INSTITUTE OF FOOD AND BIOTECHNOLOGY

AUN-QA
SELF-ASSESSMENT REPORT

BACHELOR IN BIOTECHNOLOGY
(ADVANCED PROGRAMME)

2023

AUN-QA SELF-ASSESSMENT REPORT

BACHELOR IN BIOTECHNOLOGY (ADVANCED PROGRAMME)

We hereby confirm to approve this AUN-QA Self-Assessment Report of Bachelor in Biotechnology – Advanced Programme for assessment according to AUN-QA Criteria (V4.0).

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Director of Institute of Food and Biotechnology

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Professor Dr. Ha Thanh Toan
Rector of CTU

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Abbreviations	Full form
APB	Advanced Program in Biotechnology
AUN	ASEAN University Network
AUN-QA	ASEAN University Network - Quality Assurance
BiRDI	Biotechnology Research and Development Institute
CLO	Course Learning Outcome
CTU	Can Tho University
DAA	Department of Academic Affairs
DSA	Department of Student Assistance
FTE	Full Time Equivalent
IFB	Institute of Food and Biotechnology
INMC	Information Network Management Center
LMS	Learning Management System
LRC	Learning Resource Center
MoET	Ministry of Education and Training
ODA	Official Development Assistance
PDCA	Plan Do Check Act
PLO	Program Learning Outcome
PO	Program Objective
QATC	Quality Assurance Testing Center
QMC	Quality Management Center
SAR	Self Assessment Report
T&L	Teaching and Learning
VND	Vietnam Dong
VQF	Vietnamese Qualifications Framework

PART 1. INTRODUCTION

1.1. EXECUTIVE SUMMARY OF THE SELF-ASSESSMENT REPORT (SAR)

The Bachelor in Biotechnology – Advanced Program or Advanced Program in Biotechnology (APB) was successfully assessed against AUN-QA in 2014 (using Version 2.0) [Exh.Intro.01]. The program has been operated taking into consideration the recommendations for improvement proposed by the assessors since 2015.

The APB needs to be re-assessed in order to meet the fast changing demands of society in biotechnology in Vietnam as well as on a global scale. In addition, re-assessment will help self-evaluate and benchmark the quality of the programme with the others in the Southeast Asian universities for continuous improvement to enhance training quality for adapting well to the regional situation and global integration.

The re-assessment and preparation process of Self-Assessment Report (SAR) of the APB is based on the Plan No.814/KH-DHCT-QLCL issued on March 30th, 2022 by the Rector of CTU and Plan No.1132/KH-DHCT-CNSH issued on April 25th, 2022 by the Director of Biotechnology Research and Development Institute (BiRDI) [Exh.Intro.02].

This SAR for the APB programme follows Version 4.0 of the AUN-QA guidelines and is organized into 04 parts as follows:

- Part I briefly introduces CTU, BiRDI, and APB.
- Part II presents in detail about 08 criteria of the SAR according to Version 4.0, which are grouped into three main groups: Programme, Resources, and Results.
- Part III analyzes the strengths, weaknesses, related improvement plans, and the AUN-QA self-assessment checklist of APB.
- Part IV includes the list of evidences and relevant documents to justify the criteria described in Part II.

Since 2015, the programme has been modified and adjusted two times to improve the quality and specifically to meet requirements and demands of the stakeholders [Exh.Intro.03]. The programme objectives (PO) include (1) orienting to international integration, (2) training high quality human resources for the development of biotechnology of Vietnam based on the vision and mission of BiRDI in biotechnology, especially the core value that is internationalization [Exh.Intro.04]. These objectives are aligned with Can Tho University's education mandates and missions. [Exh.Intro.05].

In addition to teaching activity, teaching staffs also involve actively with high responsibilities in research, which is an important condition to help strengthen teaching capacity and enhance quality of the training programmes. Since 2015, Biotechnology Research and Development Institute (BiRDI) has published a total of 245 international papers, of which 120 were in ISI and Scopus systems (48.98 %), in addition to hundreds of papers published in prestige national journals [Exh.Intro.06].

Since 2015 after the APB was accredited by AUN-QA, 8 more batches of students have graduated with a total of 295 students (2015-2022). [Exh.Intro.07]. The pass rate of APB students are on schedule with 98.7%. The dropout rate is not high (0.94%), just a few students for each batch due to personal matters. There are also a lot of students who participate in Exchange Programs during their studies to study and conduct scientific research in different countries because of training language in English. [Exh.Intro.08]. Upon graduation, 93.8% students were employed by the companies, or self-employment, entrepreneurship and continued to follow higher education levels in Vietnam and abroad such as Can Tho University, Université of Mons (Belgium), Institute of Molecular Plant Biology, Vienna (Austria), Curtin University, Western Australia (Australia), University of British Columbia, Vancouver (Canada), Gachon University, (Korea), Khon Kaen University (Thailand), Kyoto Institute of Technology-Kyoto (Japan), National Chung Cheng University (Taiwan),… [Exh.Intro.09]

Some key improvements since the 2014 assessment are presented below:

1. The APB curriculum has been modified and added with several credits in research ethic aspect and non-science general education courses to help students attain more social knowledge and skills [Exh.Intro.10].

2. Lecturers and supporting staff have also been upgraded and qualified with higher numbers of postgraduate degree [Exh.Intro.11].

3. Teaching staff have annually participated international seminars and conferences and kept in touch with foreigner experts and organizations [Exh.Intro.12][Exh.Intro.13].

4. Facilities for teaching, studying and research have been significantly upgraded under the ODA project funded by Japanese Government. Every year, BiRDI invests in new facilities and maintains equipment for training students in the Biotechnology program. In August 2022, BiRDI completed the ODA project of Japan government to upgrade training facilities, including building working rooms and laboratories and purchasing new equipment. The total area of the new building is 4,334.88 m^2. The cost of new equipment is about 33.6 billion VND [Exh.Intro.14].

5. The number of first year students in APB was increased to 80 from 2,021 for ease of offering of the specialization [Exh.Intro.15]. Students have been motivated in coordinating scientific projects that trains students in writing a project and managing related documents including proposal, financial plan, reports and personnel management [Exh.Intro.16].

1.2. ORGANIZATION OF THE SELF-ASSESSMENT

The self-assessment process of the APB is conducted based on Plan No. 814/KH-DHCT-QLCL issued on March 30th, 2022 by the Rector of CTU and Plan No.1132/KH-DHCT-CNSH issued on April 25th, 2022 by the Director of Biotechnology Research and Development Institute (BiRDI) [Exh.Intro.02]. The preparation of APB's SAR is going to closely follow the Guide to AUN-QA Assessment at Programme Level, Version 4.0 (including 08 criteria and 53 requirements). The implementation process lasted almost a year following the PDCA cycle [Figure 1.1].

- **Plan phase:** We first hold departmental meetings to share evaluation objectives and establish working groups. Then, members of the SAR Team learn and understand the AUN-QA criteria and procedures and develop plan to do the self-assessment.
- **Do phase:** Based on AUN-QA criteria and procedures, we conduct self-assessment steps. First, we collect data and evidences, and take steps to close gaps between reality and the criteria of the set of standards. After collecting enough data and evidences, we proceed to write SAR, review and revise it many times prior to submitting for cross-checking and verifying in the next stage.
- **Check phase:** We submit the SAR to be cross-checked and verified as well as gather feedbacks for improvement.
- **Act phase:** Based on the evaluation findings and feedbacks received, we improve our quality assurance activities and finalize the SAR. Then, we publicly communicate the SAR to the stakeholders and get ready to submit the SAR to AUN-QA for assessment.

In order to implement the self-assessment and write the SAR of APB, CTU has established a taskforce to support the process, including:

- The Coordinating Committee includes Rector, Vice Rector in charge of quality management, Director Board of APB, representatives of leaders from the for Quality Management Center (QMC), and relevant functional departments and offices within CTU. The Committee's main role is to assist in giving direction, coordinating the implementation of the self-assessment process, cross-checking and verifying the SAR.
- The Secretariat includes Deputy Director of BiRDI, members of BiRDI's Quality Assurance Unit, and QMC members in charge of organizing the implementation of the self-assessment process, assisting the SAR Team in collecting the data and evidences related to the SAR, and giving professional guidance related to the self-assessment process.
- The SAR Team is the main taskforce in conducting the SAR. They involve the staff members from BiRDI in charge of writing the criteria of the SAR as well as analyzing the strengths and weaknesses to propose the recommendation for improvement. The key members of APB is shown in table below.

Table 1.1. The SAR Team of the APB

No.	Name	Job Title	Roles
1	Do Tan Khang	Head of Department of Molecular Biology	Head of SAR Team
2	Ly Thi Bich Thuy	Deputy Head of Administrative Unit	Secretary
3	Nguyen Thi Pha	Deputy Director of IFB	Member
4	Huynh Xuan Phong	Head of Department of Microbial Bitechnology	Member
5	Tran Vu Phuong	Senior Lecturer	Member
6	Huynh Ngoc Thanh Tam	Deputy Head of Department of Microbial Bitechnology	Member

Roles and tasks of each member of the SAR Team for APB are displayed in [Figure 1.2].

1.3. BRIEF DESCRIPTION OF THE UNIVERSITY, INSTITUTE, AND THE STUDY PROGRAMME

1.3.1. Brief description of Can Tho University

Can Tho University (CTU) with the former name as Can Tho Institution of higher education (*Vien Dai hoc Can Tho*), was established on March 31, 1966. In its early years, Can Tho Institution of higher education offered education and training in sciences, law, social sciences, literature, teacher education, and agriculture. After 1975, it was renamed as CTU and provided education and training mainly on teacher education and agriculture sectors such as crop production and animal husbandry, and mechanical engineering. CTU has long been a key university in Vietnam [Exh.Intro.17] and has now become a multi-disciplinary university and the cultural, scientific and technical center of the Mekong Delta Region and Vietnam. Currently, CTU offers 117 undergraduate programmes, 51 master programmes and 21 PhD programmes. It has 21 academic units, 18 supporting units, and 12 service units with a total of 1.825 staff members and an enrolment of 47.000 students [Exh.Intro.18]. The organizational structure of CTU is shown as in [Figure 1.3].

CTU has set its vision, mission, core values, educational philosophy, educational objective, and the quality policy statement as follows [Exh.Intro.18], [Exh.Intro.19]:

Vision: CTU *targets to be one of the leading higher education institutions in terms of quality in Vietnam and one of the top universities in training and research recognized in the region and the world.*

Mission: CTU *operates its resources to be the leading national institution for education, research and technology transfer, making significant contributions to the development of high quality human resources, fostering the talents and the advancement of science and technology to cater for the regional and national socio-economic development. CTU is the crucial driving force for the development of the Mekong Delta region.*

Core values: *Consensus – Devotion – Quality – Innovation*

Educational philosophy: Community – Totality – Uniqueness

Educational objective:

The training activities aim to provide high quality human resources, enhance knowledge of the common people, nurture and promote talented people; the research activities in science and technology aim to create knowledge and new products in serving the demands of social, economic developments and assuring national security and defense, and international integration.

To train learners to grow comprehensively in terms of ethics, intelligence, health, and aesthetics; to possess knowledge, skills and professional responsibilities; to be able to seize advance in science and technology in relevance to the level of education; to possess competency for independent learning, creativity, and adaptability to the working environment; to exhibit the mindset of entrepreneurialism and the sense of serving people.

Quality policy statement:

Recognizing the significant needs for qualified human resources in the society as well as strong competition in training for high quality human resources upon the local and global innovation contexts, CTU is committed to ensuring its quality through continual innovation and integration in education, creativity and dynamics in research and technology transfer; incorporating theory with practice to prepare graduates with sufficient knowledge and skills to be able to perform their work efficiently, to formulate their leadership and to adapt themselves to changes.

CTU is committed to the full establishment and implementation of an efficient, creative, innovative, professional, and responsible governance system. All activities of the University will be systematically and effectively governed through computerized procedures, applying innovative approaches and undergoing regular monitoring and assessment.

In the development strategy, CTU always determines that quality assurance in education is a priority task. Since 2003, the university has set up a task force in charge of quality management. In 2006, the Quality Assurance and Testing Center (QATC) was established, it was then renamed as Quality Management Center (QMC) in 2018 [Exh.Intro.20]. This is a specialized unit in charge of giving consultation to the Rectorate Board and other units in the implementation of activities relating to educational quality assurance and accreditation. Besides, CTU has also set up and operated the internal quality assurance system (IQA) consisting of two levels – institutional level and programme level in order to ensure the effectiveness of the activities in quality assurance and management of the university. At institutional level, QA University Council is formed to advise the Rector in QA strategies and policies [Exh.Intro.21]. At programme level, QA Units are also established with a total of 140 members in order to assist the schools and colleges in QA practices [Exh.Intro.22]. The CTU's QA system is organized as in the chart [Figure 1.4]

For institutional accreditation, CTU has been accredited and recognized under the quality assessment standard of the Ministry of Education and Training (MoET) in the period from May 2018 to May 2023 [Exh.Intro.23].

For programme accreditation, CTU has early accessed the guide to AUN-QA for internal accreditation within the university since 2009. With the efforts in deployment and participation in the activities of educational quality assurance, CTU officially became the 30th member of the ASEAN University Network (AUN) [Exh.Intro.24]. As an AUN member since July 2013, CTU has actively realized the regional standards into the academic life and never stopped learning from new good practices. Among those activities, the implementation of self-assessment process under the Guide to AUN-QA Assessment at Programme Level expresses a strong commitment of CTU for continuous quality improvement. Currently, CTU has 16 study programmes assessed and recognized by AUN-QA, and 9 study programmes assessed and recognized by the MoET [Exh.Intro.01].

For the prestige in an academic field, CTU is ranked among Asia's 501 - 550 best institutions in 2022 by the QS University Rankings [Exh.Intro.25]. These all aspects mark the initial achievements of CTU in the process towards regional and international integration.

1.3.2. Brief description of Institute of Food and Biotechnology

In 1981, CTU established the Biological Nitrogen Fertilizer Research Center. The key mission of the center was to conduct researches to exploit nitrogen from bacterial sources. In addition, the center was also in charge of offering courses such as *General Microbiology*, *Soil Microbiology*, *Veterinary Microbiology*, and *Aquaculture Microbiology* as well as supervising graduation dissertations by students from other faculties and centers in the MDR.

In 1991, the Minister of the Ministry of Education and Training (MOET) signed the decision to rename the Biological Nitrogen Fertilizer Research Center as the Biotechnology Research and Development Center and stipulate it to operate under the authority of CTU. Then, according to Decision No. 2960/GD&DT issued on August 26th in 1995, the Minister of the MOET renamed the center as the Biotechnology Research and Development Institute (BiRDI) under the authority of CTU.

On October 10th, 2022 the Department of Food Technology from CTU College of Agriculture was annexed to BiRDI to establish the Institute of Food and Biotechnology (IFB).

BiRDI has a total of 40 staff members (of which 22 are teaching staff) including 1 Professors, 4 Associate Professors, 14 PhD, 10 MSc (6 are studying PhD) and 8 BSc. More than 86% of teaching staff are PhD holders although 100% teaching staff participating in the ABP are PhD holders and graduated mainly in foreign countries such as the United States, France, Belgium, the Netherland, Denmark, Australia, Thailand, Japan, …. Their specializations are very diverse including biotechnology, biology, molecular biology, agriculture, …. The most prominent features of the staff are highly responsible, enthusiastic, motivated, experienced, skilful and willing to contribute their efforts to the development of BiRDI and University [Exh.Intro.26].

BiRDI is organized into 2 departments and 1 supporting unit as illustrated in Figure 1.5.

BiRDI Vision: To become an excellent training, research and technology transfer center and provide well-trained and highly qualified human resources majoring in Biotechnology and Microbiology for the Mekong Delta region and the whole country.

BiRDI Mission: To mainstream its mission with CTU's mission, BiRDI has to fulfil the following mission tasks:

- Train highly qualified human resources specializing in Biotechnology in order to meet the skilled labor demands of the society;
- Conduct scientific researches and transfer technology with updating advanced technologies to support optimal solutions to practical biotechnology problems in the Mekong Delta region (MDR); and
- Become the focal point linking Can Tho University with other research centers in the MDR for efficient cooperation in Biotechnology which facilitates development in advanced technology among partners and stakeholders in the MDR and around the world.

Development strategy of BiRDI from 2018-2020 towards 2030

BiRDI with its good capacities will become a strong institute to support CTU's and national strategic plans to 2030 in biotechnology [Exh.Intro.27].

Quality policy statement

Quality Assurance in teaching has always been a concern by CTU and BiRDI. Since 2008, quality assurance has been paid more attention according to domestic and international criteria. Since 2014, BiRDI's Quality Assurance Team (QAT) has been established to support the assessment of AUN-QA's advanced Biotechnology training program according to international criteria. Since then, the QAT has always been developed and the quality assurance work has made great progress. The latest QAT of CTU has 128 members nominated on 12/12/2018 according to decision No. 5860/QĐ-ĐHCT, which there are 6 members of BiRDI. BiRDI's QAT belongs to the Quality Management Center of CTU. The QAT carries out quality assurance activities such as monitoring the improvement of teaching programs, collecting comments and evaluating teaching activities, supervising study planning, supervising examinations, and participating in the self-assessment program according to AUN-QA. Since the undergraduate Advanced Program in Biotechnology has been audited and found to be good with the requirement of the standard details of the AUN-QA's Standard in October 2014, BiRDI has continuously improved the quality of this training program by upgrading training facilities with the ODA project of the Japanese government, supplementing teaching staffs, improving training programs, improving teaching methods with the BUILD-IT program and other activities. The QAT regularly consults students, lecturers, and employers to develop and improve the quality of training. With many supports, the quality of the APB at CTU has been maintained and improved.

Achievements in training, research and quality accreditation

For Training: When the MOET permitted CTU to offer the Microbiology PhD program (1985), the Master of Biotechnology program (1997) and the Bachelor of Biotechnology program (2001), the lecturers specializing in Microbiology of BiRDI played an essential role in teaching these programs. Since 2006, BiRDI has been officially in charge of offering undergraduate programs including the Biotechnology Program taught in Vietnamese (2006), the Biotechnology Program taught in English, also known as the Advanced Program in Biotechnology (2006), and the Microbiology Program taught

in Vietnamese (2010).
Bachelor's level: Biotechnology (instructed in English), Biotechnology, Microbiology
Master's level: Biotechnology, Microbiology
Doctoral level: Biotechnology, Microbiology.

For research: BiRDI has achieved considerable results in different fields of biotechnology such as application of biotechnology in agriculture, fisheries, food, environment, pharmacy.

For Quality accreditation: with a strong commitment in quality assurance and management of the training programmes, BiRDI received an award of accreditation certificate for the Advanced Programme in Biotechnology in 2014 by AUN-QA.

As introduced, on October 10th, 2022 the Institute of Food and Biotechnology has been established as the combination of BiRDI and the Department of Food Technology from CTU College of Agriculture. Therefore, most of the information related to the APB assessment report is taken from the BiRDI period.

1.3.3. Brief description of the Advanced Program in Biotechnology (APB)

The Advanced Program in Biotechnology (APB***)*** is operated under the management of BiRDI from academic year 2006 - 2007. The Institute is responsible for organizing the training activities and assigning BiRDI's staff members to participate in the re-assessment process of the program.

The program objectives have been established based on the stipulated criteria for advanced programs issued by the Ministry of Education and Training (MOET) [Exh.Intro.28], educational objectives of CTU with the aim of providing high qualification human resource, enhance knowledge of common people, nurture and promote talented people [Exh.Intro.29], and vision and mission of BiRDI. In addition, the curriculum formulation was contributed by stakeholders including lecturers from CTU and relating faculties/colleges, biotechnology sector managers and employers, and the feedback from alumni [Exh.Intro.10]. The general objective of the program is training students to have knowledge and skills in biotechnology adapted to national and international development, and to communicate fluently in English both non-scientific and scientific contexts

The program has 20 Program Learning Outcomes (PLOs) including 9 PLOs for knowledge, 8 PLOs for skills (5 PLOs for hard/professional skills and 3 PLOs for soft/transferrable skills) and 3 PLOs for attitudes/autonomy/responsibilities [Exh.Intro.30].

Additionally, the APB is also linked with the enterprise's facilities to provide students a chance of field trainings. This can foster dramatically student's practical knowledge and experiences which can help them adapt well to practical situation and meet requirements of the stakeholders upon graduation [Exh.Intro.31].

The general information of the APB is tabled as follows:

Programme name	Bachelor in Biotechnology (Advanced Program)
Administration unit	Institute of Food and Biotechnology (IFB)
University name	Can Tho University (CTU)
Award	Bachelor of Sciences
Opening year	Academic year 2006-2007
Number of graduated cohorts	12
Mode of training	Full-time, Regular
Training time	4.5 years (maximum 9 years)
Eligibility for graduation	Students must complete 161 credits, including 115 compulsory credits, 26 elective credits and 20 intensive English credits, and meet other requirements.
Medium of instruction	English

PART 2. AUN-QA CRITERIA

2.1. Criterion 1 - Expected Learning Outcomes (PLOs)

2.1.1. The programme to show that the expected learning outcomes are appropriately formulated in accordance with an established learning taxonomy, are aligned to the vision and mission of the university, and are known to all stakeholders.

The APB of CTU was officially approved by the MoET through Decision No. 300/BGD&DT-DH&SDH dated January 12, 2006 [Exh.1.1.01]. The program aims to cultivate highly skilled human resources and fulfil the growing demand for biotechnology professionals in the MDR and the entire country. Previously, the biotechnology programme was established under Decision No. 6666/QD-BGD&DT on November 23, 2005 and the first cohort commenced during the 2006-2007 academic year [Exh.1.1.02]. To date, the APB has continuously enrolled 17 cohorts. The program was also evaluated to meet AUN-QA standards in 2014 [Exh.Intro.01]. The programme has 5 POs as follows:

PO1. Equip students with basic and specialised knowledge in the field of biotechnology to meet the National Qualifications Framework of Vietnam;

PO2. Equip students with proficient practical skills; solve problems in biotechnology and related fields;

PO3. Equip students with theoretical knowledge of politics, national defence - security, basic information technology skills according to current regulations and foreign language proficiency to meet international integration (equivalent to level B2 of the Vietnamese Framework of Foreign Language Proficiency);

PO4. Train students with independent and professional working style, communication skills, lifelong learning skills, good ethics, civic consciousness, health, professional responsibility, and social responsibility.

PO5. Train students capable for positions as lecturers, researchers, experts, technicians, managers, and consultants in biotechnology-related enterprises both at home and abroad.

The APB was developed in accordance with the national framework [Exh.1.1.03] and based on the vision and mission of the CTU and the Institute of Food and Biotechnology [Exh.Intro.05][Exh.Intro.04]. It also drew on the curriculum of reputable universities both domestically and internationally [Exh.1.1.04], the needs of the labor market, and the practical requirements of relevant stakeholders, including the participation of employers [Exh.1.1.05]. Subsequently, the programme was adjusted through a programme adjustment team [Exh.Intro.10] and approved by Science and Education Council of the Institute [Exh.1.1.06], CTU specialised committee [Exh.1.1.07] and CTU's Rectorate [Exh.1.1.08].

The APB graduates have the ability to work in fields related to biotechnology, such as agriculture, industry, food, and the environment. To achieve these educational objectives, the Programme expected learning outcomes (PLOs) are built based on Bloom's Taxonomy. The expected learning outcomes including knowledge, skills, and autonomy and responsibility are detailed in the Programme Specifications [Exh.Intro.30] and presented in Table 2.1.

Table 2.1. Alignment of PLOs and POs

PLOs	PO1	PO2	PO3	PO4	PO5
General knowledge					
PLO1. Demonstrate basic understanding of Marxist-Leninist Physical Education guidelines and policies of the Communist Party of Vietnam; Ho Chi Minh's ideology, physical education and knowledge of national defence education to meet the requirements of national construction and defence.			x	x	
PLO2. Demonstrate basic knowledge of general law, social sciences and humanities, and natural sciences to meet the requirements of			x	x	

acquiring professional knowledge;					
PLO3. Master the fundamental knowledge of English/French equivalent to the Vietnamese Framework of Foreign Language Proficiency.			x		
PLO4. Master the fundamental knowledge of computers, office software and other basic softwares in line with current regulations.			x		
Fundamental knowledge					
PLO5. Master the fundamental knowledge of the biotechnology industry such as molecular biology, biochemistry, microbiology, virology, mycology, genetics, and biostatistics...	x				x
PLO6. Master the fundamental knowledge of conducting scientific research and the basic knowledge of specialised practical skills.	x				x
PLO7. Master the knowledge of foreign languages for specific purposes	x				x
Specialised knowledge					
PLO8. Master in-depth knowledge of the specialized fields of Biotechnology, such as Genetic Engineering, Genomics and Applications, Protein and Enzyme Science, Cell and Animal Tissue Culture Technology, Immunology, Genomic Technology,…	x				x
PLO9. Master in-depth knowledge of the applications of Biotechnology in various fields, such as Biomedical Biotechnology, Agricultural Biotechnology, Environmental Biotechnology, and Food Biotechnology	x				x
Hard Skills					
PLO10. Apply knowledge and specialised skills related to biotechnology to work effectively at production facilities, research institutions, training institutions, and state management agencies.		x			x
PLO11. Apply specialised knowledge to provide technical advice and design laboratory facilities for biotechnology.		x			x
PLO12. Present, explain, and critically analyse issues related to biotechnology in some areas trained in both Vietnamese and English.		x			x
PLO13. Use skills in information technology and foreign languages to serve job requirements at the workplace		x			x
PLO14. Develop scientific research capabilities and solve theoretical and practical problems in the field of biotechnology and related fields at institutes, universities, agencies, companies, and enterprises.		x			x
Transferable Skills					
PLO15. Apply the ability to build, implement, and manage short-term, medium-term, and long-term plans for individuals and groups.		x			
PLO16. Have skills to work independently and in group Be proactive and confident in professional research, activities, and management		x		x	
PLO17. Develop fundamental communication skills		x		x	
Attitudes/ Autonomy and Responsibilities					
PLO18. Form disciplinary awareness and industrial style, improve political quality, ethics, civic duty; respect and comply with the tasks assigned and deployed by the manager.				x	x
PLO19. Comply with professional ethics of their pursued profession, demonstrate confidence, enthusiasm, passion, adaptability to change,				x	x

have a progressive attitude and overcome difficulties					
PLO20. Develop the qualities of sociability, patience, dynamism and creativity, and know how to overcome difficulties to fulfil tasks				x	x

The programme and its PLOs are widely disseminated on the websites of CTU and IFB [Exh.1.1.09] and through the orientation [Exh.1.1.10]. Also, the PLOs are also introduced to students in the programme specifications [Exh.1.1.11] and student handbook [Exh.1.1.12].

