



# **ASIIN Seal & Eurobachelor®**

## **Accreditation Report**

**Bachelor's Degree Programme**  
***Biochemistry***

Provided by  
**International University – Viet Nam National University Ho Chi Minh City**

Version: 22 March 2024

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## A About the Accreditation Process

Name of the degree programme (in original language)	(Official) English translation of the name	Labels applied for <sup>1</sup>	Previous accreditation (issuing agency, validity)	Involved Technical Committees (TC) <sup>2</sup>
Cử nhân hóa sinh	Bachelor of Biochemistry	ASIIN, Euro-bachelor®	-	09, 10
<b>Date of the contract:</b> 19.06.2023 <b>Submission of the final version of the self-assessment report:</b> 17.10.2023 <b>Date of the audit (online):</b> 09.02. – 11.02.2024				
<b>Expert panel:</b> Prof. Dr. Veronika Hellwig, Technische Hochschule Lübeck PD Dr. Alois Palmetshofer, University Wuerzburg Dr. Ngo Vy Thao, Nong Lam University – Ho Chi Minh City Tien Manh Nguyen, Ho Chi Minh City University of Technology				
<b>Representative of the ASIIN headquarter:</b> Rainer Arnold				
<b>Responsible decision-making committee:</b> Accreditation Commission				
<b>Criteria used:</b> European Standards and Guidelines as of 15.05.2015 ASIIN General Criteria as of 23.03.2023				

<sup>1</sup> ASIIN Seal for degree programmes;

<sup>2</sup> TC: Technical Committee for the following subject areas: TC 09 – Chemistry, Pharmacy, TC 10 – Life Sciences

**A About the Accreditation Process**

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Subject-Specific Criteria of Technical Committee 09 – Chemistry, Pharmacy as of 29.03.2019	
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## B Characteristics of the Degree Programme

a) Name	Final degree (original)	b) Areas of Specialization	c) Corresponding level of the EQF <sup>3</sup>	d) Mode of Study	e) Double/Joint Degree	f) Duration	g) Credit points/unit	h) Intake rhythm & First time of offer
Bachelor Biochemistry	Cử nhân Khoa học Hóa học / Bachelor of Science in Chemistry	-	6	Full time	no	8 Semester	138 Credit Hours (239.97 ECTS)	2014, Once a year (August)

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<sup>3</sup> EQF = The European Qualifications Framework for lifelong learning

For the Bachelor's degree programme Biochemistry, International University – Viet Nam National University Ho Chi Minh City (HCMIU) has presented the following profile on its homepage:

“The Department of Applied Chemistry was founded in 2010 with the mission of becoming one of the leading research centers in traditional medicine as well as other applications in Physical Chemistry and Biochemistry, both regionally and nationally. The main duty of the Department is covering all Chemistry related courses in IU and producing high quality research projects. The Department’s vision and mission are taken from the School of Biotechnology and are consistent with those of International University and Viet Nam National University – HCMC. Members of the Department of Applied Chemistry are active in research. Major areas include optimization of extraction methods from traditional plants, bioinformatics, computational simulation, chemical synthesis, genetic extraction and modification, and bioactivity testing.”

**Vision**

Achieving leadership in education, research, and social responsibility at the national and international levels and becoming the research and world-class School/Department.

**Mission**

Innovation and excellence in education and scientific research in biochemistry, Knowledge creation and human talent cultivation, the graduation of students highly skilled scientifically and technically, and the contribution to the service and development of the community.”

## C Expert Report for the ASIIN Seal

### 1. The Degree Programme: Concept, content & implementation

<b>Criterion 1.1 Objectives and learning outcomes of a degree programme (intended qualifications profile)</b>
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**Evidence:**

- Self-Assessment Report
- Study plan
- Module descriptions
- Webpage HCMIU: <https://hcmiu.edu.vn/>
- Webpage School of Biotechnology: <http://bt.hcmiu.edu.vn/?page-name=home-applied-chemistry&menu-id=17>
- Webpage Department of Applied Chemistry: <https://bt.hcmiu.edu.vn/en/about-us/depts/biochem-2/>
- Discussions during the audit

**Preliminary assessment and analysis of the experts:**

The experts base their assessment of the learning outcomes as provided on the websites and in the Self-Assessment Report of the Bachelor's degree programme Biochemistry.

The experts refer to the Subject-Specific Criteria (SSC) of the Technical Committee Chemistry, Pharmacy as a basis for judging whether the intended learning outcomes of the Bachelor's degree programme Biochemistry as defined by HCMIU correspond to the competences as outlined by the SSC. They come to the following conclusions:

HCMIU has defined Programme Objectives (POs) as well as Intended Learning Outcomes (ILOs) to describe the profile and the goals of the Biochemistry programme. While the POs describe the general goals, the ILOs are worded more specifically and describe in detail, what competencies the students should acquire during their studies. The PO were generated based on the analysis of the vision and mission of the University and the demand from industry. They were discussed and determined by the School's Scientific Committee, which

includes the members of Management Board, representatives of stakeholders and lecturers. Therefore, the POs reflect the requirements of the University and the needs of regional and nationwide companies in the area of biotechnology. The POs are documented both on the programme's webpage and in the Student Handbook.

While the POs define the overall goals, the ILOs interpret the POs in more detail with respect to the students' abilities upon graduation. In order to assure the globally competitive quality of the students as stated in the vision and mission of HCMIU, the School of Biotechnology has aligned the ILOs with international standards e.g. the criteria from the Asian University Network.

The Bachelor's degree programme Biochemistry is designed to provide students with a sound foundation in natural sciences, mathematics and especially in applied biochemistry. Additionally, the programme focuses on scientific research, practical skills, and a multidisciplinary approach. Specifically, graduates should gain methodological competences and a solid understanding of subject-specific problems and be able to carry out practical work in laboratories. Additionally, graduates should obtain relevant knowledge of safety, environmental, and ethical issues as well as the associated legal regulations. With respect to practical competences, graduates should be able to participate in research projects and apply modern techniques in the development of biochemical products.

During their studies, students should also acquire communicative skills, learn to work in a team, and have developed a strategy for life-long learning. With respect to social competences, the students are trained in conceptual, analytical and logical thinking for a professional career. In addition to the subject-related qualification objectives, graduates of the Biochemistry programme should be capable of working autonomously as well as in a team-oriented manner, and be able to conduct research activities. Furthermore, they should be able to solve subject-relevant problems, can present their results, have trained their analytical and logical abilities, and have an awareness of possible social and ethical effects of their actions.

The programme is designed to meet the needs and demands of the pharmaceutical, cosmetics, and nutrition industries in Vietnam. To this end, the programme "strives to expand the frontiers of scientific knowledge to improve the production and quality of drugs, cosmetics, and food products, and to contribute to the economic growth of the country and the global advancement of pharmacy, cosmetics, and nutritional sciences, safety, and sustainability."

For the award of the subject-specific ASIIN label, Bachelor's programmes must achieve learning outcomes that are divided into the categories "subject-specific competences" and



"generic competences". The Subject-Specific Criteria (SSC) of ASIIN are the result of a regular assessment by the ASIIN Technical Committees, which summarise what is understood as good practice in higher education or demanded as future-oriented training quality in the labour market supported equally by academia and professional practice.

Based on the Self-Assessment Report and the discussions during the online audit, the experts see that the graduates of the Biochemistry programme acquire the subject-specific competences defined in the SSC of the Technical Committee 09 – Chemistry, Pharmacy. The programme teaches basic mathematical and scientific knowledge relevant to chemistry as well as in-depth knowledge of the core chemical subjects of inorganic, organic and physical chemistry and analytical chemistry. Finally, students are given the opportunity to carry out practical chemical work and learn how to work independently and safely with chemicals in laboratory classes. The Bachelor's degree programme Biochemistry thus fulfils the requirements for the award of the European chemistry label (Eurobachelor®), which has also been applied for. The experts are convinced that the intended qualification profile allow the graduates to take up an occupation, which corresponds to their qualification. The objectives and intended learning outcomes of the Biochemistry programme are reasonable and well founded.

The experts conclude that the objectives and intended learning outcomes of the Biochemistry programme adequately reflects the intended level of academic qualification and correspond sufficiently with the ASIIN Subject-Specific-Criteria (SSC) of the Technical Committee 09 – Chemistry, Pharmacy.

<b>Criterion 1.2 Name of the degree programme</b>
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**Evidence:**

- Self-Assessment Report

**Preliminary assessment and analysis of the experts:**

The experts confirm that the English translation and the original Vietnamese name of the Biochemistry programme corresponds with the intended aims and learning outcomes.

As described in the Self-Assessment Report, graduates of the Biochemistry programme will be awarded a Bachelor of Science in Chemistry. According to the regulation of the Vietnamese Ministry of Education and Training (MOET) on issuing diplomas, all undergraduate training programmes with a Chemistry major will be awarded with a Chemistry degree only, not allowing to mention the specialization. The information regarding the specialisation on Biochemistry is detailed in the individual transcripts of the students.

The experts understand the current situation but support the plans of the Department of Applied Chemistry to apply to MOET of introducing a new major in Biochemistry so that the programme can be renamed. As it is clearly a Biochemistry programme the name of the degree should reflect this specialisation and it would be more transparent to employers what the degree is about and what qualifications the graduates acquire.

### Criterion 1.3 Curriculum

#### Evidence:

- Self-Assessment Report
- Study plan
- Module descriptions
- Webpage HCMIU: <https://hcmiu.edu.vn/>
- Webpage School of Biotechnology: <http://bt.hcmiu.edu.vn/?page-name=home-applied-chemistry&menu-id=17>
- Webpage Department of Applied Chemistry: <https://bt.hcmiu.edu.vn/en/about-us/depts/biochem-2/>
- Discussions during the audit

#### Preliminary assessment and analysis of the experts:

The Biochemistry programme is offered by the School of Biotechnology (SBT) and the Department of Applied Chemistry (DAC). It is designed for four years, and at least 138 credit hours (this is equivalent to approximately 239.97 ECTS points) need to be achieved by the students. The Department of Applied Chemistry is one of five departments of the School of Biotechnology.

There is an Academic and Scientific Committee (ASC) and a Quality Assurance Team (QAT) at the School of Biotechnology, which are responsible for designing the curriculum and monitoring all teaching and learning processes. The ASC reviews and revises the suggestions made by QAT and submits the final suggestions to the Dean for approval. After that, the Head of the Department will present the results to the Academic and Scientific Committee of HCMIU (ASCIU). The final decision of ASCIU needs to be approved by the President of HCMIU.

