In parallel to studying, students can participate in Youth Union and Students' Association activities with 5 to 8 days per year [*Exh. 2.8.3.d: Report of Youth Union workload*]. Research time is scheduled for the second semester, as "encourage participation", and English upgrading. The students take 3 weeks to four months for international internships and 4 weeks for working in companies, research centers, and institutions. This is a good opportunity for them to know the real research work and to improve the lifestyle among the people [*Exh.2.8.3.e: List of internships activities*].

Table 2.26 Work load of students in biotechnology programme

No.	Distribution of study time	Value (%)
1	Time consuming for study at class and Lab	31.0
1.1	Theory courses as compared to total programme	18.6
1.2	Practical courses as compared to total programme	12.4
2	Time for self-study compared to total programme	37.2
3	Time for other activities	31.8

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

Advisors and lecturers take care of student's orientation and co-curriculum activities throughout the course of the programme. In addition to the duties mentioned in Regulation of the University [*Exh.2.8.4.a: Decision no. 490/QĐ-ĐHNL-TCCB*], advisors of the BioD have to organize seminars on soft skills, foreign language, start-up and be involved in attitude assessments of the student [*Exh.2.8.4.b: Assignment the extra works*]. Research consulting for the students is a main task of the academic staff; suggestion the new research ideas, providing the methodologies, and how to avoid plagiarism. All that helps the students to conduct the experiments by themselves and learn the research ethics during the course of study. Consultations are implemented in two ways, face-to face meetings and indirectly through e-mail. Many professional experts, scientists, and alumni were invited to share their knowledge and skills to students via the five seminars during four years [*Exh.2.8.4.c: List of BioD's seminars*].

Student competition: The activities of the Youth Union are always supported by the BioD and NLU via funding sources and facilities [*Exh.2.8.4.d: Decision on allocation of funds*]. The BioD also supports the volunteer team, which acts as the leading force and which undertakes difficult tasks [*Exh.2.8.4.e: Facebook of volunteer team*]. Result of the activities is recognized and is used for student's attitude assessment and scholarship consideration.

Software for student studies: A total of multimedia room in NLU is 20 [*Exh.2.8.4.f: List of multimedia rooms*] with 765 computers connected to a network which is free of charge to staffs and students. Currently, the website, Wi-Fi, and email information set up throughout the

university allows students to interact with all of support divisions, via ID and email address during the course of study. [*Exh.2.8.4.g: Student's ID*].

Dormitory: NLU dormitory has 414 rooms for 3,518 students [*Exh. 2.8.4.h: NLU dormitories*], *[2.8.4.i: Co May dormitory*] and 53,540 m^2 for facilities to service students such as clubs, cafes, photocopies, pharmacies, computer services, motorcycle maintenance, electric repairs, photograph. Construction area is 1.2 ha/1,000 students to meet with TCVN 3981-1985. However, the students prefer rental house (48%) to avoid strict dormitory rules. Students frequent movement between accommodations make management a difficult task [*2.8.4.k: Report on BioD student accommodation*].

Medical care: The clinic center is located on NLU campus, taking care and advising on issues related to student health. 100% students are checked for health and have health insurance. NLU is 2.3 km from Thu Duc General Hospital, and 7.7 km from Thu Duc District Hospital. It does not take time to arrive in these hospitals for accident cases and for treatment of issues related to student health [*Exh. 2.8.4.l: A route map*].

Scholarships and learning supports: Center for Student Support and Business Relation is responsible for supporting students, setting relationships with businesses, and introducing jobs for students. In 2018, Center secured 2,000 work positions from 51 employers for graduated students. It also received many scholarships for students (1.9 billion dong VN). (http://htsv.hcmuaf.edu.vn/). The Center for Foreign Studies with 70 instructors is responsible for teaching and learning English at international level. It provides excellent service to improve English skills for students according to European Standard B1. With history of 18 years, center currently has 23 classrooms, plus 01 language lab (40 seats), 01 multimedia lab (40 computers), and 05 computer lab (40 computers/lab) (http://cfs.hcmuaf.edu.vn/). The Center for Applied Informatics is a reliable place for students to improve their knowledge and skills in IT. The Center provides general IT courses for fulltime students in accordance with IC3 standards and practical courses on computers (10 rooms with 385 computers), The Center offers evaluation and testing the IT outcomes for all students NLU. (https://aic.hcmuaf.edu.vn/).

Roles of Alumni supporting students during the course of study: Though after 18 years of establishment and development, NLU Biotech Alumni Association with alumni, who graduated during past 15 years has proved its significant role in providing current students with financial aids and soft skill trainings (http://biotech.hcmuaf.edu.vn/biotech-4071-2/vn/quy-cuu-sinh-vien.html). Since 2015, the Foundation has provided students who had good academic records and who experienced financial difficulties, with 6 scholarships, each worth 3 million VND, It has also funded a research project of the students. Besides, activities on Vietnamese Teacher Day, Music festivals and Sport days are also funded by the Foundation of Biotech Alumni Association [*Exh. 2.8.4.m: BioD students received the scholarships]*.

Student services: The students receive supports from the Student Affairs Office for their academic life; scholarships, school fee discounts, awards, part-time jobs, house rentals, medical supports. BioD's Youth Union is responsible to organize events and other activities to improve the social learning. BioD Youth Union's Facebook is playing an important role in the student consultation and in the learning material disseminating [*Exh. 2.8.4.n: Facebook of BioD Youth Union*]

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

In addition to study in class/lab, students also have the needs of recreation and personal activities. A living and studying environment established in 118 hectares is to ensure comfortable place and to meet this requirement [*Exh. 2.8.5.a: Sport fields*]. The facilities for physical training are relatively modern and well equipped with total area of 3,320 m^2. Indoor football, yard and equipment ball for volley ball, badminton, Table tennis and 18,732 m^2 is used

as outdoor sports. NLU has cooperatively invested in 06 artificial grass pitches and standard runways in the area of 10,200 m^2.

Landscape of A1 and A2 is good enough for outdoor activities of BioD's students [*Exh. 2.8.5.b: View of A1 and A2 landscape*]. The environment in A1 (2,777 m^2) and A2 (6,403 m^2) building is conducive for research activities, because of 100% research and practical laboratories located in the building to allow sharing the facilities and exchanging the knowledge and skills among the students and lecturers [*Exh. 2.8.5.c: BioD student Handbook*]. The students are happy with this learning environment for its friendliness and effectiveness.

The social environment is conducive for personal development. BioD organizes the music festival, sport competition, English club, Teachers' Day, collecting recycled waste, which gathers all BioD students and improves the social competence for them. Volunteer activities help BioD students to learn how to be a good citizen in community; Green summer, Green environment campaign, Blood donation, etc..

The students' health is focus not only on physical checks but also on mental advices. Psychological consultation and "Radio Nong Lam" News channel help students to overcome the difficulties in their life. BioD has a space 400 m^2 for student's activities such as book reading, meeting, group discussion, and relaxing [*Exh. 2.8.5.d: Public area for activities*].

2.9 Criterion 9 - Facilities and Infrastructure

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

A total number of classrooms and multi-media rooms is 126 with 22,783 m^2 to service for more than 5,000 students/year, 1.2 m^2 per student meeting Vietnam standard (TCVN 3981-1985: from 0.9 to 1.5 m^2). There are five large buildings; in which three are three meeting rooms (>200 seats), 23 classrooms (100 to 200 seats) and 85 classrooms with less than 100 seats each and also other classrooms that under Department's management. Supporting equipment for teaching and learning such as projectors, multi-media systems, light and fan systems are installed in each room [*Exh. 2.9.1.a: NLU's report on classrooms*].

BioD manages 1 classroom/seminar room (30 m^2), 1 office of administration (48 m^2), 2 staff rooms (48 x 2 m^2), and 1 room for Youth Union (12 m^2). RIBE manages 1 classroom/seminar room (72 m^2), 2 offices of administration, 3 staff rooms (48 x 3 m^2) [*Exh.2.9.1.b: Staff office, hall, classroom*]. All offices and laboratories in A1 and A2 are equipped with the internet network for learning activities and Wi-Fi system is also available in net houses for student's access [*Exh.2.9.1.c: IT Networking in A1*]. Based on the strategic plan, NLU endeavors to upgrade the facilities to support education and research activities [*Exh.2.9.1.d: Decisions on repairing, ordering*]

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

The NLU has a collection nearly 7,000 book titles, 20,000 copies of local materials, databases such as AGORA, OARE, HINARI, Proquest Central, Scopus, Sciencedirect and more than 100 scientific journals. The NLUL has the area of 6.236 m2 and has 14 librarians; the library can service more 500 users per day (http://elib.hcmuaf.edu.vn/). The library added 19,926 publications, in which there were 6,880 book titles for the education programmes, 55 magazines with 1,184 publications [*Exh. 2.9.4.a: List of study materials of biology*]. Annually many books and textbooks are purchased for the specific requirements of faculties/departments [*Exh. 2.9.4.b: List of study materials required*]. The library also actively subscribes for free access to Proquest Central database, the electronic database of Vietnam Library Association, and CSDL tailieu.vn with many useful documents of interest to many readers [*Exh. 2.9.4.c: A*

contract for software]. The library also equipped with a resource managing software Libol 5.5 (more information please refer to http://192.168.1.147/libol55 at the library) which manages borrow and return activities, statistics, documents searching, reader management. The library includes a borrowing room, two reading rooms, two group study rooms, a 190-seat study desk and 13 computers for readers to study, to search, and to access the internet (http://thuvienso.hcmuaf.edu.vn/dspace/).

Project for renovation and upgrading of the library was approved by the NLU President in 2018, some changes are to be shown in 2019 [*Exh. 2.9.4.d: A project for central library renewed*]. With the goal of continuous improvement, the university conducts surveys on the feedback from staff, lecturers and students on the services of library every year. The survey results show that most of the surveyed subjects rated "satisfactory" on the scale [*Exh. 2.9.4.e: Results of survey on satisfaction*]. The BioD's reading room, sharing with RIBE, is a collection of thesis, textbooks, and guidebooks for equipment usage. It is located nearby the lab for students to further gain knowledge and approach scientific research [*Exh. 2.9.4.f: Bio- reading room*].

2.9.3 The laboratories and equipment are adequate and updated to support education and research

The University has 86 specialized laboratories, with a total floor area of 5,578 m^2, which is dedicated to experimental - practical activities during training and scientific research [*Exh. 2.9.3.a: List of NLU laboratories*]. The training hall was built with a total area of 2,402 m^2 and the experimental farms are arranged with 341,034 m^2 for agricultural handing [*Exh. 2.9.3.b: List of NLU research farms*]. The laboratories are equipped with safety equipment, fire protection, rules and troubleshooting procedures.

Table 2.27 Facilities satisfying for teaching and learning activities

Facilities	Number	Total area (m^2)	Working capacity (students)
Practical Lab	07	378	170
Practical – Experimental Lab	08	411	100
Laboratory	24	800	120
Net house/Plastic house	08	600	80
Experimental Field	05	8,000	100

The students of BioD have used 24 laboratories for performing research. Equipment of the labs is worth about 54 billion VND from the project "Microbiological Technology" and "Animal Embryo technology" sponsored by the MoET [*Exh. 2.9.3.c: List of equipment of MoET's projects*]. Fortunately, in 2018, USAID's Seeding Labs (USA) gave a non-refundable grant for 119 equipment imported for "Environmental Biotechnology Lab" [*Exh. 2.9.3.d: List of equipment of Seeding Labs*]. Based on private funds, experiment units are conducted such as "black soldier fly research" funded by CheilJedang Corporation company (Korea, 2016), "water treatment system" funded by Tohoku-Gakuin University (Japan, 2015), "efishponic system" funded by EpicentreTelework and Yveline (France, 2013-2015), Environment-controlled room funded in 2017 by Agriconnect, a start – up company, and a joining Project "Paddy Mushroom" (2019). All that is supporting the education and research at well.

In order to educate biotechnology with high quality, University and Department pay special attention to construct new buildings for research and practical teaching, A1 and A2 building accommodate 120 students per day in lab works (Table 2.27). All equipment help improve the capacity of education and in-depth research in the field of biotechnology. NLU is responsible for purchasing and repairing of equipment in accordance with procedures, ensuring

to meet the requirements proposed by the units [*Exh. 2.9.3.e: Procedure for purchasing and repairing*]. NLU and BioD are aware that laboratories with new equipment are key facilities for upgrading the quality of student's education.

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

NLU has upgraded its network infrastructure by 2010, internet transmission increased from 34 Mbps to 68 Mbps. In 2011, the university added 9 fiber-optic internet channels to increase the total bandwidth to 518 Mbps and to 600 Mbps in 2016. Recently, NLU has manage 663 email addresses [*Exh.2.9.4.a: Email list of NLU staffs*] and 1,428 computers [*Exh.2.9.4.b: Report on the number of computers*]. The website system includes 01 main domain is www.hcmuaf.edu.vn and 50 sub-domains which are electronic information pages of the units (http://ns.hcmuaf.edu.vn/thongke). All is constantly updated, ensuring the update and posting of the right information. The University continuously invests in upgrading the network system; LAN, WAN, WIFI [*Exh.2.9.4.c: Copyrighted Software*]. NLU's website is ranked in top ten on the www.webometrics.info sites compared to other national universities during three years; 2016-2018. [*Exh.2.9.4.d: https://www.webometrics.info*].

In addition, E-learning has been used by lecturers of BioD for teaching and learning since 2014. This is sharing on Edmodo network (www.edmodo.com). Edmodo software has many good features because it not only helps the lecturers manage the student's learning activities, but also helps students involve more active in their learning, receiving the lectures and doing and submitting homework conveniently. There are 200 students of the BioD taking part in classes taught by E-learning method such as Scientific research method, Climate change, and English for Environmental biotechnology. The BioD has implemented E-learning in 2 stages: Stage 1: Implementing 13 subjects taught by E-learning method (the year learning 2018-2019); Stage 2: Implementing all E-learning subjects (the 2019-2020 school year onwards) [*Exh.2.9.4.e: Promulgation No. 60/QĐ-CNS*]

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

NLU, the average floor area is approximately 3.4 m^2/student, which meet the requirements of the Circular No, 32/2015/TT-BGDĐT signed on December 16, 2013 [*Exh.2.9.5.a: Circular No. 32/2015/TT-BGDDT*]. A workroom is 28.19 m^2, or 6.32 m^2 for a staff. The workrooms that are arranged for leaders of specialized units are 23 rooms with 452.84 m^2. The workrooms are also arranged for academic staff and secretaries, who work faculties/departments. NLU currently has 06 dormitories in 5 ha campus, with a total floor area of 27,787m^2. The dormitory has 411 rooms with a capacity of 3,875 seats [*Exh.2.9.5.b: Student dormitory*]. The dormitory of the NLU has met the standards of TCVN 3981-1985 on the area (dormitory construction land area is 1.2 ha/1,000 students).