2.1.2. The programme to show that the expected learning outcomes for all courses are appropriately formulated and are aligned to the expected learning outcomes of the programme.

The PLOs of all courses are designed to be appropriate and compatible with the PLOs of the training programme through a matrix table of the courses [Exh.1.1.11], as well as the PLOs of the training programme that are specified in the corresponding courses and detailed through the PLOs of each course [Exh.1.2.01].

CLOs' contributions to PLOs are presented in the programme specifications and in Table 2.2. General education knowledge block contributes to PLO1-3, PLO16-18 and PLO20; Fundamental knowledge block PLO3, PLO5-7, PLO12, PLO16 and PLO19-20; Specialised knowledge block contributes to most PLOs; and all courses contribute to PLOs regarding skills, autonomy and responsibility.

Table 2.2. Summary of number of courses contributing to PLOs

APB Learning Outcomes (PLOs)	**Groups of courses (number of courses/credits)**			**Total of courses contributing to PLOs**	**Percentage (%)**
	General knowledge block (31/ 51 credits)	**Fundamental knowledge (17/ 35 credits)**	**Specialised knowledge (38/ 55 credits)**		
PLO1	10	0	0	10	1.4
PLO 2	19	0	0	19	2.6
PLO 3	11	16	38	65	8.9
PLO 4	2	0	1	3	0.4
PLO 5	0	16	16	32	4.4
PLO 6	0	9	20	29	4.0
PLO 7	0	16	38	54	7.4
PLO 8	0	1	36	37	5.1
PLO 9	0	1	33	34	4.7
PLO 10	0	6	38	44	6.0
PLO 11	0	3	36	39	5.3
PLO 12	0	11	9	20	2.7
PLO 13	2	4	37	43	5.9
PLO 14	4	3	37	44	6.0
PLO 15	2	4	5	11	1.5
PLO 16	12	16	38	66	9.0
PLO 17	13	6	9	28	3.8
PLO 18	13	1	2	16	2.2
PLO 19	4	10	38	52	7.1
PLO 20	31	16	38	85	11.6
Total	**123**	**139**	**469**	**731**	**100**

2.1.3. The programme to show that the expected learning outcomes consist of both generic outcomes (related to written and oral communication, problem solving, information technology, teambuilding skills, etc.) and subject specific outcomes (related to knowledge and skills of the study discipline)

The groups of general and specialised courses are designed based on the PLOs and summarised in Table 2.3.

Table 2.3. PLOs and the APB courses

Groups of PLOs	Groups of courses	Expected learning outcomes (PLOs)
General knowledge block	Knowledge of political science, natural science (mathematics, chemistry, physics) and social sciences and humanities (language, culture, etc.), national defence and security education; and physical education.	1, 2, 3, 4
Fundamental knowledge block	Basic knowledge of the field of biotechnology such as biochemistry, microbiology, genetics, biostatistics, molecular biology.	5, 6, 7
Specialised/professional knowledge block	Specialised knowledge and applications of biotechnology in the fields of life, research and practical production (medicine, agriculture, environment and food)	8, 9
Hard skills	Proficiency in the use of equipment, computer skills, foreign languages, as well as specialised knowledge in biotechnology to work effectively.	10, 11, 12, 13, 14
Transferable skills	Communication skills, innovation, creativity, management, teamwork, presentation, decision-making, self-learning, and lifelong learning	15, 16, 17
Attitudes/ Autonomy and responsibility	Disciplinary awareness, civic duty, academic and professional ethics.	18, 19, 20

The programme with 20 PLOs is formed from 3 groups of courses including knowledge (9 PLOs), skills (8 PLOs), and autonomy and responsibility (3 CLOs). The group of general education courses provide basic knowledge in political science, natural science, social and human sciences, innovation and creativity, national security and defense education, and physical education [Exh.1.3.01]. The foundational knowledge courses provide fundamental knowledge of the field of biotechnology such as biochemistry, microbiology, genetics, biostatistics, molecular biology [Exh.1.3.02]. The specialised knowledge courses are essential and provide specialised knowledge and application of biotechnology in the fields of life, research and practical production (medicine, agriculture, environment and food) [Exh.1.3.03]. These groups of courses provide students with professional skills, soft skills, autonomy and responsibility.

2.1.4. The programme to show that the requirements of the stakeholders, especially the external stakeholders, are gathered, and that these are reflected in the expected learning outcomes.

The POs and PLOs of APB are formulated with reference to the programmes of Vietnamese and foreign universities; based on the guidelines of Vietnamese qualifications framework [Exh.1.1.03], CTU's vision and missions [Exh.Intro.05] and BiRDI [Exh.Intro.04], feedbacks from experts and lecturers of CTU and especially employers [Exh.1.1.05] and AUN experts during the AUN-QA 2014 [Exh.1.4.01]. Experts' feedbacks have been collected and implemented for programme improvement for the past years (Report on improvements based on AUN-QA suggestions). Moreover, after each semester, teaching activities are recorded through the system of collecting students' feedback [Exh.1.4.02]. These feedbacks were collected and evaluated [Exh.1.4.03] and

recommendations were made during meetings to improve teaching activities and enhance quality [Exh.1.4.04].

2.1.5. The programme to show that the expected learning outcomes are achieved by the students by the time they graduate.

Based on the government's decision to improve the quality of higher education [Exh.1.5.01] and the guidance of the CTU [Exh.1.5.02], the level of achievement of PLOs is determined in two ways: objective and subjective. The objective evaluation is reported in criterion 2.4.5. The subjective evaluation is carried out through online surveys to obtain feedback from graduating students (Figure 2.1), alumni and employers [Exh.1.5.03]. On average, all PLOs are achieved when graduating with a rate of over 75% achieving 40.7%, and from over 50% to 75% is 36.9%, in which there are still some PLOs with a high rate of over 75% such as PLO1, PLO2, and PLO15 as evaluated by alumni. However, the level of achievement of PLOs below 50% is also recorded with a rate of 5.4%. Overall, the level of achievement of PLOs of graduates is relatively high in terms of specialised knowledge, with English language skills being the highest recognised, followed by IT skills and soft skills.

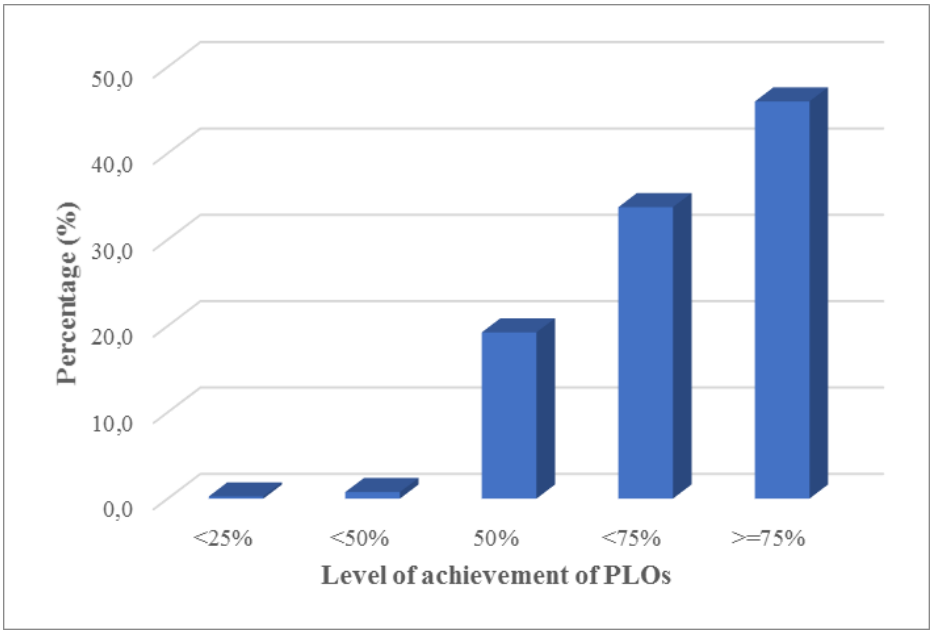

Figure 2.1. Level of achievement of PLOs upon student graduation

2.2. Criterion 2 - Programme Structure and Content

2.2.1. The specifications of the programme and all its courses are shown to be comprehensive, up-to-date, and made available and communicated to all stakeholders

The APB specification is designed according to the curriculum of Vietnamese universities and the Michigan State University - USA [Exh.1.1.04]. In addition, the programme specification, the curriculum, and all course outlines are fully presented as in CTU's common templates. They include the Administration unit; Teaching unit; Details of accreditation certificates issued by professional organisations or competent authorities; Degree name; Programme name; PLOs; Admission criteria; References to the programme; Programme structure and requirements of qualifications, courses, and credits; Mapping matrix between POs and PLOs and courses and PLOs; Study plan framework; Brief description of the course. Course outlines include Course name; Course requisites, credits and administration department; CLOs in knowledge, skills, autonomy and responsibilities; Teaching, learning, and assessment methods for students' CLO achievement; Course specification and teaching plan; Details of assessment methods; Learning materials; Self-study guide. All course outlines are

consistently designed, periodically revised, and updated in accordance with the University's regulations and templates [Exh.2.1.01] [Exh.2.1.02].[Exh.Intro.30]

The programme specification and relevant course outlines are updated after every revision period [Exh.Intro.30] [Exh.2.1.03] [Exh.2.1.04]

The POs are described in COs and CLOs. Course outlines are based on considered, updated, and improved POs. In comparison with those in 2014, the 2019 ones are updated with CLOs, teaching content aligned with CLOs, and self-study added [Exh.2.1.05] [Exh.2.1.06].

APB programme is widely introduced to stakeholders. APB course outlines are available on CTU's website [Exh.1.1.09]. In particular, after the University issued the study programme, the Institute announced APB and its course outlines to students and lecturers via various means of media such as CTU's and IFB's websites, CTU's admission consultancy materials [Exh.2.1.07], academic advisors, and staff/students/alumni in the first-year student orientation. Moreover, lecturers introduce the content of the course outline at the beginning of the course.

2.2.2. The design of the curriculum is shown to be constructively aligned with achieving the expected learning outcomes

The design of the APB curriculum allows students to achieve all PLOs. It is decided into 4 blocks: Intensive English, general knowledge, fundamental knowledge, and specialised knowledge. The mapping of knowledge blocks and courses in each block is shown in the line diagram [Exh.2.2.01].

The Intensive English block in the first semester aims at support students to reach the English proficiency equivalent to Level 4/6 of the Foreign Language Proficiency Framework for Vietnam.

The general knowledge block (51 credits) provides a basis for natural science and social science. In addition, students attend national defence training (a requisite course for all students) and physical education. These courses are designed to train students to proficiently use English in communication, equip general knowledge about current politics and society, and provide physical education for community service and natural science knowledge to acquire fundamental and specialised knowledge. [Exh.Intro.30]

The fundamental knowledge consists of 35 compulsory credits. Through fundamental courses, students learn Biostatistics, Scientific Research Methods for Biotechnology, and basic courses in biotechnology such as Basic Biology, Introductory Microbiology, Biochemistry, Basic Genetics, and Bioinformatics. In this block, students learn to write a scientific report in English. As a result, they accumulate technical terms and basic knowledge about biotechnology convenient for learning specialised courses in English. [Exh.Intro.30]

Specialised knowledge (55 credits) provides knowledge about Molecular Biology, Virology, Genetic Engineering, and Proteomics. Furthermore, students have elective courses (21 elective credits) in the applied fields, including Food Biotechnology, Environmental Biotechnology, Biotechnology in Medical and Pharmaceutical Science, and Biotechnology in Agriculture. The curriculum design also targets training students in professional behaviours, research skills, life-long learning, ethics, citizen awareness, and professional and social responsibilities. [Exh.Intro.30]

2.2.3. The design of the curriculum is shown to include feedback from stakeholders, especially external stakeholders

Feedback from stakeholders, including alumni and employers, in meetings is used as a basis for programme revision [Exh.2.3.01] [Exh.2.3.02]

In detail, according to current students' feedback, the study programme had too many credits for chemistry. Therefore, in the programme revision for Cohort 45, the number of credits for chemistry was reduced from 30 to 15. According to lecturers' feedback, the number of Biotechnology Seminar courses also reduced from 5 to 2. According to feedback from employers in various fields, students should have options for fields in the study programme, so the courses such as Biotechnology in

Medical and Pharmaceutical Science, Environmental Biotechnology, Food Biotechnology, and Microbial Biotechnology were added [Exh.2.3.03] [Exh.Intro.30] [Exh.2.3.04].

2.2.4. The contribution made by each course in achieving the expected learning outcomes is shown to be clear

Each course is designed to indicate its contribution to PLOs. [Exh.2.4.01] [Exh.2.1.06]. Course outlines include Course name; Course requisites, credits and administration department; CLOs in knowledge, skills, autonomy and responsibilities; Teaching, learning, and assessment methods for students' CLO achievement; Course specification and teaching plan; Details of assessment methods; Learning materials; Self-study guide. All course outlines are consistently designed, periodically revised, and updated in accordance with the University's regulations and templates [Exh.2.1.02] [Exh.2.1.03].[Exh.Intro.30]

2.2.5. The curriculum to show that all its courses are logically structured, properly sequenced (progression from basic to intermediate to specialised courses), and are integrated.

All courses are designed to intergrate and logically structured. The difficull level is increasingly structured. The study programme includes 4 knowledge blocks: Firstly, Intensive English provides students with skills necessary for courses in the programme in English; Secondly, General knowledge includes physical education, social science, general science, national defence, and IT skills for learning; Thirdly, Fundamental knowledge helps students orient their choice of specialised courses; Lastly, Specialised knowledge includes courses specialised in biotechnology. The programme has systematically designed in both specialised and width (including all areas of biotechnology such as agriculture, aquaculture, animal, medicine and environment) which supports students adapting to work in vary fields related to biotechnology after graduation. Some intergrated courses in English writing skill help students enhance publication skills which are very importance in following higher education in other countries [Exh.Intro.30].

2.2.6. The curriculum to have option(s) for students to pursue major and/or minor specialisations

Specialised knowledge is both compulsory and elective. Compulsory courses cover various fields such as agriculture, food, environment, medicine and pharmacy. Elective courses also cover these fields, enabling students to pursue minor specialisations [Exh.Intro.30].

In addition, Graduation Thesis allows students to choose their favourite topics including food fermentation, biocontrol in plant protection, gene technology, protein isolation and purification, microbial testing, and biological activities evaluation [Exh.2.6.01].

During study, students have an opportunity to propose or participate in a scientific project which helps them specialise their research interest in minor field [Exh.Intro.16].

2.2.7. The programme to show that its curriculum is reviewed periodically following an established procedure and that it remains up-to-date and relevant to industry

According to the procedure, the study programme is revised every two years. The administration unit organises meetings in each programme revision to collect stakeholders' feedback to ensure it remains up-to-date and meets the market requirements. The latest revisions were in 2019 and 2020, in which the number of courses and the correlation between courses and PLOs were updated. [Exh.1.1.06] [Exh.2.3.01]

CTU issues a procedure for programme updates and assessments. Collecting stakeholders' feedback is considered a significant step in programme design and development [Exh.2.7.01]. Every year, the University conducts an online survey for graduates and employers to assess the programme and determine their demands for programme improvement. [Exh. 2.7.02]

The current APB updated based on the actual situations and stakeholders' reflections, with an increase in Intensive English credits [Exh. 2.7.03] and new specialised courses (Biotechnology in Medical and Pharmaceutical Science, Environmental Biotechnology, Food Biotechnology, Microbial Biotechnology, Transferable Skills, Entrepreneurship and Innovation.) [Exh.1.1.06] [Exh.2.3.01]

2.3. Criteria 3 - Teaching and Learning Approach

2.3.1. The educational philosophy is shown to be articulated and communicated to all stakeholders. It is also shown to be reflected in the teaching and learning activities

In general, the educational philosophy in the university system in Vietnam is shown in the educational objectives specified in the Law on Higher Education [Exh.3.1.01]. CTU has stated the educational philosophy: Community – Totality – Uniqueness. This educational philosophy has been obtained with the opinions of CTU staff members and published on the website [Exh.3.1.02][Exh.3.1.03]. Base on the Law on Higher Education and the Education Philosophy, CTU issued educational objectives [Exh.Intro.19] as follows "The training activities aim to provide high qualification human resource, enhance knowledge of common people, nurture and promote talented people; the research activities in science and technology aim to create knowledge and new products in serving the demands of social economic developments and assuring the national security and defence, and international integration. To train students to grow comprehensively in terms of ethics, intelligence, health, and aesthetics; to possess knowledge, skills and professional responsibilities; to be able to seize advance in science and technology in relevance to the level of education; to possess the competency for independent learning, creativity, and adaptability to the working environment; to exhibit the mindset of entrepreneurialism and the sense of serving people". These objectives clearly support CTU's missions and vision [Exh.Intro.5]. The educational objective of BiRDI, now the IFB, which is aligned with the CTU's educational objectives. CTU's educational objectives are clearly shown and communicated to stakeholders by various channels such as legal documents [Exh 3.1.04], described in the study program and introduced to students at the beginning of the academic year [Exh.1.1.10]. The educational objectives are reflected in the teaching activities**,** through PLOs published in the program specification and curriculum which indicate the contribution of each course to each PLO [Exh.2.3.03][Exh.1.1.11]. Base on PLOs, courses outline form specific CLOs adapted PLOs [Exh.3.1.06]

2.3.2. The teaching and learning activities are shown to allow students to participate responsibly in the learning process

CTU has an online management system that allows students to actively manage the learning process through their student accounts, including learning plans [Exh. 3.2.01], timetable, and grades. Academic advisors support to students when needed [Exh.3.2.02][Exh.3.2.03]. In addition, students are encouraged to play an active role in the entire learning process from the first semester, in the curriculum, in each course or even in each lesson. In the first year, through the orientation at the beginning of the academic year [Exh.1.1.10], students can know programme specifications, effective learning methods, study plan development, student exchanges, career opportunities, and other academic and social activities. Based on the above sources and support from academic advisors, each student can make a comprehensive study plan from the first semester and adjust it by each semester. Such adjustment allows students to achieve more success in learning. Throughout the curriculum, academic advisors remind and instruct learning activities in periodic meetings for direct communication with them [Exh.3.2.04] or other supporting units [Exh.3.2.05]. In each course, students participate in T&L activities from preparing lessons [Exh.2.1.06] during and after class sessions.

2.3.3. The teaching and learning activities are shown to allow students to participate responsibly in the learning process

T&L activities in the curriculum and its courses allow students to experience different active learning levels. Before a theoretical hour in class, students actively read materials, seek information from several online learning resources and/or finish their homework and prepare their own reports as instructed in the course outline [Exh.3.1.06]. In most courses, the lecture-based method is applied during theoretical hours. Lectures are conveyed by PowerPoint, videos and other visual materials with attractive designs and in combination with diverse tools to stimulate brainstorming, group discussions, simulations, etc. [Exh.3.3.01]. Students can actively participate in lectures and acquire knowledge

more effectively thanks to the facilities (projectors, smart TVs, etc.) and online tools (Edpuzzle, Mentimeter, Kahoot, etc.). In addition to theoretical hours, courses are designed with more hours to practice [Exh.1.2.01] and visit companies, facilities, other institutes and universities [Exh.3.3.02]. Particularly, the practice duration of the course Practical Training Industry (BT480C) allows students to access practical activities in Biotechnology in Vietnam. Those activities give students exposure to science, production practice, and production procedures related to biotechnology, strengthen their theory, and understand the current situation, potential, opportunities, and challenges of the major. Therefore, employers are extremely satisfied with the specialised skills of APB graduates [Exh.3.3.03],[Exh.3.3.04],[Exh.3.3.05]. Students actively choose advisor and field of research for the graduate thesis. [Exh.3.3.06].

2.3.4. The teaching and learning activities are shown to promote learning, learning how to learn, and instilling in students a commitment for life-long learning

The practice of learning skills and attitudes and lifelong learning for students is reflected in CTU's educational objectives [Exh.3.1.05] and form specific in POs, PLOs [Exh.2.1.03], and CLOs [Exh.1.3.02]. To achieve those outcomes, APB students are trained in transferable skills such as critical thinking, information searching, IT, English, etc. These skills are shown in T&L activities in each course [Exh.3.1.06] and accumulated throughout the curriculum. Students are required to spend 02 self-study hours on average per 01 theoretical hour according to the regulations of the credit-based programme [Exh.3.4.01]. For effective use of such time, instruction and requirements are provided in each lesson [Exh.3.1.06]. Common activities include exercises, materials, problem-solving, individual or group presentations, etc. Students' self-study can be assessed by various methods such as homework, minor questions, oral question-answer, presentations, etc. [Exh.3.4.02]. From those activities, students develop skills in problem-solving, information searching and processing, IT, and time management. Those skills are also trained in courses such as BT300C-Scientific Research Methods, BT118- Scientific and Technical Writing Skills, BT499- Graduation Thesis, etc. [Exh.3.4.03]. Furthermore, English, a necessary factor in self-study and life-long learning, is required to graduate from APB. Because it is also a compulsory language for the programme T&L, APB students can accumulate and enhance their English skills. [Exh.3.4.04]. The results of the survey on the PLOs on English proficiency show that 100% of the participants as graduates agreed that their English skills meet the job requirements of a proficiency level of 50% or higher and 63% of whom agreed the proficiency level of over 75% (Figure 2.2) and eligible for studying abroad through student exchange [Exh.3.4.05] or postgraduate programmes [Exh.3.4.06]. The curriculum equips students with life-long learning [Exh.2.1.04], and extra-curricular activities are designed to support their soft skills at the same time. They include voluntary activities for community service, English clubs, and sports [Exh.3.4.07]. Other activities include students' scientific research, participation and report in subject-specific workshops/conferences and student exchanges. CTU and the Institute focus on providing research opportunities and activities annually funded by CTU to students before they conduct their graduation theses, which is facilitating them to access scientific research and enhancing their cooperation skills and confidence. Most APB students attend national and international conferences organised by various universities in Southeast Asia [Exh.3.4.08],[Exh.3.4.09]. Improving international cooperation in teaching and learning activities (such as visiting foreign lecturers and international student exchanges) [Exh.3.4.10] (see appendix 5) and APB students' international studies and exchanges [Exh.3.4.11] are considered very useful and promote their learning motivation. Moreover, such activities also improve specialised knowledge and skills within domestic and international scopes and facilitate students' access to more development opportunities. Proof of life-long learning is the number of APB students pursuing postgraduate studies abroad [Exh.3.4.05]. Despite the huge impact of the Covid-19 pandemic, in the period 2015-2022, the percentage of students who can pursue their postgraduate studies abroad immediately after graduation was 26.36%, a slight increase in comparison with the previous assessment in 2010-2014 at 25% (Figure 2.3). Maintaining and increasing the number of students studying abroad after graduation further confirms APB students' English proficiency.

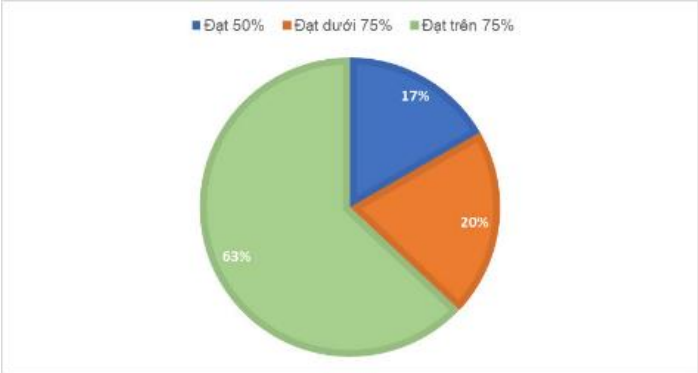

Figure 2.2. The results of the survey on English PLOs

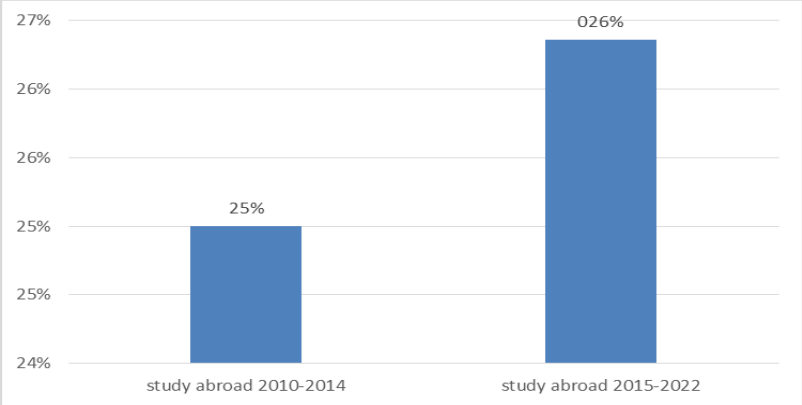

Figure 2.3. Students studying abroad after graduation in the periods 2010-2014 and 2015-2022

2.3.5. The teaching and learning activities are shown to inculcate in students, new ideas, creative thought, innovation, and an entrepreneurial mindset

Various T&L activities throughout the curriculum encourage students' creativity in learning and career. These are very important elements to help them implement new ideas to create new products (innovate) and start-ups. The creativity is reflected in PLOs and CLOs in the course outlines [Exh.2.1.06],[Exh.1.1.11] and measured by course assessments [Exh.3.5.01]. From the second year, students are encouraged to practice (beyond the courses in the study programme) in laboratories and experimental stations, attend workshops to cultivate their knowledge and skill, and especially seek new research ideas [Exh.3.5.02]. For students to have a foundation in innovation, star-up, along with knowledge, hard and soft skills are trained through fundamental and specialised courses such as "Scientific Research Methods (BT300C)" and "Biostatistics (BT117)" or research activities by many groups of students from different cohorts [Exh.3.5.03],[Exh.Intro.16]. In the fourth year, students conduct their graduation theses [Exh.3.5.04]. Some students can publish their thesis findings in domestic and international scientific journals [Exh.3.5.05]. The number of publications of students from the 2015-2022 cohorts almost doubled that of students from the 2008-2015 cohorts (in the first AUN accreditation) (Figure 2.4). The remarkable increase in international publications proved that APB students' research competence and English proficiency developed over time.