An academic year at HCMIU consists of two semesters and a short summer term. Some additional courses are offered in the summer term, which lasts for ten weeks. A regular semester consists of 15 weeks for learning and teaching, one week for mid-term tests, and two weeks for final exams. The mid-term tests are normally given at the 7<sup>th</sup> or the 8<sup>th</sup> week of a semester.

Two main semesters are offered a year. The odd semester starts in August and ends January of the following year, while the even semester lasts from February to July. The short summer semester, which starts in June, is optional for students who want to complete their studies earlier or to re-take courses they did not pass. The academic calendar is published and announced annually to the students via HCMIU's webpage. The majority of students can complete the study programme within four years. The rest can extend their study time if needed and the maximum length of time allowed for students to finish the programme is six years.

The curriculum of the Bachelor's degree programme Biochemistry is structured into general courses, core courses, specialised courses, internship, and thesis.

General basic courses include courses in natural sciences, mathematics, social sciences, humanities, English language, economics, and computer science. These courses are mainly offered in the first two semesters of the Biochemistry programme and cover 66 credits (104.86 ECTS points).

Core courses (43 credits, 69.9 ECTS points) in biochemistry, mathematics, and in the different areas of chemistry, are offered in the second year of the programme as a foundation for the more specialised courses in the third and fourth year of studies. They are also called "Foundation Major" courses.

Specialised courses (15 credits, 24.48 ECTS points) are offered in the third and fourth year of the Biochemistry programme, including both professional electives (12 credits) and free electives (3 credits). Elective courses can be chosen by the students in accordance with their areas of interest and after consultation with their academic advisor. The specialised courses are designed to impart the necessary competences in specific fields of biochemistry and include areas such as nutritional biochemistry, nutrition therapy, clinical nutrition, drug development, and cosmetic.

As the experts learn during the audit, the share of practical work in the Biochemistry programme is between 30 % and 40 % depending on the method of calculation. If the base are the awarded credits then the share is 30 %, but if the hours students actually spend in the laboratories are calculated, the share is 40 %. The experts consider this to be sufficient.

All Biochemistry students must spend at least eight weeks to study and work in companies, factories, institutes, etc. during their internship (160 hours, 2 credits, 5.82 ECTS points). The internship is usually done in the summer after the third year. In the final year, students have to complete their Bachelor's thesis (12 credits, 34.91 ECTS points). While the internship requires students to spend two months working in a professional environment, the thesis involves the long term investigation on a designed topic for normally four months. The modules "Internship", and "Bachelor's thesis" are intended to provide students with

opportunities to apply their theoretical knowledge in a professional way, to learn about the requirements of the job market, and to show their proficiency with scientific work. For both internship and thesis, students have to submit their reports, present and defend it in front of a panel. In addition, HCMIU annually organises a job fair for students from all majors.

Students have a flexible time window to complete the whole curriculum. They can take a maximum of 24 credits and a minimum 14 credits per semester. As a result, the shortest time for graduation is three and a half years and the longest allowable is seven years. It is observed that after spending one to two semesters taking intensive English courses, the IE1 or IE2 students were also able to complete the Biochemistry programme in four years.

Common reasons for students taking longer than four years are their starting English level, which may require them to spend the first year on Intensive English courses. Additionally, the required English level of graduation also causes students to apply for their graduation later than expected. Notably, the percentage of batches 2016, 2017 and 2018 students who graduated in four years was lower than those of batches 2014 and 2015. This is due to the Covid-19 pandemic, which has caused students to postpone or cancel their thesis projects.

For graduation, students are required to complete 138 credits and to obtain TOEFL scores of 550 or equivalent. In addition, students are required to complete the military training course, physical training course and citizen activities according to the regulations of HCMIU. The scores of these courses are not included in the student's cumulative GPA, students will receive certificates of recognition for their accomplishment of these courses.

The dropout rates are recorded and monitored by the Office of Undergraduate Academic Affairs and the School of Biotechnology. According to the provided statistical data, the average dropout rate is about 14.7%, which is quite high. The average dropout rate in the first year is about 4.6%, and increases until year three to about 4.9 % drops. This might be correlated with the difficulty level of the specialization courses of the programme in year three. While the majority of dropped out students do not want to make known their reasons, the most common reason given is to study abroad or to change the study programme.

The internship is usually conducted during the summer time after the 6th semester. At the end, students have to write a progress report and give a presentation. The employers are also required to give feedback and comments about the students. The course "Experimental Design" is a compulsory course, where students are required to design a proposal for their Bachelor's thesis with the supports of an adviser. The result should be presented and defended in front of a panel, which consists of two lecturers. The Bachelor's thesis is a capstone project that requires a student to apply all during the programme acquired knowledge and skills. A thesis is done in two stages (1) proposal and (2) final thesis. In the

final stage, the thesis is reviewed by a lecturer and the results need to be presented in front of a panel.

During the audit, students and alumni express their satisfaction with the organisation of the degree programme as it covers several disciplines, which helps them acquire knowledge about different fields and, from that, identify specific areas of interest.

The experts point out that it would be useful to offer an elective course in physiology, as this subject is a useful supplementary for a Biochemistry programme. This should be possible, as physiology is already taught in the Biomedical Engineering programme at HCMIU. Moreover, the experts support the wish of the students to expand the list of electives. Currently, almost only courses from the areas nutrition and cosmetics are offered and students would prefer to have a broader choice. Furthermore, the Department of Applied Chemistry should follow closely the results of the newly implemented curriculum and evaluate, after one or two batches of students have finished the programme, if the changes have achieved the intended goals.

During the discussion with the experts, the employers and HCMIU's partner from the industry highlight that biochemistry graduates from HCMIU work professionally, are willing to learn, perform well, and can work in a team. Overall, HCMIU's partners are very satisfied with the qualification profile of the Biochemistry graduates.

In summary, the experts gain the impression that the choice of modules and the structure of the curriculum ensure that the intended learning outcomes can be achieved.

#### *International Mobility*

At the School of Biotechnology, students have the opportunity to participate in international students exchange programmes. According to the data presented in the Self-Assessment Report, from 2018 to 2023 there were 55 students from the School of Biotechnology who spent some time abroad (e.g. in USA, Canada, South Korea, China, Thailand, Japan, Singapore, Malaysia, Poland, and Norway), either in the course of a research project, a summer school, an internship, or a semester long exchange programme. During the same period, there were seven international students from the USA and Canada who studied for one year at the School of Biotechnology.

Credits acquired abroad are recognized at HCMIU if the course is equivalent (70 % or above) to a course at HCMIU in terms of content, teaching pedagogy, objectives, and students' working load.

Students who want to study abroad study can receive a scholarship and financial support, if they meet specific requirements in terms of academic merits and social contribution. In

addition, the Center for International Mobility at HCMIU collaborates with European Universities regarding the Erasmus+ programme with the aim of obtaining further financial support for local students to take part in international mobility programmes. Every year, HCMIU will spend about 1.5 million USD to provide scholarships to students who achieve high entrance exam scores (5 %) both for programmes at HCMIU and for international partner universities. Moreover, very good students can directly apply for scholarships from the Vietnamese government for studying abroad.

The experts acknowledge that HCMIU participates in the ERASMUS+ programme and has around 60 international partner universities. They especially appreciate that the School of Biotechnology has just recently (January 2023) officially signed a Memorandum of Understanding (MOA) with the College of Health Science and Technology, National Central University, Taiwan. This MOU aims at promoting academic mobility by exchanging students and by inviting faculty and staff to participate in joint research projects. However, the international academic mobility of Biochemistry students is still rather low. The students confirm during the discussion with the experts that some opportunities for international academic mobility exist. They also point out that they wish for more places and better endowed scholarships for long and short-term stays abroad. The number of available places in the exchange programmes is still limited and there are restrictions due to a lack of sufficient financial support. HCMIU can provide only a limited amount of scholarships, while the demand from students is rising.

The experts understand these problems; nevertheless, they recommend increasing the efforts to further promoting the academic mobility by establishing more international co-operations and exchange programmes and by offering more and better-endowed scholarships for Biochemistry students. A good starting point for initiating more international co-operations are the personal international contacts of the faculty members. It is also possible for students and teachers to apply to international organisations like the German Academic Exchange Council (DAAD) for receiving funds for stays abroad.

Especially as an international university, HCMIU should strive to further increasing the number of incoming and outgoing students. It would also be useful to invite more international guest lecturers to give classes or seminars in the biochemistry programme.

Furthermore, the School of Biotechnology should try to attract more international students, e.g., by organising international summer schools. The experts are convinced that such an offer would appeal to many students, especially from Europe, and this might help to further promoting the internationalisation of HCMIU. In addition, the School of Biotechnology should make its degree programmes internationally more visible for example by

better advertising the programmes and emphasising that all classes in the Bachelor's programmes are taught in English.

In summary, the experts appreciate the efforts to foster international mobility and support both HCMIU, the School of Biotechnology, and the Department of Applied Chemistry to further pursuing this path.

#### **Criterion 1.4 Admission requirements**

##### **Evidence:**

- Self-Assessment Report
- Webpage HCMIU: <https://hcmiu.edu.vn/>
- Webpage School of Biotechnology: <http://bt.hcmiu.edu.vn/?page-name=home-applied-chemistry&menu-id=17>
- Webpage Department of Applied Chemistry: <https://bt.hcmiu.edu.vn/en/about-us/depts/biochem-2/>
- Discussions during the audit

##### **Preliminary assessment and analysis of the experts:**

According to the Self-Assessment Report, admission for the Biochemistry programme is conducted once a year in September. Information about the admission procedure is available on the university's website and thus accessible for all stakeholders.

The Office of Undergraduate Academic Affairs (OUAA) in cooperation with the Office of External and Public Relations are responsible to advertise all academic programmes. For example, the OUAA conducts career orientation sessions and campus tours to reach students in various high schools in Vietnam. In addition, the HCMIU publishes its new and existing programmes in major newspapers.

Since the academic year 2017-2018, the admission to HCMIU is based on either one of the following six admission paths:

- (1) National High School Achievement Exam: based on the score of three subjects, which students have registered for at their preferred.
- (2) Best Academic Records of students from designated high schools.
- (3) Direct admission according to the regulations of the Ministry of Education and Training, candidates who won e.g. the National Excellent Student Prize, the National Science and Technology Prize.

(4) Results from the Scholastic Aptitude Exam held by Vietnam National University, Ho Chi Minh City (VNUHCMC).

(5) Admission for candidates with International Baccalaureate. International students need to pass an interview with the Admission Committee in order to be admitted to HCMIU.

(6) Academic Records during the 10th, 11th and 12th grades of designated high schools (twinning programmes).

As the Biochemistry programme is taught in English, students who do not have TOEFL or IELTS certificates will have to take an English placement test, which is similar to the TOEFL test, offered by the university besides the entrance examination. They will then be placed in different levels IE0, IE1, IE2, IE3 (Intensive English) and Specialized English AE1 and AE2 based on their English proficiency.