Multidisciplinary sports and gym houses are invested in modern construction with a total area of 3,320 m^2, creating conditions for students to participate in training and competing in many kinds of sports [*Exh.2.9.5.c: Sport facilities and activities*]. NLU spends an area of about 18,732 m^2 to accommodate the outdoor sports ground for the sport events and to invest in 06 artificial grass courts, the area for standard running roads and auxiliary works in campus is 10,200m^2 for exercises in 2013. In addition, NLU also has sports ground areas located within the dormitory campus; multi-field, volleyball court, etc. With the existing field system, the school has met the living and entertained needs for the students.

As far as health care is concerned, students can participate in national health insurance according to school regulations. At the beginning of the course, students are given a physical examination before enrolling [*Exh.2.9.5.d: Report on new student checking*]. Students can use

medical services free of charge from the medical room with 01 doctor. 100% students are checked for health and have health insurance. NLU is 2.3 km from Thu Duc General Hospital, and 7.7 km from Thu Duc District Hospital. It does not take time to arrive in these hospitals for accident cases and for treatment of issues related to student health. NLU organizes periodic health examinations for lecturers and staff once a year by a reputable medical facility.

Psychological counseling is through two ways: psychological consultation and "Radio Nona Lam" news channel. Students who need to be advised, ask questions, meet experts, meet lecturers in the school, or register for online consultation at Office of Psychological Consultation, 2nd floor, Phuong Vie Building or email to: tuvantamly@hcmuaf.edu.vn

For safety, NLU has security division consisting of 19 persons who are on duty 24/24 hours [*Exh.2.9.5.e: Decision on establishing the security*], for safety and in accordance with the Decree No, 06/2013/NĐ-CP. NLU has established the Fire Protection System with the task of checking the implementation of compulsory fire and explosion at the units. In 2014, the school adjusted the functions and tasks of the Fire protection system in accordance with the provisions of Decree 79/ND-CP dated July 31, 2014. Each laboratory or lecture hall is equipped with fire protection, internal rules and troubleshooting procedures. In order to ensure safety and firefighting, the NLU regularly checks, replaces and repairs firefighting equipment for work, ensuring safety and promoting maximum efficiency when using. The members of the security team and the Fire protection system team have participated in professional training sessions. NLU also established a Technical Safety Committee - labor protection with functions and duties implemented in accordance with Circular 25/TT-KHKT dated 01/12/1992.

NLU is located in suburb of Ho Chi Minh City, a tropical climate with the rainy season, with an average rainfall of about 1,800 millimeters annually from May to November and the dry season lasts from December to April. NLU is influenced by strong winds and heavy rains annually. Therefore, NLU's direction for natural disaster prevention and control is "risk management and prevention". Pruning trees for prevent falling, sewage system checking, electrical system checking are regular activities at the beginning of the annual rainy season, that are carried out by professional staffs [*Exh.2.9.5.i: working schedule for prevention*]. To the students of BioD, almost all activities such as "self-study", research conduction, practical learning, and Youth Union are performed inside A1 and A2 building. Management of the area is based on Regulations and Behavior rules [*Exh.2.9.5.k: Working schedule for prevention*]. Biosafety system is including 10 emergency boxes, 07 eyewash systems, 4 locked cabinets for toxic chemicals, and emergency signs. Laboratories are with adequate light, clean water, ventilation fans, toxic fume hoods or air conditions. All of that is to form a scientific environment with related works and multi-dimensional interactions between "students – lecturers".

BioD has developed a process to classify the laboratory waste and recycle waste. In which 100% of laboratories have garbage cans that are in the standardized form, a broken glass waste area isolated, recycling waste area, and weekly schedule for garbage cleaning [*Exh.2.9.5.m: Schedules for moving of wastes*]. Normal waste is collected and moved according to the University's schedule, hazardous wastes and chemicals are collected and conveyed by environmental companies [*Exh.2.9.5.n: Contracts for waste treatments*]. In order to ensure food safety for students/lecturers working in laboratories, BioD has signed a supporting agreement with No. 1 Shop to provide the foods in safety [*Exh.2.9.5.o: Contract for food supply*]. All students/lecturers follow the regulations; no eating and drinking are allowed in the laboratories, troubleshooting processes and standard operating procedures are clearly documented.

2.10 Criterion 10 - Quality Enhancement

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

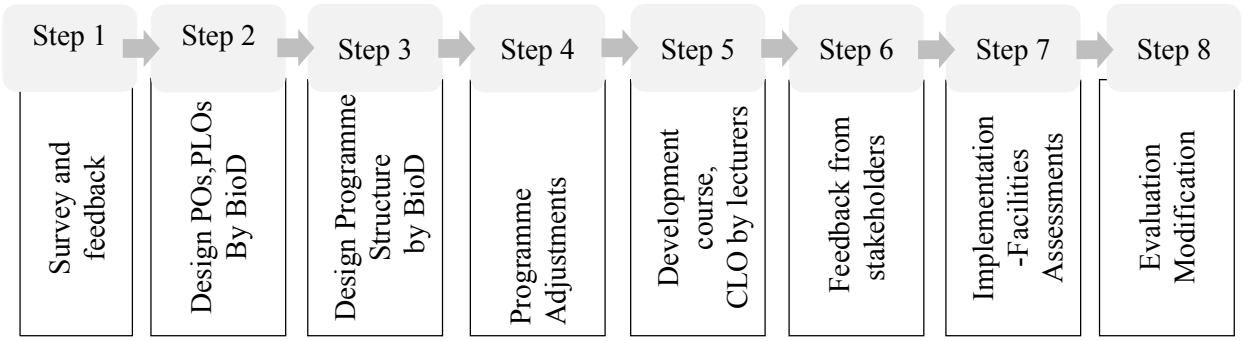
The Bio programme was first established in 2001 and underwent four modified versions. NLU and BioD always focus on the development and supplementing the training programme to meet the demand of the society. The feedback of stakeholders, the regulations of MoET, NLU's and BioD's mission and vision are used as the basis for adjustment and modifying of training programmes. After careful consideration of the requirements of the labor market the curriculum was modified significantly in 2014 and again in 2018 from the original 2008 version [*Exh.2.10.1.a: Programme development and implementing*]. BioD has collected the feedbacks from students on teaching activities at the time of graduation or from new students on awareness and understanding level about the field of study [*Exh.2.10.1.b: Collecting of evaluation forms*]. BioD has established the Alumni Association with its own Facebook to receive the feedbacks and to update the information of BioD's education and research activities [*Exh.2.10.1.c: Alumni association activities*]. The employment's feedbacks are received from newly graduated alumni after three, six, and twelve months in order to upgrading the curriculum such as adding the course of professional English skills and of Study skills (version 2018).

Prior to 2008, students were not trained in commercialization of bio-products. Similarly, prior to 2010, ISO course was not implemented. The course "development and commercialization of bio-products with two credits" and "ISO" course with 1 credit, respectively were added to the 2014 and 2018 curriculum versions [*Exh.2.10.1.d: Report on course changing and new course forming*].The soft skills are enhanced through teaching and practicing the skills such as report, presentation, explanation, professional work styles that are integrated into the courses, and also enhanced through the five seminars conducted by experts/employers/lecturers. In response to the requirements from MoET under Decision no. 07/2015/TT-BGDĐT, NLU and BioD planned to modify all of educational programmes. The Bio programme 2018 has been reviewed on the programme objectives, PLOs for curriculum development, focusing on knowledge, skills, responsibility and self-orientation.

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

The curriculum design and development process are established according to MoET's decisions, NLU's requirements, and stakeholders' needs, at least once in every three years (version 2008-2010-2014-2018). Curriculum design is formulated by academic staff of BioD. It is approved by NLU's scientific and training council, and it is approved by NLU's president. During 18 years development, the programme has undergone four modified versions following the evaluation and enhancement processes. The 2008 curriculum was modified from 2001 programme with fixed academic system being replaced by credit system with 30 new subjects. Since then, it has been continuously revised and modified to the final 2018 curriculum with 136 credits, which is used in academic year of 2019. The curriculum development is always in comparison with the programmes of both national and international universities; Bio - Can Tho university, Bio – International University (National University Ho Chi Minh), Bio – Newcastle University (Australia), and 10 other universities around the world [*Exh.2.10.2.a: Report on the results of comparison*].

The process used for the programme development is as follows:



During the implementation process, the curriculum is evaluated through the quality inspection. NLU establishes the quality assurance system through the establishment of Self-assessment Committee and the Quality Management Office for supporting and advising the system [*Exh.2.10.2.b: Self-assessment and Quality assurance regulations*]. At least every two years, a process for updating and evaluating the programme is performed with five steps according to the Circular 07/2015/TT-BGDĐT of MoET.

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

The teaching and learning process is managed on a strict schedule, which is publicized on website of Academic Affairs. It is supported by Quality Management Office, and checked by Legality Office. Workload distribution for teaching and learning activities (i) Lecturers have to complete a teaching plan for each semester, based on the curriculum [*Exh.2.10.3.a: Teaching and Learning plan*] (ii) Teaching schedule is worked out for full-time or visiting lecturers, (iii) time schedule for lab-work and booking teaching rooms must be arranged, (iv) Arrangement is made for public announcement of the Time schedule for lecturers and students, (v) Arrangement is made to organize exams and marking exam papers, (vi) relevant academic service is provided for students, and (vii) inspectors are assigned to ensure learning progress and the teaching schedule is observed on time [*Exh.2.103.b: Teaching and Learning inspection*]. Quality teaching and learning are affected by active engagements of students in different learning methods as shown in Table 2.28. The assessment methods are moved from direct and indirect assessments in the past to experiential, interactive, and independent assessments recently. The validity, reliability, and consistency of the system help the students to motivate themselves in the course of the study.

The assessments of learning outcomes and attitudes are shown in the syllabus at the beginning of the semester with assessment method, weighting, and timeline. Examinations are carried out in accordance with NLU's test rules and the MoET's regulations [*Exh.2.10.3.c: Regulation of NLU on examination*]. The student assessments always follow a predetermined process and along with this, the employer's assessment is also carried out at the end of the third year based on internship reports and thesis presentation [*Exh.2.10.3.d: Report on evaluations*]. The seminars, exercise, and quizzes required in the course (CLO) are evaluated to ensure to PLOs [*Exh. 2.10.3.e: A report of seminars on soft-skills*].

Table 2.28 Activities upgrading the quality of teaching and learning in BioD

Methods	Descriptions	Activities
Direct learning	Class/Labs/Practical Labs, Lecturers– Students, face -to -face	Presentations, team works, technical works, answers - questions
Indirect learning	Outside of class, Lecturer–Students, Advisors - Students	E-learning, email, practical reports, seminars
Experiential learning	Outside of University, Outside of class	Research, study tours, seminars, net house activities
Interactive learning	Outside of university, Outside of class, Foreign countries	Research, study tours, internships, seminars, presentation
Independent learning	Outside of university, Outside of class, Foreign countries	Internships, Thesis working, self-study

2.10.4 Research output is used to enhance teaching and learning

Research results are used to improve the quality of lectures and professional skills of students [*Exh. 2.10.4.a: research projects of lecturers*], [*Exh. 2.10.4.b: research projects of students*]. Facilities bought for projects provide good and new equipment for biotechnology students [*Exh. 2.10.4.c: List of laboratories invested*]. Remarkable results are noted that 30% thesis were carried out in labs outside NLU that enhances the quality of students in term of applying the knowledge and skills received in the university [*Exh. 2.10.4.d: List of supervisors for thesis*]. The contribution of projects' experts to educate the NLU students is appreciate.

Results from the researches of lecturers and students are published in various forms; eg. project reports, journal articles, and scientific conferences. Lecturers can use the results in the lectures and textbooks in order to enhance the lecture quality and to help students approach technological advances. The scientific research activities of the BioD students are oriented very early, the first semester of the 2nd year of the programme. However, students have to pass the course "Laboratory safety Management (2 credits)" and to know the regulation "Lab's safety and fire prevention" before joining the research team and entering the labs [*Exh. 2.10.4.e: Regulations on labs entering*]. Some bio products resulted from student researches have been used to demonstrate for the usefulness of bio-techniques learned [*Exh. 2.10.4.f: List of the commercial products*] and for start-up training. Research output is also used to enhance the facilities of laboratories, upgrading the human resource for research, and that is an important contribution for applying the new funds for teaching and learning [*Exh. 2.10.4.g: List of facilities upgraded from research*]. .

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

Quality of facilities is inventoried annually and replaced with new ones following regulations of NLU, which is signed by the President. In urgent cases, Property Management Office comes in action immediately according to the reports from Units/offices/Labs. Evaluation of facilities and support services is carried out annually based on the feedback of staff, students, and lecturers. With orientation "socialization", as many as laboratories, facilities, and equipment have been installed and expanded [*Exh.2.10.5.a: Description of tissue culture*]. For enhancement, NLU has contracted and performed the blackboard and e-learning system, the Center for Foreign Studies has been upgraded, the library has been renewed. This shows that quality of teaching and learning is being upgraded [*Exh.2.10.5.b: Activities of FLC*]. The library will also pay special attention to the supplemental textbook, especially e-Book reference materials to meet the academic and teaching needs of faculties and students [*Exh.*

2.10.5.c: Activities of library]. A new building with 9.898 m² area, Thien Ly, is reserved for administrative and functional offices/units, as well as for 01 bank office, and 6 conference rooms. This arrangement makes it easy for students in learning and academic activities. Internal bulletin, http://nls.hcmuaf.edu.vn/nls-4323-2/vn/ban-tin-noi-bo.html, is a new way to deliver the new information to students, lecturers, officers, and others. Besides that, Facebook, https://www.facebook.com/NongLamUniversity, is an easy way for sharing the information and collecting the feedbacks.

Scientific journal of NLU has been replaced by a new name "Journal of Agriculture and Development" to support the lecturers and students publishing the research results in English. The paper is submitted online with confidence and easy work, and is reviewed by well-known scientists [*Exh.2.10.5.d: Sample of NLU's Journals*].