BIRDI seeks and chooses organisations and companies appropriate for practice courses and visits [Exh.3.5.06]. Moreover, CTU regularly organises job fairs [Exh.3.5.07] in cooperation with organisations and enterprises in Vietnam to connect students with them, offer access to the labour market, and develop new ideas, creative thinking, innovation and entrepreneurial mindset. In detail, BIRDI organises job interviews for students every year. In cooperation with companies, it also organises soft skills training such as Curriculum Vitae preparation, interview, job orientation, etc. [Exh.3.5.08]. In addition, the Institute assists students in entrepreneurial activities such as "Entrepreneurial and Transferable Skills" and "Potential Start-up Projects". From these activities,

some students have successful start-ups (information on students having successful start-ups) [Exh.3.5.09].

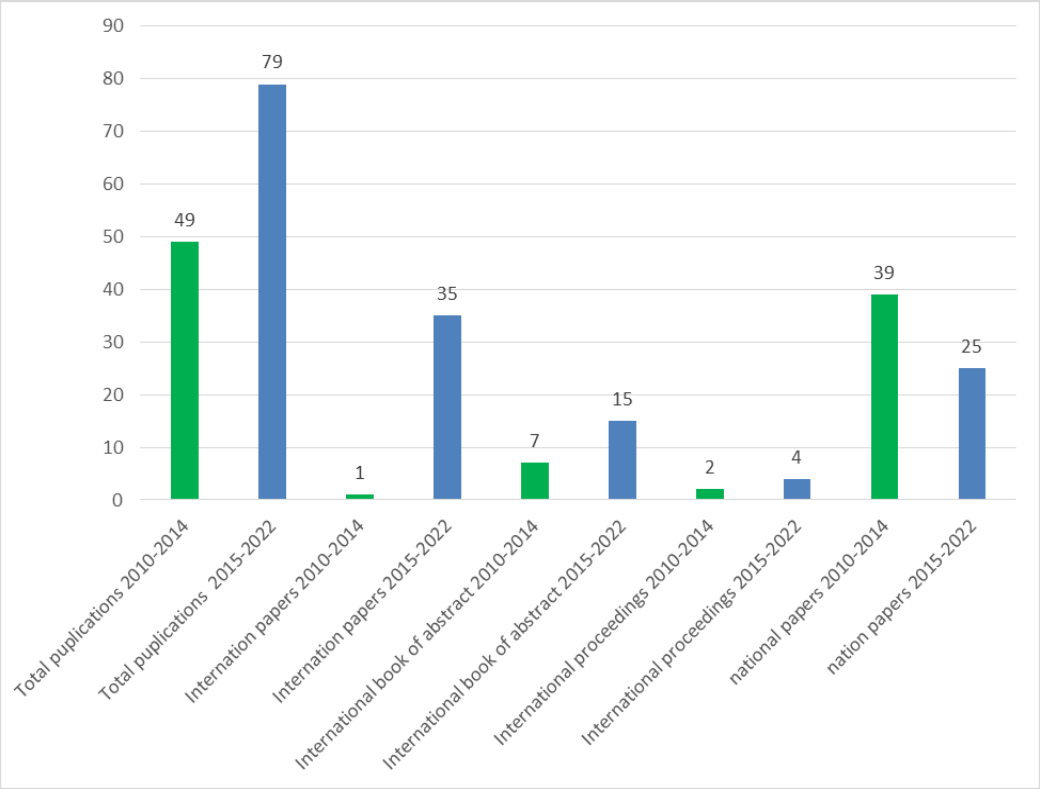

Figure 2.4. Students' research publications in the periods 2010-2014 and 2015-2022

2.3.6. The teaching and learning processes are shown to be continuously improved to ensure their relevance to the needs of industry and are aligned to the expected learning outcomes

The teaching and learning quality are shown to be continuously improved is shown in the following the Figure 2.5.

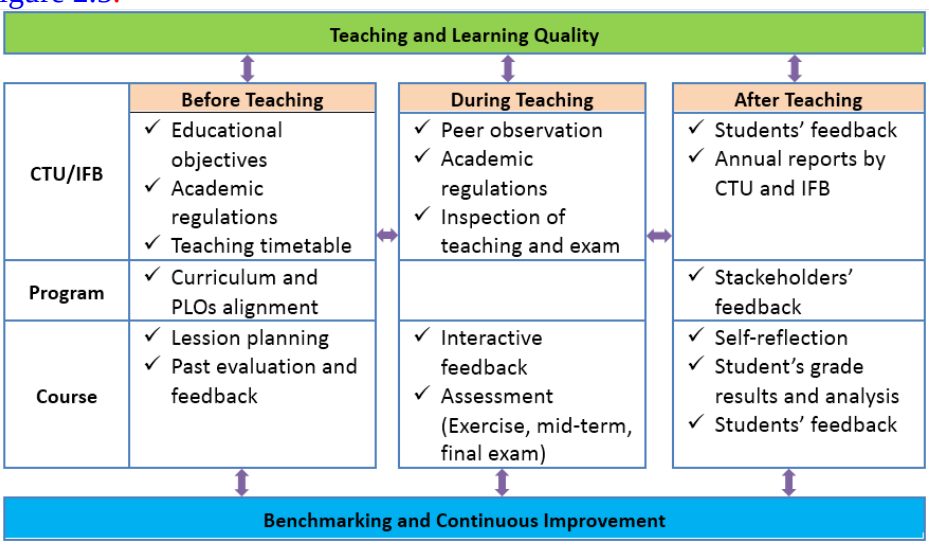

Figure 2.5. T&L assessment and improvement processes of CTU and IFB

The continuous improvement of T&L activities is carried out at programme and course levels. Based on the feedback from alumni, employers and graduates, the study programme is continuously updated [Exh.1.1.05],[Exh.1.4.04] to fulfil the needs of students and the labour market in the region. At the course level, T&L activities are planned, assessed, considered, and improved before each lesson

[Exh.2.1.06], during the teaching process and after each course by students' feedback and assessments in person or via email. In addition, based on the student feedback at the end of each semester [Exh.1.4.03]. CTU and BiRDI analyzed T&L activities, results and limitations in recent years and improvement plans for the next year in annual reports [Exh.1.4.04].

2.4. Criterion 4 – Student assessment

2.4.1. A variety of assessment methods are shown to be used and are shown to be constructively aligned to achieving the expected learning outcomes and teaching and learning objectives.

In courses, lecturers use different assessment methods of students' learning process through mid-term exams, seminars, attendance, assignments, and final exams [Exh.2.1.06], [Exh.4.1.01]. Mid-term and final exams combine several forms such as written, multiple-choice, and oral exams. Assessment content and methods are diverse to assess the CLOs. The Head of the Department will approve the content and form of questions and answers of final exams [Exh.4.1.02].

The assessment and examination cover the content and objectives of the whole programme and each course [Exh.Intro.30]. After the exams (for example, the mid-term exam), lecturers synthesise statistics on students' learning outcomes; thereby, they make appropriate modifications to the exam questions and provide explanations and recommendations for students to help them achieve the CLOs and do better on the final exam. A similar process is applied to the final exam [Exh.4.1.03] so that lecturers can improve the course content, teaching and assessment methods to get better results in the next cohort.

For graduation, based on the regulations and plans on graduation consideration in the academic year of CTU, the Institute will organise thesis defense phases in the academic year to facilitate students' graduation on schedule [Exh.4.1.04]. For the assessment of student's graduation thesis, a committee for assessment of graduation thesis with three members is established for each student. The committee members use an assessment form including specific criteria on the content and form of thesis, presentation skills, etc. with the appropriate grade allocation for each criterion according to the PLOs. The feedbacks and grades from the committee are summarised and informed to students. In addition to guiding students to implement their graduation thesis, the instructors also help them with the content of the report and presentation [Exh.4.1.05] to achieve the best results for their thesis [Exh.4.1.06].

2.4.2. The assessment and assessment-appeal policies are shown to be explicit, communicated to students, and applied consistently.

CTU and the Institute regularly assess students based on Regulations on academic work of CTU [Exh.3.4.01]. The assessment is carried out at different stages of the training process including learning process and graduation assessment:

(1) *Learning process:* the assessment is done through assignments, mid-term and final exams, which are clearly described in the course outline details [Exh.Intro.30] under the strict supervision of lecturers.

(2) *Graduation:* In the last semester, students conduct a graduation thesis. Students report their proposals to the committee (consisting of three members, including the supervisor). This is also the committee for assessment of graduation thesis. At the same time, the committee will give feedback and contributions to students to complete their thesis [Exh.4.2.01].

The process of appeal and review of student assessment results are stated in the Regulations on academic work of CTU [Exh.3.4.01] and is informed to all students. Students can directly complain to lecturers or via email when problems arise. If students still disagree with the results, they can submit a request for an appeal to the Institute Committee [Exh.4.2.02]. CTU and the Institute also organised training, seminars and thematic reports on assessment methods to guide lecturers on how to design assessments appropriate for CLOs and PLOs [Exh.4.2.03].

2.4.3. The assessment standards and procedures for student progression and degree completion, are shown to be explicit, communicated to students, and applied consistently.

The student assessment criteria are published on the website, Regulations on academic work [Exh.3.4.01],[Exh.1.1.12]. At the first class of each course, the lecturer introduces the detailed course content, assessment methods and grading [Exh.Intro.30]. The assessment is based on different components including: practice, field trip, report, attendance (to assess the learning progress at different stages) and final exam (for the whole course). Grading for different components among courses, typically at 20-30% for practical lessons in the lab, 20-30% for mid-term exams and at least 50% for final exams [Exh.3.5.03].

The criteria applied in the assessment are transparent and consistent throughout the training programme. All information about the training and assessment is public and transparent [Exh.1.1.11]. CTU applies procedures to ensure to the maximum extent that the student assessment is appropriate, reliable and fair. The assessment is carried out according to a legal process [Exh.3.4.01] and monitored by the LMS [Exh.4.3.01].

According to CTU's regulations, lecturers publicise exam grades and return the marking form to students. Students have the right to submit complaints about their learning outcomes to lecturers or even to the administration unit if necessary [Exh.4.3.02]. At the same time, students who complete the programme including compulsory and elective credits can check their graduation status on the LMS. Students who request for the graduation consideration will register in the LMS. Students who are eligible for graduation will be issued a decision on graduation, degree supplement, and bachelor's degree [Exh.4.3.03].

The assessment methods (written exams, multiple-choice exams, presentations, reports, etc.) are based on the CLOs to design the criteria for course assessment and final exam [Exh.Intro.30]. For the general courses, exams are held at the same time for all students to ensure the fairness. For specialised courses, exams are held by the course lecturers. After the exams, results and answers are informed to students and they can appeal (if any). The final exam records will be sealed and stored at the Institute [Exh.4.3.04]. The results of the course assessment are stored in the LMS and are released as a Bachelor's degree supplement.

2.4.4. The assessment methods are shown to include rubrics, marking schemes, timelines, and regulations, and these are shown to ensure validity, reliability, and fairness in assessment.

During the training process, all courses are examined and assessed based on the criteria specified in the course outline details [Exh.Intro.30]. The results are ranked on a scale (8 levels) of A, B +, B, C +, C, D +, D and F, corresponding to a 4-point scale (Table 2.4) [Exh.3.4.01]. The courses in the programme are assessed on a 10-point scale; then it will be converted to letter grades and numerical grades as in the following table:

Table 2.4. Description of the assessment results according to the marking schemes and classification

Classification	**10-point scale**	**4-point scale**		**Explanation**
		Letter grade	**Numerical grade**	
Excellent	9.0 – 10.0	A	4.0	Students completely understand the course's knowledge. All requirements are well fulfilled.
Very good	8.0 – 8.9	B+	3.5	Students understand basic knowledge of the course. All requirements are well fulfilled.
Good	7.0 – 7.9	B	3.0	
Average	6.5 – 6.9	C+	2.5	Students partly understand and apply the course's knowledge. Most of the requirements are fulfilled.
Pass	5.5 – 6.4	C	2.0	
Fail	< 5.5	F	0.0	Students fail to grasp the knowledge. Very few requirements are fulfilled.

General assessment methods are used in the APB described in section 2.4.1, and various component assessments are supplemented as described in sections 2.4.2, 2.4.3. In each course outline detail, assessment methods shall be described and each one shall be compatible with the specific CLOs. When designing exam questions, tests or project assignments, lecturers must ensure that CLOs are assessed enough to ensure the validity of exam papers. In addition, lecturers teaching the same course will agree on the content and form of assessment for the course. Lectures also use these standards when assessing similar courses. In the APB, the assessment criteria include presentations, group work, course assignments, field trip/internship, essay [Exh.4.2.01].

CTU regularly implements monitoring procedures to ensure the validity, reliability and fairness of student assessment to the maximum extent [Exh.4.4.01]. The assessment is carried out by surveys in the online LMS. At the end of each course, students will give feedback on the content of the course, CLOs, teaching methods, materials and assessment [Exh.1.4.03]. For course assessment, students are required to assess (i) the content and methods (ii) the number of assessment activities, (iii) lecturers' interpretation of the assessment content and student's learning outcomes, and (iv) lecturers' consideration of the student's contribution. CTU also promulgates regulations on training point for undergraduate students [Exh.3.4.01]. The assessment results are based on 5 criteria: (i) study consciousness; (ii) compliance with CTU's rules and regulations; (iii) participation in political, social, cultural and sport activities; (iv) civic awareness in community relations; (v) participation in collective work, class leaders, etc. The extracurricular training point is the total grade of all the criteria for each criterion, graded on a 100-point scale, and the grade classification of extracurricular activities is presented in Table 2.5.

Table 2.5. Classification of extracurricular training points

Total grade	**Classification**
90-100	Excellent
80-89	Very good
65-79	Good
50-64	Average
35–49	Poor
<35	Very poor

Extracurricular training point is assessed by semester and academic year. It is recorded in the University's student management records, used in scholarship and reward-discipline review at the end of each academic year. The overall training points are recorded in the student management file and recorded in the bachelor's degree supplement of students.

2.4.5. The assessment methods are shown to measure the achievement of the learning outcomes of the programme and its courses.

The assessment is carried out systematically to ensure that students can gain the knowledge and skills of the training programme mentioned in the PLOs [Exh.Intro.30]. Students acquire knowledge and skills from three types of general, fundamental and specialised knowledge allowing students can work after graduation.

For each course, some assessment methods are used multiple times throughout the cohort [Exh.Intro.30]. For example, mid-term and final exam questions are compiled to ensure that students can grasp the fundamental rules of the course, and situational questions will help students solve practical problems through theoretical sections in class [Exh.2.1.06]. The exam questions are designed in various forms, such as multiple choice, short or/and long answer, problem solving, etc. to ensure the assessment of the achievement of all CLOs.

2.4.6. Feedback of student assessment is shown to be provided in a timely manner.

Based on CTU's regulations on academic work, the Institute has clear regulations on the announcement of assessment results to students, including procedures, forms and deadlines. For each

course, this information is mentioned in the course outline details [Exh.Intro.30] and is communicated to students at the first session of the course. Lecturers give feedbacks or and comments to students after discussions, group reports and presentations. Based on their comments, students have the opportunity to modify and adjust their learning methods. For written assignments, lecturers will correct errors and give comments so that students can learn from them [Exh.4.6.01].

All CLOs in a semester must be updated to the online LMS [Exh.4.3.01] is regulated by CTU. Students can use their student accounts to access and follow their learning outcomes. Thanks to this online LMS, time for grade reports and end-of-semester are unified throughout the University. Besides, "MyCTUS" application was issued to help students quickly update their study results [Exh.4.6.02].

2.4.7. The student assessment and its processes are shown to be continuously reviewed and improved to ensure their relevance to the needs of labour market and alignment to the expected learning outcomes.

In the APB, the student assessment is consistent with the learning outcomes and all teaching and learning processes, as well as complies with the regulations of CTU and MoET [Exh.3.4.01]. Assessment activities for the final exam are based on the documents on checking and evaluation [Exh.4.7.01].

In each semester, the Institute's lecturers will consider the development of exam questions, exam monitoring, grading and adjusting lectures based on the latest survey results of students [Exh.1.4.03].

CTU and the Institute also organise trainings, seminars and thematic reports to monitor trends and changes in the labour market to ensure that the assessment results are in line with the needs of the industry [Exh.2.3.02]. In addition, the Institute and CTU periodically survey alumni on the assessment methods as well as on their satisfaction with students' competence after graduation [Exh.4.7.02]. Regarding students, at the end of each course, students can respond and assess through the online system managed by the QMC [Exh.4.7.03] and also by the lecturer [Exh.4.7.04]. Based on such diverse sources of feedback, CTU and the Institute can review and improve student assessment methods and procedures to ensure that they are in line with the needs of employers, the labour market, and students and in line with the PLOs [Exh.4.7.05].

2.5. Criterion 5 - Academic staff

2.5.1. The programme to show that academic staff planning (including succession, promotion, redeployment, termination, and retirement plans) is carried out to ensure that the quality and quantity of the academic staff fulfill the needs for education, research, and service

CTU and IFB pay great attention to the development, assessment and improvement of academic staff's quality, and always facilitate academic staff's study and improvement of their qualifications at all different levels from short-term training to doctoral and post-doctoral studies in Vietnam and abroad. The academic staff planning is shown through the development planning of staff in the period of 2008-2015 of the Institute and has been approved by the Rector [Exh.5.1.01], as amended in the 2013-2022 plan [Exh.5.1.02], and the 2018-2022 plan towards 2023 [Exh.5.1.03] including plans to train and improve professional qualifications, recruit new academic staff to replace staff reaching the retirement age, prepare the succession team for education.

Termination of the contract and retirement are well planned and implemented. The Institute makes the list of lecturers who reach the retirement age to make a plan on the recruitment of new academic staff and ensure that workload is implemented continuously, [Exh.5.1.01]; [Exh.5.1.02]; [Exh.5.1.03]. For retired staff, the University announces a plan to arrange for staff and employees reaching the retirement age to retire every 6 months [Exh.5.1.04]. Staff who reach the retirement age (60 years old for men, 55 years old for women) are notified by the Institute, and the University will issue a decision on retirement [Exh.5.1.05]. Academic staff who wish to continue contributing after retirement will also be considered to request CTU and the MOET to extend their working time

(applied to lecturers with high professional qualifications, titles of associate professor, PhD, and experienced lecturers) [Exh.5.1.06] or signing a visiting lecturer contract [Exh.5.1.07].

Table 2.6. Statistics of the number of lecturers from 2017-2023

No.	Year	Male	Female	Qualification				Total
				Prof.	Assoc.Prof.	PhD.	Master	
1	2017	14	7	2	6	7	6	21
2	2018	13	8	2	6	9	4	21
3	2019	13	7	2	6	9	3	20
4	2020	13	8	2	6	10	3	21
5	2021	14	9	2	5	13	3	23
6	2022	14	8	1	6	14	3	22
7	2023	22	21	3	11	23	6	43

Source: Institute of Food and Biotechnology (2023)

The number of the Institute's lecturers from June 2017 to June 2022 (Table 2.6). Lecturers who are professors, associate professors, and PhDs reach the retirement age will be extended their working time according to the University's regulations. In the last 5 years, the Institute has 01 Professor (Prof.) and 04 Associate Professors (Assoc.Prof) who have extended their working time to ensure the quantity and quality of academic staff to meet the needs of education, research, and service [Exh.5.1.06]

CTU also periodically implements the leader planning through the review and supplementation of the planning of heads and deputy heads of units and their department's heads and deputy heads [Exh.5.1.08]. The planning for the appointment of leaders is carried out to ensure the development of the Institute's strong research and teaching towards service. The staff planning must be voted by competent authorities and reach the rate (>50%). Based on the actual situation, according to each term, the appointment of leaders must be based on the list of planned staff, the process of new appointment and reappointment clearly regulated [Exh.5.1.09],[Exh.5.1.10],[Exh.5.1.11],[Exh.5.1.12].

Academic staffs need to always learn to improve their qualifications to be able to meet the job position well. This is specified in requirements of lecturers' professional development process [Exh.5.1.13]. The planning of these staff is based on the current status of academic staff (Table 5.1) and the FTE ratio of students and lecturers in the last 5 years. If lacking academic and laboratory staff, the Institute will ask for the permission of recruitment from CTU. On this basis, CTU will have a recruitment announcement [Exh.5.1.14] and implementation of the recruitment process for staff in the right job position [Exh.5.1.15]. Currently, the Institute is building a management model according to the research laboratory associated with training and research. This planning is based on staff's professional capacity and sense of organization and discipline. On that basis, the Institute proposed the appointment of laboratory heads [Exh.5.1.16] This is the basis for lecturers to promote research, directly serve the training and community service.

2.5.2. The programme to show that staff workload is measured and monitored to improve the quality of education, research, and service.

The ratio of lecturers/students in the training programme of the APB has increased gradually from 2018-2022 (Table 5.2) [Exh.5.2.01]. The number of lecturers who directly teach the APB is not only lecturers of the Institute but also several lecturers of other schools/colleges of the University such as School of Foreign Languages, College of Natural Sciences, College of Environment and Natural Resources, College of Agriculture [Exh.5.2.02] and visiting foreign lecturers (See appendix 5). Selection criteria for lecturers participating in teaching comply with the University's recruitment regulations and requirements on the qualifications of lectures comply with the provisions of the Law on Higher Education [Exh.3.1.01] and is concretised in the Regulation on organisation and operation of CTU. According to the University's regulations, each lecturer participating in teaching at CTU must ensure the standard number of hours according to the applicable regulations of the University.

Thereby, the standard hours are calculated by the total number of teaching hours and hours of research and performing other tasks [Exh.5.2.03].

Table 2.7. Teacher/student ratio

Academic year	Total FTEs of lecturers*	Total FTEs of students**	Ratio of students/ lecturers
2017-2018	21	174	8.3
2018-2019	20	171	8.6
2019-2020	21	174	8.3
2020-2021	23	170	7.4
2021-2022	22	209	9.5

*Note: *, ** Statistics to June 2022*

** Lecturer's FTE is calculated as the ratio between the number of G hours in the year of the lecturer assigned to directly teach from the third year and fourth year of the APB training programme [Exh.5.2.04] on the total of standard teaching hour norms for each lecturer's title according to Decision No. 871 dated July 14, 2021 [Exh.5.2.03].*

*** Student's FTE is calculated based on the number of credits (TC) in the academic year of students directly studying the APB training programme. FTE=1.0 if students study >30 credits/year of the APB training programme; FTE=0.5 if students study from 9-14 credits/year; FTE= 0.3 if students study 8 credits/year. The maximum number of credits per semester is specified under Decision No. 2748 dated July 12, 2019 [Exh.3.3.02], students must make a study plan for each academic year.*

2.5.3. The programme to show that the competences of the academic staff are determined, evaluated, and communicated

The roles, responsibilities and qualities of lecturers participating in the APB meet the regulations on standards of lecturers, the Vietnamese Law on Higher Education, and CTU [Exh.3.1.01] [Exh.5.3.01] [Exh.5.2.02]. Lecturers teaching the APB training programme have the lowest level of master's degree, have clear degrees and scientific backgrounds in accordance with regulations [Exh.5.2.03]. Lecturers must be able to: design a close teaching and learning programme, apply a variety of teaching and learning methods, and choose the most appropriate testing and assessment methods to achieve the PLOs [Exh.5.2.04], use and develop a variety of media in teaching and learning such as projectors, LCDs, laptops, use a variety of techniques to assess students' learning in accordance with the PLOs, self-monitor and assess the teaching as well as the training programme; criticize the practice of their own teaching, identify needs and develop continuous development plans.

Lecturers who implement the APB curriculum must complete professional tasks according to regulations [Exh.5.2.03]. Thereby, lecturers are entitled to benefits according to the regulations on codes and standards of professional title of academic staff [Exh.5.3.02]. However, the teaching competence of lecturers is also assessed through articles and research works. The competence of lecturers to teaching the APB is highly assessed inside and outside the country [Exh.Intro.06]. At the end of each course, students are involved in the assessment of lecturers' teaching through a survey. From that, CTU has a basis to assess lecturers' teaching competence [Exh.5.3.03]. On the other hand, to promote the quality of lecturers' T&L, the commendation and emulation is annually organised by CTU [Exh.5.3.04]. Lecturers will actively register their emulation achievements to CTU for review. The review results will be the motivation for lecturers to continue to strive for higher achievements.

2.5.4. The programme to show that the duties allocated to the academic staff are appropriate to qualifications, experience, and aptitude.

CTU and IFB have a clear and transparent recruitment plan according to the needs of the tasks, qualifications, experience and abilities of employees, which is officially published on CTU's websites

[Exh.5.4.01]. CTU's recruitment policy must ensure the sufficiency of lecturers to implement the main contents of the programme. Furthermore, at least two lecturers are assigned to be in charge of each course to ensure the teaching in case a lecturer has to stop teaching temporarily [Exh.5.4.02]. The department plans the teaching workload for each lecturer based on the number of credits of the curriculum, newly developed courses, and the available number of lecturers. Thereby determining the scale of quantity and quality of lecturers to develop recruitment plans for the unit. The department's plan is submitted to the Institute's Board of Directors. The Institute plans for the recruitment of new staff based on the proposal of the departments at the beginning of each year. After that, the plan needs to be approved by the Board of Directors. The recruitment process and criteria are clearly specified in the "Regulations on staff recruitment" issued by CTU and widely published on CTU's website [Exh.5.4.03]. CTU establishes a Recruitment Committee to review the candidate's profile and conduct a face-to-face interview according to the recruitment announcement [Exh.5.4.04];[Exh.5.4.05]. The recruitment results are decided based on a prescribed scale, in order from high to low and according to the quantity of recruitment needs and notified to relevant parties [Exh.5.4.06]. The lecturers are in charge of teaching, research, technology transfer and other activities. The assignment of workload to staff are in accordance with the regulations on academic titles [Exh.5.2.04]. Before each semester, the specific work of each lecturer is assigned by the head of department. On the basis of specific assigned tasks, lecturers will achieve the target of striving for G number of registration according to the academic year [Exh.5.2.03].

