



ASIIN Seal & EUR-ACE[®] Label & Euro-Inf[®] Label

Accreditation Report

Bachelor's Degree Programme
Computer Science
Information Technology
Control Engineering and Automation

Provided by

International University, Vietnam National University
Ho Chi Min City

Version: 24 September 2024

Table of Content

| | |
|---|-----------|
| A About the Accreditation Process..... | 3 |
| B Characteristics of the Degree Programmes | 5 |
| C Peer Report for the ASIIN Seal | 8 |
| 1. The Degree Programme: Concept, content & implementation | 8 |
| 2. The degree programme: structures, methods and implementation..... | 15 |
| 3. Exams: System, concept and organisation..... | 24 |
| 4. Resources | 27 |
| 5. Transparency and documentation..... | 31 |
| 6. Quality management: quality assessment and development | 32 |
| D Additional Documents | 35 |
| E Comment of the Higher Education Institution (11.08.2023) | 35 |
| F Summary: Peer recommendations (21.08.2023) | 45 |
| G Comment of the Technical Committees | 47 |
| Technical Committee 02 – Electrical Engineering/Information Technology (04.09.2023) | |
| 47 | |
| Technical Committee 04 – Informatics/Computer Science (14.09.2023)..... | 48 |
| H Decision of the Accreditation Commission (22.09.2023) | 49 |
| I Appendix: Programme Learning Outcomes and Curricula | 53 |

A About the Accreditation Process

| Name of the degree programme (in original language) | (Official) English translation of the name | Labels applied for ¹ | Previous accreditation (issuing agency, validity) | Involved Technical Committees (TC) ² |
|--|---|---------------------------------|--|---|
| Kỹ sư Khoa học Máy tính | Bachelor of Science in Computer Science | ASIIN, Euro-Inf® Label, | AUN-QA (ASEAN University Network, 5/11/2017 – 4/11/2022) | 04 |
| Kỹ sư Công nghệ Thông tin | Bachelor of Engineering in Information Technology | ASIIN, EUR-ACE® | / | 02, 04 |
| Kỹ sư Kỹ thuật Điều khiển và Tự động hóa | Bachelor of Engineering in Control Engineering and Automation | ASIIN, EUR-ACE® | / | 02 |
| Date of the contract: 01.10.2022 Submission of the final version of the self-assessment report: 07.03.2023 Date of the online visit: 15 – 17.03.2023 at: online | | | | |
| Peer panel: apl. Prof. Dr.-Ing. Reinhard Moeller, University of Wuppertal Prof. Dr.-Ing. Reiner Schütt, West Coast University of Applied Sciences | | | | |

¹ ASIIN Seal for degree programmes; EUR-ACE® Label: European Label for Engineering Programmes; Euro-Inf®: Label European Label for Informatics

² TC: Technical Committee for the following subject areas: TC 02 - Electrical Engineering/Information Technology; TC 04 - Informatics/Computer Science.

A About the Accreditation Process

| | |
|--|--|
| Prof. Dr. Bernd Becker, University of Freiburg Prof. Dr. Thomas Meuser, University of Applied Sciences Niederrhein Thang Mai, Vice Business Leader in FPT Software Nguyễn Vĩnh Anh, Student at HUST | |
| Representative of the ASIIN headquarter: Paulina Petracenko | |
| Responsible decision-making committee: Accreditation Commission for Degree Programmes | |
| Criteria used: European Standards and Guidelines as of May 15, 2015 ASIIN General Criteria, as of December 07, 2021 Subject-Specific Criteria Technical Committee 02 – Electrical Engineering/Information Technology as of September 23, 2022 Subject-Specific Criteria of Technical Committee 04 – Informatics/Computer Science as of March 29, 2018 | |

B Characteristics of the Degree Programmes

| a) Name | Final degree (original/English translation) | b) Areas of Specialization | c) Corresponding level of the EQF ³ | d) Mode of Study | e) Double/Joint Degree | f) Duration | g) Credit points/unit | h) Intake rhythm & First time of offer |
|------------------------------------|---|---|--|------------------|------------------------|-------------|----------------------------|--|
| Computer Science | Bachelor of Science | | 6 | Full time | / | 8 Semester | 143 or 144 credits | 09/2014 |
| Information technology | Bachelor of Engineering | Computer Engineering Network Engineering | 6 | Full time | / | 9 Semester | 150 credits 151 credits | 09/2004 |
| Control Engineering and Automation | Bachelor of Engineering | | 6 | Full time | / | 8 Semester | 152 credits | 09/2014 |

For the Bachelor's degree programme Information Technology the institution has presented the following profile on the website:

Students of the Bachelor programme Information Technology have to choose between two majors: Network Engineering and Computer Engineering.