Since 2012, RIBE has been assessed to conform with the requirements of ISO/IEC 17025:2005 by Bureau of Accreditation (BoA), Ministry of Science and Technology for Chemical field with Accreditation No. VILAS 548. In 2015, there were 20 chemical tests and 01 biological test certified and in 2018 another 6 biological tests were certified. Four laboratories are signed as Vilas labs., to support students in two courses (1) the standardized methods for biochemical analysis in the Advanced Chromatography course, (2) the standardized regulations for ISO course. RIBE's labs enhanced from 2016-2019 are funded yearly by MoET with 2 million US dollars in total (project code: 7501485). The BioD is successful to establish rooms for practical teaching with new equipment installed [*Exh.2.10.5.e: List of equipment in 2018-2019*]. Combination of the high-tech labs of RIBE and the practical labs of BioD is an excellent strategy for teaching and learning.

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

The feedback and comment collecting from stakeholders is systematically established, evaluated, and quality enhanced. QMO, and AAO are organizing the feedback collecting from lecturers, students, alumni and employers through various forms such as questionnaires, communication, interview and so on [*Exh. 2.10.6.a: NLU Report on feedback of stakeholder*]. Results are analyzed and reported to related units/departments/faculties, and suggestions on procedures of quality improvement have been done (Table 2.29).

With the employers, BioD has signed cooperation agreements with many institutions, centers, and companies for educational activities on the win-win ways [*Exh. 2.10.6.b: Minutes of cooperation agreement*]. After the internship course, the employers evaluated on the quality of trainers; the ability to meet the workload, the skills and knowledge, attitudes, strength and weakness [*Exh. 2.10.6.c: Internship assessment*]. The results are analyzed on the current situation and trends, and on that basis, the BioD's Scientific Council works out a plan to adjust the contents of the courses [*Exh. 2.10.6.d: Minutes of Internship activities*].

Table 2.29 Stakeholders' feedback and analysis mechanism conducted by QMO, AAO

STAKEHOLDER FEEDBACK			
STUDENTS	**ALUMNI**	**STAFF**	**EMPLOYERS**
- Teaching and Learning methods -Student assessment - Student supporting services - Facilities - Co-curriculum	- Curriculum - Employment rate - Supporting services - Internships - Thesis evaluation	- PLOs - Curriculum - Teaching and Learning methods - Working environment - Supporting services - Student attitudes	- Graduate quality - Internship - Thesis evaluation - Co-curriculum

With the staff, BioD receives directly feedback for student's evaluation, teaching and learning facilities, research funds, communication and environment conditions. In addition,

lecturers can give the idea for the programme enhancement in the Labor Conferences at the end of academic year [*Exh. 2.10.6.d: Minutes in the Labor meetings*]. The stakeholder's feedback mechanisms of Bio programme are by way of (1) online for collecting the feedbacks, (2) using the PDCA for solving the new problems, (3) identifying the targets and checking the confidence of data. With the students, BioD periodically conducts feedback for the quality of teaching and service in each semester or each year [*Exh. 2.10.6.f: Report on feedback of students on the programme*]. For courses, which are rated "unsatisfactory" by many students, the BioD's leader will meet with lecturers concerned to identify the problems and together they look for solutions. As a consequence, some courses were modified or were combined with other courses by reducing the number of credits of one course or increasing the number of credits of the other course as shown in version 2018. Suggestions of alumni are also important information for quality improvement process. Every year in Vietnamese Teacher's Day, the BioD organizes alumni meetings, exchanges between alumni and students to capture the actual needs of students, get the feedback from alumni. Students who have just graduated after 6 months will be surveyed on their ability to meet work and additional skills and knowledge in the programme [*Exh. 2.10.6.g: Report on feedback of Alumni*]

2.11 Criterion 11 - Output

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

On average 85% of biotechnology students graduate, they are assessed based on (1) completion of 5 seminars at Department level, (2) satisfactory marks of merit, (3) GPA passed, (4) attaining the European B1 standard, and (5) IT standardization [*Exh.2.11.1: List of the students completing the programme*].The pass and dropout rates of BioD students are different from year to year with the average on time pass rate (within four years) is 50 – 65%, which is relatively low compared to the expectation of 70% as the programme version 2001. The dropout rate is variable, the main reasons are (1) the changing the orientation of study of the first year students, (2) personal reasons leading to the students failed the programme, and (3) the English qualification (Table 2.30). The BioD always looks for solutions for the student's personal problems; For example providing the scholarships/part time jobs/; or pushing the English study from second year; notifying the academic warnings in every semester; enhancing the role of advisors; reducing the number of students per class.

Table 2.30 The pass rates and dropout rates in the last eight years

Academic year	Cohort size	% completed first degree in			% dropout during			
		3.5 year	4.0 year	>4.0 year	1st year	2nd year	3rd year	>4th year
2018-2019	190	-	-	-	0.00	-	-	-
2017-2018	167	-	-	-	0.00	1.80	-	-
2016-2017	110	-	-	-	8.18	4.55	0.00	-
2015-2016	210	1.90	36.19	0.00	6.19	4.76	0.95	1.43
2014-2015	186	2.15	31.18	32.80	0.00	18.82	1.61	2.15
2013-2014	236	9.75	41.95	23.31	0.00	0.00	5.08	1.27
2012-2013	154	16.23	41.56	13.64	0.00	0.00	0.00	4.55
2011-2012	235	12.34	53.62	19.57	3.83	0.00	0.00	3.40

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

The programme with 135 credits (version 2014) allows students to complete the course in 3.5 years (16% in the year 2012-2016), in 4 years (40%) and 32.8% for 5.0 years (2014-

2018). Results revealed that the structural programme is satisfactory and it allows the students to finish their study within 8 years (even one student is still having a right to graduate), and the students to finish their study only 3.5 years, in particularly. These evidences showed that the credit programme impacts the quality of students as well as their quantity [*Exh. 2.11.2.a: List of the students graduated in 3.5 years*].

Table 2.31 The length of study and pass, dropout, and delay rates in the last five years

Academic year	Cohort size	Length of study (year)						Pass (%)	Drop out (%)	Delay (%)
		3.5	4.0	5.0	6.0	7.0	8.0			
2011-2015	235	12.34	53.62	14.47	3.40	1.28	0.43	85.54	7.23	7.23
2012-2016	154	16.23	41.56	10.39	1.31	1.95		71.43	4.55	24.02
2013-2017	236	9.75	41.95	18.22	5.08			75.00	6.36	18.64
2014-2018	186	2.15	31.18	32.80				66.13	22.58	11.29
2015-2019	210	1.90	36.19					38.10	13.33	48.57

BioD students have a tendency to prolong their study time to 5.0 years, due to the maximum training time rule. Students take more time to finish their thesis for graduation. They also take more time for English certificate and other unkown reasons. The Student Affair Office, Student Support Center, Organization and Company relations and BioD always work together to provide physical and mental supports to students such as scholarships, tuition fee discount, and mental consultation [*Exh. 2.11.2.b: BioD Student scholarships and awards*].

2.11.3 Employability of graduates is established, monitored and benchmarked for improvement

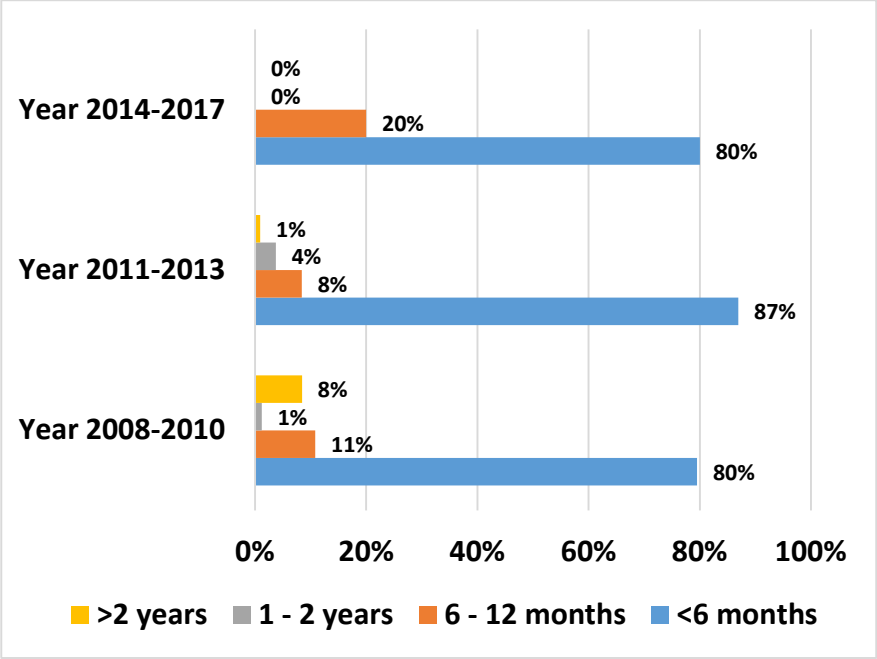


Figure 2.4 The percentage of students having jobs after graduation.

The surveyed result shows that 95.0% of graduates are employed after 1 year and 82.3% of graduates have jobs after 6 months, 3.0% of them get jobs after 2 years. It is noted that the

graduates occasionally left their work due to (1) change jobs (2) study post-graduate and (3) study second degree or other specialized knowledge (Fig. 2.4). Job positions in biotechnology were recorded in 17 different careers, in general 55% jobs relating to agriculture field, 25% to testing labs, 15% to microbe-environment, and 5% to others. It indicates that the knowledge and skills educated meet the employer's requirements and graduates are well-equipped for the jobs (Fig. 2.5) [*Exh. 2.11.3.a: Report on job positions*].

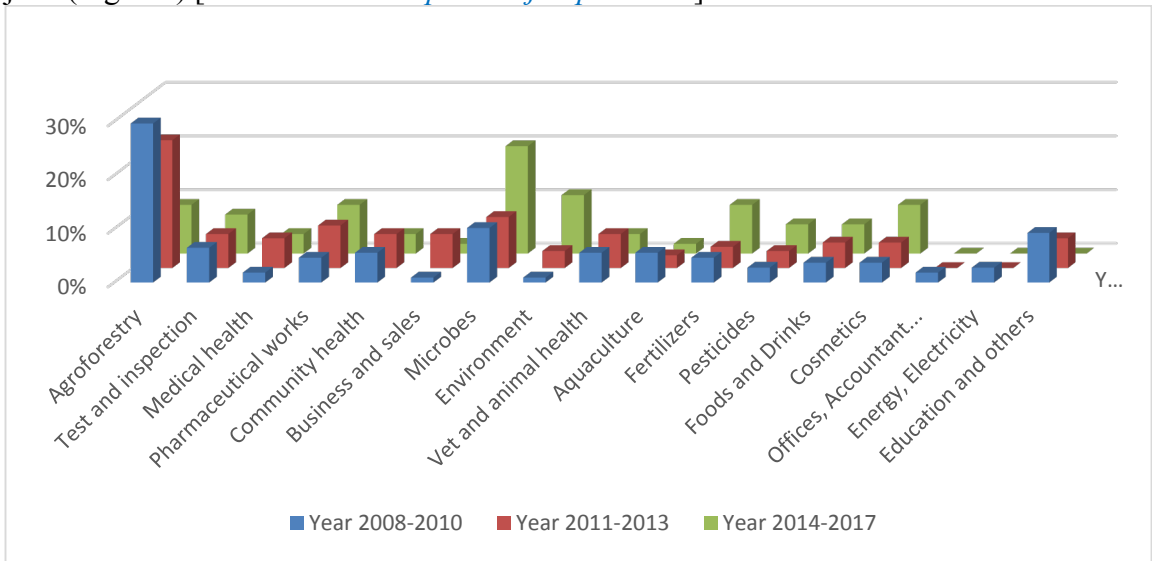


Figure 2.5 Working positions of graduates in biotechnology (2017).

In order to assist student to find jobs after graduation, BioD has frequently published recruitment information on the BioD website and Alumni emails; It encourages the students joining internships in private sectors/ in international organizations; It expands the foreign language clubs; to train for their soft skills; It encourages students to conduct their thesis/research outside of the university/department [*Exh. 2.11.3.b: Announcement of Job position on website*].

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

Research activities of the students are appreciated and they are developed (1) with the aim of producing skillful engineers (2) to ensure that the field of technology means creativity and technical expertise. Results of the research are used for (1) a reward point to final thesis [*Exh. 2.11.4.a: List of the students awarded for plus point*], (2) submitting to awards [*Exh. 2.11.4.b: List of the students received the awards*], (3) developing a commercial product [*Exh. 2.11.4.c: List of commercial products*], (4) formulating scientific papers [*Exh. 2.11.4.d: List of the scientific pappers*], (5) transferring to donors [*Exh. 2.11.4.e: List of the results of research projects transferred*] and (6) receiving more funds for the continuity of research. Some of bio-products resulted from students researches have been commercialized such as Cordyceps mushroom, Lingzhi mushroom, Hydroponic vegetables, Banana tissue culture.

Table 2.32 Research achievements of BioD students (2013-2017)

Academic year	NLU funds	Other funds	No. of students joined	National scientific papers	Awards
2012- 2013	17	6	39	0	7
2013- 2014	11	13	30	8	4
2014- 2015	12	14	51	7	1
2015- 2016	6	8	21	1	3
2016 - 2017	3	23	29	6	1
Total	**49**	**64**	**170**	**22**	**16**

The number of research projects is carried out by students also increased since they had time for doing research, the private companies are convinced to give the funds for students (Table 2.32). Every year the BioD students receive awards for research achievements and scientific papers, which are contributed by the data of student's research. Quantity and quality of thesis's research are established and monitored by supervisors working internally and externally of NLU. Table 2.33 is showing that the supervisors are experts in their fields, they hold master and Ph.D degree and that the quality of research by BioD students is improved year by year; Thesis written in English is encouraged. Achievements in research of BioD students contribute to the vision and mission of NLU, which is a research university of international quality.

Table 2.33 Quality of supervisors for thesis working conducted outside of NLU

Supervisor's degree	2012-2016		2013-2017		2014-2018		2015-2019	
	Number	%	Number	%	Number	%	Number	%
Bachelor	9	20	13	13	7	15	0	
Master	28	61	54	55	24	52	25	49.0
PhD	5	11	23	23	12	26	22	43.1
Doctor	0	0	4	4	2	4	1	0.2
Assoc. Professor	4	9	4	4	1	2	3	0.6
Total	46		98		46		51	

2.11.5 The satisfaction levels of stakeholders are established, monitored and benchmarked for Improvement

For Student's satisfaction [*Exh.2.11.5: Report on the feedback of BioD students*]

Seventy percent of 1st, 2nd and 3rd year students are satisfied with the objectives, contents of the courses. More than 70% of students are satisfied with the knowledge and teaching method of lecturers, in which second and third year students have similar comments (Fig. 2.6). While 60 - 70% of students have evaluated on the relevance of the course to the social needs, in which 3rd year students have less satisfaction. The results from three years of survey showed that: (1) The objectives and contents of the course are to decrease the dissatisfaction ratios and to increase the satisfaction and very satisfaction ratios, (2) The suitability of the course is significantly improved with high satisfaction ratios.