The Biochemistry programme is designed for students with the English entry level of AE1 (Academic English) to be completed in four years. Students who have a lower English proficiency (IE1 or IE2) level have to spend about one year taking intensive English courses before entering the Biochemistry programme. On average, 16.0% of the new biochemistry students have the entry English level of AE1, 27.3% of English level of IE2 and 56.7% of IE1 (the lowest level).

The selection from either path is made by taking the candidates with the highest scores down until the corresponding quota is filled. Most of the students at HCMIU are admitted via the first two paths, but the quota for each scheme varies each year depending on the recruitment strategy of HCMIU.

Every summer, the Vietnamese Ministry of Education and Training (MOET) will organise the National High School Achievement Exam. All high school students in Vietnam must take part at this exam. It covers several subjects, such as Mathematics, Foreign Languages, Physics, Chemistry, Literature, and History and lasts 3 - 4 days. Based on the score in the exam and on their preferences, prospective students get admitted to the different universities.

In addition, the two National Universities in Ha Noi and Ho Chi Minh City conduct their own admission exam the so called National University Competency Assessment Test. The National Universities have introduced this test in order to give high school graduates another chance to get admitted to university, it only lasts about 3 - 4 hours and consists of several questions and problems to assess the applicants' knowledge and skills in different subjects.

Tuition fees for all programs at HCMIU are announced publicly on the university's homepage at the beginning of each academic year. Domestic and international students pay the same tuition fees for the same programme. Twinning programmes typically have higher



tuition fees than regular programs. For the academic year 2022/23, the tuition fees for Biochemistry students are 46.47 million VND (approximately 1794 EUR) per year, or 185.88 million VND (approximately 7177 EUR) for the entire programme. HCMIU is part of the national university system, so it follows national regulations in this matter.

The Academic Affairs Office awards scholarships to students with excellent performance. In addition, students can also receive scholarships from external sources such as companies, non-government organisations, alumni, and individuals.

There are some scholarships available at HCMIU. Directed to the top 5 % of offered applicants in the entrance examination, the Admission Scholarship covers the full or half of the fees of the scholarship holder for four years. Additionally, each semester, the Encouraging Scholarship Programme chooses one of the best students in each class, based on their GPA and the number of credits taken, to receive 600 USD (560 €) per semester.

In general, HCMIU has a policy to award tuition fee waivers for five different groups of students. (1) students with meritorious services to the revolution or the relatives of people with meritorious services to the revolution; (2) students who are orphaned by both parents; (3) Students with disabilities in poor or near-poor households; (4) students of ethnic minorities in poor or near-poor households; (5) students of very few ethnic minorities. Around 8 % of the students receive a scholarship from HCMIU, which includes a full or a partial tuition fee waiver.

In summary, the experts find the terms of admission to be binding and transparent. They confirm that the admission requirements support the students in achieving the intended learning outcomes.

### **Criterion 1.5 Work load and credits**

#### **Evidence:**

- Self-Assessment Report
- Study plan
- Module descriptions
- Discussions during the audit

#### **Preliminary assessment and analysis of the experts:**

In the Vietnamese system, each credit is equivalent to 15 periods of theoretical lecture in class or 30 – 45 periods of practical laboratory work with additional 30 periods of self-study. In the internship and the Bachelor's thesis it is equivalent to 45 – 60 periods and 45 – 90

periods in the experimental design project. One period lasts for 50 minutes. The workload calculation is depicted in the following table:

Form of study for 1 credit	In-class periods	Self-study hours	Total hours
Theoretical lecture	15	30	45
Practice in a Laboratory	30-45	30	60-75
Quizzes in class	30-45	30	60-75
Assignment	30-45	30	60-75
Project, Thesis	45-60		45-60
Internship	45-90		45-90

Table 1: Workload Calculation, Source: SAR HCMIU

According to the Self-Assessment Report, for converting HCMIU credits to ECTS points, one ECTS point is awarded for 27.5 hours of students' workload. Based on this, one credit of a theoretical course at HCMIU equals 1.54 ECTS points, and one credit of practical courses equals two ECTS points. Additionally, the internship and thesis take a total of 80 hours for each credit, which is equivalent to 2.91 ECTS points. Each course's syllabus explicitly specifies the expected workload. The typical number of credits students take for each semester is 18. Students can take up to 24 credits and no less than 14 credits each semester, except for the last semester when they perform the thesis.

The Biochemistry programme is required to have a minor revision annually and a major revision every five years. The last revision was just recently implemented and includes a reduction in credit from 150 (260.29 ECTS) to 138 credits (239.97 ECTS). The new curriculum applies for all students starting the Biochemistry programme from the academic year 2023/24. To verify the students' workload, students are asked to give feedback about the workload of the course at the end of each semester. In 2023, 7.2% of the students considered the workload of the Biochemistry programme to be fair, 50.6% thought it is heavy and 42.2% considered it is as too heavy. This result was one of the reasons that initiated the modification of the curriculum. Consequently, the curriculum for the intake year 2023 has been adjusted in several ways to reflect this feedbacks. For example, the courses "Clinical Biochemistry", "Fermentation Technology", and "Immunology" have been moved from required to professional elective courses. Additionally, the courses "Genetics" and "Scientific Writing Workshop" have been replaced by the courses "Molecular Cell Biology" and "Experimental Design and Technical Communication".

During the audit, the students basically confirm that their workload is adequate and that it is possible to finish the degree programme within the expected four years.

**Criterion 1.6 Didactic and Teaching Methodology**

**Evidence:**

- Self-Assessment Report
- Study plan
- Module descriptions
- Discussions during the audit

**Preliminary assessment and analysis of the experts:**

Various teaching and learning methods (including lectures, computer training and classroom and lab exercises, individual and group assignments, seminars and projects, etc.) have been implemented in the Biochemistry programme. Structured activities include tutorials, homework, assignments (reading or problem exercises) and practical activities. Students are encouraged to use various tools for learning activities, including reading textbooks, giving references to documents and scientific papers, taking notes during lectures, and doing Internet searches to fulfil homework and quizzes. Group project assignments are given in some courses to develop students' skills in teamwork, communication, and leadership. The assignments and exercises should help students to develop their abilities with respect to critical thinking, written/oral communication, data acquisition, problem solving, and presentations.

HCMIU has the goal to support the transition from a teacher-centred to a student-oriented and outcome-based education in order to involve all students in the learning process and to develop their thinking and analytical skills.

The most common method of learning is class session, with several courses offering laboratory practice. Lecturers generally prepare presentations to aid the teaching process. With individual or group assignments, such as discussions, presentations, or written tasks, students are expected to improve their academic as well as their soft skills. Laboratory work covers laboratory preparation, pre or post-tests, laboratory exercises, reports, discussions, and presentations. Additionally, practical activities should enable students to be acquainted with academic research methods. Moreover, students are encouraged to participate in scientific seminars, journal clubs, workshops and conferences organised by the university or outside institutions. Students can take part as research project volunteers in research projects run by faculty members or researchers outside the university.

As described in the Self-Assessment Report, biochemistry students are expected to familiar with experimental designs and scientific research methods. During their studies, students are encouraged to participate in scientific seminars, journal clubs, workshops and scientific conferences. Students also have the opportunity to take part as research project volunteers in research projects, which are run by teachers at HCMIU or by researchers from outside

our university. Moreover, students also have to conduct thesis research. They are also encouraged to publish their work, which can increase their chances of getting scholarships for their further academic education.

HCMIU has recognised that gaining hands-on experience is important for advanced education. To this end, the Office of Research and Development and Center for Innovation and Technology Transfer (CITT), offers students the opportunity to be involved in practical, real-life projects. The unit not only assist professors but also students in carrying out such projects with local governments and companies.

To support teaching and learning activities at HCMIU, all classrooms and laboratories are equipped with computers, projectors, and internet access. To help students achieving the intended learning outcomes and to facilitate adequate learning and teaching methods, HCMIU has developed an e-learning platform (Blackboard), where students and teachers can interact. Through this tool, lectures, textbooks, reading materials, and study documents are uploaded in advance for students. Online quizzes/assignments and group discussion can be made available via Blackboard, allowing more lecturer-student communication after class hours. In addition, students have full access to the Central Library of HCMIU. The university's E-learning system has helped teachers utilising different teaching methods such as flipped classroom and blended learning. During the COVID-pandemic, faculty members have adapted and used some online teaching platforms including MS-TEAM, ZOOM, and GOOGLE MEET.

Since 2019, HCMIU has invested in different online teaching platforms to cope with the COVID situation. Lecturers can opt for either Zoom or Microsoft Teams for teaching online according to their preference. All these platforms allow lecture recording, group discussion and blackboard functions to create a virtual classroom experience that is very close to the real one. Besides, the Center of Information Service has conducted many training sessions for using these online platforms and provided supporting training documents.

In addition, each student has an Edusoft account, where the academic progress and results can be accessed. Students make course registration every semester through the Edusoft system, which has information of prerequisite courses, courses to study for individual students, and courses available in a particular semester. The score of each course will be displayed at the end of the semester.

In summary, the expert group considers the teaching methods and instruments to be suitable to support the students in achieving the intended learning outcomes. In addition, they confirm that the study concept of the Biochemistry programme comprises a variety of

teaching and learning forms as well as practical parts that are adapted to the subject culture and study format. It actively involves students in the design of teaching and learning processes (student-centred teaching and learning).

**Final assessment of the experts after the comment of the Higher Education Institution regarding criterion 1:**

The experts support the plan of HCMIU to apply to MOET for a new code and name for the Biochemistry programme. Hopefully, MOET will approve the application.

The experts appreciate that HCMIU will offer more electives such as , for Batch 2024, we will continue with implementing more courses to the programs, such as Human Physiology Human Anatomy, Chemistry of Surfaces and Interfaces, Molecular Diagnosis and Therapy, and Agricultural Biochemistry.

Offering Biochemistry students more opportunities regarding academic mobility is certainly a good idea. Establishing and developing an internship programme in the summer term and inviting more international guest lecturers are steps in this direction and will possibly attract more students.

The experts consider criterion 1 to be mostly fulfilled.

## 2. Exams: System, concept and organisation

**Evidence:**

- Self-Assessment Report
- Module descriptions
- Academic Handbook
- HCMIU Academic Calendar

**Preliminary assessment and analysis of the experts:**

The final grade of the course is a combination of the midterm and final exam, quizzes, assignments, homework, presentations, and lab exams and reports. Students' overall performance throughout the semester is formally monitored through course grades, which are at least 50/100 in order to pass the course. Besides the theoretical courses, the majority of the courses in the curriculum also includes practical sessions, which allow students to acquire hands-on experience in the laboratories.