2.5.5. The programme to show that promotion of lecturers is based on a merit system which accounts for teaching, research, and service.

CTU uses an achievement-based system of teaching, research and service to motivate academic staff. All of these activities are assessed and converted into G hours, based on CTU's regulations [Exh.5.2.03] according to the guidance of MoET [Exh.5.3.02]. The total G hours are calculated from teaching activities (undergraduate and postgraduate level), research projects, published articles and service [Exh.5.2.03];[Exh.5.3.02]. The Department of Research Affairs supervises, examines staff's research and converts it to G hours. G hours for other activities are supervised by the Department of Administration and Planning. All the work is managed through the online system [Exh.3.2.02]. Bonuses are paid for the overtime. To encourage staff to publish high-quality articles, CTU has increased the volume of G conversions for ISI articles [Exh.5.2.03]. Assessment of staff performance used for promotion is carried out at the end of each academic year, which is widely communicated [Exh.5.5.01]. The assessment is systematically implemented, including self-assessment at the department, college and university levels. The results show the level of task completion of lecturers, including excellent completion, good completion, completion of tasks and failure to complete tasks [Exh.5.5.01]. The results will be are decided and approved by CTU and published widely [Exh.5.5.01]. Lecturers who successfully complete tasks and have excellent activities will be recognised as advanced labourers [Exh.5.5.02] emulation fighters, [Exh.5.5.03]; moreover, are considered for salary increment [Exh.5.5.04]; [Exh.5.5.05]

2.5.6. The programme to show that the rights and privileges, benefits, roles and relationships, and accountability of the academic staff, taking into account professional ethics and their academic freedom, are well defined and understood.

The recruitment standards for academic staff include ethics, professional knowledge and skills and are clearly defined in the Regulations on the recruitment of staff of CTU [Exh.5.4.03]. All lecturers must be accountable to the university and its stakeholders, taking into account their academic freedom and professional ethics.

From the recruitment stage, candidates who are lecturers are respected having freedom to participate in the recruitment process according to a clear and transparent process [Exh.5.6.01];[Exh.5.6.02]. Candidates have the right to demonstrate their competencies, professional qualifications and skills through the interview of the Assessment Committee

[Exh.5.4.04];[Exh.5.4.05]. For management staff, their rights are protected through tasks such as appointment, reappointment, resignation or dismissal in accordance with the process [Exh.5.6.03]

In all the criteria for recruitment and appointment, professional ethics and academic freedom are the top two. CTU has issued regulations on ethics in scientific and technological activities, emphasising that individuals must be honest, objective, self-responsible, and not violate the copyright. [Exh.5.6.04].

Lecturers must fulfill their roles and responsibilities in accordance with the Law on Higher Education 2012 [Exh.3.1.01], Article 54 of the Law amending and supplementing a number of articles of the law on higher education, 2018 [Exh.5.3.01] and Section 1 Chapter IV of the University Regulation 2014 [Exh.5.6.05]. Academic staff's tasks are defined in Decision No. 871/QD-DHCT dated April 14, 2021 of CTU [Exh.5.2.03]. Lecturers seriously perform assigned tasks such as teaching, compiling lectures and textbooks, conducting research, supervising projects, assessing students' exams, working as academic advisors, self-studying to improve their knowledge, participating in activities organised by unions and associations. In addition, all academic and support staff of the Institute and CTU have the right to be trained to improve their knowledge and skills, depending on the requirements of the job position and the development of CTU. Lecturers are encouraged to improve their professional qualifications and skills.

CTU has a regulation on organisation and operation. Heads and Deputy Heads of Departments and Divisions are responsible for supervising, encouraging and supporting staff to complete tasks with good quality and on schedule [Exh.5.6.06].

2.5.7. The programme to show that the training and developmental needs of the academic staff are systematically identified, and that appropriate training and development activities are implemented to fulfil the identified needs.

The need for training and development of academic staff is one of the significant important factors in ensuring the quality of human resources and training. Therefore, CTU always requires units to collect the needs of annual training and promulgates a plan for fostering staff in 5 years of 2021-2025 [Exh.5.7.01], [Exh.5.7.02]. On this basis, it creates create favourable conditions for units to train and develop their staff's qualifications to meet the professional requirements for ensuring the quality of the training programme. The Institute's needs of training management staff and academic staff with a PhD degree are also registered and approved for support from the state budget such as Project 911 from 2010 – 2020 [Exh.5.7.03], Project 89 from 2019 - 2030 [Exh.5.7.04]. In addition, the Institute always thoroughly grasps the spirit of learning and improving the qualifications of staff as well as always creates favourable conditions for staff to study and improve their qualifications at all different levels, from short-term training to doctoral studies [Exh.5.7.05]. Therefore, staff's qualification is always improved (Table 5.1).

Through the international cooperation activities of the Institute, there have been several training sessions to help staff improve their professional competences and educational skills [Exh.5.7.06], [Exh.5.7.07], [Exh.5.7.08] and laboratory management skills [Exh.5.7.09].

2.5.8. The programme to show that the performance management (including rewards and recognition) is implemented to assess academic staff teaching and research quality.

Teaching, research and service of lecturers are discussed and communicated to lecturers. The Director shall clearly designate the tasks for the Board of Directors' members and staff to coordinate the Institute's activities. The assignment of tasks is communicated to all staff through meetings at the beginning of every two weeks, Annual Staff Meetings and official documents such as Decision on Appointment, orientation of the Institute, Resolution of CTU. The Institute's Board of Directors discusses and assigns courses to staff, based on the course in the training programme and the competence and expertise of the lecturer [assignment criteria: (1) The right field of doctoral training; (2) There are evidence of knowledge of the course (published in international journals); (3) Long-term teaching to ensure that the assignment of teaching is most beneficial to students]. The head of the

department is responsible for assigning work to lecturers, ensuring the right assignment of expertise and having relatively equal hours among lecturers, helping promote their best competences. All lecturers clearly understand their responsibilities and tasks and make efforts to fulfil the professional workload as regulated [Exh.5.2.04].

Time management and reward mechanisms aim to promote the quality of academic staff. First, the management of professional work for lecturers is carried out in accordance with the Regulation on management of professional work for lecturers of CTU [Exh.5.2.03]. At the beginning of each academic year, CTU announces the registration of the plan to implement the professional workload and register for emulation for the whole year [Exh.5.8.01]. At the end of each academic year, lecturers make an annual form of staff assessment to serve as a basis for the assessment and commendation of the academic year according to regulations [Exh.5.8.02], [Exh.5.8.03], [Exh.5.8.04], the committee assesses emulation and commendation through 03 levels: Department, Institute and University levels after the assessment results of the emulation and commendation will be publicly and widely announced in the units, the form of commendation is implemented in accordance with the regulations of the MoET and CTU's Internal Expenditure Regulations [Exh.5.8.05]. In 5 years, the IFB has had many lecturers who have achieved several achievements and been awarded with certificates of merit [Exh.5.8.06], [Exh.5.8.07], [Exh.5.8.08].

2.6. Criterion 6 - Student support services

2.6.1. The student intake policy, admission criteria, and admission procedures to the programme are shown to be clearly defined, communicated, published, and up-to-date.

The annual student admission programme is planned by CTU in terms of admission quotas and criteria. The admission policies are based on the Regulations on Student Admission by the MoET [Exh.6.1.01]. On the basis of the above documents, CTU publishes the Annual Student Admission Scheme [Exh.6.1.02]. The main contents of the Student Admission Scheme include: Targets and admission areas, total quotas and admission consideration quotas for each programme, enrolment methods, admission scores, duration, priority policies, tuition fees, accommodation/dormitory of CTU. Information about student admission is publishes on CTU's website for easy access [Exh.6.1.03].

CTU also coordinate with high schools in the Mekong Delta in organising career guidance sessions to introduce the study programmes and the employment opportunities of each one by various methods: The annual Admission Consulting and Career Guidance in March, live streams, flyers, and website [Exh.6.1.04], [Exh.6.1.05], [Exh.6.1.06], [Exh.6.1.07].

The admission criteria are as follow: Admission consideration methods (direct admission, national high school graduation exam results consideration, high school transcript consideration, transfer of students from other programmes) and subject combinations A01, B08 and D07 [Exh.6.1.08]. The total number of admitted APB students is presented in Table 2.8 and Table 2.9

Table 2.8. Statistics on first year students' matriculation (in the last 5 academic years)

Academic year	Candidates		
	Applied candidates	Admitted candidates	Actual admitted students
2017-2018	87	32	44
2018-2019	125	31	42
2019-2020	120	38	39
2020-2021	146	72	45
2021-2022	343	172	83
2022-2023	488	107	63

The student admission process is as follow: CTU sends the matriculation notices to admitted students by post. The content of matriculation notices includes instruction on the matriculation procedure, tuition fee and orientation activities for first year students [Exh.6.1.09].

As presented in Table 2.8, from 2017 to 2021 we are allowed to receive only one group (about 40 students)/cohort. Based on the outstanding results of training and social demand, the number of students have been increased twice (about 80 student/cohort) from 2021-2022 academic year.

Table 2.9. Statistics on the number of APB students in training (in the last 5 academic years)

Academic year	Student in training					Total
	1st year	2nd year	3rd year	4th year	Above 4th year:	
2017-2018	44	48	37	45	39	213
2018-2019	42	44	48	37	45	216
2019-2020	39	42	44	48	37	210
2020-2021	45	39	42	44	51	221
2021-2022	83	45	39	42	47	256

2.6.2. Both short-term and long-term planning of academic and non-academic support services are shown to be carried out to ensure sufficiency and quality of support services for teaching, research, and community service.

CTU and the Institute have long-term and short-term plans to improve staff's competence in teaching and student support, which are regularly updated in the basis of the current situation, students' needs in training and society's requirements. CTU promulgates the functions and duties of each academic (based on the required quality and quantity of teaching and scientific research) and support units [Exh.6.2.01], in order to provide academic and non-academic support services. Alongside with CTU's plans [Exh.6.2.02], [Exh 3.1.04], the Institute also has short-term and long-term schemes [Exh.6.2.03], [Exh.5.1.03]. The performance of all activities (teaching, scientific research, community services, etc.) from these plans are evaluated annually and the plans for the next year at University level and Institution level are updated [Exh.6.2.04], [Exh.6.2.05], as presented and discussed in the annual meetings. In order to enhance the quality of teaching activities and support staff, the Institute sends their staff on training courses. As a result, the number of BiRDI's staff with Doctor's Degrees increased from 71.4% in 2017 to 86.4% in 2022 (Table 2.6), which is 31,6% and 48,3%, respectively, in comparison to that of CTU's staff [Exh.6.2.06]. Several staff also receive certificates for their competence training.

The strength of CTU in general and BiRDI in particular is focus on international cooperation. Through various international projects such as MHO (Netherlands), VLIR (Belgium), the ODA Project sponsored by the Japanese Government, a large number of staff were sent on short-term training courses [Exh.5.7.06], [Exh.5.7.05]. In addition, the ODA Project provide the budget for the construction of classrooms, the procurement of equipment and other services to serve teaching and scientific research as well as meet the demand of society [Exh.6.2.07].

2.6.3. An adequate system is shown to exist for student progress, academic performance, and workload monitoring. Student progress, academic performance, and workload are shown to be systematically recorded and monitored. Feedback to students and corrective actions are made where necessary.

CTU has developed a thorough system to monitor and support the learning and training process of students, including the LMS for the use of students [Exh.3.2.03] and staff [Exh.3.2.02], the duties of academic advisors [Exh.6.3.01], BiRDI's Office, Department of Student Assistance (DSA) [Exh.6.3.02], and Department of Academic Affairs (DAA) [Exh.6.3.03]. The academic advisors play an important role in monitoring and supporting students. Through the LMS, academic advisors can access students' contact information, study plans, schedules, scores, tuition fees and graduation documents [Exh.3.2.02]. Therefore, academic advisors can provide consultants to their students when necessary. Meetings between the academic advisors and students to discuss the study

plans, learning progress, course choices and answer the questions from students are held on a monthly basis [Exh.3.2.04]. Students can also communicate with their academic advisors using emails, phones, and social media (Facebook, Zalo, etc.). In addition, the Youth Union of CTU and BiRDI organise meetings with CTU's Board of Trustees, BiRDI's Dean Board and the Department's leaders to discuss and answer students' questions [Exh.6.3.04].

All information about students' studying process, course scores, training grades, and workload are recorded on the LMS and monitored by the students themselves [Exh.3.2.03], the academic advisors [Exh.3.2.02] as well as staff from DSA, DAA and BiRDI. At each semester, information on academic warning and scholarships for those with excellent performance are send to the corresponding students by CTU [Exh.6.3.05], etc. Students' workload is monitored on the basis of the Regulation on Academic Affairs by CTU, regarding the maximum and minimum number of credits for each semester [Exh.3.4.02]. Students can register the maximum of 25 credits in the main semester and 8 credits in the summer semester. Lecturers and students are informed about the teaching and course register schedule for each semester [Exh.6.3.06].

Students receive notification of all academic performance and have the right to request corrections. After the lecturers publish the scores, students can appeal for review. The faculty member in charge of the course and the Director are in charge of handling appeals from students about their academic performance. Lists of students rewarded for academic excellence (communicated through emails and published on DSA's website, [Exh.6.3.06] training grades, etc. are communicated to all students for responds before coming to the final decision.

2.6.4. Co-curricular activities, student competition, and other student support services are shown to be available to improve learning experience and employability.

Academic advisors support plays a major role in academic consulting activities for students [Exh.6.3.01]. Besides, the Youth Union plays an important role in organising co-curricular activities for students [Exh.6.4.01], [Exh.6.4.02]. The main activities include: Cultural exchange and sports; social activities; academic activities; international relation activities. The Youth Union of CTU and BiRDI excellently maintain the mobilisation of volunteer students in cleaning and blood donation [Exh.6.4.03]. Besides, the Union also organise competitions in various fields, including: Environmental competitions [Exh.6.4.04] political and social competitions such as the competition about Marine Police [Exh.6.4.05], national innovation competitions [Exh.6.4.06], the Politic Olympic [Exh.6.4.07] to raise students' awareness of social issues and responsibilities of organisations, individuals and communities. CTU also regularly organises activities about to part-time employment, job fairs, exchanges, seminars, student contests on start-up ideas [Exh.6.4.08], [Exh.6.4.09]. Besides, cultural and sports activities are held regularly, creating a healthy playground for students; the students are enthusiastic in participating such activities [Exh.6.4.10], [Exh.6.4.11], [Exh.6.4.12]. Students' participation in the above activities is recognised and evaluated, which is the basis for rewarding academic achievements and contributions to the community [Exh.6.4.13].

CTU and BiRDI also pay attention to co-curricular activities that benefit students' learning and research activities. CTU spends annual funding for student exchange programmes with universities in Asia [Exh.6.4.14], in which many excellent students of APB are included [Exh.6.4.15]. CTU and BiRDI also focus on field trips and field practice to help students acquire knowledge about the actual conditions in localities and regions [Exh.6.4.16]. In order to promote students' scientific research activities, CTU allocates funds for scientific research exclusively for students every year. This provides students early access to scientific research activities and promote their creativity, as shown in [Exh.3.5.02], published articles [Exh.3.5.04], participation in seminars [Exh.6.4.17].

Furthermore, CTU also provides students with consultants and support in job seeking through training courses, conferences [Exh.6.4.18], as well as recruitment announcements from agencies and companies [Exh.6.4.19].

BiRDI also organises seminars/training sessions on transferable skills such as Curriculum Vitae compilation, interview, etc. [Exh.6.4.20]. There are several Departments and Branches of CTU in

charge of student support. In which, DAA plays an important role in student consultancy and support about students' academic activities, scholarships, insurance, accommodation, employment, etc. [Exh.6.3.02]. Center for Student Consultancy, Assistancy and Start-up is the focal point to focus, link, coordinate and support with units inside and outside the University to carry out consulting and support activities for students [Exh.6.4.21]. During the Covid-19 pandemic in July 2021, the Youth Union of CTU organised the "Student Fair - CTU" to provide timely support to students [Exh.6.4.22]. CTU also provides students participated in the fight and prevention of the Covid-19 pandemic with financial support, facilities and equipment.

2.6.5. The competences of the support staff rendering graduate students services are shown to be identified for recruiting and deployment. These competences are shown to be evaluated to ensure their continued relevance to stakeholders needs. Roles and relationships are shown to be well-defined to ensure smooth delivery of the services.

The team of support staff in CTU is guaranteed in terms of quantity and professional competence to meet the needs of lecturers and students. The recruitment criteria and methods for support staff are based on regulations of the Government [Exh.6.5.01], defined by CTU in a clear, objective, fair and transparent manner [Exh.6.5.02], and widely communicated to Units and on the University's website [Exh.6.5.03], [Exh.6.5.04]. The University stipulates the functions, duties and organisation of activities of the Departments, Colleges/Schools, Institutes [Exh.6.5.05]. The duties of each member at the Units are clearly assigned [Exh.6.5.06].

During the working process, support staff can participate in training courses to improve their professional capacity [Exh.6.5.07], [Exh.6.5.08]. CTU also has remuneration policies to attract staff, including: additional income; financial support for training; domestic and foreign travel tours; professional skills training and fostering, approving regulations on internal expenditure [Exh.6.5.09]. It is worth noting that toxic allowances are paid to employees working in hazardous environments such as laboratories, libraries, etc. in accordance with the regulations [Exh.6.5.09]. Every year, CTU provides all staff and employees with financial support for periodic health examinations [Exh.6.5.10].

CTU also analyses the needs of human resource to come up with recruitment plans for the Units [Exh.6.5.03], [Exh.6.5.04]. The number of support staff in CTU's Units is shown in Appendix 6.1, and that of BiRDI is shown in Table 2.10. The duties of the support staff, as determined by the BiRDI's Board of Directors, are to support teaching activities, administrative tasks, and student support [Exh.6.5.06]. In addition, each Department in BiRDI also has a cohort of staff members in charge of laboratory management, assigned on the basis of their expertise and capacity [Exh.5.1.16]. The Fire Prevention and Fighting teams of CTU and BiRDI are established and trained [Exh.6.5.11].

Table 2.10. Number of support staff in BiRDI

Support staff (classified by support services)	Highest Qualification				Total
	High School Degree	Bachelor Degree	Master's Degree	Doctoral Degree	
Administrative procedures		2	1 (Lecturer cum Chief of Staff)	4 (Lecturer cum Assistant)	7
Equipment		1			1
Library		1			1
Laboratories and practice stations		2	10		12
Total	**0**	**6**	**11**	**4**	**21**

The competences of staff are reflected through their qualifications [Exh.6.5.12] and are assessed by various methods: register for professional work plans and emulation titles at the beginning of the

year [Exh.6.5.13], year-end self-assessment [Exh.6.5.14], as well as remarks from co-workers and Units' leaders on task completion, from which worthy rewarding levels are proposed [Exh.6.5.15].

2.6.6. Student support services are shown to be subjected to evaluation, benchmarking, and enhancement.

Teaching and learning support services are evaluated by students [Exh.1.4.03], [Exh.6.6.01] and academic staff [Exh.6.6.02] through on-line surveys conducted by CTU. Feedback collections from the previous year show that the satisfaction rates are around 89.2% and 95.6% (Table 2.11). The academic staff were satisfied with the support services, rating 4.13/5 [Exh.6.6.03].

Table 2.11. Satisfaction rate of students on support services

Academic year	2017-2018	2018-2019	2019-2020	2020-2021	2021-2022
Satisfaction rate [%]	95	91.2	89.6	95.6	89.2

In addition, students can send their feedbacks via email to the relevant units, BiRDI, or the Board of Directors [Exh.6.6.04], Facebook Fanpage [Exh.6.6.05], or during class meetings with their academic advisors [Exh.3.2.04]. In addition, CTU and BiRDI organise annual meetings with students to listen to their opinions and inquiries Student comments are responded to in person or in writing [Exh.6.6.06], since then CTU and BiRDI come up with specific solutions to improve the efficiency of support activities and services and bring about students' satisfaction.

Several improvements were noted such as adequately equipped dormitory facilities and services; staff attitudes towards students at the units; and the installation of projectors in classrooms.

2.7. Criterion 7- Facilities and Infrastructure

2.7.1. The physical resources to deliver the curriculum, including equipment, material, and information technology, are shown to be sufficient.

As of 2022, the area of CTU is 2,249,773.47 m^2 with 143,066.13 m^2 dedicated to training and scientific research activities, including 396 classrooms and lecture halls with the total area of 59,889,309 m^2 [Exh.7.1.01]. The total area dedicated to BiRDI is 14,693 m2 [Exh.7.1.02] including the main building with 8 classrooms [Exh.7.1.03]. In general, the facilities of CTU is well equipped. The classrooms are equipped with 158 projectors, 235 televisions, 6 LCD screens, 163 speakers, 3,206computers and other equipment for teaching and scientific research [Exh.7.1.04]. Classrooms for the APB are equipped with air conditioners and televisions [Exh.7.1.05]. In addition, there is a 60-seat hall in BiRDI. The hall is equipped with amenities such as cushioned chairs, sound system, air-conditioners, and LCD projector to serve meetings, conferences and seminars [Exh.7.1.06]. CTU's annual budget is allocated to all units, including BiRDI, for training, academic and administrative activities Table 2.12) [Exh.7.1.07].

Table 2.12. CTU's budget allocated to BiRDI for training and academic activities in the 2018-2022 period

Year	2018	2019	2020	2021	2022
BiRDI's budget (million VND)	1,074.3	1,022.5	1,417.2	7,342.2	7,439.4
CTU's allocation (million VND)	598,688.0	626,235.8	739,074.8	623,681.5	753,569.3

CTU campus includes Learning Resource Center (LRC) and 13 libraries of the subordinate units [Exh.7.1.01]. By 2022, CTU's libraries have 296 computers, 23 high-speed wifi routers, 144,831 books, 3,326 journals, 40,686 electronic documents and 34 e-books. [Exh.7.1.01]. BiRDI's library, which is located in the Research Laboratories Complex (RLC) building, provides a large number of books, articles, journals, theses, dissertations, etc. [Exh.7.1.08]. The Institute also provides students with self-study spaced that are airy, clean and covered with wifi connections [Exh.7.1.09].

Especially, 5,342,696 USD from the ODA Project of the Japanese Government was allocated to BiRDI for equipment procurement. Besides, BiRDI is going to manage a new location with the area of 14,230 m^2 at Section B of the RLC building; the area of laboratories is 5,054 m^2, of which the Stem Cell Laboratory is 285 m2 [Exh.7.1.10].

2.7.2. The laboratories and equipment are shown to be up-to-date, readily available, and effectively deployed.

CTU and BiRDI have all the laboratories and equipment needed to serve teaching and scientific research. In total, CTU has 138 laboratories, computer labs, practice stations, pilot plant, veterinary clinic, 15 interpreter labs and multimedia [Exh.7.2.01], [Exh.7.2.02]. BiRDI has 17 laboratories where the students practice to enhance their skills [Exh.5.1.16]. There laboratories are where the students practice to enhance their skills [Exh.7.2.03]. The ODA Project invested in 16 modern laboratories for BiRDI in the RLC building and 1 laboratory in the Advanced Technology Lab (ATL) building to serve training and research activities.

The laboratories and equipment are jointly managed (Head of Laboratories) in accordance with the regulations of CTU and BiRDI, which plays an important role in the appropriate and efficient use of those facilities [Exh.5.1.16], [Exh.7.2.04], [Exh.7.2.05]. BiRDI has an annual plan for the procurement, renovation, maintenance and repair of facilities and equipment to ensure teaching and scientific research activities [Exh.7.2.06]. presents the budget allocated by CTU for BiRDI's equipment procurement and maintenance in the last 5 years [Exh.7.1.07].

2.7.3. A digital library is shown to be set-up, in keeping with progress in information and communication technology.

Both BiRDI's library and LRC are guaranteed to provide a large amount of information about biotechnology [Exh.7.3.01]. BiRDI's library opens 8 hours per day and 5 days per week [Exh.7.3.02]. LRC was officially put into operation in April 2006. The Centre provides free access to a number of Vietnamese and English manuscripts, rare books, maps, photographs and other important academic materials using an integrated informatics system [Exh.7.3.03]. LRC was sponsored by The Atlantic Philanthropies of the United States. It has 4 with the total area of 7,560 m^2, including 1,000 seats [Exh.7.3.03]. The architectural design and interior set-up of the building are suitable for studying, research, individual and group activities [Exh.7.3.04].

Especially, multi-media conference rooms are also available for thematic reports, seminars and conference [Exh.7.3.04]. As of June 2021, LRC was updated with more than 300,000 reference materials, including textbooks, reference books, etc. New paper materials are updated annually [Exh.7.3.05]. Besides, LRC also provides various types of digital databases [Exh.7.3.06] and open databases [Science Online Vietnam Journal, DSpace @ Cambridge, Elsevier Journal, etc.], domestic and foreign open materials [MIT Opencourseware, Coursera, edX, Udemy and FutureLearn]. Students can get access to these materials by signing in with their private accounts created at the beginning of their training process [Exh.7.3.07]. The materials of LRC are accessible both from inside and outside of CTU's campuses, and are available in all fields for teaching, studying and scientific research. In order to create favourable conditions to efficiently exploit all the resources, LRC usually organise introductory tours to the library as well as training courses, including: An introductory tour to the LRC for first year students and instructions on using the resources [Exh.7.3.08]. Especially, as of September 2020, the number of CTU's digital materials has increased to 40,868 to serve students' on-line learning [Exh.7.3.09]. Students have 24/7 on-line access and can read the full text of the materials from LRC's websites [Exh.7.3.04].