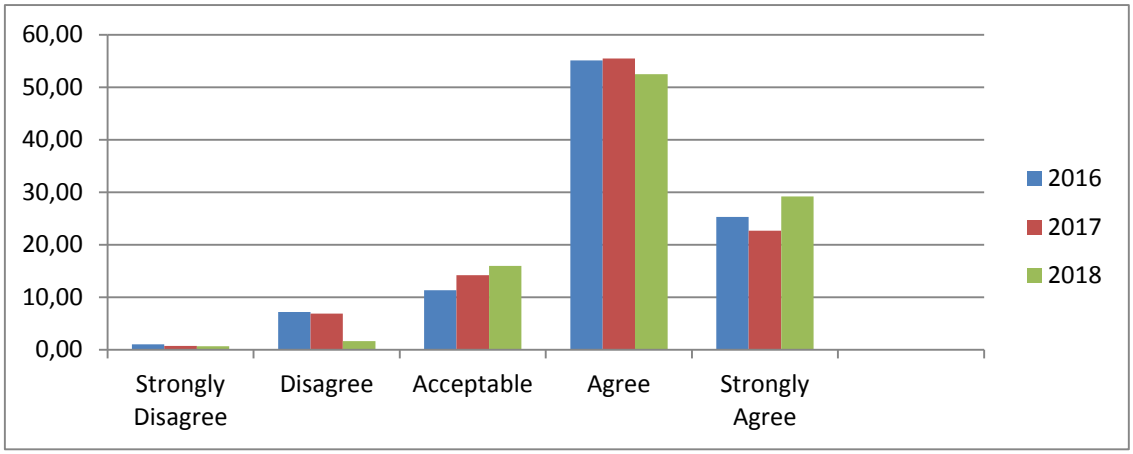


Figure 2.6 Students' satisfaction with teaching methods and knowledge of lecturers.

For Alumni's satisfaction [*Exh.2.11.5.b: Report on the feedback of BioD Alumni*]

The satisfaction level of alumni shows that over 50% alumni are satisfied with the quality, the structure, the practical connectivity requirements and the balance between theory and practice duration of the programme, However, less than 50% of the alumni agrees that the Programme meets requirements of current professional - related jobs (Table 2.34). These results suggest that the current programme puts too much weight on theoretical knowledge than on professional skills. The alumni recommend that graduates should have more skills and experiences of English and IT in order to succeed in job application. Lacking experience in job interview and communication skills is the major limitation for student in job finding (Fig. 2.7). Taking the recommendations, the quality of presentations on soft skills should be improved with addition of skills in foreign language and information study.

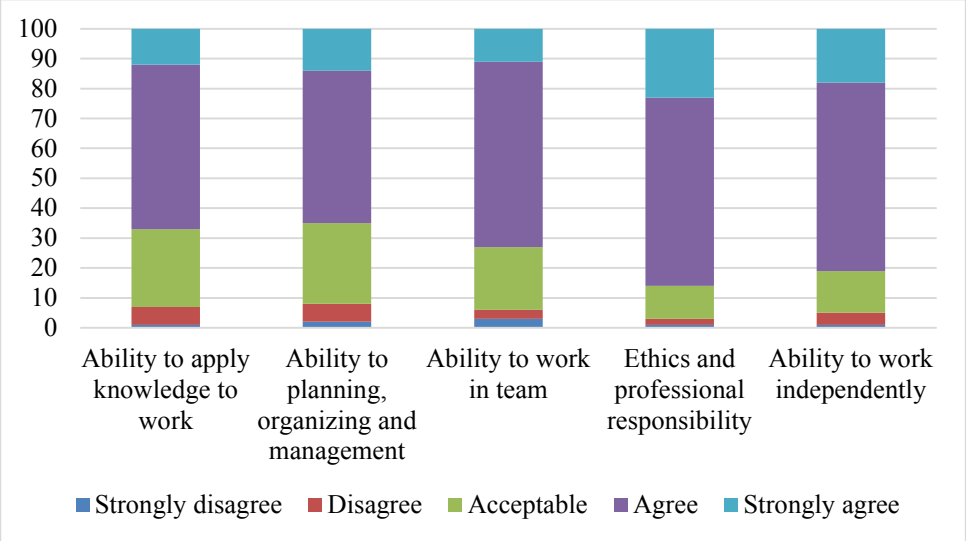


Figure 2.7 Alumni satisfying with career after graduation (updated: May 2019).

Table 2.34 Satisfy of alumni with knowledge and skills in the programme and social needs

Quality Education	Strongly disagree (%)	Disagree (%)	Acceptable (%)	Agree (%)	Strongly agree (%)
The programme has clearly and specific objective, is well structured and systematic	3	16	24	51	6
The programme has integrated and supported courses	1	11	20	60	8
The content of the programme is balanced between general and specific skills and knowledge	4	15	27	46	8
The programme is rationally divided between theory and practice	2	22	18	46	12
The programme meets the job requirements after graduation.	7	20	29	36	8
The programme ensures inter-connected capacity with other programmes	3	6	25	54	12
The programme responds flexibly to labour market needs	6	19	33	38	4

For Employer's satisfaction [*Exh.2.11.5.c: Report on the feedback of employers***]**

Employers suggested that soft skills and foreign language should be upgraded urgently (71% agreed in comparison with 85% in 2018) (Fig. 2.8). They suggested that it needs (1) to construct a network between university/department with employers for sharing of education ideas, (2) to increase the number of students working in real conditions of the companies (50% agreed with), (3) to invite the employers to give seminars and to train soft skills (42% agreed with), and (4) curriculum modifying needed to involve employers (29% agreed with). In comparison with 2018 survey, students who graduated in 2019 are more satisfied with professional knowledge and skills (60% agree), in particularly, 92% agreements that student's attitudes improved markedly (Fig. 2.9). Taking the recommendations, the teaching and learning methods should be improved with addition of English language in lectures, using textbooks and reference materials in English, exercises for practical subjects, and oral final exam for some courses.

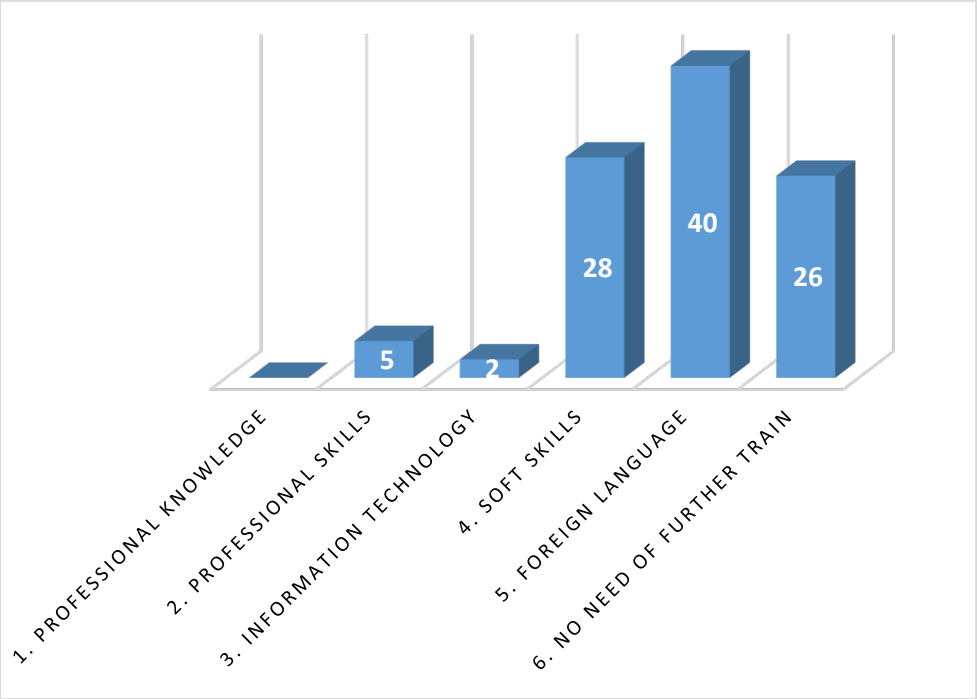


Figure 2.8 Employers suggesting the skills to need for upgrading and renew.

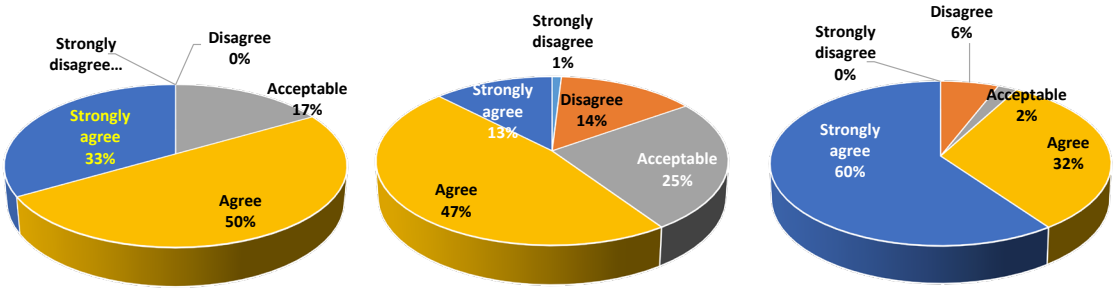


Figure 2.9 Satisfaction of employers about the knowledge and skills of the programme (updated: May, 2019).

For Staff's satisfaction [*Exh.2.11.5.d: Report on the feedback of BioD staff*]

The following data drawn from the survey in the academic year 2017-2018 indicated that the soft skill seminars and realizing career skills should be concerned (11% disagreed with). From 70% to 80% of lecturers agreed with the curriculum, a balancing between theoretical and

practical subjects requires attention (5.5% disagree). They are satisfied with the objectives of the programme (80% agreed) and PLO with 90% approved. Support staffs are satisfied in term of service and management of teaching activities. However, lecturers were not satisfied with learning attitude of students in foreign language and IT. 20 – 40% lecturers are not satisfied with the process and management of learning activities. Other evaluations noted; (1) the research and teaching equipment are not adequately maintained, and (2) library is not updated enough (Fig. 2.11). Work in the plan includes: Conducting the process for lecturers and students to evaluate attitude in study; Supporting tools and equipment for teaching activities more effectively; Improving the process to address issues related to all aspects of teaching and learning activities.

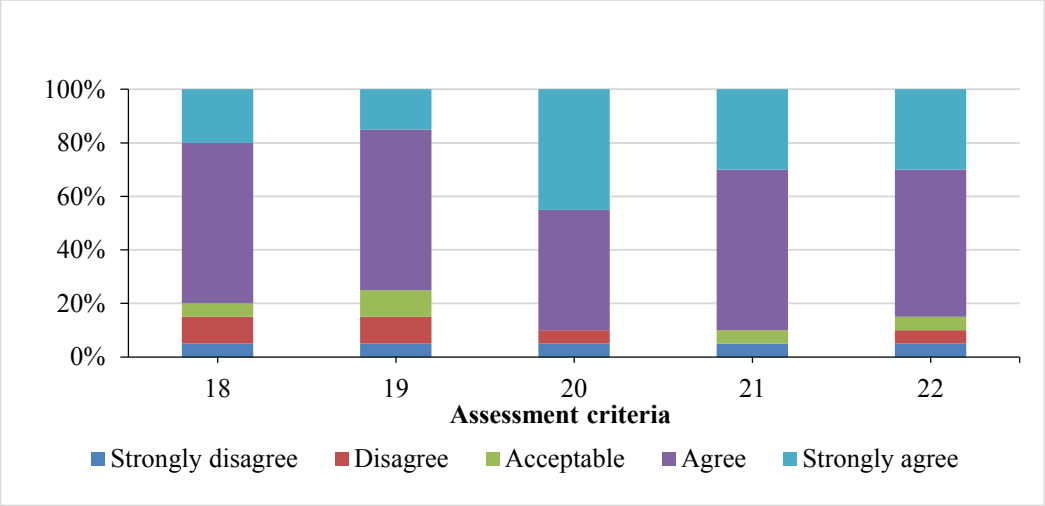


Figure 2.10 Assessment of lecturers on support staff and organization.

18. The organization and management of education of the Department facilities for teaching activities;
19. Board of management of the Department appropriately addresses the issues related to teaching activities
20. Office staffs have gentle attitude and provide well services to teaching activities;
21. Academic staffs notify teaching schedules to lecturer on time;
22. Undergraduate thesis review and presentation are well organized

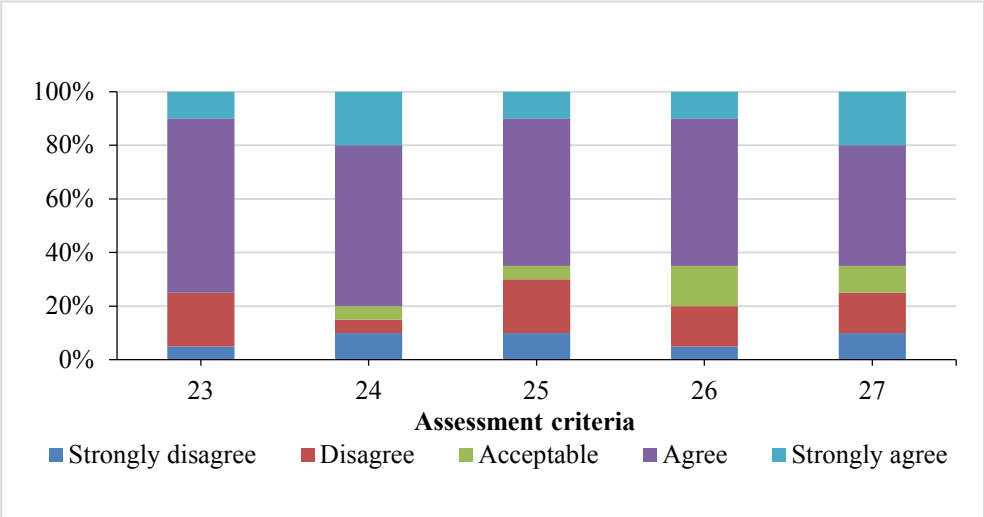


Figure 2.11 Assessment of lecturers on facilities, equipment and library.