The most common type of evaluation used are written examinations; however, other exams may contribute to the final grade. Written examinations typically include short answers, essays, problem-solving or case-based questions, and calculation problems. Some lecturers also give multiple choice or true-false questions in examinations or quizzes. The grade from laboratory work usually consists of laboratory skills, discussions, reports, and oral exams.

Successfully passed exams are evaluated by lectures with a grading system based on a 100-point scale: Excellent (90 to 100), Very-good (80 to near 90), Good (70 to near 80), Rather good (60 to near 70) and Fair (50 to near 60). The maximum score for each course is 100 points, and 50 points are required to pass the course. For mid-term and final exams, the teacher should deliver the grades within two weeks after the test date.

The criteria to assess students' performance are stated in the assessment plan of each course syllabus. To ensure transparency and fairness for all students, the assessment components, their weights, and schedules are introduced to the students from the first class of the course. The course syllabus is also available on Blackboard for enrolled students to assess. In addition, students and teaching staff can also find the information related to the course specifications and assessment criteria in the Programme Specification that has been published on the department's website.

The internship is conducted through collaboration with companies, research institutes or other public or private institutions connected to biochemistry. To join the course, students must have accumulated at least 90 credits, and then, they work for at least two months, equivalent to eight weeks or 160 hrs. The internship is approved and supervised by a faculty instructor and an onsite supervisor at the host institution. At the end of the internship, students write a report and present their results to a panel. The evaluation considers the work plan, discipline, teamwork, plan implementation, and activity report. The final grade derives from the assessment of the onsite supervisor, faculty instructor and committee members.

The Bachelor's thesis is a major part of the Biochemistry programme and considered as a final assessment if the intended learning outcomes have been achieved. Regulations about thesis assessment is made known to students via the student handbook and the department's website. All students need to complete at least 113 credits and have IELTS of at least 5.5 or equivalent to be qualified for conducting the thesis. Students enrolled in thesis work, are assigned a supervisor, who helps the students undertaking their research project.

The final project (Bachelor's thesis) consists of two stages (1) proposal and (2) final thesis. The thesis last four months, equivalent to 720 hrs. In the final stage, the thesis should be

reviewed by a lecturer. The two stages are assessed by a panel with a presentation. This project is conducted independently under the guidance of one or more supervisors. It consists of a literature review, practical research, and data analysis. Both the student and supervisors might decide the topic and content of the project. In many cases, lecturers offer particular topics connected to their research. Students who are interested in a specific topic are able to volunteer in the lab from the second year, which allows them to collect preliminary research data. Students are requested to provide evidence of supervision arrangement to the SBT through a thesis registration form. About eight weeks after starting the research, students must submit a progress report certified by the supervisor to the school. Students present the results to five members of the scientific committee of the Department of Applied Chemistry, the reviewer, and their supervisor. Some students, approximately 10 %, conduct their Bachelor's thesis outside HCMIU. In this case, they have a co-supervisor at the host institution and one supervisor at HCMIU. For thesis assessment, the thesis advisor and thesis reviewer give a grade (score between 0 and 100) after assessing the written report. In addition, students have to defend their thesis in front of the examination committee, which consist of three or four examiners. Each of them gives a grade (score between 0 and 100) based on the written report and the oral defense. The final grade of the thesis is then the average score of all examiners and the thesis advisor and thesis reviewer.

At the beginning of the semester, students get all course and exam-related information from their academic advisor and can access the course syllabus via the digital platform Blackboard. At the end of the semester, students can also access their grades privately through the platform.

In case that students cannot attend the exam due to unavoidable reasons such as illness, accident, death of family members, etc., they need to inform SBT by the deadline specified in the university's policy by submitting a form asking for permission to re-sit the exam another time, along with supporting evidence.

Students who fail a course must attend it again in the next semester. The number of repetitions is unlimited. Students, who have passed a course but want to improve their score, may also take it again. Students with unsatisfactory academic performance will receive an academic warning. The academic warning is issued if a student violates one of the regulations, such as failing to complete more than 50 % of the registered credits for the semester, finishing the semester with an average grade of less than 35 (out of 100) or less than 40 in the last two consecutive semesters. Students will be suspended if receiving academic warnings more than twice. It is worth noticing that the student's academic advisor receives the notifications during the course as well. Consequently, help and support would be given to improve the student's academic performance. However, students can request to postpone the final exam due to important reasons (such as accidents, health

problems, etc.). In these cases, students will take the final exam in the next semester without repeating the whole course.

As an international university, HCMIU uses English as the medium of instruction. Students have to obtain IELTS 6.0 or equivalent as a graduation requirement. According to the programme coordinators, this requirement explains why, for the last five cohorts, around 60 % still have to graduate after four years. Those students who do not meet the required English level can still apply for jobs but have to get prepared to sit for a new upcoming test. According to HCMIU's Academic Regulation, students who fail to graduate are granted certificates for modules accumulated during their study duration.

The experts discuss with the students how many and what kind of exams they have to take each semester. They learn that for each course there is one mid-term exam and one final exam in every semester. Usually, there are additional practical assignments or oral tests. The final grade is the sum of the sub-exams. The students confirm that they are well informed about the examination schedule, the examination form, and the rules for grading.

With respect to the exams, the experts are convinced that it would be useful to put more emphasis on questions related to transfer skills and critical thinking. As the programme coordinators explain during the audit, exams should have at least a 20 % share of open questions such as essays and not only multiple choice questions. This is applied in first year courses, the share is higher for more advanced courses in the later years of studies. However, while looking through the provided sample exam paper, the experts notice that in many exams there are only a few open questions and the focus is clearly on multiple choice questions. The mid-term and final exams should not only verify that the students have learned the content by heart but that they understand the context and the reasoning behind it and are able to apply the acquired knowledge to new areas. In general, the examinations include many multiple choice questions and focus on learning by heart and too little on the ability to solve problems by self-determined application of what has been learnt. Students should be motivated to think freely and to be confident to present own results, which cannot be found directly in a textbook. The experts point out that this is especially relevant for more advanced course where the exams should have more open questions. Students should be trained in critical and analytical thinking and not only learn facts by heart; this should be reflected in the written exams. In addition, the share of exam questions dealing with transfer skills should be increased in the course of the degree programme and should be highest in the latest semesters.

Otherwise, the experts are overall satisfied with the general quality of the provided sample of examination papers and final theses.



**Final assessment of the experts after the comment of the Higher Education Institution regarding criterion 2:**

HCMIU does not comment on this criterion in its statement.

The experts consider criterion 2 to be mostly fulfilled.

### 3. Resources

<b>Criterion 3.1 Staff and Development</b>
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**Evidence:**

- Self-Assessment Report
- Staff Handbook
- Study plan
- Module descriptions
- Discussions during the audit

**Preliminary assessment and analysis of the experts:**

At HCMIU, the staff members have different academic positions. There are professors, associate professors, and lecturers. The academic position of each staff member is based on research activities, publications, academic education, supervision of students, and other supporting activities.

All fulltime members of the teaching staff are obliged to be involved in teaching/advising, research, and administrative services. However, the workload can be distributed differently between the three areas from teacher to teacher and also depends on the academic position. For example, full professors spend more time on research activities and less on teaching than associate professors or lecturers.

According to the Self-Assessment Report, the teaching staff at the Department of Applied Chemistry consists of 7 fulltime teachers (2 Associate Professors, 3 PhD's, and 2 lecturers with a Master's degree). The details are shown in the following table:

	2019	2020	2021	2022	2023
Number of Associate Professors	1	2	2	2	2
PhD degree holders	3	3	3	3	3
PhD candidates	0	0	0	0	0
Master's degree holders	2	2	2	2	2
Number of lecturers	6	7	7	7	7
Number of staffs defined by Ministry of Education and Training's decree	11	14	14	14	14
Number of students of Program	224	233	237	226	243
<b>Student-to-Staff ratio</b>	<b>20,3</b>	<b>16,6</b>	<b>16,9</b>	<b>16,1</b>	<b>17,3</b>

Table 2: Number and Academic Qualification of Teachers, Source: SAR HCMIU

PhD and Master's students work as lab assistants in the laboratories, so there is no shortage in staff members to supervise practical lab work, according to the feedback of the teachers during the audit. In addition, the School of Biotechnology has five administrative staff and three technical assistants to support the teaching and learning activities. Furthermore, there are another 180 support staff members in different units of HCMIU such as library, labs, IT, administration, and student services.

In 2023, there were eight visiting lecturers at the Department of Applied Chemistry, but all of them are either from other departments of HCMIU or other Vietnamese universities. Especially as an internationally oriented university, HCMIU should also invite international guest lecturers.

Associate professors or lecturers can apply for promotion to associate professor or full professor, respectively. The candidates are considered based on three main criteria, the extent of the work experience, hours of teaching graduate students and quantity and quality of publications. In its development strategic plan, the Department of Applied Chemistry commits to develop its human resources by encouraging staff members to pursue higher academic degrees by recruiting more PhDs and inviting more visiting lecturers. All teachers who hold a Master's degree are encouraged to pursue Doctorate degrees to upgrade their scientific and personal expertise. Currently, there is one teacher, who is pursuing a PhD abroad.

The experts discuss with HCMIU's management how new staff members are recruited. They learn that when a department in the School of Biotechnology wants to recruit new staff members, the Head of Department will send an official letter to the Dean of the School. If the Dean approves, an official letter of request will be sent to the Office of Human Resource Management (OHRM) along with the recruitment requirements proposed by the department. The Office of Human Resource Management will check the request and then propose it to the Board of Presidents of HCMIU. If the President approves the request, the vacancy will be announced on HCMIU's website and through other media channels.

Applications are collected by OHRM and screened by the Recruitment Committee. The shortlisted candidates will be invited for interviews. Candidates have to do a presentation on their research activities, and their teaching abilities are verified. Recruited teaching staff must hold a PhD degree and post-doctoral research experience from a developed country with suitable expertise. They must be accredited in English by a professional committee comprised of school leaders and university leaders. In addition, candidates for a teaching staff position must have practical scientific research experience demonstrated through scientific publication records. New teachers receive a one year contract and then usually a subsequent three year contract. Afterwards, they are hired permanently.

As the experts learn during the audit, teachers at HCMIU have a teaching load of 270 hours per year. A reduction for administrative tasks e.g. for the Dean and the Vice-Deans is possible. If teachers want to go abroad for a longer time, e.g. for conducting collaborative research activities, they do not get paid during their absence, so teachers have to look for independent financial support through their research projects. However, teachers receive additional payment if they teach during the short summer semester. The experts regret that no paid sabbatical leave is possible by national regulation from MOET because other teachers would have to cover for the teachers on leave and absent teachers cannot be paid by the government.