The average number of visitors to LRC (from 2016 to 2021) was 83,329.5 in each year. The number of visitors coming to LRC for self-studying, book loan and access to materials was around 17,153.5 in each year. In order to provide better services, LRC has continuously conducted surveys on

the satisfaction level students with both resources and services. It is shown that students are satisfied with the current facilities and infrastructure (nearly more than to 86%) (Table 2.14).

Table 2.13. Total number of books from 2016 to June 2021

Year	2016	2017	2018	2019	2020	2021
Titles	122,541	127,212	132,047	136,314	143,201	144,520
Volumes	281,199	288,844	295,792	302,620	311,464	313,016

Table 2.14. Students' satisfaction with the quality of services and resources at LRC

Year	2016-2017	2017-2018	2018-2019	2019-2020	2020-2021
Satisfaction rate [%]	100	95.7	95.2	86.7	92.3

2.7.4. The information technology systems are shown to be set up to meet the needs of staff and students.

All dedicated and on-line computer networks are operated and maintained by Information and Network Management Center (INMC) [Exh.7.4.01] to efficiently serve teaching and learning activities with the integrated information system [Exh.3.2.03]. Students use the LMS to establish their study plans, register for courses, view scores and tuition fees, etc. Academic staff and lecturers use the LMS to manage course scores, scientific research activities, workload, personal incomes, etc. Users are also allowed to give feedbacks on the services [Exh.3.2.03]. Since August 2021, CTU has installed the e-office system in order to facilitate internal information exchange and administrative management [Exh.7.4.02]. CTU's on-line learning platform on Moodle can be used to evaluate the effectiveness of the University's remote training programme [Exh.7.4.03]. Especially, during the Covid-19 pandemic, on-line platforms such as E-learning, Zoom, Google Meet and Microsoft Teams are employed for on-line teaching and learning [Exh.7.4.04]. From 2022, CTU has deployed MyCTU software for staffs, the application supports CTU staff to view teaching information, announcements from the school, teaching schedule, input learning results for students, and MyCTUS software for students, the application supports CTU students to view study results, view exam timetables and class schedules, register for courses, and receive notifications from the University [Exh.7.4.05], [Exh.7.4.06].

2.7.5. The university is shown to provide a highly accessible computer and network infrastructure that enables the campus community to fully exploit information technology for teaching, research, service, and administration.

The high-speed wifi network is fully equipped, free and widely covered over the campuses [Exh.7.1.09]. However, the wifi connections at the lecture hall buildings are disruptive sometimes. The infrastructure of CTU and BiRDI is managed by staff from INMC [Exh.7.4.01]. INMC is managing 3 multi-media labs with 97 computers to serve on-line examinations, teaching and learning [Exh.7.5.01]. Staff, lecturers and students are instructed on how to use E-learning, Zoom, Google Meet and Microsoft [Exh.7.5.02]. CTU has also upgraded the multi-media labs with high quality computers, webcams, chalkboards and on-line teaching and learning software to facilitate educational activities [Exh.7.5.03]. The investment in IT equipment at CTU comes from the direct budget of the Government and as well as other projects [Exh.7.5.04].

2.7.6. The environmental, health, and safety standards and access for people with special needs are shown to be defined and implemented

CTU and BiRDI pay special attention to the stipulation of criteria about environmental, health and labour safety for students, staff and lecturers. CTU also signs a contract with cleaning companies to do the cleaning and handling waste treatment system [Exh.7.6.01]. Cleaning activities of the Youth Union contribute to the cleanliness of the campus and classrooms [Exh.6.4.03]. Every year, CTU

organises health checks for first year students as well as all staff, lecturers and public employees [Exh.7.6.02]. CTU Clinic is a health care clinic for students and staff, providing primary health care services, health consultant, first aid and free medicine in accordance with the regulations of the Ministry of Health [Exh.7.6.03]. Students can meet with staff in person on Wednesday afternoons or contact the staff individually with the phone numbers provided upon admission. During the Covid-19 pandemic, CTU promptly issued documents, notices and guidelines on health care and pandemic prevention [Exh.7.6.04]. Students can improve their health by using CTU's facilities such as the gymnasium [60 exercise machines, opening all days in a week] [Exh.7.6.05], football courts, stadium, etc.

To ensure security on campus, CTU has established security as well as fire prevention and fighting teams both at University level and College/School levels [Exh.6.5.11]. Laboratory safety is managed and guided by the laboratory management team who have been trained by the CTU Laboratory Safety Management Task Force [Exh.7.6.06]. To strengthen security, BiRDI campus has been installed with surveillance cameras. Security services are available 24/7 [Exh.7.6.07].

The total area of dormitories in CTU is 73,020.60 m^2 with 1,330 rooms [Exh.7.6.08]. Although some of the old buildings in the campus are not specially designed for students with disabilities, recent construction works of CTU have added separate entrances for the disabled (Administration Building, LRC, ATL, RLC). In addition, special grants such as scholarships, tuition fee waivers, etc. are timely supported for poor students and disabled students [Exh.7.6.09].

2.7.7. The University is shown to provide a physical, social, and psychological environment that is conducive for education, research, and personal well-being

CTU and BiRDI have open spaces with adequate facilities for teaching and research activities. At the same time, the academic staff (item 2.5.1) and support staff (item 2.6.5) have professional qualifications and are always enthusiastic in training students. Students can practice and work in laboratories equipped with modern equipment and tools in all fields of biotechnology [Exh.5.1.16]. All students of BiRDI can carry out graduation theses and choose topics according to their interests. This is an advantage for students of BiRDI and CTU, which encourages students in scientific research activities.

Department of Student Assistance and Center for Student Consultancy, Assistancy and Start-up support students in areas such as policy implementation, scholarships, tuition fees, rewards, counselling and student health care; employment opportunities etc. and are always ready to serve students (on-line) in case of emergency [Exh.6.3.02], [Exh.6.4.21]. In addition to classroom activities, students can experience many socio-political activities designed and managed by the Youth Union of CTU/BiRDI at both College/School level and University level [Exh.6.4.01], [Exh.6.4.02]. Sports, social and cultural activities, as well as meetings, workshops, skills training courses are organised to develop soft skills for students. Therefore, students' academic life is always ensured with a positive mood, a healthy mentality, meanings and vitality. Survey on the satisfaction levels on CTU's consultancy and support activities during the learning process in the 2016-2021 period (Table 2.15).

Table 2.15. Students' satisfaction on CTU's consultancy and support activities during the learning process

Year	2016-2017	2017-2018	2018-2019	2019-2020	2020-2021
Satisfaction rate [%]	94	96	91	96	91

2.7.8. The competences of the support staff rendering services related to facilities are shown to be identified and evaluated to ensure that their skills remain relevant to stakeholder needs.

The support staff are from three main units, including IT system management staff from INMC, laboratory and facility technicians from Department of Facility Management [Exh.7.8.01], and

librarians from LRC. BiRDI's technicians and librarians methodically trained through courses and have received certificates as regulated in their fields of expertise [Exh.7.8.02].

QMC of CTU is in charge of quality assurance and quality assessment at Programme Level and Educational Institution Level; proposing improvements and solutions to enhance the quality of undergraduate training at CTU [Exh.7.8.03]. QMC designs tools and coordinate with other units and relevant staff to conduct surveys with stakeholders, thus ensure the quality of undergraduate training and curriculum development at CTU. In order to strengthen staff and lecturers' soft skills and technical skills, CTU has developed annual plans to evaluate, rank and commend staff with documents issued by the MoET [Exh.7.8.04].

2.7.9. The quality of the facilities (library, laboratory, IT and student services) are shown to be subjected to evaluation and enhancement

The usage, repair, renovation and upgrade of assets is carried out annually in accordance with CTU's regulations [Exh.7.9.01] and planned 1 year in advanced [Exh.7.9.02]. BiRDI also proposes a detailed plan for equipment procurement and repair, cleaning, explosion prevention, etc. with the budget of CTU [Exh.7.2.06]. In addition, laboratory equipment is repaired and purchased with the funding from BiRDI's cooperation projects, especially the ODA Project. All of the new laboratories have been provided with modern equipment recently.

Researchers and lecturers coordinate with technicians from equipment providers to monitor and assess the condition of the facilities. Each laboratory has an equipment usage diary, which records all the activities and users of every individual device [Exh.7.2.05].

Learning materials at LRC and BiRDI's library are updated annually [Exh.7.3.05]. The quality of library services are assessed every year by students [Exh.6.6.01]. The survey findings show that students' satisfaction levels on library services are around 4.06 to 4.28/5. At undergraduate level, more than 85% of the students are satisfied with the library support services [Exh.7.9.03]. In addition, the quality of library support services is also evaluated through statistic reports on the number of entrances and book loans [Exh.7.9.04]. The overall satisfaction level of students on CTU's facilities is above 86.1% [Exh.7.9.05].

2.8. Criterion 8- Output and Outcomes

2.8.1. The pass rate, dropout rate, and average time to graduate are shown to be established, monitored, and benchmarked for improvement

Academic performance, the percentage of students completing the programme, the drop-out rate, and average training duration are important indicators to assess the quality of the training programme. There are guidelines on student academic performance assessment, criteria for graduation consideration as well as conditions for temporary suspension, academic warning and dismissal in Decision No. 1813/QD-DHCT dated June 18th, 2021 regarding CTU's regulations on academic affairs. [Exh.3.4.01]. Academic advisors and the students themselves are always informed through their accounts on the LMS. CTU has an LMS which decentralises a number of functions so that the training management units can monitor and track students' academic performance as well as academic warnings for timely contact with the students. [Exh.3.2.02], [Exh.3.2.03]. BIRDI's academic assistants collect information from the LMS as well as Dispatches and Notices from the units so they can contact relevant academic advisors for prompt solutions [Exh.8.1.01]. According to Table 2.16, the rate of students completing the programme on-schedule is satisfactory. The dropout rate during the training duration is trivial. Cases of dropping out are mostly first year students who had chosen unsuitable training programmes. Cases of dropping out of school due to difficult circumstances account for a very small percentage because BIRDI has a scholarship fund to help those in unexpected situations aside from CTU's support. Management units and academic advisors work together to promptly support those who want to drop out and thus reduce the number of dropouts with financial difficulties. [Exh.8.1.02] [Exh.8.1.03]

Table 2.16. Pass rates and dropout rates of the last 5 cohorts

Academic year (Cohort)	Number of students (*)	Number of dropouts	Pass rate (%)			Dropout rate (%) during (**)			
			Ahead of schedule (< 4.5 years)	On schedule (4.5 years)	Behind schedule (> 4.5 years)	1st year	2nd year	3rd year	4th year & the following years
2013-2014 (C39)	40	2	-	97.37	2.63	2.50	-	5.00	-
2014-2015 (C40)	48	3	-	97.78	2.22	-	6.25	-	-
2015-2016 (C41)	37	-	-	100	-	-	-	-	-
2016-2017 (C42)	49	2	-	93.62	6.38	-	2.04	4.08	-
2017-2018 (C43)	46	2	-	97.73	2.27	-	2.17	4.34	-

*(*) Calculated from the number of newly admitted students*
(**) Compound rate

The average duration for APB students to graduate is 4.5 years (09 semesters). As the first semester of APB is designed to enhance students' English proficiency with intensive English training before starting the block of specialised knowledge, the rate of students graduating ahead of schedule is 0%. In addition, it is written in CTU's Regulations on Academic Affairs students have to complete the programme with 4.5 years and can extend up to 9 years [Exh.3.4.01]. This training duration is suitable, which helps students earn their degrees even when their study is interrupted because of different reasons. The percentage of students graduating behind schedule (according to the table above) is relatively low because APB student are monitored and supported by academic advisors, consultants from BIRDI and student support units during their training process. In cases of interruption because of poor health, personal problems and other reasons include students choose to participate in a short-term courses for an extra semester to expand their knowledge and improve English at foreign universities (student exchange programmes with BIRDI's partners). The "Academic warnings for students with poor academic performance" policy is in place to help students balance and improve the average time to graduation. This helps both the CTU/BIRDI and students to monitor their learning conditions. [Exh.8.1.01]

Table 2.17. Percentage of graduation rankings in the last 5 cohorts

Admission year (Cohort)	Graduation year	Graduated student	Percentage (%) of graduation ranking			
			Excellent (3.60-4.00)	Good (3.20-3.59)	Fair (2.50-3.19)	Average (2.00-2.49)
2013 (Cohort 39)	2018	38	23.68	42.11	34.21	-
2014 (Cohort 40)	2019	45	8.89	55.56	35.56	-
2015 (Cohort 41)	2020	37	16.22	43.24	40.54	-
2016 (Cohort 42)	2021	44	11.36	45.45	43.18	-
2017 (Cohort 43)	2022	43	6.98	46.51	46.51	-

Looking at students' graduation rankings from Cohort 39 to 43, the rates of students ranked Excellent or Very Good are always above 50%; there were no students ranked Average, showing that the training programme ensures the sustainability of T & L quality.

2.8.2. Employability as well as self-employment, entrepreneurship, and advancement to further studies, are shown to be established, monitored, and benchmarked for improvement.

Graduates' employability is an important aspect to determine the quality of a training programme. The MoET and CTU always pay attention to students' employment after graduation. Every year, QMC coordinates with BIRDI to conduct job surveys with graduates to analyse and compile statistics for periodical improvement of the training programmes. [Exh.8.2.01].

Aside from laying the foundation for the improve of the training programmes, those surveys also let the training units access sources of information on the needs of the society, thus better meet the requirements of domestic and foreign job market. In addition, CTU and BIRDI have many activities to help graduates access recruitment announcements through Student Unions, Youth Unions and job fairs. Recruitment announcements are always updated on the websites of BIRDI, CTU, and on the official Facebook fanpages of BIRDI and BIRDI's Youth Union [Exh.8.2.02]. BIRDI maintains contact with companies and enterprises as well as coordinate with those units to organise meetings between employers and students.

Table 2.18. Statistics on APB graduates' employability (in 01 year after graduation) from 2018 to 2021

Graduation cohort	**2018** Cohort 39	**2019** Cohort 40	**2020** Cohort 41	**2021** Cohort 42
Percentage (%) of employed graduates/surveyed graduates	85.71	100	100	100
Percentage (%) of employed graduates/total graduates	85.71	100	92.85	100
Self-employed/ surveyed graduates	-	6.25	2.56	-

*** Note:**

Job survey conduction timeline:

- Job survey in 2019: For 2018 graduation cohort *(Cohort 39)*
- Job survey in 2020: For 2019 graduation cohort *(Cohort 40*)
- Job survey in 2021: For 2020 graduation cohort *(Cohort 41*)
- Job survey in 2022: For 2021 graduation cohort *(Cohort 42*)
- Job survey in 2023: For 2022 graduation cohort *(Cohort 43*, to be conducted at the end of 2023)

According to the job survey outcomes, the employability rates of APB graduates are satisfactory. With a total of 04 graduate cohorts participating in the survey, the number of graduates who are not yet employed is 5.23%. However, most unemployed graduates are those waiting to apply for scholarships abroad.

Table 2.19. Survey on APB graduates' pursuit of further training in the last 5 years

Graduation cohort	Percentage (%) of graduate pursuit further training abroad, according to training level:			Percentage (%) of graduate pursuit further training domestically, according to training level:		
	Master's Degree	Ph.D/Doctor	Other	Master's Degree	Doctoral Degree	Other
Cohort 39	21.05 %	7.89 %	-	-	-	-
Cohort 40	31.11 %	8.88 %	6.66%	2.22 %	2.22%	-
Cohort 41	21.62%	-	2.70 %	5.40 %	-	-
Cohort 42	15.90 %	2.27 %	-	-	-	-
Cohort 43	10.81%	-	-	5.40 %	-	2.70 %
Total	**26.36 %**			**2.47 %**		

The percentage of APB graduates pursuing further training domestically and abroad is 28.83% of the total number of graduates (in the last 5 years as shown in the table above). This rate expresses APB graduates' pursuit of further training as they have many opportunities to study abroad. The annual number of APB students receiving scholarships to upgrade their qualifications domestically and abroad always reaches the highest rate in comparison with graduates of CTU in general due to the advantages of the programme taught in English, and therefore students can pursuit follow post-graduate programmes at different universities around the world. [Exh.8.2.03]. The rate of APB graduates' studying abroad is always higher than that of others in CTU. [Exh.8.2.04]

2.8.3. Research and creative work output and activities carried out by the academic staff and students, are shown to be established, monitored, and benchmarked for improvement

Scientific research is an important output of lecturers. With scientific research and technology transfer being BIRDI's strength, the academic staff pay special attention to scientific research at all levels. Since 2015, BIRDI's staff have been working on scientific research projects (Table 2.20.). APB students have also carried out 47 projects with a total of 135 students participating. (Table 2.22) [Exh.Intro.16].

Table 2.20. Scientific research activities of lecturers and staff

Sources of funding	**Total number of scientific research projects carried out in the 2015-2022 period**								**Total**
	2015	2016	2017	2018	2019	2020	2021	2022	
University Level	5	3	6	2	1	10	2	5	34
City/Provincial Level			2	1		1	1	1	6
Enterprise			1	1	1	1			4
State/Ministry Level				1	1	2			4
International Level	1		2	3					6
Protocol			1						1
Total	**6**	**3**	**12**	**8**	**3**	**14**	**3**	**6**	**54**

Through research projects, the staff have enhanced their own research competences and created conditions for students to participate in research activities, which is an important source of funding. Staff and students have opportunities to collaborate and share their teaching and research experience at national seminars and international seminars held at CTU as well as other university in Vietnam [Exh.3.4.08]. One of the most important channels that records academic staff's scientific research activities are publications of research outcomes national and international journals. Since 2015, 533 articles have been published nationally (national level) and internationally (international level) and on scientific journals of the ISI category. Other published projects of BIRDI include books, textbooks, theses, dissertations, seminars, etc. (Table 2.21)

CTU and BIRDI encourage students to participate in scientific research. Every year, CTU allocates budget for students' scientific research projects and instructs them on the implementation [Exh.8.3.01]. Thanks to the attention from CTU and well as avid support from academic staff, students are confident in registering scientific research topics. In particular, CTU always pays great attention to students' scientific research activities by increasing the annual funding for these activities as well as with the mobilisation and support of mass organisations at grass-roots level and University level. Students in 3rd and 4th years are apprenticed at laboratories and participate in lecturers'

projects. Moreover, students actively register as chairpersons and directly carry out research projects at University level (Table 2.22) [Exh.8.3.01].

Table 2.21. Types and Number of Research Publication

Year	Types of Publication			Total
	National	International	ISI/Scopus*	
2015	16	22	7	38
2016	25	36	6	61
2017	27	22	6	49
2018	40	29	10	69
2019	79	25	13	104
2020	36	28	19	64
2021	59	49	26	108
2022	13	27	25	40
Total	**295**	**238**	**112**	**533**

*Note: *Total is only sum of domestic and international columns*
(ISI/SCOPUS belongs to international publications)

Table 2.22. Number of APB Students participating in scientific research

Year of implementation	2015	2016	2017	2018	2019	2020	2021	2022	**Total**
Number of research topics	4	5	5	2	11	6	8	6	**47**
Number of students	12	16	15	8	31	12	25	16	**135**

Through the training programme and scientific research projects at University level, students' professional competence, individual and group-working skills, and scientific research skills have been strengthened. Students also have opportunities to have their articles published at domestic and foreign scientific seminars [Exh.3.5.05] as well as confidently participate and present at seminars [Exh.3.4.08]. With the guidance of supervisors, students participating in scientific research projects also actively publish research results on domestic and foreign journals. This is a very important premise for students to be able to approach research practice and publish research results under the direct guidance of teaching staff in the program.

With scientific research being the strength, APB students have many advantages and thus, have earned various awards in science competitions such as KOVA Prize, Vietnam Young Science Talent Award, etc. [Exh.8.3.02]. Solving the research problems while conducting graduation theses helps students become more mature and confident after graduation. It also helps them develop a working style that involves organising tasks more scientifically, solving problems quickly, and communicating effectively with others. Scientific research topics and graduation theses with high quality is one of students' advantages when applying for jobs and scholarships to study abroad. [Exh.Intro.16; Exh.3.3.06]. APB students have an advantage over other students in the same field of expertise thanks to their exposure to English during the whole training process. Furthermore, research results from the students' theses can be easily converted into scientific articles for publication in high-quality national and international journals and they can also easily present their research findings at national and international conferences.

2.8.4. Data are provided to show directly the achievement of the programme outcomes. The data are shown to be established and monitored.

The APB was established in the 2006-2007 academic year on the basis of the Biotechnology and Biochemistry Programme of Michigan State University (MSU), the United States, with an aim to training high-quality human resources in biotechnology to meet the needs of society and international integration In order to reach these goals, the PLOs/POs are established, monitored and periodically adjusted to be suitable with the vision of CTU and BIRDI in the new era. According to the survey results with APB graduates in the last 5 cohorts, the level of PLOs achievement after graduation is 5 (achieved above75% of the PLO).

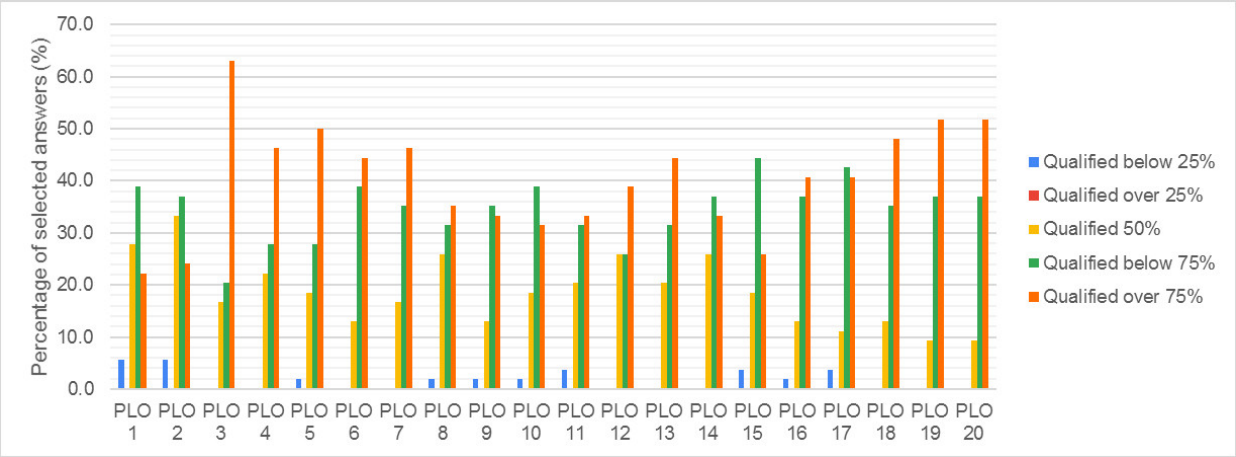

Figure 2.6. Achievement level of the PLOs of APB graduates (in the last 5 cohorts)

The APB is periodically reviewed through seminars and surveys to gather information and opinions from stakeholders about the training programme to formulate the PLOs [Exh.2.3.02],[Exh.8.4.01].

T&L process is continuously improved to meet the needs of the labour market and the PLOs. The teaching methods are learner-centered, helping the students develop their self-study skills and research competences. During the teaching process, the lecturers apply different teaching methods such as assignments, group work, discussions, seminars, lab practices, field practices, research and dissertations [Exh.3.1.06]. These lessons and learning methods help students acquire an abundant knowledge and sharpen their skills. Besides, students' transferable skills such as independent and team-working skills, communication skills and collaboration skills are also strengthened. Such important skills help students easily adapt to the training at higher levels.

Field trips and exchange programmes with other universities in East Asia are also included in the study programme [Exh.8.4.02]. This helps students exchange their knowledge and form their own learning motivations for international integration. CTU also provides students with learning support facilities such as computer labs, free access to the internet, private emails, library services (including the LRC) [Exh.7.1.10], as well as recreational media. These favourable conditions are to motivate and encourage students' self-study skills as well as life-long learning.

2.8.5. Satisfaction level of the various stakeholders are shown to be established, monitored, and benchmarked for improvement

CTU always pays great attention to the feedbacks of stakeholders (students, lecturers, alumni and employers). CTU has promulgated the Decision on Feedback Collection with Stakeholders [Exh.8.5.01] and established a measuring system for satisfaction levels from the survey results [Exh.8.5.02]. QMC coordinated with support staff of the APB to conduct annual surveys to measure the level of stakeholders' satisfaction. BIRDI has established a database to maintain contact with the stakeholders and monitor survey outcomes.

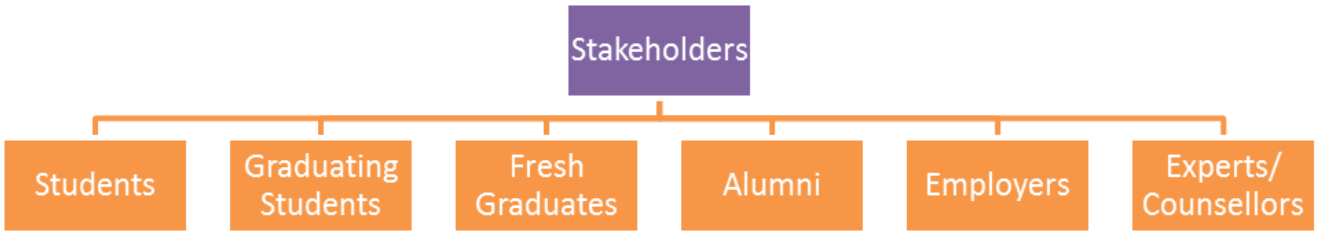

Figure 2.7. Survey System for Stakeholders

Students' feedbacks on lecturers' teaching activities are collected by QMC at the end of each semester and are directly sent to the lecturers in charge of the courses. These feedbacks are the foundation for the lecturers and BIRDI to improve the course quality and training quality [Exh.8.5.03]; [Exh.8.5.04]; [Exh.8.5.05]. The survey outcomes show that most of the students are satisfied with the teaching and learning activities of the courses. [Exh.1.4.03]. At the end of each academic year, BIRDI organises the meeting for students as stipulated in CTU's master plan to acknowledge students' opinions and answer their questions about all aspects in learning, and support services by CTU and BIRDI [Exh.1.1.10]. Students' feedback not only is an important information channel for BIRDI to adjust the programmes and teaching plans, but also directly inform CTU Board of Trustees and supporting units. This task is also carried out through seminars and exchange programmes organised by the BIRDI's and CTU's Youth Unions as well as meetings between CTU Board of Trustees and student delegates. [Exh.8.5.06]. In addition, CTU has implemented a plan to collect students' feedbacks on counselling and support services to improve the quality of T&L. [Exh.8.5.07].