23. Classrooms are well-equipped with teaching apparatus;
24. Laboratories are appropriately arranged and safe for students;
25. Experimental equipment meets the requirements of practical subjects and scientific researches;
26. Library satisfies the demands of reference lookup;
27. Internet and Wi-Fi systems are good support for teaching.

PART 3. STRENGTHS AND WEAKNESS ANALYSIS

3.1 Criterion 1: Expected Learning Outcomes

Strengths	Weaknesses	Improvement plan
- The PLOs of the programme are structured basing on basic knowledge and professional skills that are able to meet demands of stakeholders, - The PLOs are suitably structured in each subject and they are available to students in every semester and in the whole programme, - The programme not only meets quality requirement in the national standards, it is also consistent with the international quality standards in both the knowledge and skill.	- Feedback from stakeholders on PLOs is not satisfactory.	- The programme will continue to be assessed every year and to be improved periodically, - To apply a set of online tools to get more feedbacks from alumni and employers. - To prepare for the next round of curriculum revision in 2022

3.2 Criterion 2: Programme Specification

Strengths	Weaknesses	Improvement plan
- The programme specification is identified in each CLO and PLO, - Stakeholders are concerned about the programme specification.	- Feedback from stakeholders on programme specification is not satisfactory	- To apply a set of online tools to get more feedbacks from alumni and employers.

3.3 Criterion 3: Programme Structure and Content

Strengths	Weaknesses	Improvement plan
- The, programme is well-balanced - The content of the courses of the programme are broad and deep, - The programme is reduced in the number of credits and knowledge is adjusted to be in line with biotechnology programmes of the developed countries, - The programme enhances an orientation of profound knowledge through giving more options for selective courses in order to help students with their career orientations later.	- There is inadequate delivery of soft skills, - Lectures do not meet internationalization requirements	- English courses for biotechnology professionals should be improved, - Soft skills should be increased in term of seminars and social activities.

3.4 Criterion 4: Teaching and learning Approach

Strengths	Weaknesses	Improvement plan
- Qualified lecturers with their professional knowledge and skills and their teaching methods must meet the needs of students, - Students are provided knowledge and skills in a competitive environment,	- English proficiency of some students is not good enough for accessing the new	- To increase the number of courses taught in English, - To enhance activities and time of the practical

Strengths	Weaknesses	Improvement plan
- Scientific research and technology transfer are the right way to develop the quality of teaching and learning, - Assessment is always the key to improve teaching and learning quality.	techniques and knowledge	field trips and factory visits, - To increase the number of students exchanged with universities through the world.

3.5 Criterion 5: Student Assessment

Strengths	Weaknesses	Improvement plan
- The assessment regulations are completely established, consistently applied, constantly updated and adjusted to suit the current situation, - The assessment methods reflect truly the learning quality of students, - The results of students are evaluated in different conditions and contexts.	- The bank of exam questionnaire has been set up not complete and not widely utilized yet.	- Keep going on to set up the bank of exam questionnaire for all courses based on CLOs.

3.6 Criterion 6: Academic Staff Quality

Strengths	Weaknesses	Improvement plan
- Enthusiastic and highly qualified staff members with good teaching skills involve in research, - Contribution for the national's education - Responsible students, - Confidence in international cooperations.	- Insufficient number of professors, - Insufficient number of assistant lectures.	- Submit to university level the requests for more labor resources.

3.7 Criterion 7: Support Staff Quality

Strengths	Weaknesses	Improvement plan
- The administration staff are highly experienced and enthusiastic, - The Administrative Office performs perfectly the assigned tasks.	- The staffs have sometimes been overloaded with different tasks.	- Fostering and upgrading the professional skills: computers, law, and documentation yearly.

3.8 Criterion 8: Student Quality and Support

Strengths	Weaknesses	Improvement plan
- Quality of enrolled students is high - Orientation of job is clear - Good interest in foreign language learning - Toward responding to the social and community needs	- The English competence among students is not balanced, - Gaps of qualification and skills among students are large	- The course in English should be increased 20% each year, - To upgrade the seminar quality regularly focusing on skills for life and works.

- The specialized centers for student support	- Lacking the materials for guidance.	- Guidance for life is prepared.

3.9 Criterion 9: Facilities and Infrastructures

Strengths	Weaknesses	Improvement plan
- The facilities and infrastructures are sufficient and updated annually, meeting the teaching, studying and researching demands of lecturers and students, - Labs environment is adequate for students, - Stakeholders contributed the facilities for student research - Equipment are used efficiently and satisfactorily	- Wifi system is not satisfactory - Equipment for practical courses are not enough for all students	- Wifi in A1 – A2 building resized, - A plan for new equipment - Seminar on demonstration of the use of new equipment.

3.10 Criterion 10: Quality Enhancement

Strengths	Weaknesses	Improvement plan
- The curriculum shows a tight association between courses with knowledge and skills, - The evaluation methods are established throughout according to PLOs, - The review on feedback from stakeholders is carried out periodically, - Quality assessment system is recognized throughout from Department to University	-The quality of evaluation is not satisfactory - Quality assessment system is not properly carried out among sectors/offices.	-The results of QA are shared online, - Training course on QA for students and lecturers is needed, - A QA position for faculty/department is needed

3.11 Criterion 11: Output

Strengths	Weaknesses	Improvement plan
- More than 80% students graduated and had a job after 6 months, - Students are prepared and ready to go abroad to take further training , - Lecturers work strongly in scientific research and they are involved in a lot of scientific transfer work , - As many as products are commercialized and start-up companies established, - The programme is distinguished with other biotechnology programmes.	-Soft skills are still the weakness - Jobs appointment in international markets are still less.	- To add a new course to help the students to know how to work on business, - To increase the seminars on soft skills,

PART 4. APPENDICES

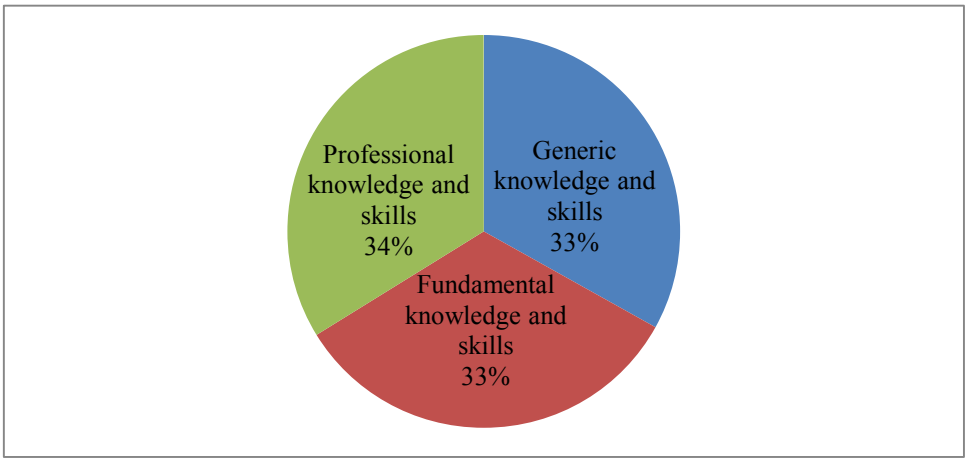
Appendix 1: Checklist for AUN-QA Assessment at Programme Level

Criteria	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 opinion						X	
2. Programme Specification							
2.1. The information in the programme specification is comprehensive and up-to-date.					x		
2.2. The information in the course specification is comprehensive and up-to-date.					x		
2.3. The programme and course specifications are communicated and made available to the stakeholders.				x			
Overall opinion					X		
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 opinion					X		
4. Teaching and Learning Approach							
4.1. The educational philosophy is well articulated and communicated to all stakeholders.					x		
4.2. Teaching and learning activities are constructively aligned to the achievement of the expected learning outcomes					x		
4.3. Teaching and learning activities enhance life-long learning					x		
Overall opinion					X		
5. Student Assessment							
5.1. The student assessment is constructively aligned to the achievement of the expected learning outcomes.					x		
5.2. The student assessments including timelines, methods, regulations, weight distribution, rubrics and grading are explicit and communicated to students.						x	
5.3. Methods including assessment rubrics and marking schemes are used to ensure validity, reliability and fairness of student assessment.					x		
5.4. Feedback of student assessment is timely and helps to improve learning.					x		
5.5. Students have ready access to appeal procedure.					x		
Overall opinion					X		

Criteria	1	2	3	4	5	6	7
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 opinion					X		
7. Support Staff Quality							
7.1. Support staff planning (at the library, laboratory, IT facility and student services) is carried out to fulfil the needs for education, research and service.					x		
7.2. Recruitment and selection criteria for appointment, deployment and promotion are determined and communicated					x		
7.3. Competences of support staff are identified and evaluated					x		
7.4. Training and developmental needs of support staff are identified and activities are implemented to fulfil them.					x		
7.5. Performance management including rewards and recognition is implemented to motivate and support education, research and service.					x		
Overall opinion					X		
8. Student Quality and Support							
8.1. The student intake policy and admission criteria are defined, communicated, published, and up-to-date.						x	
8.2. The methods and criteria for the selection of students are determined and evaluated.						x	
8.3. There is an adequate monitoring system for student progress, academic performance, and workload.						x	
8.4. Academic advice, co-curricular activities, student competition, and other student support services are available to improve learning and employability.					x		
8.5. The physical, social and psychological environment is conducive for education and research as well as personal well-being.					x		
Overall opinion					X		

Criteria	1	2	3	4	5	6	7
9. Facilities and Infrastructure							
9.1. The teaching and learning facilities and equipment (lecture halls, classrooms, project rooms, etc.) are adequate and updated to support education and research.					x		
9.2. The library and its resources are adequate and updated to support education and research.				x			
9.3. The laboratories and equipment are adequate and updated to support education and research.						x	
9.4. The IT facilities including e-learning infrastructure are adequate and updated to support education and research.				x			
9.5. The standards for environment, health and safety; and access for people with special needs are defined and implemented.					x		
Overall opinion					X		
10. Quality Enhancement							
10.1. Stakeholders' needs and feedback serve as input to curriculum design and development.					x		
10.2. The curriculum design and development process is established and subjected to evaluation and enhancement					x		
10.3. The teaching and learning processes and student assessment are continuously reviewed and evaluated to ensure their relevance and alignment.					x		
10.4. Research output is used to enhance teaching and learning						x	
10.5. Quality of support services and facilities (at the library, laboratory, IT facility and student services) is subjected to evaluation and enhancement.					x		
10.6. The stakeholder's feedback mechanisms are systematic and subjected to evaluation and enhancement.					x		
Overall opinion					X		
11. Output							
11.1. The pass rates and dropout rates are established, monitored and benchmarked for improvement.					x		
11.2. The average time to graduate is established, monitored and benchmarked for improvement.					x		
11.3. Employability of graduates is established, monitored and benchmarked for improvement.					x		
11.4. The types and quantity of research activities by students are established, monitored and benchmarked for improvement.					x		
11.5. The satisfaction levels of stakeholders are established, monitored and benchmarked for improvement.					x		
Overall opinion					X		
OVERALL VERDICT					X		

Appendix 2: Programme Specification

1	Degree awarding institution	Nong Lam University Ho Chi Minh City
2	Training unit	Department of Biotechnology
3	Degree title	Engineer in Biotechnology
4	Name and code of the programme	Biotechnology, 7420201
5	Type of training	Full-time, credit-based
6	Brief introduction of the programme	- 136 credits (101 compulsory credits and 35 elective credits) + general knowledge and skills: 45 credits + fundamental knowledge and skills: 45 credits + professional knowledge and skills: 46 credits (including graduation thesis with 10 credits)  - The average training time is 4.0 years; however, students can shorten or extend completion time of their study programme in accordance with their personal conditions. Elective credits are structured in 10 specialized groups, which are characterized by the in-depth knowledge or skills navigating the student to the study area and the future work after graduation. - Engineers graduated from the programme are capable of working in various sectors and fields, particularly in agriculture, biology, livestock, and medical center, as well. The engineers could teach at other universities and/or colleges, work for companies with production and commercialization of biological products, or establish startup themselves. Additionally, the engineers could also continue to pursue the postgraduate programmes at national and international institutions. - **References** + Decision No. 43/2007/QĐ-BGDĐT dated on 15 August 2007, Promulgation of Regulation on formal undergraduate education using academic credit system + Integrated document No. 17/VBHN-BGDDT dated on 15 May 2014, Promulgation of Regulation on formal undergraduate education applying academic credit system + Decision No. 1712/QĐ-ĐHNL-ĐT, dated on 23 July 2014, Regulation on the credit system in education programmes of NLU

		+ Comparison between biotechnology programme of NLU with biotechnology programme of Newcastle University 2014- 2017 + Comparison of Programme Learning Outcomes between the biotechnology programme in 2014 with that revised in 2018. + Decision No.1104/QĐ-ĐHNL-ĐT, dated on 2 April 2015, Promulgation of Regulation on learning outcomes of foreign language and IT for credit-based regular programme
7	Programme assessment information	N/A
8	Programme objectives (PO)	– PO1: Good knowledge of the origin of life that is based on biological knowledge at levels of cell and molecule. – PO2: Ability to apply of biological techniques into basic and applied research in the field of biotechnology. – PO3: Ability to develop and implement research proposals in the field of biotechnology. – PO4: Ability to create biological products that meet social demands. – PO5: Awareness of ethical standards and occupational skills to adapt to highly competitive working environments and to stay relevant in the Vietnam and Southeast Asia job market
9	Programme expected learning outcomes (PLO)	– PLO1: Possess basic knowledge of natural and social sciences, and biological processes relating to life and living environments of organisms. – PLO2: Possess comprehensive basic principles of molecular, biochemical, microbiological and cellular techniques. – PLO 3: Possess knowledge of basic methods that are applied in fields of biological sciences. – PLO4: Apply biological techniques in research and production of biological products in meeting social demands. – PLO5: Use biological instruments/ tools and computational software in research relating to biological fields. – PLO6: Establish precise diagnosis methods and tests based on biological and genetic techniques. – PLO7: Analyze trends of biotechnology development by integrating research results which have been published by national and international scientists. – PLO8: Establish a research team as well as conduct the proposed projects. – PLO9: Propose approaches to solve real-life problems using biological knowledge, techniques and tools. – PLO10: Communicate with student the basic knowledge and advanced techniques related to biology. – PLO11: Apply basic principles of the biotechnology to develop novel and highly competitive products. – PLO12: Establish processes for technological transfer of new biological products in order to serve the communities and meet social demands – PLO13: Plan and conduct biological researches to the standards, which are acceptable in Vietnam. – PLO14: Comply with professional ethical standards, and rules and regulations of national and international laws.