In summary, the experts confirm that the composition, scientific orientation and qualification of the teaching staff are suitable for successfully implementing and sustaining the degree programme. Moreover, they see that the teaching load is adequate, which leaves teachers enough time for conducting research activities.

### *Staff Development*

HCMIU encourages training of its academic staff for improving their didactic abilities and teaching methods. As described in the Self-Assessment Reports, faculty members regularly participate in trainings or workshops.

The Office of Human Resources Management is responsible for identifying training needs of staff members, developing training plans, and carrying out training activities. Annually,

the Board of Presidents holds meetings with heads of schools, departments, and offices to discuss on the training needs of staff of different units. Based on the feedback of academic and non-academic units, the Office of Human Resource Management makes plans to organise training courses or workshops for the whole year.

Faculty members can also further develop their competencies through several activities such as post-doctoral programmes, trainings, workshops, and joint research. The Center for Innovation and Technology Transfer frequently provides faculties with possible collaborative projects between the university and local governmental or provincial offices. The Office of Research and Development helps with guiding academic publication procedures, such as how to identify qualified journals and conferences. Moreover, teachers are encouraged to present their research papers in national and international conferences, and to collaborate with colleagues from international universities. Furthermore, the School of Biotechnology also promotes research activities by holding internal academic seminars, encouraging group research and connecting faculties with business and academic networks. Teachers receive financial support for traveling abroad in order to take part at conferences and workshops.

Newly recruited lecturers are encouraged to take some teaching training courses. Faculty members are also trained from time to time to make sure they stay updated with the latest technologies and methodologies when it comes to teaching. The most recent workshops are how to use Zoom, and other online teaching platforms.

The experts discuss with the members of the teaching staff the opportunities to develop their personal skills and learn that the teachers are satisfied with the internal qualification programme at HCMIU, their opportunities to further improve their didactic abilities and to spend some time abroad to attend conferences, workshops or seminars.

In summary, the experts confirm that HCMIU offers sufficient support mechanisms and opportunities for members of the teaching staff who wish for further developing their professional and teaching skills.

### *Student Support*

HCMIU offers a comprehensive advisory system for all undergraduate students. At the start of the first semester, every student is assigned to an academic advisor. Each academic advisor is a member of the academic staff and is responsible for approximately 10 to 15 students from her/his classes. He/she is a student's first port of call for advice or support on academic or personal matters.

Before a new semester starts, the advisors help students plan for their next courses. Students register for courses through an online platform (Edusoft), which allows advisors to

look through all registered courses and make adjustments in consistency with the student's ability to meet educational goals. The advisors also access this platform to monitor the academic performance of their students and organise at least two meetings with them each term to discuss any issues that may influence their achievement. During the discussion with the expert group, the students confirm that they all have an academic advisor.

After class hours, the lecturers organise additional consultations for at least one hour per week to reinforce learning of the subject material. Students can then ask about exercises or revisit class content.

The role of the academic advisor is to help the students with the process of orientation during the first semesters, the introduction to academic life and the university's community, and to respond promptly to any questions. They also offer general academic advice, make suggestions regarding relevant careers and skills development and help if there are problems with other teachers. Every advisor may access the Edusoft system to get data about students' performance such as grades, cumulative credits, cumulative GPA, and time of studying. These data are used as a reference by advisors to monitor students' performance and give appropriate recommendations. In addition to the academic advisors, the IU has established a "buddy system", in which senior students are matched with the freshmen assisting them to be successful in the new learning environment. The students confirm during the discussion with the experts that they all have an academic advisor.

In general, students stress that the teachers are open minded, communicate well with them, take their opinions and suggestions into account, and changes are implemented if necessary.

The fourth-year students, who prepare their final project, have one or more supervisors, who are selected based on the topic of the final project. One supervisor could be an external supervisor, if the student performs the research outside HCMIU. Each lecturer supervises not more than eight students during the Bachelor's thesis and organises weekly meetings with them. The role of the final project supervisor is to guide students in accomplishing their final project, e.g. to finish their research and complete the final project report.

In 2012, HCMIU has established the Student Advisor Programme to counsel students on issues regarding psychology, health, laws, and career planning. The Office of Student Services (OSS) manages this programme by employing psychologists, medical doctors, lawyers, and educators as counsellors. The counselling is performed online, face-to-face, and via seminars.

The Office of Student Services also helps students to look for career orientations and job opportunities. Every year, OSS organises the Career Orientation Day (job fair) to connect

current students, alumni, and enterprises. In addition, specialised seminars are organized to invite alumni and people from the industry to present the needs of the labour market and share their working experiences. At the same time, industry talks are organised at the department level so that companies can introduce their line of business as well as learn more about the students on this occasion. Moreover, OSS has a separate website providing information on job opportunities, internships, enterprise programmes, seminars, networking events, and industrial field trips.

Additionally, there is the Biotechnology Youth Union (BTYU), which was established in 2004 to organize multi-disciplinary extracurricular activities for students. At the School of Biotechnology there is also BIODOMIC (Academic Department of Biotechnology School), which is an academic club. It was established in 2010 with the goal of fostering academic knowledge, facilitating connections between students and professors in specialised fields, as well as organising other science-related activities. Finally, there are several student organizations at HCMIU; they include student's activity clubs, which are divided into arts, sports, religious and other non-curricular activities.

The experts notice the good and trustful relationship between the students and the teaching staff; there are enough resources available to provide individual assistance, advice and support for all students. The support system helps the students to achieve the intended learning outcomes and to complete their studies successfully and without delay. The students are well informed about the services available to them. The comprehensive support and advisory system is one of the strengths of HCMIU and the Biochemistry programme.

### **Criterion 3.2 Funds and equipment**

#### **Evidence:**

- Self-Assessment Report
- Visitation of the facilities
- Discussions during the audit

#### **Preliminary assessment and analysis of the experts:**

Basic funding of the Bachelor's degree programme Biochemistry and the facilities is provided by HCMIU and the School of Biotechnology. Additional funds for research activities can be provided by HCMIU or the Vietnamese government, but the teachers have to apply for them. In addition, there are several co-operations with industrial partners. On university level, the Office of Finance and Planning is responsible for planning the budget and assign-

ing the funds to the schools and departments. During the discussion with HCMIU's management, the experts learn that HCMIU almost exclusively relies on tuition fees as its predominant source of income. Only around 9 % of its total budget is provided by the government or is derived from third party cooperations and business projects (e.g. the cafeteria). In addition, the Vietnamese government pays for investments e.g. in the facilities and HCMIU can apply for additional funds for example for specific research projects. Finally, the Vietnam National University – Ho Chi Minh City (VNUHCMC) as an umbrella organization provides investments especially in the area of the physical infrastructure for all seven member universities including HCMIU, which they could not afford individually.

To maintain, evaluate, and improve the physical facilities and infrastructure such as teaching and learning facilities, laboratories, equipment, and tools to meet the needs of education, research, and service, the Office of Procurement Services (OPS) and the Office of Finance and Planning (OFP) are responsible for planning and maintaining the university facilities.

The School of Biotechnology has established 19 laboratories. Among these laboratories, there are three laboratories belonging to the Department of Applied Chemistry (Applied Biochemistry Lab, Pharmaceutical Chemistry Lab, and Nutritional Laboratory).

The most critical point from the experts' point of view is the fact that all of the visited laboratories in the School of Biotechnology do not follow international safety standards. The experts point out that the basic personal protective equipment that needs to be available to all persons working in laboratories includes safety goggles, laboratory coats, and hand gloves. It should be worn when working in the laboratory with chemical and when conducting sensitive experiments. Students should be trained in the right use of the equipment (e.g. the need to change contaminated gloves before touching a door handle or a keyboard, which also might be used by persons not wearing safety gloves). The personal protective equipment should be stored separately from street clothes. In addition, working safety hoods should be available in all labs (with exhaust to the outside) and chemicals and solvent containers should be labeled properly and be stored in special lockers with exhausts leading outside the labs. Moreover, there should be emergency exit signs and posters with the safety regulations. Finally, it is important that all students know how sterile work in a laboratory is conducted and that at least once year a safety inspection of the laboratories should be done. This does not only include wearing gloves, but also hair should be covered and gas cylinders and fire extinguishers must be securely fastened. Furthermore tripping hazards such as power cables laid on the floor must be removed and it must be obvious where safety showers are positioned, best would be to have safety showers inside the laboratories and not only in the lavatory. To improve safety standards, sufficient room ven-

tilation of the labs should be verified. The storage of chemicals should be reorganized, inflammable consumables should be stored in safety cabinets, inflammatory solvents in safety cabinets. The lab infrastructure needs on the one hand to be optimised due to safety regulations as well as to be extended regarding space and instrumentation. Some deficiencies regarding safety can and must be quickly fixed: fixing of gas cylinders, moving the safety storage cabinets from the hallway to the laboratory area. The teachers need to make sure that all students are familiar with sterile work, especially if they are preparing personnel for further work in diagnostic laboratories.

The experts stress that there are many hazardous substances and instruments used in the laboratories, which causes a significant risk of accidents and presents a danger to human health, and the natural environment. This demands care in order to protect human health, conserve the natural environment and to prevent laboratory accidents. As a consequence, the School of Biotechnology needs to draw up a plan, how the internationally accepted safety standards are adopted in all laboratories in the near future.

The programme coordinators emphasise that from their point of view, the Biochemistry programme receives sufficient funding for all teaching and learning activities. Hence, the Department of Applied Chemistry does not face any financial shortages. Of course, there is limited funding to modernise or add laboratory equipment, but there are sufficient resources for adequately teaching the classes and conducting research activities.

However, the experts notice during the visitation of the facilities that the working space in the laboratories is very limited. Additional lab space is required including those that are in accordance with the Biosafety regulations required for the work with genetically modified organisms (GMO). For training and applying current methods in molecular biology, additional equipment should be considered. Besides a decent number of bench apparatus (centrifuges, incubators, thermal cyclers, electrophoresis units, sequencing tools) would be desirable including fluorescence microscope(s), additional laminar air flows and tools for sophisticated analysis of cells using cell sorting / cell staining and analysis (FACS) would be helpful. To inactivate GMO, appropriate heat sterilizing devices should be in a place allowing inactivation within the GMO-facility.

The experts see the absolute necessity that modern chromatographic and spectroscopic methods are used in teaching and research. Especially in the focus areas of the degree program (Food, Cosmetics), these methods are essential for quality assurance, among other things so that future graduates should become familiar with it at an early stage. HPLC should be purchased as soon as possible. In the advanced stage of the studies as well as in the final theses, it should not only be possible to work theoretically, but also with mass



spectrometric methods. The acquisition or easy access to a central MS (e.g. GC-MS) is important for further development. This also applies to NMR, as NMR has now become a standard method in raw material monitoring. The acquisition of a benchtop NMR or easy access to such a device is also important for research and development work.