Lecturers also give their feedbacks through various channels. Feedbacks on support services for T&L activities are collected from staff and lecturers during briefings that are held twice a week of the units. [Exh.8.5.08]. CTU also conducts periodical surveys with lecturers and support staff about CTU's working conditions and support services [Exh.8.5.09]. Most lecturers and students are satisfied with teaching and learning support services [Exh.8.5.10].

Contact with alumni has been further established through the contact data that they provide upon graduation, as suggested by the External Assessment Team. [Exh.8.5.11]. Feedback collection formats include on-line surveys, information exchanges through via email, connection on social media (Facebook/ Zalo), telephone, meetings and annual traditional arts performances at BIRDI [Exh.8.5.12], and an Alumni Association was established in November, 2022 [Exh.8.5.13] to maintain the connection with alumni after graduation. Statistics on alumni's satisfaction level shows that most alumni are satisfied with the knowledge that they acquire and are confident enough to participate in the research and production process at agencies and enterprises [Exh.8.5.14].The alumni also have positive comments to add to the training programme, which BIRDI regularly listens to and adjusts the programme appropriately to gradually improve the training programme, creating the best opportunities for students so that they can quickly participate in the practical work of society [Exh.2.3.02]. Feedbacks from alumni are considered for periodical programme improvement, focusing more on job seeking and connection with enterprises to increase students' employability.

CTU also coordinate with training units to conduct surveys with employers on a yearly basis [Exh.8.5.15]. The list of employers is also updated every year [Exh.8.5.16]. Survey results show that graduates of BIRDI have worked in different fields. The satisfaction level of the employers about the quality of graduates working at their agencies/enterprises is quite good (82.3%). Most of the agencies/enterprises are satisfied with the quality of their employees in terms of professional knowledge (70.6%), foreign language proficiency (64.7%), computer skills (52.9%), work autonomy (52.9%), ethical values (70.6%), problem-solving skills (58.8%), sense of discipline and progressive spirit (64.7%). In the upcoming training process, the categories mentioned above should be focused on to improve the training quality. [Exh.8.5.17].

The advantage of the APB is having foreign specialists and visiting lecturers. Annually, CTU allocated funds to the units to plan for inviting specialists and lecturers from foreign universities for

teaching and thematic seminars. [Exh.8.5.18] [Exh.8.5.19] (See appendix 5). Maintaining these sources of invitations as well as collecting additional comments from foreign lecturers are to improve the quality of the invitations, and the quality of the curriculum. [Exh.8.5.20]

PART 3. STRENGTHS AND WEAKNESSES ANALYSIS

3.1. STRENGTHS AND WEAKNESSES ANALYSIS AND IMPROVEMENT PLAN

Strengths	Weakness	Improvement Plan
1. Expected Learning Outcomes		
1. PLOs are built based on the Bloom Taxonomy and are in line with the mission and vision of CTU and IFB and evaluated based on the VQF, the needs/feedback from stakeholders, references from AUN-QA guidelines, and the consensus of the lecturers. 2. PLOs are expressed through the curriculum for graduates with good English language skills and expertise as well as the ability to enhance their qualifications in an international environment and lifelong learning 3. PLOs have received satisfaction from graduates and employers through the integration of stakeholders' contributions into the curriculum.	1. Lack of feedback from employers and related groups more regularly to approach practical needs and the labour market. 2. Some PLOs have not been highly evaluated upon student graduation.	1. Actively contact and gather feedbacks from employers and related groups more regularly to approach practical needs and the labour market. 2. Focus on improving some PLOs that have not been highly evaluated upon student graduation.
2. Program Structure and Content		
1. The study program is annually updated, follows the MOET's regulations, and seeks advice from stakeholders via various channels. 2. The program structure is very systematic and gets positive feedback from students. 3. Students absolutely determine their learning orientation and objectives early. Academic advisors always actively support and orient students depending on their wishes.	1. Due to the dependence on visiting lecturers' expertise, the knowledge sometimes overlaps in some courses. 2. The advanced programme limits the number of students, so some courses cannot be offered due to insufficient students.	1. The content should be assessed in advance before inviting visiting lecturers. 2. Increasing the admission quotas in the following years.
3. Teaching and Learning Approach		
1. The University and Institute formulate an appropriate educational philosophy communicated to stakeholders via websites, during class sessions, and in meetings with academic advisors. 2. Students can share their ideas through class activities and course assessments. 3. Teaching activities develop students' passion for research and curiosity. It is proved by the number of publications and the high rate of students pursuing postgraduate studies. 4. Through learning activities, students actively participate in entrepreneurship competitions with some remarkable achievements	1. Limited online seminars and conferences in biology and biotechnology in Southeast Asia and Asia 2. Not many opportunities for students to acquire practical experiences from companies in biotechnology	1. Encouragement to attend international conferences should be offered. 2. The connection with enterprises should be made to facilitate students to visit and learn from their models.

Strengths	Weakness	Improvement Plan
4. Student Assessment		
1. The assessment criteria are clearly stated in each textbook, introduced and communicated clearly and consistently to students to help them understand the requirements for each course, have appropriate learning methods, contribute to improving the effectiveness of the programme. 2. The assessment forms, methods and contents of learning outcomes are closely followed the course outline details and PLOs, which are widely published; thereby ensuring the value, reliability and fairness of the assessment. 3. A variety of assessment methods of students' learning outcomes are in line with the COs and CLOs; help students know quite accurately their own learning outcomes and adjust their learning methods accordingly; lecturers rely on the assessment results to adjust their teaching methods to improve teaching efficiency.	1. Assessment methods for online teaching are still limited. 2. Some students cannot follow several new assessment methods and do not achieve good results.	1. Organizing more workshops on sharing experiences in online assessment methods will be frequently conducted 2. Recommendations of teaching and learning methods should be made to students who do not have good results.
5. Academic staff		
1. The Institute has planning of long-term and medium-term lecturers, regularly reviewed, updated and supplemented to ensure that the academic staff meet the needs of training, research, and service in both quantity and quality. 2. The academic staff are highly qualified with an increasing number of professors and associate professors. The competence of lecturers is determined, assessed and communicated in the education law and circulars of the MoET and CTU. 3. Standards for recruitment of academic staff including ethics, professional knowledge and skills are clearly stipulated in the Regulation on recruitment of staff of CTU 4. In considering the promotion, the emulation and commendation takes into account the effective management of lecturers' work as well as the assessment of the quality of lecturers' teaching and research.	1. The Institute does not have a clear strategy in the development of lecturers for the APB programme	1. The director board will discuss and establish a clear strategy in the development of lecturers for the APB programme
6. Student Support Services		
1. The annual student admission programme is planned by CTU in terms of admission quotas and criteria. The student intake policy, admission criteria, and admission procedures to the programme are shown to be clearly defined, communicated, published, and up-to-date	1. The number of technicians at the library is still limited.	1. One more technician at the Institute's library will be employed.

Strengths	Weakness	Improvement Plan
2. Support staff's English proficiency and professional competences are upgraded to meet the needs of services. 3. Criteria and methods for support staff recruitment are in accordance with the Government's regulation, and are clearly, objectively, judicially and thoroughly stipulated by CTU. Such information is widely communicated through the units and on CTU's websites.		
7. Facilities and Infrastructure		
1. Laboratories and equipment for teaching, learning and research have been significantly upgraded thanks to the ODA Project funded by the Japanese Government. 2. LRC has a regularly updated learning resource that ensures its useful function of providing information and research news on aquaculture and relevant fields in biotechnology. 3. The environmental, health, and safety standards and access for people with special needs are shown to be defined and implemented. There are DSA and Center for Student Consultancy, Assistancy and Start-up to support students in aspects such as policies, scholarships, tuition fees, rewards, health care and consultation, employment opportunities, etc. 4. CTU has an on-line system to conduct surveys with students and lecturers about the quality of facilities (such as libraries, practice rooms, laboratories, IT and student services) to evaluate and improve the service quality.	1. The Wifi system in the campus does not excellently meet the needs in teaching and learning. 2. The on-line survey system to get feedback from students and lecturers about the facilities needs to be improved.	1. The Wifi system in the campus will be installed more devices 2. Approaches in getting feedback from stakeholders will be more developed.
8. Output and Outcomes		
1. High rates of students graduate on schedule with Excellent and Very Good graduation ranking, which is always above 50%. 2. Various channels have been set up to monitor and report students' employment situation from University level to training unit level. IFB continues to maintain contact with alumni through the establishment of the Alumni Union. 3. The number of APB students participating in scientific research activities, international conferences and seminars is higher than that of students from regular programmes, due to APB's advantage in English proficiency. 4. The programme has established and conducted a survey on the level of POs achievement to continue to improve the training programme.	1. There is no statistics on self-employment and start-up of APB graduates in their field of expertise. 2. Scientific research activities of students by programme have not been codified, monitored and benchmarked to similar programmes.	1. Adding questions in survey forms for collecting self-employment and start-up of APB graduates 2. Scientific research activities of students by programme will be codified, monitored and benchmarked to similar programmes.

3.2. COMPLETED SELF-RATINGS

	Criteria	1	2	3	4	5	6	7
1	**Expected learning outcomes**							
1.1	The programme to show that the expected learning outcomes are appropriately formulated in accordance with an established learning taxonomy, are aligned to the vision and mission of the university, and are known to all stakeholders.					x		
1.2	The programme to show that the expected learning outcomes for all courses are appropriately formulated and are aligned to the expected learning outcomes of the programme.				x			
1.3	The programme to show that the expected learning outcomes consist of both generic outcomes (related to written and oral communication, problem solving, information technology, teambuilding skills, etc) and subject specific outcomes (related to knowledge and skills of the study discipline)						x	
1.4	The programme to show that the requirements of the stakeholders, especially the external stakeholders, are gathered, and that these are reflected in the expected learning				x			
1.5	The programme to show that the expected learning outcomes are achieved by the students by the time they graduate.					x		
	Overall opinion					**x**		
2	**Programme structure and content**							
2.1	The specifications of the programme and all its courses are shown to be comprehensive, up-to-date, and made available and communicated to all stakeholders						x	
2.2	The design of the curriculum is shown to be constructively aligned with achieving the expected learning outcomes					x		
2.3	The design of the curriculum is shown to include feedback from stakeholders, especially external stakeholders						x	
2.4	The contribution made by each course in achieving the expected learning outcomes is shown to be clear					x		
2.5	The curriculum to show that all its courses are logically structured, properly sequenced (progression from basic to intermediate to specialised courses), and are integrated.					x		
2.6	The curriculum to have option(s) for students to pursue major and/or minor specialisations						x	
2.7	The programme to show that its curriculum is reviewed periodically following an established procedure and that it remains up-to-date and relevant to industry						x	
	Overall opinion					**x**		
3	**Teaching and learning approach**							
3.1	The educational philosophy is shown to be articulated and communicated to all stakeholders. It is also shown to be reflected in the teaching and learning activities					x		
3.2	The teaching and learning activities are shown to allow students to participate responsibly in the learning process					x		
3.3	The teaching and learning activities are shown to allow students to participate responsibly in the learning process					x		
	The teaching and learning activities are shown to promote learning,						x	

	Criteria	1	2	3	4	5	6	7
3.4	learning how to learn, and instilling in students a commitment for life-long learning							
3.5	The teaching and learning activities are shown to inculcate in students, new ideas, creative thought, innovation, and an entrepreneurial mindset					x		
3.6	The teaching and learning processes are shown to be continuously improved to ensure their relevance to the needs of industry and are aligned to the expected learning outcomes					x		
	Overall opinion					**x**		
4	**Student assessment**							
4.1	A variety of assessment methods are shown to be used and are shown to be constructively aligned to achieving the expected learning outcomes and teaching and learning objectives.					x		
4.2	The assessment and assessment-appeal policies are shown to be explicit, communicated to students, and applied consistently.					x		
4.3	The assessment standards and procedures for student progression and degree completion, are shown to be explicit, communicated to students, and applied consistently.					x		
4.4	The assessment methods are shown to include rubrics, marking schemes, timelines, and regulations, and these are shown to ensure validity, reliability, and fairness in assessment.					x		
4.5	The assessment methods are shown to measure the achievement of the learning outcomes of the programme and its courses.					x		
4.6	Feedback of student assessment is shown to be provided in a timely manner.					x		
4.7	The student assessment and its processes are shown to be continuously reviewed and improved to ensure their relevance to the needs of labour market and alignment to the expected learning outcomes.				x			
	Overall opinion					**x**		
5	**Academic staff**							
5.1	The programme to show that academic staff planning (including succession, promotion, redeployment, termination, and retirement plans) is carried out to ensure that the quality and quantity of the academic staff fulfill the needs for education, research, and service.						x	
5.2	The programme to show that staff workload is measured and monitored to improve the quality of education, research, and service.						x	
5.3	The programme to show that the competences of the academic staff are determined, evaluated, and communicated.						x	
5.4	The programme to show that the tasks allocated to the academic staff are appropriate to qualifications, experience, and aptitude.					x		
5.5	5.5. The programme to show that promotion of lecturers is based on a merit system which accounts for teaching, research, and service.						x	
5.6	The programme to show that the rights and privileges, benefits, roles and relationships, and accountability of the academic staff, taking into account professional ethics and their academic freedom, are well defined and understood.					x		
5.7	The programme to show that the needs of training and development of lecturers are systematically identified, and that appropriate training and development activities are implemented to fulfil the identified needs.						x	
	The programme to show that the performance management (including						x	

	Criteria	1	2	3	4	5	6	7
5.8	rewards and recognition) is implemented to assess lecturers' teaching and research quality.							
	Overall opinion						**x**	
6	**Student support services**							
6.1	The student intake policy, admission criteria, and admission procedures to the programme are shown to be clearly defined, communicated, published, and up-to-date						x	
6.2	Both short-term and long-term planning of academic and non-academic support services are shown to be carried out to ensure sufficiency and quality of support services for teaching, research, and community service.					x		
6.3	An adequate system is shown to exist for student progress, academic performance, and workload monitoring Student progress, academic performance, and workload are shown to be systematically recorded and monitored. Feedback to students and corrective actions are made where necessary.						x	
6.4	Co-curricular activities, student competition, and other student support services are shown to be available to improve learning experience and employability.						x	
6.5	The competences of the support staff rendering graduate students services are shown to be identified for recruiting and deployment. These competences are shown to be evaluated to ensure their continued relevance to stakeholders needs. Roles and relationships are shown to be well-defined to ensure smooth delivery of the services.					x		
6.6	Student support services are shown to be subjected to evaluation, benchmarking, and enhancement.					x		
	Overall opinion					**x**		
7	**Facilities and infrastructure**							
7.1	The physical resources to deliver the curriculum, including equipment, material, and information technology, are shown to be sufficient.						x	
7.2	The laboratories and equipment are shown to be up-to-date, readily available, and effectively deployed.						x	
7.3	7.3. A digital library is shown to be set-up, in keeping with progress in information and communication technology.						x	
7.4	7The information technology systems are shown to be set up to meet the needs of staff and students.						x	
7.5	The university is shown to provide a highly accessible computer and network infrastructure that enables the campus community to fully exploit information technology for teaching, research, service, and administration.						x	
7.6	The environmental, health, and safety standards and access for people with special needs are shown to be defined and implemented.					x		
7.7	The University is shown to provide a physical, social, and psychological environment that is conducive for education, research, and personal well-being.					x		
7.8	The competences of the support staff rendering services related to facilities are shown to be identified and evaluated to ensure that their skills remain relevant to stakeholder needs.					x		
7.9	The quality of the facilities (library, laboratory, IT and student services)						x	

	Criteria	1	2	3	4	5	6	7
	are shown to be subjected to evaluation and enhancement.							
	Overall opinion						**x**	
8	**Output and outcomes**							
8.1	The pass rate, dropout rate, and average time to graduate are shown to be established, monitored, and benchmarked for improvement.					x		
8.2	Employability as well as self-employment, entrepreneurship, and advancement to further studies, are shown to be established, monitored, and benchmarked for improvement.				x			
8.3	Research and creative work output and activities carried out by the academic staff and students, are shown to be established, monitored, and benchmarked for improvement				x			
8.4	Data are provided to show directly the achievement of the programme outcomes. The data are shown to be established and monitored.					x		
8.5	Satisfaction level of the various stakeholders are shown to be established, monitored, and benchmarked for improvement.					x		
	Overall opinion					**x**		

PART 4. APPENDICES

▶ Appendix 1. List of Evidence

No.	Code	Name of Evidence
Introduction		
1.	Exh.Intro.01	AUN-QA Certificate
2.	Exh.Intro.02	Plan for deployment of quality assessment at programme level under AUN-QA for APB in the period of 2022-2023
3.	Exh.Intro.03	Minutes of meetings in curriculum modification Cohort 40
4.	Exh.Intro.04	Vision and Mission of BiRDI
5.	Exh.Intro.05	CTU mandates and missions
6.	Exh.Intro.06	List of international and national papers
7.	Exh.Intro.07	List of graduated students since 2015
8.	Exh.Intro.08	List of students in exchange program since 2015
9.	Exh.Intro.09	Statistical results and pictures of students employed and studied abroad
10.	Exh.Intro.10	Minutes of meetings in curriculum modification Cohort 45
11.	Exh.Intro.11	List of qualified staff
12.	Exh.Intro.12	List of international seminars and conferences in which teaching staff of BiRDI attended
13.	Exh.Intro.13	List of international experts and organizations participating in APB
14.	Exh.Intro.14	List of laboratories and pictures of building
15.	Exh.Intro.15	Student enrolment plan in 2021
16.	Exh.Intro.16	Student's scientific research project
17.	Exh.Intro.17	Document No 1269/CP-KG dated on September 6th, 2004 regarding the further completion of Vietnamese network of universities and colleges
18.	Exh.Intro.18	CTU's Annual Report in 2020
19.	Exh.Intro.19	Decision on CTU's educational objective
20.	Exh.Intro.20	Decision on establishment of QATC/QMC
21.	Exh.Intro.21	Decision on establishment of QA University Council
22.	Exh.Intro.22	Decision on establishment of QA Units
23.	Exh.Intro.23	MoET Certificate for CTU's institutional accreditation
24.	Exh.Intro.24	Announcement Letter from AUN
25.	Exh.Intro.25	QS Asia University Rankings 2021
26.	Exh.Intro.26	List of BirDI staff member
27.	Exh.Intro.27	Development strategy of BiRDI from 2018-2022 towards 2030
28.	Exh.Intro.28	Documents on advanced program by MOET
29.	Exh.Intro.29	CTU website_Introduction page
30.	Exh.Intro.30	Study programme for Cohort 45
31.	Exh.Intro.31	Proof and List of annual practical trainings of students at the companies
Criteria 1		
32.	Exh.1.1.01	Decision 300/BGD&DT-DH&SDH dated 12/01/2006
33.	Exh.1.1.02	Decision 6666/QD-BGD&DT dated 23/11/2005
34.	Exh.1.1.03	Decision 1982/QĐ-TTg dated 18/10/2016
35.	Exh.1.1.04	Curriculum of Michigan State University; University of Science, Ho Chi Minh City; VNUHCM-University of Science; VNUHCM-International

		University; VNUHanoi-University of Science
36.	Exh.1.1.05	Meeting minutes for consultation with stakeholders 2018
37.	Exh.1.1.06	Meeting minute of the Science and Education Council of the Institute 2018
38.	Exh.1.1.07	Meeting minute of the specialised committee_Food and Biotechnology 2018
39.	Exh.1.1.08	Decision on the issuance of the programme in 2019
40.	Exh.1.1.09	CTU and IFB's websites
41.	Exh.1.1.10	Orientation Programme
42.	Exh.1.1.11	Programme Specifications 2019
43.	Exh.1.1.12	Student's handbook
44.	Exh.1.2.01	Theoretical and practical courses MM433C&MM434C
45.	Exh.1.3.01	Syllabus of general education knowledge course BS110C
46.	Exh.1.3.02	Syllabus of fundamental knowledge course BT202
47.	Exh.1.3.03	Syllabus of specialized knowledge course BT302
48.	Exh.1.4.01	Suggestions for improvement in AUN 2014
49.	Exh.1.4.02	Progress report on the recommendations from the previous aun-qa assessment
50.	Exh.1.4.03	Report on student feedback on teaching activities
51.	Exh.1.4.04	Minutes and documents of meetings to improve teaching activities and quality
52.	Exh.1.5.01	Decision 69/QD-TTg dated 15/01/2019
53.	Exh.1.5.02	Document 2144 /DHCT-QLCL dated 23/9/2019
54.	Exh.1.5.03	Survey results of employers
Criteria 2		
55.	Exh.2.1.01	Programme and curriculum specification templates_2020
56.	Exh.2.1.02	Course outline templates
57.	Exh.2.1.03	Study programme for Cohort 46
58.	Exh.2.1.04	Study programme for Cohort 48
59.	Exh.2.1.05	Course outline of Molecular Biology in 2014
60.	Exh.2.1.06	Course outline of Molecular Biology in 2019
61.	Exh.2.1.07	Admission leaflets
62.	Exh.2.2.01	Courses relationship diagram
63.	Exh.2.3.01	Minutes of meeting for collecting feedback from lecturers 2022
64.	Exh.2.3.02	Minutes of meeting for collecting feedback from employers and alumni 2022
65.	Exh.2.3.03	Study programme for Cohort 44
66.	Exh.2.3.04	Summary of programme revisions
67.	Exh.2.4.01	The matrix between PLOs and courses
68.	Exh.2.6.01	Course outline of Graduation Thesis
69.	Exh. 2.7.01	Plan No. 2222/KH-ĐHCT related to programme update for cohort 45
70.	Exh. 2.7.02	Report of Quality Management Center on stakeholder's feedback
71.	Exh. 2.7.03	Document of FL100H course
Criteria 3		

72.	Exh.3.1.01	Education law -2012
73.	Exh 3.1.02	https://www.ctu.edu.vn/gioithieu.html
74.	Exh 3.1.03	Decision No. 93
75.	Exh 3.1.04	Development strategy of the CTU in 2020-2025 and a vision to 2030
76.	Exh 3.1.05	Decision No. 3627
77.	Exh.3.1.06	Courses outline
78.	Exh.3.2.01	Study plan
79.	Exh.3.2.02	Staff management system
80.	Exh.3.2.03	Student management system
81.	Exh.3.2.04	Meetings with academic advisors
82.	Exh3.2.05	Document for editing study plan
83.	Exh.3.3.01	Lectures in PowerPoint, teaching videos, group exercises
84.	Exh.3.3.02	Photos of field trip
85.	Exh.3.3.03	BT480C course outline
86.	Exh.3.3.04	Students' report in this course and facilities' assessments
87.	Exh.3.3.05	Facilities' assessments
88.	Exh.3.3.06	List of thesis topic
89.	Exh.3.4.01	Regulations on Academic Affairs
90.	Exh.3.4.02	Students' seminars, group exercises, etc
91.	Exh.3.4.03	Course outline BT300C, BT118, BT499
92.	Exh.3.4.04	BT302-Course outline- tests- exercises, etc
93.	Exh.3.4.05	List of students study abroad
94.	Exh.3.4.06	List of postgraduate students
95.	Exh.3.4.07	Photos of community-service activities
96.	Exh.3.4.08	List of conferences and workshops
97.	Exh.3.4.09	List of participants
98.	Exh.3.4.10	List of the international lecturers participating in teaching activities
99.	Exh.3.4.11	List of the international students studying at the Institute
100.	Exh. 3.5.01	Review of the seminar in the module Molecular Biology BT302
101.	Exh.3.5.02	Application for apprenticeship in laboratories
102.	Exh.3.5.03	Course outlines of BT300C, BT117
103.	Exh.3.5.04	Plan for theses, proposals, and assessments
104.	Exh.3.5.05	List of students' articles
105.	Exh.3.5.06	List of units receiving students in BT480C- Practical Training Industry
106.	Exh.3.5.07	Photos of job fairs activity
107.	Exh.3.5.08	Photos of notices, interviews activities
108.	Exh.3.5.09	Students participate in the School Entrepreneurship Competition…
Criteria 4		
109.	Exh.4.1.01	Course outline of Bioinformatics in 2019
110.	Exh.4.1.02	Example of final exam (Essay and Multiple choices)
111.	Exh.4.1.03	Results and grade analysis (BT302) for 2 years
112.	Exh.4.1.04	Plans on graduation consideration, Plans on the implementation of

		graduation thesis
113.	Exh.4.1.05	Powerpoint used for their thesis report
114.	Exh.4.1.06	Dossier of the organization of graduation thesis defense
115.	Exh.4.2.01	Form 1-Evaluation form (member) for bachelor's thesis, Form 2-Summary of Committee Evaluation
116.	Exh.4.2.02	Checking examination papers suggestion form
117.	Exh.4.2.03	Training on assessment methods
118.	Exh.4.3.01	Online system
119.	Exh.4.3.02	(1) Email to send feedback, (2)Announcement on receiving student feedback
120.	Exh.4.3.03	Decision on recognition of graduation for cohorts
121.	Exh.4.3.04	Official dispatch on the submission of exam papers for the storage
122.	Exh.4.4.01	Dossier of evaluation final exam
123.	Exh.4.4.02	Student's feedback on lecturers' teaching activities sheet
124.	Exh.4.6.01	Exercises with teacher comments
125.	Exh.4.6.02	MyCTU application screen
126.	Exh.4.7.01	Dossier related to examination evaluation activities
127.	Exh.4.7.02	PLOs assessment survey upon graduation sheet
128.	Exh.4.7.03	Assessment form and website
129.	Exh.4.7.04	CLO measurement of the selected courses
130.	Exh.4.7.05	Minutes of graduation thesis evaluation
Criteria 5		
131.	Exh.5.1.01	Plan for the development of academic staff in 2008-2015
132.	Exh.5.1.02	Plan for the development of academic staff in 2013-2022
133.	Exh.5.1.03	Development plan for the period 2018-2022, vision to 2030
134.	Exh.5.1-04	Plan on the arrangement for retired employees
135.	Exh.5.1.05	Decision on retirement
136.	Exh.5.1.06	Decision on the extension of working time
137.	Exh.5.1.07	Contract of teaching invitation
138.	Exh.5.1.08	Planning of CTU management staff
139.	Exh.5.1.09	Plan No.690 - Implement the appointment process of heads of units under the University for the term of 2020-2025
140.	Exh.5.1.10	Plan No.728-Plan on the reappointment of deputy heads of units under the University in the term of 2020-2025
141.	Exh.5.1.11	Dispatch No.844-Regulations on appointment, reappointment, extension of time, termination, dismissal of leaders and management staff_2021
142.	Exh.5.1.12	Plan No.985-Implement the appointment process of ...the head of Department and heads of other organizations in the term of 2020-2025
143.	Exh.5.1.13	Regulations on lecturers' professional development process in 2013, 2021
144.	Exh.5.1.14	Recruitment announcement of CTU
145.	Exh.5.1.15	Decision on and official results of recruitment
146.	Exh.5.1.16	Decision on establishing laboratories and the heads of laboratories
147.	Exh.5.2.01	Statistics of the number of APB students of cohorts
148.	Exh.5.2.02	List of lecturers teaching the APB training programme