		– PLO15: Resolve issues related to work and tasks in effective, positive and flexible ways. – PLO16: Fulfill the social responsibility, keep up to date with new development and be ready to establish work serving the community.
10	The Curriculum	See details in the programme curriculum
11	The Courses	See the brief overview of the courses
12	Quality references	- The MoET's regulations on the standardized output of the programmes - The guide to AUN-QA assessment at programmeme level Version 3
13	Quality indicators	NLU's Quality Assurance Handbook, 2017; the regulations of the training units on the subject, grading, examination inspection, rubrics
14	Academic staff	See details in Academic staff documents
15	Study environment	– A1 Building, Nong Lam University Ho Chi Minh City – Classrooms; laboratories; net houses; experiment sites; library; academic clubs; consultant; seminars – Youth Union, Student Support Counseling Center, dormitory, health care, photocopy service, – Sport clubs, and start-up
16	Requirements and enrollment criteria	- High school graduation exams; MoET's regulation on the floor entrance results; Direct entrance rules and other bonus points; Admissions criteria; English requirements; - Standard scores of the combined subjects of group A00 (Mathematics, Physics, Chemistry), B00 (Mathematics, Chemistry, Biology), A02 (Mathematics, Physics, Biology).
17	Information channels that help review feedbacks and improve quality	Stakeholder consultations conducted by the NLU Quality Management Office and BioD
18	Websites	Site address of University, BioD or relevant management units; links for reference, self-study or document download. BioD website: http://biotech.hcmuaf.edu.vn/ Bio facebook: https://www.facebook.com/biononglam/ BioD's alumni facebook: https://www.facebook.com/NLUBiotechAlumni/ BioD Youtube: https://www.youtube.com/channel/UCNf90zpOlg77XDy6OIJG0rw/
19	Contact information	Assoc.Prof.Dr. Tran Thi Le Minh Department of Biotechnology A1 Building, Nong Lam University Ho Chi Minh City E-mail: ttlminh@hcmuaf.edu.vn Phone: Office: + 84 - 2837245163 Mobile: +84 987560209
20	Time to compile / modify curriculum specifications	The latest modification was 2018
21	Signature and stamp	Signed and approved by the Head of BioD

Appendix 3: Programme structures: The programmemed structure comprises of the 136 credits following 8 semesters, with extra studies in summer course and thesis course.

No.	Code	Courses	Year	SM	Number of credits		
					Theory	Practice	Total
I. General courses							
Compulsory courses							
1	200201	Philosophy of Marxism and Leninism	1	1	3		3
2	200102	Political economics of Marxism and Leninism	1	1	2		2
3	202113	Advanced Mathematics B2	1	1	2		2
4	202301	General Chemistry	1	1	3		3
5	202304	General Chemistry Laboratory	1	1		1	1
6	202401	General Biology	1	1	2		2
7	202402	General Biology Laboratory	1	1		1	1
8	202501	Physical Education 1	1	1		1	1
9	202622	General Law	1	1	2		2
10	213603	English 1	1	1	4		4
11	200103	Scientific socialism	1	2	2		2
12	200201	Military training (theory)	1	3	3		3
13	200202	Military training (practice)	1	3		3	3
14	202201	Physics 1	1	2	2		2
15	202502	Physical Education 2	1	2		1	1
16	213604	English 2	1	2	3		3
17	214103	General Informatics	1	2	2	1	3
18	200105	History of Vietnamese communist party	2	1	2		2
19	202121	Probability and Statistics	2	1	3		3
20	200107	Ho Chi Minh Ideology	2	2	2		2
II. Fundamental courses							
Compulsory courses							
1	211107	Introduction of Biotechnology	1	2	2		2
2	211123	English for Biotechnology 1	1	2	1		1
3	211141	Biological Laboratory safety Management	1	2	2		2
4	211124	English for Biotechnology 2	2	1	1		1
5	211138	Microbial Biology	2	1	2		2
6	211139	Experiment in Microbial Biology	2	1		1	1
7	211140	Essential Skills in University Research and Education	2	1	2		2
8	211214	General Biochemistry	2	1	2	1	3
9	211106	Molecular Biology	2	2	3	1	4
10	211111	Fermentation Technology I	2	2	2	1	3
11	211319	Environmental Pollution Assessment	2	2	2		2
12	211906	Research Methodology	2	2	2	1	3
13	211113	Genetics Engineering I	3	1	2	1	3
14	211402	Biotechnological Equipment and Techniques	3	1	1	2	3
15	211110	Biological Proteins	3	2	2		2

No.	Code	Courses	Year	SM	Number of credits		
					Theory	Practice	Total
16	211117	Bioinformatics	3	2	1	1	2
17	211134	Biodiversity and Conservation of Genetic Resources	4	1	2		2
18	211215	Molecular Genetics	4	1	2	1	3
Elective course grouped in 0201 - Must obtained 2 credits							
1	211121	Plant Cultivation	2	1	1		1
2	211314	General Animal Pathology	2	1	1		1
3	211315	Introduction to Aquaculture	2	1	1		1
Elective course grouped in 0202 - Must obtained 2 credits							
1	202412	Ecology	1	2	2		2
2	212104	Environmental ecology	1	2	2		2
III. Specialized courses							
Compulsory courses							
1	211204	Fermentation Technology II	3	1	1	1	2
2	211216	Plant Cells	3	1	2		2
3	211217	Animal Cells	3	1	2		2
4	211114	Genetics Engineering II	3	2	1	1	2
5	211309	Enzyme Production Technology	3	2	1	1	2
6	211404	Development and Commercialization of Bio-products	3	2	1	1	2
7	211902	Internships	3	3		2	2
8	211403	ISO quality management	4	1	1		1
Elective course grouped in 0301 - Must obtained 2 credits							
1	211126	English for Biotechnology	2	2	2		2
2	211127	English for Environmental Biotechnology	2	2	2		2
3	211142	English for Medicine	2	2	2		2
4	211143	English for Applied Biology	2	2	2		2
Elective course grouped in 0302 - Must obtained 2 credits							
1	211201	Functional Foods and Human Health	3	1	2		2
2	211202	Probiotic	3	1	2		2
3	211205	Medical Microbiology	3	1	2		2
4	211206	Water and Soil Microbiology	3	1	2		2
Elective course grouped in 0303 - Must obtained 2 credits							
1	211305	Radiation Application in Agriculture	3	1	2		2
2	211415	Cultivation of Edible and Pharmaceutical Mushrooms	3	1	1	1	2
3	211518	Microbiological Testing	3	1	1	1	2
Elective course grouped in 0304 - Must obtained 3 credits							
1	211304	Waste Treatment Technology	3	2	2		2
2	211312	Ethanol Production Technology By Biology	3	2	2		2
3	211313	Biogas Production Technology	3	2	2		2
4	211508	Bio-fertilizer Production Technology	3	2	1		1
5	211510	Bio-pesticide Production Technology	3	2	1		1

No.	Code	Courses	Year	SM	Number of credits		
					Theory	Practice	Total
Elective course grouped in 0305 - Must obtained 4 credits							
1	211207	Plant Cell Culture	3	2		1	1
2	211208	Animal Cell Culture	3	2		1	1
3	211218	Basic immunology	3	2	2	1	3
4	211317	Vaccine and Vaccine Application	3	2	2	1	3
Elective course grouped in 0306 - Must obtained 2 credits							
1	211209	Animal Embryo Culture Technique	4	1	1		1
2	211210	Stem Cell Engineering	4	1	1		1
3	211401	Nanotechnology introduction	4	1	1		1
4	211509	In vitro Fertilization	4	1	1		1
Elective course grouped in 0307 - Must obtained 2 credits							
1	211303	Applied Pharmaceutical Chemistry	4	1		1	1
2	211503	Advanced Chromatography	4	1		1	1
3	211504	Advanced ELISA	4	1		1	1
4	211505	Advanced PCR	4	1		1	1
Elective course grouped in 0308 - Must obtained 4 credits							
1	211125	Molecular Diagnostic Tests in Livestock Diseases	4	1	1	1	2
2	211203	Biotechnology in Plant Protection	4	1	1	1	2
3	211307	Molecular Diagnostic Tests in Aquatic Organism Diseases	4	1	1	1	2
4	211310	Molecular Assisted Plant Breeding	4	1	2		2
5	211316	Biotechnology in Animal Reproduction and Growth	4	1	2		2
Elective course grouped in 0309 - Must obtained 10 credits							
1	211318	Writing a Scientific paper	4	2	2		2
2	211320	Proteomics	4	2	3		3
3	211903	Thesis	4	2		10	10
4	211904	Minor Thesis	4	2		75	5
5	211905	Applied Biotechnology	4	2	3		3
6	211907	Genomic	4	2	2		2
7	211908	Application of Biotechnology in Environment	4	2	3		3

SM: Semester

Appendix 4: Matrix of courses vs. Programme learning outcomes (Skills matrix)

No	Code	Courses	Credit	Semester	Year	Knowledge						Skills							Attitude		
						PLO1	PLO2	PLO3	PLO4	PLO5	PLO6	PLO7	PLO8	PLO9	PLO10	PLO11	PLO12	PLO13	PLO14	PLO15	PLO16
I. GENERAL COURSES (45 CREDITS)																					
Compulsory courses																					
1	200101	Philosophy of Marxism and Leninism	3	1	1	X															X
	200102	Political economics of Marxism and Leninism	2	1	1	X	X	X				X							x	x	X
3	202113	Advanced Mathematics B2	2	1	1	X				x		x	x		x				x	x	x
4	202301	General Chemistry	3	1	1	X	X	X	X	X	X	x	X	X	X	x	X	x	X	x	X
5	202304	General Chemistry Laboratory	1	1	1	X	X	x	x	X	x	x	X	X	x	x	x	x	X	X	X
6	202401	General Biology	2	1	1	X	X				X	X							x	x	X
7	202402	General Biology Laboratory	1	1	1	X	x	x				x							x	x	x
8	202501	Physical Education 1	1	1	1	X													x	x	X
9	202622	General Law	2	1	1	X													X	x	x
10	213603	English 1	4	1	1	X	X					x									X
11	200103	Scientific socialism	2	2	1	X	X				X	X							x	x	X
12	200201	Military training (theory)	3	2	1	X	X					x									X
13	200202	Military training (practice)	3	2	1	X													x	x	X
14	202201	Physics 1	2	2	1	X					x	x							x	x	x
15	202502	Physical Education 2	1	2	1	X													x	x	X
16	213604	English 2	3	2	1	X	X					x									X
17	214103	General Informatics	3	1	1	X	X							X	X	x		X			
18	200105	History of Vietnamese communist party	2	1	2	X	X	X				X							x	x	X
19	202121	Probability and Statistics	3	1	2	X				x	x		x		x				x	x	x

No	Code	Courses	Credit	Semester	Year	Knowledge						Skills							Attitude		
						PLO1	PLO2	PLO3	PLO4	PLO5	PLO6	PLO7	PLO8	PLO9	PLO10	PLO11	PLO12	PLO13	PLO14	PLO15	PLO16
20	200107	Ho Chi Minh Ideology	2	2	2	X	X	X				X							x	x	X
II. FUNDAMENTAL COURSES																					
Compulsory courses (41 credits)																					
1	211107	Introduction of Biotechnology	2	2	1	X	X	X	X			x	x	x	x				x	x	x
2	211123	English for Biotechnology 1	1	2	2	x		x	X			X							x		x
3	211141	Biological Laboratory safety Management	2	2	1	x	X			X	x			X	x				X	x	x
4	211124	English for Biotechnology 2	1	1	3		x	x		X		x			x				X	x	x
5	211138	Microbial Biology	2	1	2	x	X	X	x		X			x		X			X		
6	211139	Experiment in Microbial Biology	1	1	2	x	X	X	X	X	X	X	x	X	X	x	X	X	X	X	X
7	211140	Essential Skills in University Research and Education	2	2	2				x	x	x	x	x	x	x	x	x	x	X	X	X
8	211214	General Biochemistry	3	1	2		X	X		X		x	X		X		X	X	X	x	x
9	211106	Molecular Biology	4	2	2	X	X	X	X	x	x	X	x		x				x	X	X
10	211111	Fermentation Technology I	3	2	2	x			x	X	x	x		x	x	x				X	X
11	211319	Environmental Pollution Assessment	2	2	2	X		x		X		X	X	X			X		X	X	X
12	211906	Research Methodology	3	2	2		X	X	X	X	X	X	x		X		X	X	x	x	x
13	211113	Genetics Engineering I	3	1	3		X	X	X							X	X		x	x	x
14	211402	Biotechnological Equipment and Techniques	3	1	3		x	x	X	X	X	x	x	X	x	x	x	x	x	x	x
15	211110	Biological Proteins	2	2	3					x	x	X	X	X	X	x	x	x	x	x	X
16	211117	Bioinformatics	2	2	3	X	X	X	X	X	X	X	X	X		X	X	X	X		X
17	211134	Biodiversity and Conservation of Genetic Resources	2	1	2	X	x	X		x	x	x	x	X	X	x	X	X	X	X	X
18	211215	Molecular Genetics	3	2	1		x	x	X	X	X	X	X	X	X	X	X	X	x	x	X
Total			**41**																		
Elective course grouped in 0201 – Must obtained 2 credits																					