These problems may be solved with the construction of a new building on campus, which will house the laboratories. The new building will increase the capacity for education and research significantly. It should be available in 2025 and will include an area of approximately 7.000 m<sup>2</sup> for more modern laboratories. While designing the laboratories, the School of Biotechnology should make sure that enough working places and instruments are available so that students can do the experiments in groups of not more than two to three. The peers recommend that the professors are involved in the detailed planning. It is important that the gaps between the lab benches are large enough for student groups. There should be cabinets for the compressed gas cylinders. It can be checked if gas generators are a feasible and cost-efficient alternative. The instrumentation should enable the usage of modern biochemical and (bioanalytical) techniques both in teaching and research. Moreover, the new laboratories should follow international standards with respect to safety measures – as mentioned above. Finally, the experts point out that some important devices such as a HPLC are not available in the laboratories of the School of Biotechnology. Thus, purchasing these instruments should be included in furnishing the laboratories in the new building.

In addition this will help to give students more hands-on experience in the laboratories. Currently, students conduct the experiments in the laboratories classes in groups of three to five, mostly because the working places in the laboratories are limited. Under such conditions the learning outcome is difficult to reach and each single student cannot gain enough practical experience. There is also an increased risk of emergencies due to lack of space. The experts emphasise that all students need to have the opportunity to get sufficient hands-on experience with practical work and carrying out laboratory experiments.

The students express their general satisfaction with the available resources and conditions of studying, thereby confirming the positive impression of the expert group. The students also express their satisfaction with the library and the available literature there. Remote access via VPN is possible. However, the experts notice that the students are not well informed about the possible access to scientific databases. For this reason, HCMIU should provide better information for students how to access current scientific publications via the HCMIU Central Library. In this respect, the experts acknowledge that the HCMIU Central Library library offers direct access to international literature, scientific journals, and publications e.g. via ScienceDirect and Springer Online. In addition, it is possible to access all resources of all member universities of the Vietnam National University

Ho Chi Minh City so that it is possible to get books from other universities if HCMIU does not have them.

In summary, the expert group judges the available funds, the technical equipment, and the infrastructure (laboratories, library, seminar rooms etc.) to comply – besides the mentioned restrictions – with the requirements for adequately sustaining the degree programme.

**Final assessment of the experts after the comment of the Higher Education Institution regarding criterion 3:**

The experts appreciate that HCMIU puts a strong emphasis on ensuring the safety of the students in the laboratories. To this end, the School of Biotechnology requires that all students undergo a comprehensive general laboratory safety course before accessing the labs. As the current safety standards do not meet international benchmarks, it is certainly necessary to implement the intended action plan as soon as possible. The experts expect an update on the implemented measures in the further course of the procedure.

The experts support the efforts to improve and update the technical equipment in the laboratories and hope that all the needed instruments will be purchased and that the new building will be furnished adequately.

The experts consider criterion 3 to be mostly fulfilled.

## 4. Transparency and documentation

<b>Criterion 4.1 Module descriptions</b>
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**Evidence:**

- Self-Assessment Report
- Module description
- Webpage School of Biotechnology: <http://bt.hcmiu.edu.vn/?page-name=home-applied-chemistry&menu-id=17>
- Webpage Department of Applied Chemistry: <https://bt.hcmiu.edu.vn/en/about-us/depts/biochem-2/>
- Discussions during the audit

**Preliminary assessment and analysis of the experts:**

The students, as all other stakeholders, have access to the module descriptions via the programme's homepage.

After studying the module descriptions, the experts confirm that they include all of the necessary information about the persons responsible for each module, the teaching methods, the intended learning outcomes, the content, the applicability, the admission and examination requirements, and the forms of assessment.

<b>Criterion 4.2 Diploma and Diploma Supplement</b>
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**Evidence:**

- Self-Assessment Report
- Sample Diploma
- Sample Diploma Supplement

**Preliminary assessment and analysis of the experts:**

The experts confirm that the students of the Bachelor's degree programme Biochemistry are awarded a Diploma and a Diploma Supplement upon graduation. The Diploma consists of a Diploma Certificate and a Transcript of Records. The Diploma Supplement contains all necessary information about the degree programme. The Transcript of Records lists all the courses that the graduate has completed, the achieved credits, grades, and cumulative GPA.

<b>Criterion 4.3 Relevant rules</b>
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**Evidence:**

- Self-Assessment Report
- All relevant regulations as published on the university's webpage

**Preliminary assessment and analysis of the experts:**

The experts confirm that the rights and duties of both HCMIU and the students are clearly defined and binding. All rules and regulations are published on the university's website and hence available to all stakeholders. In addition, the students receive all relevant course material at the beginning of each semester.

The experts appreciate that the English website of the Biochemistry programme has been updated in advance of the audit and now includes information about the intended learning outcomes, study plan, and module descriptions.

**Final assessment of the experts after the comment of the Higher Education Institution regarding criterion 4:**

HCMIU does not comment on this criterion in its statement.

The experts consider criterion 4 to be fulfilled.

## **5. Quality management: quality assessment and development**

**Evidence:**

- Self-Assessment Report
- Academic Handbook
- Discussions during the audit

**Preliminary assessment and analysis of the experts:**

The Biochemistry programme is managed by Department of Applied Chemistry which is part of the School of Biotechnology (SBT) of Ho Chi Minh City International University (HCMIU). Ho Chi Minh City International University is a member of Vietnam National University – Ho Chi Minh City (VNUHCMC), which is a ministerial-level university. The International University is one of altogether seven universities, all belonging to the Vietnam National University in Ho Chi Minh City (VNUHCMC). On the one hand HCMIU has to follow laws and regulations emanating from MOET and on the other hand has to deal with the fact that a considerable number of decisions (e.g. raising the tuition fees) are taken on the level of the umbrella VNUHCMC organization.

The School of Biotechnology has an Academic and Scientific Committee (ASC), a Quality Assurance Team (QAT), and on university level there is the Office of Quality Assurance and Testing (QATO), which analyses the data, write reports, and offers suggestions to the Board of Presidents, which is the highest academic council at HCMIU. The Board of Presidents reviews, revises the suggestions from QATO, and makes the final decisions to all academic concerns at HCMIU.

The experts discuss the quality management system at HCMIU with the programme coordinators and the students. They learn that there is a continuous process in order to improve the quality of the degree programme and it is carried out through internal and external quality assurance. Minor revisions in the curriculum are implemented every year, while major changes are carried out every five years.

In order to further improve its degree programme, HCMIU conducts several surveys. In 2021, HCMIU established a university entrance survey for first year students. This survey is conducted annually and uses multiple choice questions including and spaces for comments. The main purpose of this survey is to obtain students' opinions concerning the way they get into the HCMIU, their orientation in the first weeks as well as potential difficulties students may face at the beginning of their studies.

At the end of each semester, the Office of Quality Assurance and Testing (QATO) conducts students' surveys to collect their feedback about the courses taken. Students can provide feedback using the university's online system. Participation at the questionnaires is compulsory for the students, otherwise they cannot access their digital account. The feedback is analysed by QATO and sent to the Dean of the School of Biotechnology and the individual lecturers. The School of Biotechnology will then review each course to ensure teaching and learning activities were carried out efficiently. If there is any negative feedback, the Dean will arrange a meeting with the lecturers in charge and request improvement for the next semester. In addition to the satisfaction surveys, the Dean of the School of Biotechnology meets with students at the end of each academic year to gather feedback. At these meetings, students have the opportunity to share their thoughts and suggestions, and they receive responses to their feedback. Students are also informed of plans and possible actions for improving study programmes and services. Part of the discussion is the students' feedback in the satisfaction questionnaires and also the planned changes in the curriculum, which were implemented at the beginning of the academic year 2023/24.

The survey on HCMIU's services is conducted annually at the end of each year. The goal of this survey is to find out how the offered services meet the needs of the students in order to implement corrective measures and improvements to enhance the service quality of the whole university. Moreover, an exit survey is conducted for senior students before graduation. The purpose is to receive their feedback on the educational and teaching processes in order to find room for improvement. The staff members also have their survey to evaluate the internal quality assessment activities and development of academic programmes with respect to their workload, duties, and services for supporting their teaching and research activities.

Finally, HCMIU regularly conducts surveys for alumni and employers to find out about the employment areas and professional career of the graduates and the opinion of employers on the graduates knowledge and skills as well as the needs of the labour market.

As HCMIU and SBT are aware of the diversity of the labour market and the fast development of new technologies, employer surveys are conducted annually. Employers are asked about the ability of alumni to apply fundamental and professional skills into practice. For each skill, employers are asked about their level of expectation for graduates and how these expectations are met. The employers' feedbacks is considered by the QAT to modify or update the degree programme and teaching methods in order to providing students with current knowledge, so that they can adapt themselves to different working environments in their future career.

The Office of Quality Assurance and Testing annually conducts surveys to receive feedback from alumni at the time of graduation and one year after graduation using questionnaires. The responses of the alumni on their employment status as well as their adaptability to the working environment are collected, analysed, and transferred into reports. The survey results can be used for further improving the programmes and continuously enhancing the training quality.

On average, the satisfaction level of the different groups (teachers, senior students, alumni, and employers) is between 70 % and 90 %.

The experts learn during the audit that some employers are invited to give their feedback on the content of the degree programme by taking part at the surveys. In addition, partners from the industry are invited to give lectures and to donate money for grants. However, they are not informed about the results or the upgrade of the programme. As the experts consider the input of the employers to be very important for the further improvement of the degree programme, they appreciate the existing culture of quality assurance with the involvement of employer in the quality assurance process. Nevertheless, they recommend establishing an advisory boards with external stakeholders at the School of Biotechnology. They should meet regularly with the Department Heads and programme coordinators to discuss with them new developments in the area of biochemistry and needs of the job market and how the School of Biotechnology can accommodate these needs.

External quality assurance focuses on international accreditations. For this reason, the Biochemistry programme at HCMIU has been accredited by the ASEAN University Network Quality Assessment (AUN-QA).

The experts discuss with the programme coordinators and students, if students are represented in HCMIU's boards. They learn that students are not members of the Quality Assurance Teams and are only invited sometimes to the Academic and Scientific Committee meetings. The experts are convinced that it would be very useful to have students' representatives as official members of the Academic and Scientific Committee on school level and to include them in the Quality Assurance Teams. This way, students will be actively involved in the decision-making processes for further developing the degree programme.

In summary, the expert group confirms that the quality management system is suitable to identify weaknesses and to improve the degree programme, but there is still room for improvement.