149.	Exh.5.2.03	Regulations on working regime for lecturers and teachers of CTU in 2021
150.	Exh.5.2.04	The assignment of teaching
151.	Exh.5.3.01	Law amending and supplementing a number of articles of the law on higher education, 2018
152.	Exh.5.3.02	Circular 40-2020- of MOET on standards of professional title and salary ranking for academic staff
153.	Exh.5.3.03	Collecting students' feedback on lecturers' teaching
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157.	Exh.5.4.03	Regulations on recruitment of staff of CTU in 2021
158.	Exh.5.4.04	Proposal to establish a Competence Assessment Committee
159.	Exh.5.4.05	Decision on the establishment of a Competence Assessment Committee
160.	Exh.5.4.06	Approval and announcement of recruitment
161.	Exh.5.5.01	Results of staff assessment
162.	Exh.5.5.02	Decision on recognition of progressive labours
163.	Exh.5.5.03	Decision on recognition of grassroots-level emulation fighters
164.	Exh.5.5.04	Plan of salary increment
165.	Exh.5.5.05	Decision on ahead-of-time salary increment
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167.	Exh.5.6.02	Recruitment announcement of CTU
168.	Exh.5.6.03	Regulation 884 on promulgating the regulations on appointment of CTU in 2021
169.	Exh.5.6.04	Decision on promulgating the Regulations on ethics in scientific and technological activities of CTU in 2020
170.	Exh.5.6.05	Decision No. 70_2014_QD-TTg dated December 10, 2014 on promulgating the University Charter
171.	Exh.5.6.06	Regulations on the organisation and operation of CTU - 2020
172.	Exh.5.7.01	Announcement of planning for training and fostering staff in 2023
173.	Exh.5.7.02	Plan for training and fostering staff in 2023
174.	Exh.5.7.03	Project 911 of the Government
175.	Exh.5.7.04	Project 89 of the Government
176.	Exh.5.7.05	List of BiRDI academic staff with PhD training
177.	Exh.5.7.06	Professional training
178.	Exh.5.7.07	Certificate of writing scientific articles
179.	Exh.5.7.08	Workshop on teaching and other topics
180.	Exh.5.7.09	Certificate of Laboratory Safety Training
181.	Exh.5.8.01	CTU announces the registration of the workload in 2021
182.	Exh.5.8.02	Plan for assessment, classification and emulation and commendation consideration for the academic year 2021-2022
183.	Exh.5.8.03	Staff assessment form
184.	Exh.5.8.04	Assessment results of staff
185.	Exh.5.8.05	CTU's Decision on Internal Expenditure Regulations
186.	Exh.5.8.06	Emulation and commendation of staff

187.	Exh.5.8.07	Decision on emulation and commendation of CTU 2020-2021
188.	Exh.5.8.08	Decision on recognition of the title of grassroots-level emulation fighter in 2021-2022
189.	Exh.6.1.01	Circular No. 09/2020/TT-BGDĐT (Hanoi, May 7th, 2020) by the MOET regarding the promulgation of Regulations on Student Admission
190.	Exh.6.1.02	Annual Student Admission Scheme - Can Tho University - Regular Training Mode
191.	Exh.6.1.03	Student Admission Website of CTU
192.	Exh.6.1.04	Plan Student Admission Consulting
193.	Exh.6.1.05	Facebook Stream – Student admission consulting], flyers
194.	Exh.6.1.06	Introduction flyer about student admission
195.	Exh.6.1.07	Student Admission Website
196.	Exh.6.1.08	Information on Student Admission of the Advanced Program of Biotechnology
197.	Exh.6.1.09	Confirming and Submitting Matriculation Documents
198.	Exh.6.2.01	Regulation on the Functions and Duties of each School/College and Unit
199.	Exh.6.2.02	Master Plan of CTU to 2022
200.	Exh.6.2.03	Development Plan of BIRDI for the 2012-2017 period and orientations to 2020
201.	Exh.6.2.04	Annual Report on Teaching Activities of CTU in the 2020-2021 academic year
202.	Exh.6.2.05	Annual Report of BIRDI in the 2017-2022 academic year
203.	Exh.6.2.06	Report on Performance of Tasks in 2017 to 2022 by CTU
204.	Exh.6.2.07	The ODA Project (website)
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206.	Exh.6.3.02	Department of Student Assistance (Functions and Duties)
207.	Exh.6.3.03	Department of Academic Affairs (Functions and Duties)
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211.	Exh.6.3.07	Expected list of students rewarded with encouragement scholarship in the 2020-2021 academic year
212.	Exh.6.4.01	Ho Chi Minh Communist Youth Union – BIRDI
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215.	Exh.6.4.04	Environmental Competition
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218.	Exh.6.4.07	Olympic Game about Political Theory and Ho Chi Minh Thoughts among CTU students in 2022
219.	Exh.6.4.08	Launching the National Innovation Start-up Day 2022
220.	Exh.6.4.09	Images of thematic reports and academic clubs
221.	Exh.6.4.10	Arts and cultural performance
222.	Exh.6.4.11	Sports activities
223.	Exh.6.4.12	Exchange activities of BIRDI students

224.	Exh.6.4.13	Rewarding students' academic achievements and contributions to the community
225.	Exh.6.4.14	Funding of CTU for student exchange activities
226.	Exh.6.4.15	List of exchanged students in the 2016-2022 period
227.	Exh.6.4.16	Document on Field Trip
228.	Exh.6.4.17	Young Scientists Conference
229.	Exh.6.4.18	CTU Job Fair in 2020, 2022
230.	Exh.6.4.19	Recruitment Announcement
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232.	Exh.6.4.21	Center for Student Consultancy, Assistancy and Start-up
233.	Exh.6.4.22	Student Fair - SCovid support
234.	Exh.6.5.01	Decree on assessment and classification of public employees
235.	Exh.6.5.02	CTU's Regulations on public employee recruitment in 2021
236.	Exh.6.5.03	Website_ Recruitment Announcement
237.	Exh.6.5.04	Recruitment announcements of the years 2019, 2020, 2021, 2022
238.	Exh.6.5.05	Decision on functions, duties and organisation of CTU's subordinate units
239.	Exh.6.5.06	Functions of BIRDI's subordinate units
240.	Exh.6.5.07	Announcement on training courses and promotion for support and academic staff in 2022
241.	Exh.6.5.08	Decision on assessment of tasks and rewards for CTU staff in the 2021-2022 period
242.	Exh.6.5.09	Decision on internal expenditure of CTU - edited in 2022
243.	Exh.6.5.10	Annual health examinations in 2020
244.	Exh.6.5.11	Establishment of the Fire Prevention and Fighting Team and the Security Team of CTU
245.	Exh.6.5.12	Certificate of equipment usage and laboratory safety
246.	Exh.6.5.13	Personal professional work plans and emulation titles
247.	Exh.6.5.14	Staff appraisal form
248.	Exh.6.5.15	Decision on task completion and rewards for staff of CTU in the 2021-2022 period
249.	Exh.6.6.01	Feedbacks from students on support services
250.	Exh.6.6.02	Feedbacks from academic staff on support services
251.	Exh.6.6.03	Statistics – Feedbacks from academic staff on support services
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253.	Exh.6.6.05	CTU's Facebook fanpage
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256.	Exh 7.1.02	Information on the total area of BIRDI
257.	Exh 7.1.03	Report on the management and use of equipment, laboratories, practice rooms, labour safety, and fire prevention; classroom statistics
258.	Exh 7.1.04	Statistics on the value of fixed assets and facilities of CTU
259.	Exh 7.1.05	Images of classrooms for the APB

260.	Exh 7.1.06	Images of the RLC hall 4.08
261.	Exh 7.1.07	CTU's expenditure in the 2018-2022 period
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264.	Exh 7.1.10	The new buildings of the ODA Project
265.	Exh 7.2.01	Statistics on the number of laboratories
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270.	Exh 7.2.06	Plan to purchase, renovate, maintain and repair facilities and equipment 2022
271.	Exh 7.1.07	CTU's expenditure in the 2018 - 2022 period
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291.	Exh 7.6.01	Cleaning contract 2016 - 2021
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298.	Exh 7.6.08	Statistics on CTU's infrastructure in 2021
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308.	Exh.7.9.05	Feedbacks on the level of satisfaction on educational services
Criteria 8		
309.	Exh.8.1.01	DSA_Dispatch No.99_Suspended overdue students BIRDI_Dispatch No. 45_Response on suspended overdue students
310.	Exh.8.1.02	Encouragement scholarships of BIRDI in the 2017-2022 period
311.	Exh.8.1.03	Subsidies for unexpected adversities in 2022
312.	Exh.8.2.01	Report on students' employability in 1 year after graduation
313.	Exh.8.2.02	Recruitment announcements
314.	Exh.8.2.03	BIRDI's website_ Information on students studying abroad
315.	Exh.8.2.04	Benchmarking statistics with other programmes and CTU
316.	Exh.8.3.01	Official dispatch on scientific research
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318.	Exh.8.4.01	Minutes of Meeting/Feedback Collection with Employers/Alumni on the PLOs
319.	Exh.8.4.02	Dispatches and lists of short-term exchange tours
320.	Exh.8.5.01	Decision No. 4784/QD-DHCT dated November 18th, 2021
321.	Exh.8.5.02	CTU's survey website (QMC); Survey questionnaires
322.	Exh.8.5.03	Plan on implementing online feedback collection from students about the teaching activities of each lecturer in the semester
323.	Exh.8.5.04	Questionnaire for feedbacks from students on the teaching performance by academic staff.
324.	Exh.8.5.05	Assessment report of BiRDI
325.	Exh.8.5.06	Plan to organise student consultation and meeting between CTU Board of Trustees and student delegates in the 2022-2023 academic year - Dispatch No. 3907/KH-DHCT dated December 9th 2022
326.	Exh.8.5.07	Dispatch on Implementing feedback collection with students on Counselling and Support Service (Dispatch No. 25/QLCL of the academic year 2021-2022 and survey results.
327.	Exh.8.5.08	Minutes of briefing/on-line meeting
328.	Exh.8.5.09	Dispatch No. 2807/DHCT-QLCL dated September 22nd, 2022 regarding feedback collection with lecturers and support staff about the working conditions and support services in 2022.
329.	Exh.8.5.10	Statistical reports of QMC
330.	Exh.8.5.11	List of graduates' contact information
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▶Appendix 2. Tables and Figures

Figure 1.1. Approach to SAR Development of the APB

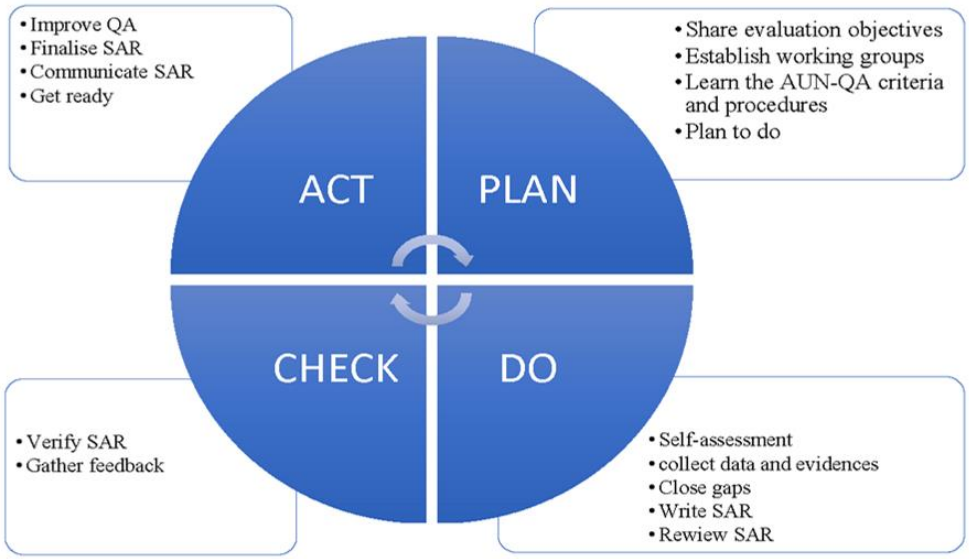


Figure 1.2. The organizational structure of SAR Team in the self-assessment implementation of Advanced Programme in Biotechnology

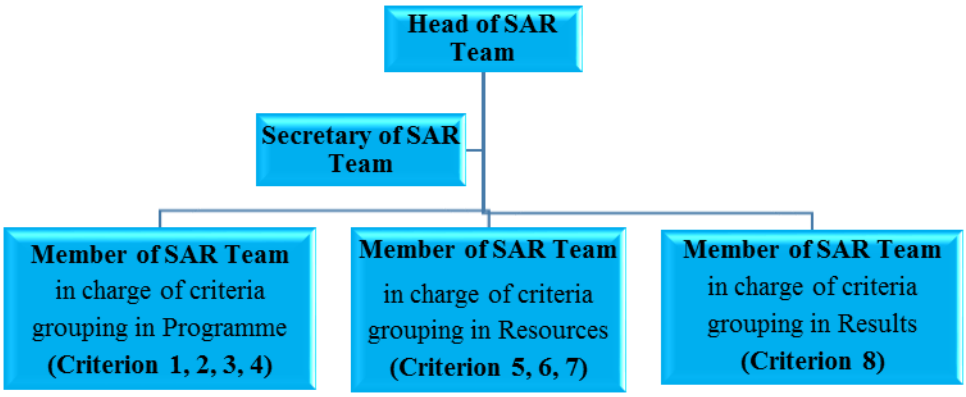


Figure 1.3. Organizational structure of CTU

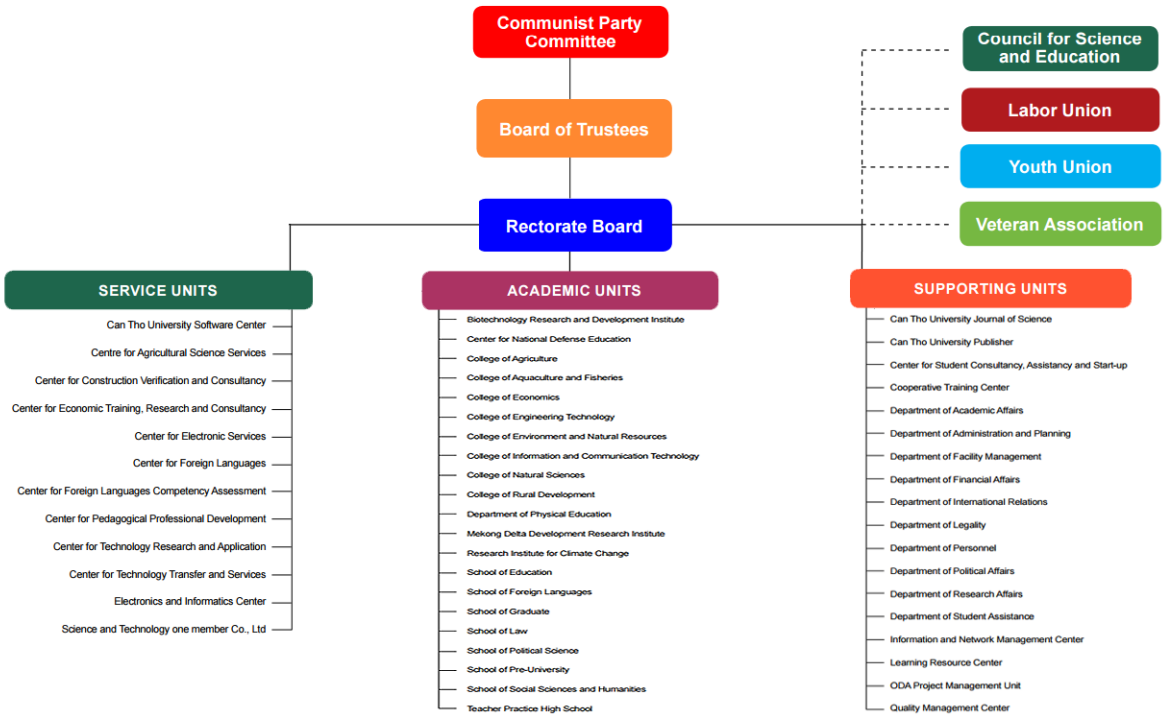


Figure 1.4. The organizational structure of QA system of Can Tho University

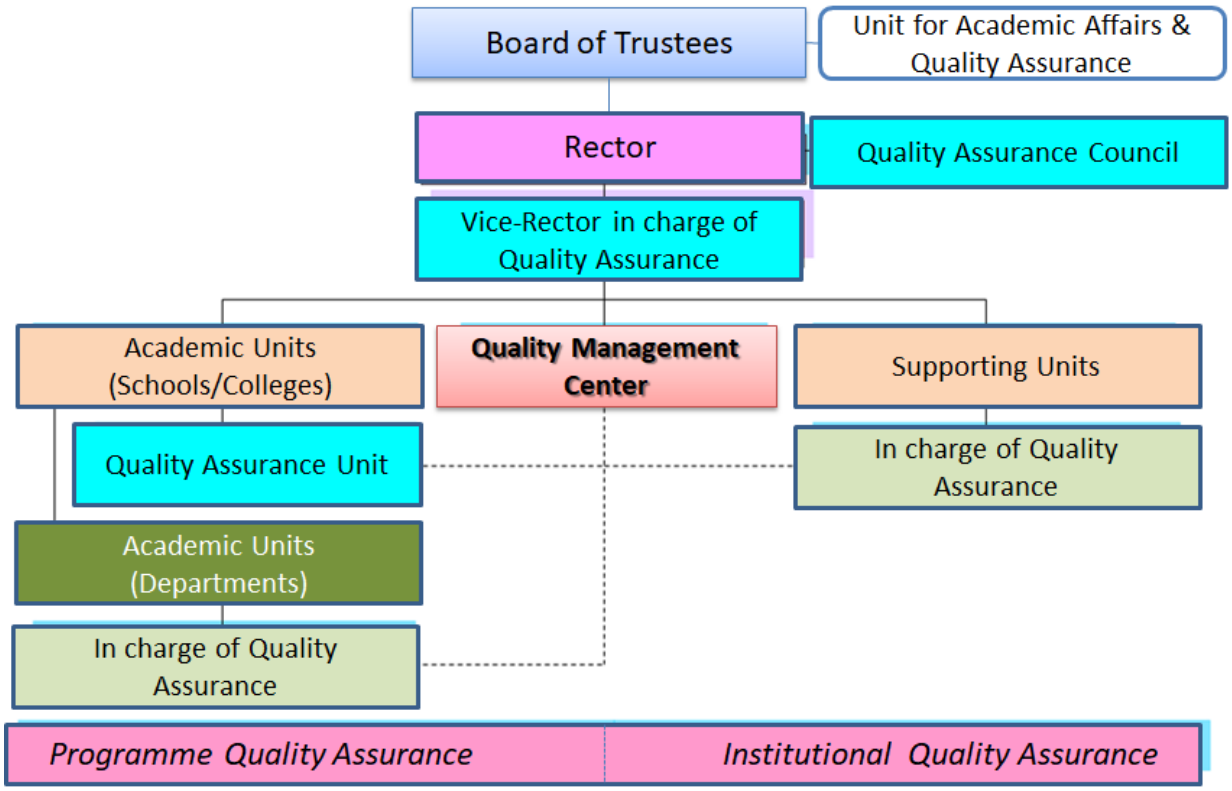
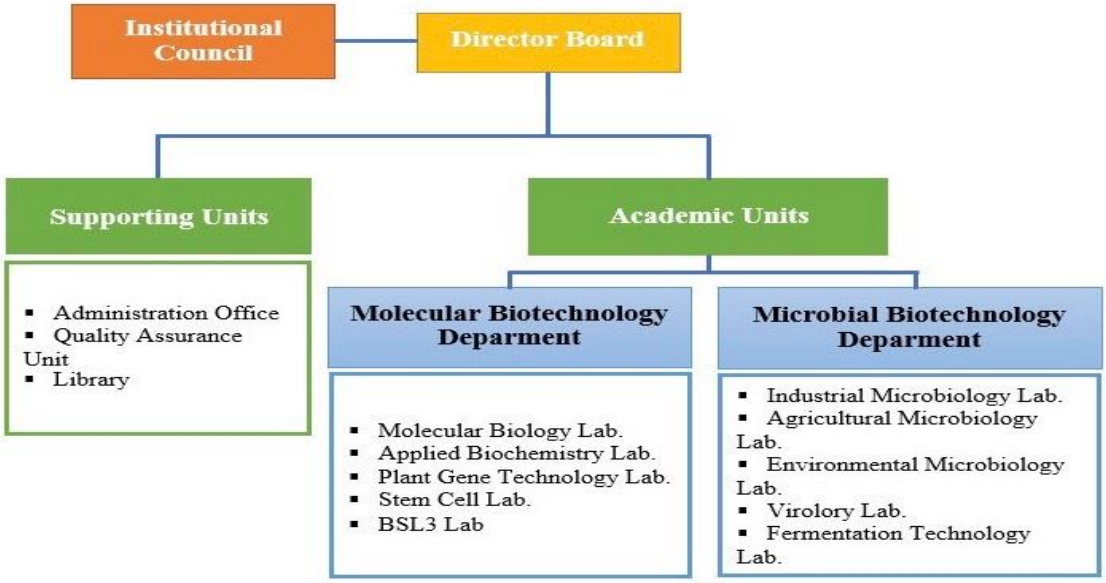


Figure 1.5. The organizational structure of BiRDI



▶ Appendix 3. Study Programme

BACHELOR IN BIOTECHNOLOGY (ADVANCED PROGRAM)

Programme name	Bachelor in Biotechnology (Advanced Program)
Administration unit	Institute of Food and Biotechnology (IFB)
University name	Can Tho University (CTU)
Award	Bachelor of Sciences
Training time	4.5 years (maximum 9 years)
Training language	English

1. Program Objective

1.1 General objective

The program aims to cultivate highly skilled human resources and fulfill the growing demand for biotechnology professionals in the Mekong Delta region and the entire country with knowledge and skills in biotechnology for solving problems in the field, using information technology for adapting to current trend in research, applying scientific research for country requirement and development, following higher education and working on biotechnology in Vietnam and in other countries.

1.2 Detail objectives

The programme has 5 POs as follows:

PO1. Equip students with basic and specialised knowledge in the field of biotechnology to meet the National Qualifications Framework of Vietnam;

PO2. Equip students with proficient practical skills; solve problems in biotechnology and related fields;

PO3. Equip students with theoretical knowledge of politics, national defence - security, basic information technology skills according to current regulations and foreign language proficiency to meet international integration (equivalent to level B2 of the Vietnamese Framework of Foreign Language Proficiency);

PO4. Train students with independent and professional working style, communication skills, lifelong learning skills, good ethics, civic consciousness, health, professional responsibility, and social responsibility.

PO5. To train students capable for positions as lecturers, researchers, experts, technicians, managers, and consultants in biotechnology-related enterprises both at home and abroad.

2. Program Learning Outcomes

2.1 Knowledge

2.1.1 General knowledge

PLO1. Demonstrate basic understanding of Marxist-Leninist Physical Education guidelines and policies of the Communist Party of Vietnam; Ho Chi Minh's ideology, physical education and knowledge of national defence education to meet the requirements of national construction and

PLO2. Demonstrate basic knowledge of general law, social sciences and humanities, and natural sciences to meet the requirements of acquiring professional knowledge;

PLO3. Master the fundamental knowledge of English/French equivalent to the Vietnamese Framework of Foreign Language Proficiency.

PLO4. Master the fundamental knowledge in relation to information technology (computers, office software and other basic software…) in line with current regulations.

2.1.2 Fundamental knowledge

PLO5. Master the fundamental knowledge of the biotechnology industry such as molecular biology, biochemistry, microbiology, virology, mycology, genetics, and biostatistics...

PLO6. Master the fundamental knowledge of conducting scientific research and the basic knowledge of specialised practical skills.