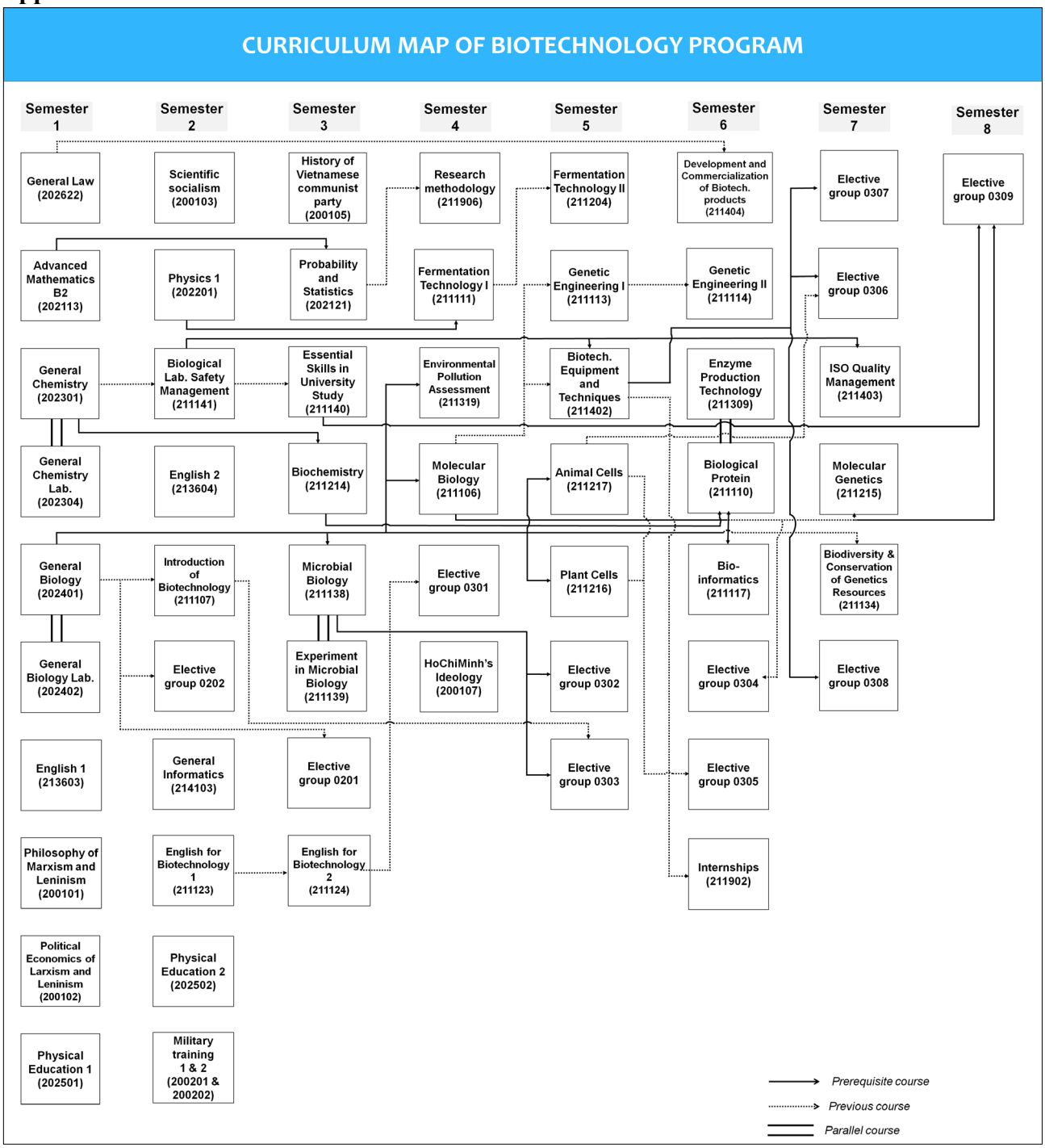
No	Code	Courses	Credit	Semester	Year	Knowledge						Skills							Attitude		
						PLO1	PLO2	PLO3	PLO4	PLO5	PLO6	PLO7	PLO8	PLO9	PLO10	PLO11	PLO12	PLO13	PLO14	PLO15	PLO16
1	211121	Plant Cultivation	1	1	2	X			X	x	x	x			X				x	x	X
2	211314	General Animal Pathology	1	1	2	X			X	x	x	x			X				x	x	X
3	211315	Introduction to Aquaculture	1	1	2	X			X	x	x	x			X				x	x	X
Elective course grouped in 0201 – Must obtained 2 credits																					
1	202412	Ecology	2	2	1	X	X	X	X	x	X	x	x	X	x		x	X	X	x	x
2	212104	Environmental ecology	2	2	1	X	X	X	X	x	X	x	x	X	x		x	X	X	x	x
Total			**4**																		
III PROFESSIONAL COURSES																					
Compulsory courses – Must obtained 15 credits																					
1	211204	Fermentation Technology II	2	2	3		X	X		X		x		x	X						x
2	211216	Plant Cells	2	1	3	X	x		x	x		X			X	x				x	x
3	211217	Animal Cells	2	1	3	x	X	X	X	X	x	x	X		X				x	x	X
4	211114	Genetics Engineering II	2	2	3	x	x	x	X	X	x	X	X	X	X	x	x		x	x	x
5	211309	Enzyme Production Technology	2	1	4	X	X	X	X					x	x	X					
6	211404	Development and Commercialization of Bio-products	2	2	3	x	x		X			X	X	x		X				x	x
7	211902	Internships	2	2	3	x	X	X	X	x	X	x	x	x	x	x	X	x	X	X	X
8	211403	ISO quality management	1	1	4	x	X	X	X	x	X	x	x	x	x	x	X	x	X	X	X
Total			**15**																		
Elective course grouped in 0301 – Must obtained 2 credits																					
1	211126	English for Biotechnology	2	1	4				x		x	X	X	x	X	x	x	X	X	X	X
2	211127	English for Environmental Biology	2	1	4				x		x	X	X	x	X	x	x	X	X	X	X
3	211142	English for Medicine and Pharmacy	2	1	4				x		x	X	X	x	X	x	x	X	X	X	X
4	211143	English for Applied Biology	2	1	4				x		x	X	X	x	X	x	x	X	X	X	X
Elective course grouped in 0302 – Must obtained 2 credits																					
1	211201	Functional Foods and Human Health	2	1	3		X	X	X	x	x	x	X	x	x		x		x	x	X
2	211202	Probiotic	2	1	3		X	X	X	x	x	x	X	x	x		x		x	x	X

No	Code	Courses	Credit	Semester	Year	Knowledge						Skills							Attitude		
						PLO1	PLO2	PLO3	PLO4	PLO5	PLO6	PLO7	PLO8	PLO9	PLO10	PLO11	PLO12	PLO13	PLO14	PLO15	PLO16
3	211205	Medical Microbiology	2	1	3		X	X	X	x	x	x	X	x	x		x		x	x	X
4	211206	Water and Soil Microbiology	2	1	3		X	X	X	x	x	x	X	x	x		x		x	x	X
Elective course grouped in 0303 – Must obtained 2 credits																					
1	211305	Radiation Application in Agriculture	2	1	3		X	x	X	X				X					x	x	X
2	211415	Cultivation of Edible and Pharmaceutical Mushrooms	2	1	3		X	x	X	X				X					x	x	X
3	211518	Microbiological Testing	2	1	3		X	x	X	X				X					x	x	X
Elective course grouped in 0304 – Must obtained 3 credits																					
1	211304	Waste Treatment Technology	2	1	3	x	X	X	X	X		X	X	X		X	X	x		x	X
2	211312	Ethanol Production Technology By Biology	2	1	3	x	X	X	X	X		X	X	X		X	X	x		x	X
3	211313	Biogas Production Technology	2	1	3	x	X	X	X	X		X	X	X		X	X	x		x	X
4	211508	Bio-fertilizer Production Technology	1	1	3	x	X	X	X	X		X	X	X		X	X	x		x	X
5	211510	Bio-pesticide Production Technology	1	1	3	x	X	X	X	X		X	X	X		X	X	x		x	X
Elective course grouped in 0305 – Must obtained 4 credits																					
1	211207	Plant Cell Culture	1	2	3	x	X	x	X						x	X		x		x	x
2	211208	Animal Cell Culture	1	2	3	x	X	x	X						x	X		x		x	x
3	211218	Basic immunology	3	2	3	x	X	x	X						x	X		x		x	x
c	211317	Vaccine and Vaccine Application	3	2	3	x	X	x	X						x	X		x		x	x
Elective course grouped in 0306 – Must obtained 2 credits																					
1	211209	Animal Embryo Culture Technique	1	1	4	x	X	X	x	x		X	x		x	x	x		x	x	x
2	211210	Stem Cell Engineering	1	1	4	x	X	X	x	x		X	x		x	x	x		x	x	x
3	211401	Nanotechnology introduction	1	1	4	x	X	X	x	x		X	x		x	x	x		x	x	x
4	211509	*In vitro* Fertilization	1	1	4	x	X	X	x	x		X	x		x	x	x		x	x	x
Elective course grouped in 0307 – Must obtained 2 credits																					

No	Code	Courses	Credit	Semester	Year	Knowledge						Skills							Attitude		
						PLO1	PLO2	PLO3	PLO4	PLO5	PLO6	PLO7	PLO8	PLO9	PLO10	PLO11	PLO12	PLO13	PLO14	PLO15	PLO16
1	211303	Applied Pharmaceutical Chemistry	1	1	4			X		X			x	X	x	x	x				x
2	211503	Advanced Chromatography	1	1	4			X		X			x	X	x	x	x				x
3	211504	Advanced ELISA	1	1	4			X		X			x	X	x	x	x				x
4	211505	Advanced PCR	1	1	4			X		X			x	X	x	x	x				x
Elective course grouped in 0308 – Must obtained 4 credits																					
1	211125	Molecular Diagnostic Tests in Livestock Diseases	2	1	4	x	X	X	X	X		x		X	x	X	x	x		x	x
2	211203	Biotechnology in Plant Protection	2	1	4	x	X	X	X	X		x		X	x	X	x	x		x	x
3	211307	Molecular Diagnostic Tests in Aquatic Organism Diseases	2	1	4	x	X	X	X	X		x		X	x	X	x	x		x	x
3	211310	Molecular Assisted Plant Breeding	2	1	4	x	X	X	X	X		x		X	x	X	x	x		x	x
5	211316	Biotechnology in Animal Reproduction and Growth	2	1	4	x	X	X	X	X		x		X	x	X	x	x		x	x
Elective course grouped in 0309 – Must obtained 10 credits																					
1	211318	Writing a Scientific paper	2	2	4	X	X	X	X	x	x	X	x	x	x	x	x	X	X	X	X
2	211320	Proteomics	3	2	4	X	X	x	X	x	x	X	X	x	X	X	X	x	x	x	X
3	211903	Thesis	10	2	4	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
4	211904	Minor Thesis	5	2	4	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
5	211905	Applied Biotechnology	3	2	4	X	X	X	X	x	X	X	X	x	X	x	X	x	x	x	X
6	211907	Genomic	2	2	4	X	X	x	X	x	x	X	X	x	X	X	X	x	x	x	X
7	211908	Application of Biotechnology in Environment	3	2	4	X	X	X	X	X	x	X	X	x	X	x	X	x	x	x	X

X : Highly supportive x : Supportive

Appendix 5: Curriculum flow chart



Appendix 6: Supporting documents and evidences

No	Exh.		Title of Exhibition	Category
PART 1: INTRODUCTION				
1	Exh.1.1.1	a	Decision No. 118/2000/QĐ-TTg, dated 10 October 2000, Re-organization of Vietnam National University Ho Chi Minh	Document
		b	Decision No. 4165/QĐ-ĐHNL-HC, dated 31 December 2015. Strategy for the development of NLU for the period 2016-2020 and towards of 2030	Document
2	Exh.1.1.2		Decision No. 240/2001/QĐ-TCHC signed by Rector of NLU on February 19, 2001 , Organization of Department of Biotechnology	Document
3	Exh.1.1.3		Biotechnology Programme published in 2018	Document
4	Exh.1.1.4	a	Special Programme in biotechnology; inter-college, joining, advanced	Document
		b	Decision on the promulgation of environment biotechnology	Document
5	Exh.1.1.5		Action plan for strategy for the development of Biotechnology Department in 2011, 2015, and 2018	Document
6	Exh.1.1.6		Decision No 2730/QĐ-ĐHNL-ĐT signed by Rector of NLU on December 30, 2010; Expected Learning Outcomes for education programmes (2010)	Document
7	Exh.1.1.7	a	Decision on Master programme in Biotechnology	Document
8		b	Decision on Doctoral programme in Biotechnology	Document
	Exh.1.1.8		List of foreign students to study/to research/to visit in BioD and RIBE	Document
9	Exh.1.1.9		Decision No 2802/QĐ-ĐHNL-TCCB signed by Rector of NLU; AUN self-assessment for four education programmes in 2018 (August 20, 2018)	Document
10	Exh.1.1.10		NLU's Quality Assurance Handbook, 2017	Document
11	Exh.1.1.11		Certificate of AUN training in Thailand; signed for T.T.L. Minh	Document
12	Exh.1.1.12		AUN training activities; lecturers involving in AUN training on 22 March 2018, students involving in AUN training on 28 Dec 2018.	Picture Document
13	Exh.1.1.13	a	Action plan for AUN-QA in 2016-2018 at Department level	Document
		b	Decision on the promulgation of AUN self-assessment groups at biotechnology programme	Document
PART 2. ASSESSMENT OF AUN-QA CRITERIA AT PROGRAMME LEVEL **Criterion 1: EXPECTED LEARNING OUTCOMES**				
14	Exh.2.1.1	a	Decision No. 17/VBHN-BGDĐT, signed on 15 May 2014, Regulations for the credit system in education programmes of university and college	Document
		b	Decision No. 1712/QĐ-ĐHNL-ĐT, signed on 23 July 2014, Regulations for the credit system in education programmes of NLU	Document
15	Exh.2.1.2		Directive No. 50-CT / TW dated March 4, 2005, Secretariat Committee. On promoting the development and application of biotechnology serving the country's industrialization and modernization.	Document
16	Exh.2.1.3		Comparison of biotechnology programmes; Bio-Newcastle, Bio-Can Tho, Bio-IU	Document
17	Exh.2.1.4		Decision No. 3301/ĐHNL-HC, signed on 28 October 2016, Declaration of vision, mission, and strategy objectives of NLU	Document + web
18	Exh.2.1.5		Decision No.1104/QĐ-ĐHNL-ĐT, signed by President of NLU, the promulgation of learning outcomes of foreign language and IT in the credit system for regular study programme	Document