**Final assessment of the experts after the comment of the Higher Education Institution regarding criterion 5:**

The experts appreciate that HCMIU has appointing a student representative to the School Council of the School and three students to the Quality Assurance Team of the School of Biotechnology. This way, students are directly involved in the decision making process at the School of Biotechnology.

The experts consider criterion 5 to be mostly fulfilled.

## **D Additional Documents**

Before preparing their final assessment, the panel ask that the following missing or unclear information be provided together with the comment of the Higher Education Institution on the previous chapters of this report:

- none



## E Comment of the Higher Education Institution (20.02.2024)

HCMIU provides the following documents:

Additional document 1. Request of new code for Biochemistry program

Additional document 2. Syllabus\_Human Physiology\_BT

Additional document 3. Additional Information on BC website

Additional document 4. Lab safety certificate

Additional document 5. Action on laboratory safety

Additional document 6. Memorandum on lab safety

Additional document 7. List of ASIIN recommended equipment

Additional document 8. Decision of BT New Building

Additional document 9. Decision on adding student representative to School Council

Additional document 10. Decision on addition of students to Quality Assurance Team at SBT\_DAC

HCMIU submits the following statement:

<b>RESPONSES FROM DEPARTMENT OF APPLIED CHEMISTRY</b>
<b>1. THE DEGREE PROGRAM: CONCEPT, CONTENT &amp; IMPLEMENTATION</b>
<b>Criterion 1.2 Name of the degree programme</b>
We also understand the concern of the stakeholders regarding the name of the degree. We already have plan to apply to the MOET for a new code and name for our Biochemistry program. The request has been sent to the Office of Undergraduate Academic Affairs to initiate the procedure of our application. We hope MOET will approve our application and we will update the results to all stake holders.
<b>Criterion 1.3 Curriculum</b>
We valued our stakeholders' opinions in updating and modifying the BC program.

### RESPONSES FROM DEPARTMENT OF APPLIED CHEMISTRY

Compare to the previous curricula, Batch 2023 curriculum has given the students more professional elective courses with those from the mandatory course sections. Furthermore, thanks to your suggestions, for Batch 2024, we will continue with implementing more courses to the programs, such as Human Physiology from BT program, Human Anatomy and Physiology from BME program, The chemistry of surfaces and interfaces, Molecular Diagnosis and Therapy and Agricultural Biochemistry.

#### ***International Mobility***

International University (IU) is aware of the necessity to offer Biochemistry students more opportunities regarding the academic exchange. Besides the regular module with strategic partners, IU is placing significant emphasis on connecting to universities whose advantage is biochemistry; especially institutions located in well-known countries in the field such as USA, UK, Japan, Taiwan, Singapore, etc. With the cooperation from partner universities, we aim at establishing and developing the internship programs in the summer term which are attracting more and more students during the last few years.

In our experience gained from the long period of time operating and managing the exchange program, we acknowledge that students in general prefer remaining their study in Vietnam to fulfil the requirements of their own major which is considered relatively stressful. However, only by being in a different academic environment in an overseas country can bring our students with chances of widening their perspectives, leveraging their expertise, learning from the native cultural traits, as well as further exploring themselves. All these purposes need to be advised, visualized, and offered to students.

In the efforts to encourage more IU students to engage in the student mobility programs, the Center for International Mobility (CIM) yearly organize many activities for the students, namely, sharing more information of the exchange program during the annual Orientation Week for freshmen, Alumni Live chat, Information Session, coffee talk, etc. to increase the students' consciousness of studying abroad. In addition, Center for International Mobility at IU-VNU annually design the Study Tour programs hosting different universities groups majoring in economics/business, engineering, science and always include local students (open the chance to all biochemistry students specifically) into the tours. Although students just spend time together in 01 or 02 week, it should be sufficient for them to develop a network, refresh their mindset, and brainstorm plans for a new journey. Those short-term programs are communicative channels to attract more international biochemistry students to come and experience the training program fully delivered in English.

The internship program with financial support from our partner university has also been

### RESPONSES FROM DEPARTMENT OF APPLIED CHEMISTRY

great resources for our students to have more opportunity studying abroad. In the last 03 recent months, the Center for International Mobility has been announcing 04 internship programs in Taiwan (National Chung Cheng University, National Central University), Singapore (National University of Singapore) for engineering and business outbound students. Vice versa, CIM has just recently established a database of the existing research projects managed by IU faculty members that are available for international students who want to conduct their internship in Vietnam.

The Department of Applied chemistry will also strive to invite more international speakers to our seminars and lectures to attract more students to the program. The information regarding to these seminars together with internship programs and international academic mobility will be updated regularly to the Department website to improve the students information access.

### 3. RESOURCES

#### Criterion 3.2 Funds and equipment

Ensuring the safety of our students in laboratory environments is our utmost priority. To this end, the School of Biotechnology mandates that all students undergo a comprehensive general laboratory safety course before accessing the labs. Personal protective equipment is readily available and provided for all teaching sessions and research endeavors. However, we acknowledge that our laboratory safety standards have not yet met international benchmarks. In response to experts recommendations, we have promptly initiated actions to address this gap:

- Improving laboratory safety protocols involves various measures, including ensuring the visibility and accessibility of personal protective equipment, installing clearly marked emergency exits and laboratory regulation signs, properly securing gas tanks, and appropriately labeling chemical and glassware waste.
- Issuing the School plan of establishing a new lab safety guidelines follow the internationally safety standards at all school laboratories.

In regards to our equipment facilities, we recognize the critical role of modern equipment and laboratory infrastructure in advancing our program. BC students have unrestricted access to a comprehensive array of instruments across the 19 laboratories housed within the School of BT. We have compiled a list of recommended equipment from ASIIN experts, including essential items such as HPLC machines, heat sterilizing devices, and fluorescence microscopes, all of which are vital for enhancing our laboratory capabilities. It's worth noting that while some devices listed by ASIIN, like GC-MS, NMR, and FACS, are not

### RESPONSES FROM DEPARTMENT OF APPLIED CHEMISTRY

currently available in our School of BT laboratories, students can still utilize them through collaborative arrangements with other laboratories within the Vietnam National University HCMC system.

On the other hand, addressing the shortage of aforementioned equipment and laboratory space for teaching, VNU-HCMC has approved for the construction of the new laboratory building QT.B4, comprising seven floors designated for the School of BT. Notably, the Department of Applied Chemistry will be allocated a total of five laboratories for teaching and research purposes. Additionally, VNU-HCMC has formulated a development plan extending to 2030 for the SBT, with the objective of positioning it as a leading research center in Asia. Alongside the construction of the new building, this plan will facilitate the establishment of modern laboratories equipped with state-of-the-art equipment at SBT.

Recognizing the concern that our students may not be adequately informed about accessing scientific databases, we have taken proactive steps to address this issue. We have requested the university library to organize additional training sessions specifically tailored for our students. Furthermore, we have enhanced accessibility by incorporating a new section dedicated to library access instructions on our School/Department websites.

### 5. QUALITY MANAGEMENT: QUALITY ASSESSMENT AND DEVELOPMENT

We highly value the perspectives of our stakeholders, including current and former students, in shaping and advancing the BC program. At the School of Biotechnology, effective April 18th, 2023, we have implemented a significant change by appointing a student representative to the School Council. This Council holds decision-making authority in crucial matters such as the development strategy, planning, and operational direction of the School of Biotechnology, as well as the establishment of regulations and operational guidelines. The School Council, comprising members from the School Board, employers, external institutions, faculty, researchers, and students, also serves as an advisory body for our programs.

Moreover, we have expanded student involvement by appointing three students to the Quality Assurance Team of the School. This step ensures enhanced participation in the development of our academic programs, fostering a collaborative and inclusive approach to quality assurance.

## F Summary: Expert recommendations (04.03.2024)

Taking into account the additional information and the comments given by HCMIU, the experts summarize their analysis and **final assessment** for the award of the seals as follows:

Degree Programme	ASIIN-seal	Subject-specific label	Maximum duration of accreditation
Ba Biochemistry	With requirements for one year	Eurobachelor® upon the fulfilment of requirements	30.09.2029

### Requirements

- A 1. (ASIIN 2) The discrepancy between the intended learning outcomes in the module descriptions and the actual examination methods need to be solved. The exams need to be competency oriented and should put a stronger focus on transfer skills and critical thinking.
- A 2. (ASIIN 3.2) All laboratories need to follow international standards with respect to safety measures.

### Recommendations

- E 1. (ASIIN 1.3) It is recommended to further promote the students' academic mobility and to establish more international cooperations.
- E 2. (ASIIN 3.1) It is recommended to invite more international guest lecturers.
- E 3. (ASIIN 3.2) It is recommended to provide enough technical equipment and laboratory workplaces so that experiments can be done by groups of 2 to 3 students.
- E 4. (ASIIN 3.2) It is recommended to give students practical experience in modern analytical and biochemical methods and to become familiar with the respective devices (e.g. HPLC).
- E 5. (ASIIN 5) It is recommended to establish an advisory board with external stakeholders at the School of Biotechnology.

## **G Comment of the Technical Committees (14.03.2024)**

### **Technical Committee 09 – Chemistry, Pharmacy**

*Assessment and analysis for the award of the ASIIN seal:*

The Technical Committee shares the assessment of the experts that it would make a lot of sense to award a Bachelor's degree in Biochemistry rather than Chemistry in order to reflect the actual focus of the programme. It also supports the imposition of two requirements regarding compliance with international safety standards in the laboratories and the adaptation of examination formats. In addition, five recommendations are to be made.

*Assessment and analysis for the award of the Eurobachelor® label:*

The Technical Committee agrees with the assessment of the expert group that the Eurobachelor label should be awarded if the requirements are met.

The Technical Committee 09 – Chemistry, Pharmacy recommends the award of the seals as follows:

<b>Degree Programme</b>	<b>ASIIN seal</b>	<b>Subject-specific labels</b>	<b>Maximum duration of accreditation</b>
Ba Biochemistry	With requirements for one year	Eurobachelor® upon the fulfilment of requirements	30.09.2029

### **Technical Committee 10 - Life Sciences**

*Assessment and analysis for the award of the ASIIN seal:*

The Technical Committee shares the assessment of the experts that it would make a lot of sense to award a Bachelor's degree in Biochemistry rather than Chemistry in order to reflect the actual focus of the programme. It also supports the imposition of two requirements regarding compliance with international safety standards in the laboratories and the adaptation of examination formats. The Technical Committee decides to upgrade recommendation E4 to a requirement, as it must be ensured that students gain practical experience with modern analytical methods. In addition, four further recommendations are to be made.