PLO7. Master the knowledge of foreign languages for specific purposes

2.1.3 Specialised knowledge

PLO8. Master in-depth knowledge of the specialized fields of Biotechnology, such as Genetic Engineering, Genomics and Applications, Protein and Enzyme Science, Cell and Animal Tissue Culture Technology, Immunology, Genomic Technology, etc

PLO9. Master in-depth knowledge of the applications of Biotechnology in various fields, such as Biomedical Biotechnology, Agricultural Biotechnology, Environmental Biotechnology, and Food Biotechnology

2.2 Skills

2.2.1 Professional Skills

PLO10. Apply knowledge and specialised skills related to biotechnology to work effectively at production facilities, research institutions, training institutions, and state management agencies.

PLO11. Apply specialised knowledge to provide technical advice and design laboratory facilities for biotechnology.

PLO12. Present, explain, and critically analyse issues related to biotechnology in some areas trained in both Vietnamese and English languages.

PLO13. Use skills in information technology and foreign languages to serve job requirements at the workplace

PLO14. Develop scientific research capabilities and solve theoretical and practical problems in the field of biotechnology and related fields at institutes, universities, agencies, companies, and enterprises.

2.2.2 Soft Skills

PLO15. Apply the ability to build, implement, and manage short-term, medium-term, and long-term plans for individuals and groups.

PLO16. Have skills to work independently and in group Be proactive and confident in professional research, activities, and management

PLO17. Develop fundamental communication skills

2.3 Autonomy/Responsibilities

PLO18. Form disciplinary awareness and industrial style, improve political quality, ethics, civic duty; respect and comply with the assignment and deployment of work of the manager

PLO19. Comply with professional ethics of their pursued profession, demonstrate confidence, enthusiasm, passion, adaptability to change, have a progressive attitude and overcome difficulties

PLO20. Develop the qualities of sociability, patience, dynamism and creativity, and know how to overcome difficulties to fulfill tasks

3. Job Opportunities

- Universities, research institutes with the mandate in modern Biotechnology research
- Government agencies for industrial biotechnology and intellectual property management
- Graduate education overseas
- Organizations, agencies for food services, food quality and safety management, environmental and public health
- International and domestic companies involved in Biotechnological production and trading

4. Curriculum

No.	Code	Courses	Credits	Require credits	Elective credits	Prerequisite Course
1	FL001H	Listening & Speaking 1	3	3		
2	FL002H	Listening & Speaking 2	2	2		
3	FL003H	Reading 1	2	2		
4	FL004H	Reading 2	2	2		
5	FL005H	Writing 1	2	2		
6	FL006H	Writing 2	2	2		
7	FL007H	Pronunciation in practice	2	2		
8	FL008H	Grammar in use	3	3		
9	FL009H	Presentation Skills	2	2		
I. General Knowledge			**51**	**46**	**5**	
10	QP006	National Defense Education 1 *(*)*	2	2		
11	QP007	National Defense Education 2 *(*)*	2	2		
12	QP008	National Defense Education 3 *(*)*	3	3		
13	QP009	National Defense Education 4 *(*)*	1	1		
14	TC100	Physical Education 1+2+3 (*)	3		3	
15	TN033	Basic Informatics (*)	1	1		
16	TN034	Basic Informatics in Labs (*)	2	2		TN033
17	ML014	Marxist- Leninist Philosophy	3	3		
18	ML016	Marxist- Leninist Political Economy	2	2		ML014
19	ML018	Science Socialism	2	2		ML016
20	ML019	History of The Communist Party of Viet Nam	2	2		ML018
21	ML021	Ho Chi Minh's Ideology	2	2		ML019
22	KL001	General Law	2	2		
23	ML007	General Logic	2			
24	XH011	Basic Vietnamese culture	2			
25	XH012	Vietnamese in use	2			
26	XH014	General management documents and archives	2		2	
27	XH028	Overview of Sociology	2			
28	KN001	Transferable Skills	2			
29	KN022	Entrepreneurship and Innovation	2			
30	BS110C	General Biology 1	3	3		
31	BS210C	Practical general Biology 1	1	1		
32	BS111C	General Biology 2	3	3		BS110C
33	BS211C	Practical general Biology 2	1	1		BS210C
34	BT227	General Chemistry I	3	3		
35	BT224	Fundamental Chemistry Laboratory	1	1		
36	BT228	Organic Chemistry	3	3		
37	BT229	Experiments of Organic Chemistry	1	1		
38	BT220	Advanced Mathematics	3	3		
39	BT214	Physics	3	3		
40	BT215	Physics Lab	1	1		
II. Fundamental Knowledge			**35**	**35**	**0**	
41	MI301C	Introductory Microbiology	3	3		BS111C
42	MI302C	Introductory Microbiology Lab	1	1		BS211C
43	BC461C	Biochemistry I	3	3		BT288
44	BT230	Biochemistry Laboratory I	1	1		BT289
45	BC462C	Biochemistry II	3	3		BC461C
46	BT231	Biochemistry Laboratory II	1	1		BT230

No.	Code	Courses	Credits	Require credits	Elective credits	Prerequisite Course
47	EN103C	Writing in Science and Technology	3	3		
48	BT202	Fundamental Genetics	3	3		BS111C
49	BT203	Fundamental Genetics Lab	1	1		
50	BT225	Biotechnology Seminar I	2	2		
51	BT226	Biotechnology Seminar II	2	2		BT225
52	BT300C	Scientific Research Methods	2	2		
53	CS464C	Biological Statistics	3	3		
54	BT303C	Bio-Informatics	3	3		BT302
55	BT200C	Field trip	1	1		
56	BT216	Basic Biotechnology	3	3		
57	BT480C	Practical Training Industry	3	3		
III. Professional Knowledge			**55**	**24**	**21**	
58	BT480C	Practical Training Industry	3	3		
59	BT302	Molecular Biology	3	3		BC462C
60	BT303	Molecular Biology Lab.	1	1		
61	HR486C	Biotechnology in Agriculture: Applications and Ethical issues	3	3		
62	MM413C	General Virology	2	2		MI301C
63	MM414C	General Virology Lab.	1	1		MI302C
64	BT223	Genetic Engineering	2	2		
65	BT217	Genomics and Its Application Lab	1	1		
66	BT218	Biotechnology in medical and pharmaceutical science	2	2		
67	BT219	Environmental biotechnology	2	2		
68	BT220	Food Biotechnology	2	2		
69	BT221	Microbial biotechnology	2	2		
70	MM433C	Microbial Genomics	2			BT302
71	MM434C	Microbial Genomics lab	1			BT302
72	BT306C	Proteomics	3			BC462C
73	BT406C	Proteomics Lab.	1			
74	BT304C	Food Fermentation	2			MI301C
75	BT404C	Food Fermentation Lab.	1			MI302C
76	CS344C	Food Biochemistry	2			BC462C
77	CS345C	Food Biochemistry Lab.	1			BC472C
78	FS440C	Food Microbiology	2			MI301C
79	FS441C	Food Microbiology Lab.	1			MI302C
80	AN407C	Food and Animal Toxicology	3			MI301C
81	BT307C	Social and Economical Aspects of Biotechnology	2			
82	CS072C	Animal Physiology	2			BS111C
83	CS073C	Animal Physiology Lab.	1			
84	CS443C	Aquaculture Biotechnology	2			BT302
85	CS444C	Aquaculture Biotechnology Lab	1		21	
86	BT313	Biodiversity	2			BS111C
87	BT305C	Plant Tissue Culture	2			
88	BT405C	Plant Tissue Culture Lab.	1			
89	CS441C	Plant Breeding and Biotechnology	2			BT302
90	CS442C	Plant Breeding and Biotechnology Lab.	1			
91	CS465C	Plant Physiology	2			BS111C
92	CS466C	Plant Physiology Lab.	1			

No.	Code	Courses	Credits	Require credits	Elective credits	Prerequisite Course
93	BT441	Plant Molecular Biology	2			BT302
94	BT412	Plant Molecular Biology Lab	1			BT302
IV. Thesis			**10**	**10**	**0**	
95	BT499C	Graduate Thesis	10	10	0	
Total: 141 credits (Required credits: 115; Elective credits: 26) and 20 Intensive English credits						

5. Typical Study Plan

INTENSIVE ENGLISH PROGRAM: 20 credits					
1st YEAR: 33 credits					
Semester 1			***Semester 2***		
Code	**Courses**	**Credit**	**Code**	**Courses**	**Credit**
FL001H	Listening & Speaking 1	3	BS110C	General Biology 1	3
FL003H	Reading 1	2	BS210C	Practical general Biology 1	1
FL005H	Writing 1	2	FL004H	Reading 2	2
FL008H	Pronunciation in practice	2	FL006H	Writing 2	2
FL007H	Grammar in use	3	BT227	General Chemistry I	3
FL009H	Presentation Skills	2	BT224	Fundamental Chemistry Laboratory	1
			BT200	Advanced Mathematics	3
			FL002H	Listening & Speaking 2	2
Total credits		**20**	*Total credits*		**20**
Summer semester					
QP006	National Defense Education 1	2			
QP007	National Defense Education 2	2			
QP008	National Defense Education 3	3			
QP009	National Defense Education 4	1			
2nd YEAR: 34 credits					
Semester 1			***Semester 2***		
Code	**Courses**	**Credit**	**Code**	**Courses**	**Credit**
BS111C	General Biology 2	3	ML016	Marxist- Leninist Political Economy	2
BS211C	Practical general Biology 2	1	MI301C	Introductory Microbiology	3
BT228	Organic Chemistry	3	MI302C	Introductory Microbiology Lab	1
BT229	Experiments of Organic Chemistry	1	BT202	Fundamental Genetics	3
BT214	Physics	3	BT203	Fundamental Genetics Lab	1
BT215	Physics Lab	1	BT300C	Scientific Research Methods	2
TN033	Basic Informatics (*)	1	BC461C	Biochemistry I	3
TN034	Basic Informatics in Labs (*)	2	BT230	Biochemistry Laboratory I	1
ML014	Marxist- Leninist Philosophy	3			
Elective Course: 1 credit					
TC100	Physical Education 1	1			
Total credits		**18**	*Total credits*		**16**
Summer semester					
TC100	Physical Education 2	1			
Elective Courses : 2 credits					
ML007	General Logic	2	KN001	Transferable Skills	2
XH011	Basic Vietnamese culture	2	KN022	Entrepreneurship and Innovation	2
XH012	Vietnamese in use	2	XH028	Overview of Sociology	2
XH014	General management documents and archives	2			
3rd YEAR: 35 credits					
Semester 1			***Semester 2***		
Code	**Courses**	**Credit**	**Code**	**Courses**	**Credit**
ML018	Science Socialism	2	ML019	History of The Communist	2

				Party of Viet Nam	
BC462C	Biochemistry II	3	BT302	Molecular Biology	3
BT231	Biochemistry Laboratory II	1	BT303	Molecular Biology Lab.	1
MM413C	General Virology	2	BT218	Biotechnology in medical and pharmaceutical science	2
MM414C	General Virology Lab.	1	BT219	Environmental biotechnology	2
CS464C	Biological Statistics	3	BT220	Food Biotechnology	2
BT221	Microbial biotechnology	2	EN103C	Writing in Science and Technology	3
TC100	Physical Education 3	1			
			Elective Courses: 2 credits		
			BT313	Biodiversity	2
			BT304C	Food Fermentation	2
			BT404C	Food Fermentation Lab.	1
Total credits		**18**	*Total credits*		**17**
4th YEAR: 34 credits					
Semester 1			***Semester 2***		
ode	**Courses**	**Credit**	**Code**	**Courses**	**Credit**
ML021	Ho Chi Minh's Ideology	2	BT305C	Plant Tissue Culture	2
BT303C	Bio-Informatics	3	BT405C	Plant Tissue Culture Lab.	1
BT480C	Practical Training Industry	3	CS441C	Plant Breeding and Biotechnology	2
BT223	Genetic Engineering	2	CS442C	Plant Breeding and Biotechnology Lab.	1
BT217	Genomics and Its Application Lab	1	BT441	Plant Molecular Biology	2
BT225	Biotechnology Seminar I	2	BT412	Plant Molecular Biology Lab	1
HR486C	Biotechnology in Agriculture: Applications and Ethical issues	3	CS344C	Food Biochemistry	2
Elective Courses : 3 credits			CS345C	Food Biochemistry Lab.	1
MM433C	Microbial Genomics	2	FS440C	Food Microbiology	2
MM434C	Microbial Genomics lab	1	FS441C	Food Microbiology Lab.	1
CS465C	Plant Physiology	2	AN407C	Food and Animal Toxicology	3
CS466C	Plant Physiology Lab.	1	BT307C	Social and Economical Aspects of Biotechnology	2
			CS072C	Animal Physiology	2
			CS073C	Animal Physiology Lab.	1
			CS443C	Aquaculture Biotechnology	2
			CS444C	Aquaculture Biotechnology Lab	1
Total credits	**18**		*Total credits*	**16**	
FINAL YEAR: 13 credits					
BT499C	Graduate Thesis	10			
BT480C	Practical Training Industry	3			
TOTAL: 141 credits					

▶ Appendix 4. List of scientific projects conducted by students

No.	Project code	Project title
1.	TSV2015-68	Isolation and use of lactic acid bacteria in the fermentation process of papaya juice
2.	TSV2015-70	Isolation and selection of cyanobacteria capable of nitrogen fixation on rice soil in Chau Thanh district, Dong Thap province
3.	TSV2015-71	Investigate the antioxidative and anti-Candida activity from extracts of mangosteen (Garcinia mangostana Linn.)
4.	TSV2015-73	Study on production of Gray Abalone Mushroom (Pleurotus sajor-caju) on corn cob
5.	TSV2015-74	Using acetic acid bacteria in vinegar fermentation from acerola juice
6.	TSV2016-77	Investigation and selection of optimal nutritional conditions for lutein synthesis in microalgae Scenedesmus
7.	TSV2016-78	Developing a process for extracting flavonoids from Melaleuca mushroom (Tylopilus felleus) and investigating α-glucosidase enzyme inhibitory activity and antibacterial and antifungal activity of Melaleuca extract.
8.	TSV2016-82	Isolation of the antagonistic bacteria Neoscytalidium dimidiatum (Penz.) causing white spot disease on dragon fruit from the soil in the root zone of dragon fruit.
9.	TSV2016-85	Using lactic acid bacteria capable of producing bacteriocin to replace antibiotics in industrial chicken production
10.	TSV2016-86	Cultivation of black fungus (Auricularia auricula) on rubber sawdust and corn cob substrates
11.	TSV2017-103	Application of protease and lysozyme to create oligosaccharide-rich preparations from the shells of white leg shrimp (Litopenaeus vannamei)
12.	TSV2017-104	Prevention of green wilt disease on chili plants caused by Ralstonia solanacearum by bacteriophage (Bacteriophage) isolated from soil growing ginger, turmeric
13.	TSV2017-105	Evaluating and selection of suitable carrier for Bacillius subtilis strain for application in prevention of brown spot disease on dragon fruit
14.	TSV2017-107	Identification of fungal pathogens on cocoa and isolation of microbial strains capable of antagonizing fungal pathogens
15.	TSV2017-109	Effect of monochromatic light from LED light on growth and accumulation of astaxanthin in microalgae Haematococcus pluvialis
16.	TSV2018-109	Testing the application of heat-resistant yeast in the wine fermentation process from peach guava
17.	TSV2018-111	Application of PCR technique to create a standard 100 bp DNA ladder from the 16S rRNA gene region of Bacillus subtilis
18.	TSV2019-124	Isolation, Evaluating and selection of endogenous bacteria with antibacterial properties from Lemon basil (Plectranthus amboinicus (Lour.) Spreng) in Ninh Kieu District, Can Tho City
19.	TSV2019-125	Isolation of bacteriophages from the soil of the root zone of Squid (Eclipta alba Hassk.) and Phyllanthus urinaria (Phyllanthus urinaria) have the ability to inhibit Vibrio spp.

No.	Project code	Project title
20.	TSV2019-128	Investigation of antioxidant activity and hepatocarcinogenic cytotoxicity of high alkaloids from plants
21.	TSV2019-130	Study on methods of treating organic household waste by household scale worms
22.	TSV2019-131	Investigation of the inhibition of alpha amylase and alpha glucosidase enzymes of Mai Duong fruit extract (Mimosa pigra L.)
23.	TSV2019-132	Testing the application of heat-resistant yeast after storage time in papaya wine fermentation
24.	TSV2019-134	Isolation, selection and biomass culture of Bacillus subtilis strains from sour water tofu
25.	TSV2019-137	Isolation and selection of endogenous bacteria in the leaves of betel nut (Piper betle L.) grown in An Giang, Hau Giang, Soc Trang and Can Tho cities have the ability to fight Aeromonas hydrophila causing disease on freshwater fish.
26.	TSV2019-138	Developing a process for freezing pig semen by vitrification method
27.	TSV2019-140	Effect of pH, reaction time, and substrate concentration on fibrinolytic activity of pineapple bromelain (Ananas comosus (L.) Merr.)
28.	TSV2019-141	Purification of lysozyme from egg whites of quail (Coturnix sp.) and activity against Cutibacterium acnes and Staphylococcus sp. by lysozyme
29.	TSV2020-154	Investigate the effects of bagasse biochar on biological and chemical properties of acid sulfate soil and yield of some leafy vegetables
30.	TSV2020-156	Investigation of the ability of bacteriophages to inhibit Vibrio parahaemolyticus of Phyllanthus amarus Schum.et Thonn - Comparative antagonism of bacteria against bacteriophages, bacteriophages and extracts and antibiotics
31.	TSV2020-163	Investigating the activity of tamanu oil in anti-fungal disease on mango trees
32.	TSV2020-169	Study on creating antibacterial gel Staphylococcus sp. from quail egg white lysozyme (Coturnix sp.)
33.	TSV2020-171	Isolation and selection of yeast from sap of nipa palm
34.	TSV2021-143	Isolation and selection of filamentous fungi capable of synthesizing lovastatin from Acanthus ilicifolius L. in U Minh Ha mangrove forest
35.	TSV2021-146	Selection of strains of Bacillus spp. capable of producing the enzyme beta-galactosidase
36.	TSV2021-147	Study on production of organic zinc and selenium-rich Saccharomyces cerevisiae yeast powder
37.	TSV2021-149	Investigate the influence of Auxin, 2-Aminopurrine, Ethyl methane sulphonate on mutagenicity on orchids (Hoya kerrii)
38.	TSV2021-150	Developing a process to recognize DNA breaks in human sperm cells
39.	TSV2021-151	Investigation of the antifungal ability of Neoscytalidium sp. causing white spot disease on dragon fruit with nanoparticles and essential oils
40.	TSV2021-154	Application of lactic acid bacteria strain with antibacterial ability and GABA synthesis in fermented pork roll
41.	TSV2021-156	Application of bacteriophage (Bacteriophage) to treat toxic gas-producing bacteria to reduce oxygen in shrimp ponds
42.	TSV2022-150	Evaluating on method of extracting pectin from ginseng dew leaves (Tiliacora triandra) to evaluate heavy metal absorption capacity

No.	Project code	Project title
43.	TSV2022-153	Study on fermentation process of yogurt with purple corn added and using lactic acid bacteria capable of producing gamma-aminobutyric acid (GABA)
44.	TSV2022-154	Investigation of tyrosinase enzyme inhibitory activities and carcinoma cells of trilobite (Wedelia trilobata (L.) Hitch.)
45.	TSV2022-156	Evaluation of the antibacterial activity of Listeria monocytogenes and Escherichia coli of Tea Tree (Melaleuca alternifolia) essential oil applied in disinfection
46.	TSV2022-161	Study on genetic diversity in the matK gene region of longan varieties in the Mekong Delta
47.	TSV2022-163	Study on the production of cider from crock pot (Citrus nobilis L. Osbeck)

► Appendix 5. List of visiting lecturers (from 2015 to 2023)

No.	Names	Course instructing	University	Country
1.	Prof. Terence Marsh	Molecular Biology	Department of Microbiology and Molecular Genetics Michigan State University (MSU)	The United States of America
2.	Dr. Kathleen M. Foley	Biochemistry 2 Proteomics	Department of Molecular Biology and Biochemistry Michigan State University (MSU)	The United States of America
3.	Dr. Scott Mulrooney	Introductory Microbiology	Dept. of Microbiology and Molecular Genetics Michigan State University (MSU) *Director of Undergraduate Studies and Assoc. Chair for Undergraduate Education*	The United States of America
4.	Adjunct Professor Nhuan (John) P. Nghiem	Biochemistry 2	Dept. of Agriculture and Biological Engineering Clemson University, South Carolina	The United States of America
5.	Barry Clough	Scientific Research Methods	Sydney University	Australia
6.	Tom Ross	Food Microbiology	University of Tasmania,	Australia
7.	Prof. Sonia Beeckmans	Biochemistry I	Laboratory of Protein Chemistry, Institute for Molecular Biology and Biotechnology	Belgium
8.	Prof. Eddy Van Driessche	Biochemistry I	Laboratory of Protein Chemistry, Institute for Molecular Biology and Biotechnology	Belgium
9.	Prof. Wolfgang Schumann	Fundamental Genetics Genomics and its application	Institute of Genetics University of Bayreuth	Germany
10.	Dr. Rob Nout	Food Fermentation	Wageningen University	The Netherlands
11.	Prof. Nobumistu Sasaki	Molecular Biology	Faculty of Agriculture Tokyo University of Agriculture and Technology	Japan
12.	Prof. Yutaka Kuroda	Biochemistry 1	Department of Biotechnology and Life Science, Faculty of Technology, TUAT	Japan
13.	Prof. Jaehong Han	Biochemistry 2	Development of Integrative Plant Science.	Korea

No.	Names	Course instructing	University	Country
			Chung-Ang University	
14.	Dr. Patrick Chain	Microbial Genomics	Los Alamos National Laboratories	New Mexico
15.	Dr. C.M. Lengoc	Biochemistry 2	Life Technologies Company	New Zealand
16.	Asst.Prof. Preekamol Klanrit	- Microbial Genomics - Biotechnology in medical and pharmaceutical science - Plant Tissue Culture	Department of Biotechnology Faculty of Technology Khon Kaen University (KKU)	Thailand
17.	Assoc. Prof. Dr. Pornthap Thanonkeo	- Food Fermentation - Microbial Biotechnology - Plant Tissue Culture	Faculty of Technology Khon Kaen University (KKU)	Thailand
18.	Assoc. Prof. Dr. Mallika Kongkeitkajorn	Basic Biotechnology	Department of Biotechnology Faculty of Technology Khon Kaen University (KKU)	Thailand
19.	Asst. Prof. Dr. Pensri Plangklang	Basic Biotechnology	Department of Biotechnology Faculty of Technology Khon Kaen University (KKU)	Thailand
20.	Dr. Jindarat Ekprasert	Introductory Microbiology	Department of Microbiology Faculty of Science, Khon Kaen University (KKU)	Thailand
21.	Assoc. Prof. Saowanit Tongpin	Introductory Microbiology	Department of Microbiology Faculty of Science, Khon Kaen University (KKU)	Thailand
22.	Assoc. Prof. Sophon Boonlue	Introductory Microbiology	Department of Microbiology Faculty of Science, Khon Kaen University (KKU)	Thailand
23.	Assist. Prof. Dr. Atcha Oraintara	Introductory Microbiology	Department of Microbiology Faculty of Science, Khon Kaen University (KKU)	Thailand
24.	Assoc. Prof. Dr. Paweena Pongdontri	Biochemistry I	Department of Biotechnology Faculty of Technology Khon Kaen University (KKU)	Thailand
25.	Assoc. Prof. Dr. Rina Patramanon	Biochemistry I	Department of Biotechnology Faculty of Technology Khon Kaen University (KKU)	Thailand
26.	Asst. Prof. Dr. Pensri Plangklang	Basic Biotechnology	Department of Biotechnology Faculty of Technology Khon Kaen University (KKU)	Thailand
27.	Professor Alissara Reungsang,	Seminar on Biotechnology 1	Department of Biotechnology Faculty of Technology Khon Kaen University (KKU)	Thailand

No.	Names	Course instructing	University	Country
28.	Assoc. Prof. Dr. Wilailak Siripornadulsil	Microbial Biotechnology	Faculty of Science Khon Kaen University (KKU)	Thailand
29.	Assoc. Prof. Dr. Saowanit Tongpim	Microbial Biotechnology	Faculty of Science Khon Kaen University (KKU)	Thailand
30.	Asst. Prof. Dr. Wiyada Mongkolthanaruk	Microbial Biotechnology	Faculty of Science Khon Kaen University (KKU)	Thailand
31.	Asst.Prof. Dr. Nuntavun Riddech	Microbial Biotechnology	Faculty of Science Khon Kaen University (KKU)	Thailand
32.	Asst. Prof. Dr. Jindarat Ekprasert	Introductory Microbiology	Faculty of Science Khon Kaen University (KKU)	Thailand
33.	Asst. Prof. Dr. Wiyada Mongkolthanaruk	Introductory Microbiology	Faculty of Science Khon Kaen University (KKU)	Thailand
34.	Assoc. Prof. Dr. Chewapat Saejung	Introductory Microbiology	Faculty of Science Khon Kaen University (KKU)	Thailand
35.	Assoc. Prof. Dr. Atcha Oraintra	Introductory Microbiology	Faculty of Science Khon Kaen University (KKU)	Thailand
36.	Assoc. Prof. Dr. Sophon Boonlue	Introductory Microbiology	Faculty of Science Khon Kaen University (KKU)	Thailand
37.	Asst.Prof. Dr. Nuntavun Riddech	Introductory Microbiology	Faculty of Science Khon Kaen University (KKU)	Thailand
38.	Assoc. Prof. Dr. Wilailak Siripornadulsil	Introductory Microbiology	Faculty of Science Khon Kaen University (KKU)	Thailand

AUN-QA PROGRAM ASSESSMENT (ONSITE)

LINKS FOR APPENDIX AND ONLINE EXHIBITS

BACHELOR IN BIOTECHNOLOGY
(ADVANCED PROGRAMME)

1. Key evidences (Appendix a-m)
https://drive.google.com/drive/folders/1VawmqrJSK_7GlAMZz1ReEn9LlEC3Ph0C?usp=share_link

2. Common Exhibits/Evidences
https://drive.google.com/drive/folders/1sZG6-YIXKJ0DlkfRA-eoUZuEW9u8gCZx?usp=share_link