19	Exh.2.1.6		Report on internship activities of academic year 2018, 2017, 2016	Document
20	Exh.2.1.7		Start-up activities in 2018-2019	Document
21	Exh.2.1.8		New process for thesis working, 2018	Document
22	Exh.2.1.9		List of the courses using the English for teaching	Document
23	Exh.2.1.10		Circular No. 07/2015/TT-BGDDT dated on April 16, 2015.	Document
Criterion 2: PROGRAMME SPECIFICATION				
24	Exh.2.2.1	a	Decision No. 04/1999/QĐ-BGDĐT dated February 11, 1999 Promulgation of the Regulations on training, testing, examination and recognition of graduation university and college	Document
		b	Circular No. 03/2015/TT-BGDĐT signed on 26 Jun 2015 by Ministry of Education and Training; regulations on enrollment of regular universities and colleges	Document
		c	The promulgation No. 772/ĐHNL-ĐT signed by President of NLU, admission, direct admission, and priority admission to NLU in 2017	Document
		d	The programme version 2008	Document
		e	The programme version 2010	Document
		f	List of international internships	Document
25	Exh.2.2.2	a	Sample of course specification version 2018	Document
		b	Procedure of developing course syllabus	Document
26	Exh.2.2.3	a	BioD Student Handbook	Document
		b	A sample of course syllabus showing the CLO-PLO	Document
		c	Facebook of Youth Union and Alumni	Facebook
		d	Online meeting for introducing the biotechnology programme	Pictures
Criterion 3: PROGRAMMEME STRUCTURE AND CONTENTS				
27	Exh.2.3.1	a	Matrix course and PLOs of the programme	Document
		b	Evaluation of student's attitude by Youth Union	Document
		c	New courses in programme version 2018;	
28	Exh.2.3.2	a	Samples of the course syllabus of the biotechnology programme in 2008, 2014, 2018	Document
		b	List of English course changing	Document
29	Exh.2.3.3	a	List of activity items of Youth Union in 2018,2017,2016,2015,2014	Document
		b	Learning programme of the students scheduled in 2018-2019	Document
Criterion 4: TEACHING AND LEARNING APPROACH				
30	Exh.2.4.1	a	Educational philosophy, vision, and mission of BioD	Document
		b	Development of Vilas standards for laboratories	Document
		c	Website showing the philosophy, vision, and mission of BioD	Document
		d	Minute of meeting of new students	Document
31	Exh.2.4.2	a	Teaching plan of biotechnology programme in semesters/years, 2019, 2018,	Document
		b	Learning plan of biotechnology students in semesters/years, 2019, 2018	Document
		c	A process of exchange students	Document
		d	List of the e-learning courses	Document
		e	List of 2nd year students entering into the labs 2017,2016,2015,2014	Document
		f	List of social activities of the BioD students 2019,2018,2017	Document + Picture
		g	List of institutions receiving the BioD students for internships 2019, 2018, 2017	Document
32	Exh.2.4.3	a	List of training courses	Document + Picture

		b	Agreement of visiting lecturers	Document
		c	Report on international internships 2019, 2018, 2017	Document
		d	Regulations for thesis working	Document
		e	Regulations for students entering the labs working	Document
		f	Report on national internships 2019, 2018, 2017	Document
		g	Evolution competition of Youth Union	Document
		h	Website of Technology and Business Incubation Center	Website
Criterion 5: STUDENT ASSESSMENT				
33	Exh.2.5.1	a	Sample of evaluation of thesis outline	Document
		b	Sample of evaluation of thesis progress	Document
		c	Thesis committee in 2019, 2018, 2017	Document
		d	Internship evaluation	Document
		e	English examinations	Document
		f	A process of the evaluation of graduation in the NLU	Document
34	Exh.2.5.2	a	A rubic of theory course	Document
		b	Website for accessing the scores	website
		c	Evaluation forms for thesis 2008, 2014, 2018	Document
		d	Regulations on extra scores for excellent working of the bio-students	Document
		e	A process and method for attitude evaluation	Document
		f	Standards for evaluation on completing of the programme and graduation	Document
35	Exh.2.5.3	a	Practical courses evaluation scale	Document
		b	BioD Student's Hand book	Document
		c	Scales for thesis presentation	Document
		d	Evaluation scale for co-curriculums	Document
		e	Examination schedules	Document
		f	List of students in academic warned and dismissed 2016, 2017, 2018	Document
		g	Websites showing the results of foreign language and IT examination	Websites
		h	A plan of thesis presentation for BioD students	Document
36	Exh.2.5.4	a	List of chemical and equipment for practical teaching 2018-2019	Document
		b	Programme curriculum in version 2018	Document
		c	A form for practical evaluation	Document
37	Exh.2.5.5	a	Process for publishing the results of the course examination	Document
		b	Complaining procedure	Document
		c	A process for thesis working dated 2019	
Criterion 6: ACADEMIC STAFF QUALITY				
38	Exh.2.6.1	a	List of scholarships for lecturer training	Document
		b	A plan for upgrading of quality of lecturers	Document
		c	List of experts and visiting professors invited for teaching in the programme	Document
		d	A plan for upgrading the lecturers to higher certificates; associate professors	Document
		e	Retirement decision of Dr. Tran Thi Dung, former head of the department	Document
		f	Agreement of retired lecturers	Document
39	Exh.2.6.2	a	Circular no. 32/2015/TT-BGDDT signed on 16 Dec 2015 by Minister, Regulations on determination of enrollment targets for higher education institutions	Document
		b	Activities of soft-skill seminars in 2018,2017,2016	Pictures
		c	NLU's Regulations on teaching hours of lecturers in 2018	Document
		d	Job description of BioD staff	Document

40	Exh.2.6.3	a	Process for staff recruitment of NLU	Document
		b	Regulations for staff evaluation of NLU	Document
		c	The promulgation No. 1895/ĐHNL-NCKH signed by President of NLU; Research activities and rewards for excellent scientific papers	Document
		d	Process for evaluation of probationary lecturer of NLU	Document
		e	List of lab managers	Document
41	Exh.2.6.4	a	Education laws; 2014 and 2018	Document
		b	NLU's Regulations on duties and responsibilities of lecturers	Document
		c	A sample of feedback of the students on teaching activities	Document
		d	Report on the achievements of academic staff at the end of year	Document
		e	A sample of evaluation form for labor union members	Document
		f	A process of emulation for academic staff	Document
		g	Staff's Handbook	Document
42	Exh.2.6.5	a	NLU's Regulations on training of staff	Document
		b	List of the staff upgrading for academic management	Document
		c	Pictures showing the equipment training	Pictures
		d	Vilas certification	Document
		e	List of national and international training organized in Ribe and NLU	Document
43	Exh.2.6.6	a	NLU Decisions on the financially rewarding for scientific papers	Document
		b	NLU Decisions on the project rewarding for young scientists	Document
		c	NLU Decisions for rewards and honors of BioD	Document
		d	The process of emulation for academic staff	Document
		e	NLU Labor Union policies for members	Document
44	Exh.2.6.7	a	Decision on research activities for young staff	Document
		c	A plan for improvement of research activities in BioD and RIBE	Document
		b	Laboratories Handbook	Document
Criterion 7: SUPPORT STAFF QUALITY				
45	Exh.2.7.1	a	A plan for establishing of Information and Communication Unit (ICU)	Document
		b	List of advisors in 201,2018,2017,2016	Document
		c	Extra-works of staffs nominated by head of department	Document
		d	Laboratories Handbook	Document
		e	List of net house and experiment site for research	Document
		f	List of staff involving the biosafety teaching	Document
		g	Assignment the E-learning team of BioD	Document
46	Exh.2.7.2	a	Procedure for recruitment of NLU	Document
		b	Regulation on criteria for selection of supporting staffs	Document
		c	Decision on assigning probationary guiding support staff	Document
		d	Wage policies for NLU's staffs	Document
47	Exh.2.7.3	a	Qualifications and certificates of BioD staff on biosafety training	Certificates
		b	Job description of BioD staff	Document
		c	Face-to-Face discussion between the students and support staff	Pictures
48	Exh.2.7.4	a	Announcement on pedagogical skills training	Document
		b	Financial supports for training and retraining of staff-NLU	Document
		c	Emulation and rewards for support staff	Document
49	Exh.2.7.5	a	Evaluation forms for support staffs	Document
		b	Facilities for support staff working	Document
Criterion 8: STUDENT QUALITY AND SUPPORT				
50	Exh.2.8.1	a	Regulation on enrollment of biotechnology programme	Document
		b	Website showing the NLU activities for enrollment in 2019	website
		c	NLU's student intake policy	Document

		d	NLU's policies for school fee exemption for students	Document
		e	NLU's policies for scholarships and awards for students	Document
		f	Feedback from new students, 2018-2019	Document
51	Exh.2.8.2	a	NLU's enrollment scheme	Document
		b	Decision No. 2832/BGDDT-GDD	Document
		c	Wellcome Meeting with the new students	Reports
52	Exh.2.8.3	a	Student's Handbook 2019	Document
		b	List of students in academic warned and dismissed 2016, 2017, 2018	Document
		c	Websites showing the results of foreign language and IT examination	Websites
		d	Report of Youth Union workload	Document
		e	List of internships activities of BioD students 2019, 2018, 2017, 2016	Document
53	Exh.2.8.4	a	Decision No. 490/QĐ-ĐHNL-TCCB signed by President of NLU, the duty of student's mentors/advisors	Document
		b	Assignment the extra works for mentors of BioD	Document
		c	List of BioD's seminars suggested by the students	Document
		d	Decision on allocation of funds for Youth Union activities annually	Document
		e	Facebook of volunteer team of biotechnology Department	website
		f	List of multimedia rooms for teaching and learning	Document
		g	Student's ID	Pictures
		h	NLU dormitories	Pictures
		i	Co May dormitory	Pictures
		k	Report on BioD student accommodations	Document
		l	A route map showing the way to Thu Duc Hospital	Route map
		m	BioD students received the scholarships from Alumni fund	Pictures
		n	Facebook of BioD Youth Union	Facebook
55	Exh.2.8.5	a	Sport fields of NLU	Picture
		b	View of A1 and A2 landscape	Pictures
		c	BioD student Handbook	Document
		d	Public area for activities of bio students located in A1 and A2 building	Pictures
Criterion 9: FACILITIES AND INFRASTRUCTURE				
55	Exh.2.9.1	a	NLU's report on classrooms, libraries of faculties, and central library	Document
		b	Staff office, hall, classroom and laboratories of RIBE and BioD	Document
		c	IT Networking in A1	Pictures
		d	Decisions on repairing, ordering, and establishment of facilities for AUN approved by NLU president, 2018-2019	Document
56	Exh.2.9.2	a	List of study materials of biology/biotechnology in central library	Document
		b	List of study materials required from department in 2017-2018	Document
		c	A contract for software buying of central library	Document
		d	A project for central library renewed in 2018	Document
		e	Results of survey on satisfaction of user about the library	Document
		f	Bio- reading room	Pictures
57	Exh.2.9.3	a	List of laboratories and practical laboratories of NLU	Document
		b	List of research farms and practical farms of NLU	Document
		c	List of equipment of MoET's projects	Document
		d	List of equipment of Seeding Labs in 2017-2018	Document
		e	Procedure for purchasing and repairing of equipment	Document
58	Exh 2.9.4	a	Email list of NLU staffs	Document

		b	Report on the number of computers in the each faculty/department	Document
		c	Copyrighted software using in NLU	Document
		d	https://www.webometrics.info/en/Asia/Vietnam	Website
		e	Promulgation No. 60/QĐ-CNS dated 31 August 2019, E-learning in BioD	Document
59	Exh.2.9.5	a	Circular No. 32/2015/TT-BGDDT signed on 16 Dec 2015 by Minister, Regulations on determination of enrollment targets for higher education institutions	Document
		b	Student dormitory	Pictures
		c	Sport facilities and activities	Document
		d	Report on new student checking for Health care	Document
		e	Decision on establishing the security units in NLU	Document
		g	Decision on NLU regulations	Document
		h	Security and safety regulations	Document
		i	Working schedule for prevention of damaging of typhoon	Document
		k	Regulations for entering of A1 and A2 building	Document
		l	Biosafety system in A1 and A2 building	Pictures
		m	Schedules for moving of wastes and garbage	Document
		n	Contracts for waste treatments	Document
		o	Contract for food supply	Document
Criteria 10: QUALITY ENHANCEMENT				
60	Exh.2.10.1	a	Programme development and implementing in 2008, 2011, 2014, 2018	Document
		b	Collecting of evaluation forms from new students in 2019	Document
		c	Alumni association activities	Document
		d	Report on course changing and new course forming	Document
61	Exh.2.10.2	a	Report on the results of comparison between Bio-programmes	Document
		b	Self-assessment and Quality assurance regulations	Document
62	Exh.2.10.3	a	Teaching and Learning plan of biotechnology programme in 2014 - 2018	Document
		b	Teaching and Learning inspection annually	Document
		e	Regulation of NLU on examination	Document
		d	Report on evaluations of institutions receiving the internship students	Document
		e	A report of seminars on soft-skills 2017, 2018, 2019	Document
63	Exh.2.10.4	a	List of research projects of lecturers in 2017,2016,2015,2014	Document
		b	List of research projects of students in 2017,2016,2015,2014	Document
		c	List of laboratories invested from the research projects	Document
		d	List of supervisors for thesis conducting outside of NLU	Document
		e	Regulations for labs entering	Document
		f	List of the commercial products involved by the bio students	Document
		g	List of facilities upgraded from research from 2015-2019	Document
64	Exh.2.10.5	a	Description of tissue culture and fermentation labs	Document
		b	Activities of Center for foreign language	website
		c	Activities of library	website
		d	Sample of NLU's Journals	
		e	List of equipment in 2018-2019 invested for practical labs and microbe labs	Document
65	Exh.2.10.6	a	NLU Report on feedback of stakeholder in 2016	Document
		b	Minutes of cooperation agreement	Document
		c	Internship assessment	Document
		d	Minutes of Internship activities	Document
		e	Minutes in the Labor meetings	Document
		f	Report on feedback of students on the programme	Document

		g	Report on feedback of Alumni on the programme	Document
Criteria 11. OUTPUT				
66	Exh.2.11.1		List of the students completing the programme 2015,2014,2013	Document
67	Exh.2.11.2	a	List of the students graduated in 3.5 years 2013,2012,2011,2010	Document
		b	BioD Student scholarships 2018, 2017, 2016	Document
68	Exh.2.11.3	a	Report on job positions after graduation	Document
		b	Announcement of Job position on website of BioD	Website
69	Exh.2.11.4	a	List of the students awarded for plus point based on the excellent research	Document
		b	List of the students received the awards for research activities	Document
		c	List of commercial products contributed by the students	Document
		d	List of the scientific pappers contributed by the students	Document
		e	List of the results of research projects transferred to users	Document
70	Exh.2.11.5	a	Report on the feedback of BioD students	Document
		b	Report on the feedback of BioD Alumni	Document
		c	Report on the feedback of Employers	Document
		d	Report on the feedback of BioD staff	Document

NONG LAM UNIVERSITY - HO CHI MINH CITY

vphanhchinh@hcmuaf.edu.vn

(84-28)-38966780

DEPARTMENT OF BIOTECHNOLOGY

bmcnsh@hcmuaf.edu.vn

(84-28)-37245163

Quarter 6, Linh Trung Ward, Thu Duc District, Ho Chi Minh City