The Technical Committee 10 – Life Sciences recommends the award of the seals as follows:

<b>Degree Programme</b>	<b>ASIIN-seal</b>	<b>Subject-specific label</b>	<b>Maximum duration of accreditation</b>
Ba Biochemistry	With requirements for one year	Eurobachelor® upon the fulfilment of requirements	30.09.2029

## H Decision of the Accreditation Commission (22.03.2024)

*Assessment and analysis for the award of the subject-specific ASIIN seal:*

The Accreditation Commission discusses the procedure and decides to follow the suggestion of TC 10 to upgrade recommendation E 4 to a requirement because it is essential that students gain practical experience with modern analytical methods. Otherwise, no changes to the other requirements and recommendations are made.

*Assessment and analysis for the award of the Eurobachelor® label:*

The Accreditation Commission agrees with the assessment of the expert group and the Technical committee that the Eurobachelor label should be awarded if the requirements are met.

The Accreditation Commission decides to award the following seals:

<b>Degree Programme</b>	<b>ASIIN-seal</b>	<b>Subject-specific label</b>	<b>Maximum duration of accreditation</b>
Ba Biochemistry	With requirements for one year	Eurobachelor® upon the fulfilment of requirements	30.09.2029

### Requirements

- A 1. (ASIIN 2) The discrepancy between the intended learning outcomes in the module descriptions and the actual examination methods need to be solved. The exams need to be competency oriented and should put a stronger focus on transfer skills and critical thinking.
- A 2. (ASIIN 3.2) All laboratories need to follow international standards with respect to safety measures.
- A 3. (ASIIN 3.2) Provide a concept how to give students practical experience in modern analytical and biochemical methods and how to become familiar with the respective devices (e.g. HPLC).

### Recommendations



- E 1. (ASIIN 1.3) It is recommended to further promote the students' academic mobility and to establish more international cooperations.
- E 2. (ASIIN 3.1) It is recommended to invite more international guest lecturers.
- E 3. (ASIIN 3.2) It is recommended to provide enough technical equipment and laboratory workplaces so that experiments can be done by groups of 2 to 3 students.
- E 4. (ASIIN 5) It is recommended to establish an advisory board with external stakeholders at the School of Biotechnology.

# Appendix: Programme Learning Outcomes and Curricula

According to the Self-Assessment Report, the following **objectives** and **learning outcomes (intended qualifications profile)** shall be achieved by the Bachelor's degree programme Biochemistry:

## Programme Objectives (PO)

The biochemistry undergraduate programme is designed to provide students with a strong foundation in science and applied biochemistry, with an emphasis on scientific research, practical skills, and a multidisciplinary approach. It is tailored to meet the needs and demands of the pharmaceutical, cosmetics, and nutrition industries in Vietnam.

This programme strives to expand the frontiers of scientific knowledge to improve the production and quality of drugs, cosmetics, and food products, and to contribute to the economic growth of the country and the global advancement of pharmacy, cosmetics, and nutritional sciences, safety, and sustainability.

Graduates of the programme will be equipped with the proper knowledge and skills in biochemistry, as well as professional integrity. Therefore, the Programme Objectives (POs) have been clearly formulated:

PO 1: Training students to gain basic knowledge of mathematics, natural and social sciences to be ready to join the international workforce, and meet the demand of economic development, national industrialization and modernization.

PO 2: Training students to have theoretical and practical knowledge with solid expertise and professional ethics; to have management, critical thinking, communication, and multi-disciplinary teamwork skills.

PO 3: Training students to be capable of working in the biochemical and chemical organization such as factories, research institutes, hospitals, universities, high schools, and in businesses of related fields such as cosmetics, nutrition, biotechnology, agriculture, environment, food and pharmaceutical, etc...

PO 4: Training students with adequate knowledge and lifelong learning spirit, to continue to study in biochemistry, chemistry, biotechnology graduate programs in Vietnam or abroad.

## Intended Learning Outcomes (ILO)

The ILOs detailed by the Biochemistry programme are detailed below:

(1) Upon graduation, our students should be able to:

Identify Biochemistry-relevant fundamental knowledge of mathematics, economics, social, and the natural sciences. (Generic knowledge)

- (2) Display methodological competence and apply this in other contexts to identify and solve subject-specific problems effectively. (Generic skills)
- (3) Acquire fundamental and professional knowledge of core subjects in Biochemistry. (Specific knowledge)
- (4) Perform independent practical work safely in laboratories in Biochemistry and related fields; and gather, interpret, and evaluate scientific data. (Specific skills)
- (5) Adhere to safety, environmental and ethical issues and responsibilities as well as the associated legal fundamentals. (Attitudes)
- (6) Conduct research projects, apply modern techniques in development of biochemical products. (Application)
- (7) Recognize the need and engage in life-long learning and professional life preparation. (Life-long learning)
- (8) Function in interdisciplinary teams and acquire communication, leadership, management skills. (Development)

The following curriculum is presented:

Freshman Year (1 <sup>st</sup> year)							
Semester 1				Semester 2			
Code	Course	ECTS	Credits	Code	Course	ECTS	Credits
MA001IU	Calculus 1	6.16	4	EN011IU, EN012IU	AE 2	6.16	4
BT311IU	Biology	4.62	3	BT317IU	Biostatistics	3.08	2
BT312IU	Practice in Biology 1	2	1	BT318IU	Practice in Biostatistics	2	1
CH011IU	Chemistry for Engineers	4.62	3	PE008IU	Critical Thinking	4.62	3
CH012IU	Chemistry Laboratory	2	1	BTBC103IU	Inorganic Chemistry	4.62	3
EN007IU, EN008IU	AE 1	6.16	4	BTBC104IU	Inorganic Chemistry Lab	2	1
PH013IU	Physics 1	3.08	2	PH014IU	Physics 2	3.08	2
PT001IU	Physical Training 1	4.62	3	BTBC102IU	Introduction to Biochemistry	3.08	2
				PT002IU	Physical Training 2	4.62	3
<b>Total Credits</b>		<b>28.64</b>	<b>18</b>	<b>Total Credits</b>		<b>28.64</b>	<b>18</b>

Summer Semester							
Code	Course	ECTS	Credits				
PE015IU	Philosophy of Marxism and Leninism	4.62	3				
PE016IU	Political economics of Marxism and Leninism	3.08	2				
PE014IU	Environmental Science	4.62	3				
<b>Total Credits</b>		<b>12.32</b>	<b>8</b>				

Sophomore Year (2 <sup>nd</sup> year)							
Semester 1				Semester 2			
Code	Course	ECTS	Credits	Code	Course	ECTS	Credits
BTBC213IU	Fundamentals of Analytical Chemistry	4.62	3	BTBC207IU	Organic Chemistry Lab	4	2
BTBC214IU	Fundamental in analytical chemistry lab	2	1	BTBC211IU	Biochemistry 2	4.62	3
BTBC209IU	Biochemistry 1	4.62	3	BTBC212IU	Biochemistry 2 lab	4	2
BT313IU	Genetics	4.62	3	BTBC215IU	Instrumental Analysis	4.62	3
BT314IU	Practice in Genetics	2	1	BTBC216IU	Instrumental analysis lab	2	1
PE017IU	Scientific socialism	3.08	2	BTBC206IU	Organic Chemistry 2	4.62	3
BT200IU	Scientific Writing Workshop	3.08	2	BT405IU	Physical Chemistry	4.62	3
BTBC201IU	Organic Chemistry 1	4.62	3	PE018IU	History of Vietnamese Communist Party	3.08	2
				PE019U	Ho Chi Minh's Thoughts	3.08	2
<b>Total Credits</b>		<b>28.64</b>	<b>18</b>	<b>Total Credits</b>		<b>34.64</b>	<b>21</b>

Junior Year (3 <sup>rd</sup> year)							
Semester 1				Semester 2			
Code	Course	ECTS	Credits	Code	Course	ECTS	Credits
BT321IU	Microbiology	4.62	3	BTBC313IU	Methods in Biochemistry	4.62	3
BT322IU	Practice in Microbiology	2	1	BTBC314IU	Methods in biochemistry lab	4	2
BT337IU	Bioinformatics	4.62	3	BTBC415IU	Fermentation Technology	4.62	3
BT338IU	Practice in Bioinformatics	2	1	BTBC416IU	Fermentation Technology lab	2	1
BTBC302IU	Biophysical Chemistry	4.62	3	BT335IU	Immunology	4.62	3
BTBC304IU	Biopharmaceutics	4.62	3	BT336IU	Practice in Immunology	2	1
BTBC315IU	Enzymology	4.62	3		Free Elective courses	9.24	6
BTBC316IU	Enzymology lab	2	1				
<b>Total Credits</b>		<b>29.1</b>	<b>18</b>	<b>Total Credits</b>		<b>31.1</b>	<b>19</b>
Summer Semester							
Code	Course	ECTS	Credits				
BTBC309IU	Internship	5.82	2				
<b>Total Credits</b>		<b>5.82</b>	<b>2</b>				

Senior Year (4 <sup>th</sup> year)							
Semester 1				Semester 2			
Code	Course	ECTS	Credits	Code	Course	ECTS	Credits
BTBC413IU	Clinical Biochemistry	4.62	3	BT179IU	Thesis	34.91	12
BTBC413IU	Clinical biochemistry lab	2	1				
	Professional Elective courses	13.86	9				
	Professional Elective Lab courses	6	3				
<b>Total Credits</b>		<b>26.48</b>	<b>16</b>	<b>Total Credits</b>		<b>34.91</b>	<b>12</b>

**List of Free Elective courses**

Students have to take at least 6 credits from following list

<i>Code</i>	<i>Course</i>	<i>ECTS</i>	<i>Credits</i>
IS050IU	Project Management	4.62	3
BA164IU	Production and Operation management	4.62	3
IS029IU	Logistics and Supply chain Management	4.62	3
BA003IU	Principles of Marketing	4.62	3

**List of Professional Elective courses:**

Students have to take at least 12 credits from following list

<i>Code</i>	<i>Course</i>	<i>ECTS</i>	<i>Credits</i>
BTBC317IU	Nutritional Biochemistry	4.62	3
BTBC318IU	Nutritional Biochemistry Lab	2	1
BTBC417IU	Nutrition Therapy	4.62	3
BTBC418IU	Nutrition Therapy Lab	2	1
BTBC419IU	Clinical Nutrition	4.62	3
BTBC420IU	Clinical Nutrition Lab	2	1
BTBC408IU	Drug Development	4.62	3
BTBC409IU	Cosmetics and Cosmeceuticals 1	4.62	3
BTBC410IU	Cosmetics and Cosmeceuticals 2	4.62	3
BTBC411IU	Cosmetics and Cosmeceuticals Lab	4	2
BTBC421IU	Nutraceuticals	4.62	3
BTBC422IU	Nutraceuticals Lab	2	1