“The Network Engineering major provides foundational and advanced knowledge, emphasizing both theory and practical skills in the field of networks and systems. Foundational knowledge in Computer Networks, Computer Operating Systems, and Network Application Programming is taught in this major. In-depth knowledge such as Wireless Networks, Network and System Administration, Network and System Security, IoT applications, and Distributed Computing is also provided to students.

Career Opportunities in the Network Engineering major:

- Software Engineers: Analyzing, designing, and developing software for government agencies, research institutes, and businesses.
- Network Engineers: Designing and managing computer network infrastructure and information systems in domestic and international enterprises, banks, and stock exchanges.

³ EQF = The European Qualifications Framework for lifelong learning

The Computer Engineering major equips students with foundational and advanced knowledge in the field of computer hardware, principles, and methods for designing and developing hardware and software systems to serve the operations of hardware devices. Computer Engineering knowledge encompasses various aspects of computing, such as electronic circuit design, microprocessors, personal computers, supercomputers, and particularly embedded systems used in modern electronic devices.

Career Opportunities in the Computer Engineering major: Hardware Engineers: Analyzing, designing, and developing hardware devices, hardware systems, and related embedded software to support the operations of such devices. Hardware engineers can work in hardware-focused companies such as Intel, Renesas, Samsung, Asus, and others.”

For the Bachelor’s degree programme Computer Science the institution has presented the following profile on the website:

“Objectives: The curriculum is designed to provide students with a strong foundation in computer science and encompasses a comprehensive range of topics of software development and essential professional knowledge. It covers a range of topics, including algorithms, methods, tools, and techniques used in computers, information systems, development and management system, system security principles, and analysis and design methods of software applications. The program equips learners with knowledge of cutting-edge technologies and research trends in the field of computer science.

Career opportunities: Computer Science graduates are well equipped for professional roles involving analysis, design, and development of algorithms and software solutions. They can pursue a range of career opportunities, including positions at renowned companies such as DXC, FSOFT, IBM, TMA, TPS,... as well as within government organizations and research institutions for science and technology.

Students can chose between two majors: Computer Science and Software Engineering.”

For the Bachelor’s degree programme Control Engineering & Automation the institution has presented the following profile on the website:

“The Control Engineering and Automation Program was constructed based on similar domestic and international programs in 2014. The program aims to pass the audit of multiple international education organizations. The program is an English-only course and the minimum number of total credits is 152, over a 4-year period. An English entrance exam will determine which level of English complementary class each student would have to attend,

B Characteristics of the Degree Programmes

together with their official course. The SEE, IU – VNU HCMC educates graduates with highly specialized knowledge and skills to: Be a capable Engineer who may contribute in different areas of Electrical and Electronic industries, Be engaged in lifelong learning and researching to adapt rapid changes in the global economy and technologies, Serve efficiently the community, society, and industry in an ethical and responsible manner, Have professional working style and leadership. “

C Peer Report for the ASIIN Seal⁴

1. The Degree Programme: Concept, content & implementation

Criterion 1.1 Objectives and learning outcomes of a degree programme (intended qualifications profile)

Evidence:

- Self-Assessment Report
- Discussions during the Audit
- Objective-module-matrix for all programmes
- Websites of all programmes
- Diploma Supplements for all programmes
- Module Handbooks for all programmes

Preliminary assessment and analysis of the peers:

For the degree programmes under review, the higher education institution (HEI) presents an extensive description of learning outcomes in the self-assessment report (SAR). This description is accompanied by learning module matrices for each programme, matching learning objectives, modules and the ASIIN Subject-Specific Criteria (SSC) as well as the criteria for the Euro-Inf[®] Label and the EUR-ACE[®]-Label. A short English description of the learning outcomes is also presented in the Diploma Supplements for all degree programmes. In addition, the module descriptions include the learning outcomes of each individual module.

The peers discuss the learning outcomes of each degree programme, which can be found in their entirety in the annex to this accreditation report, with regard to the following criteria: the level of academic qualification aimed at, the respective ASIIN subject-specific label (SSC), whether the intended qualification profiles allow the students to take up an occupation corresponding to their education, which stakeholders are involved in the continuous assessment and further development of the objectives. The peers refer to the SSC of

⁴ This part of the report applies also for the assessment for the European subject-specific labels. After the conclusion of the procedure, the stated requirements and/or recommendations and the deadlines are equally valid for the ASIIN seal as well as for the sought subject-specific label.

the Technical Committees Electrical Engineering and Information Technology as well as Computer Science as a basis for judging whether the objectives and intended learning outcomes of the degree programmes under review correspond with the criteria. They come to the following conclusions:

HCMIU has defined Programme Educational Objectives (PEOs) as well as Intended Learning Outcomes (ILOs) to describe the profile and the goals of the programmes under review. While the PEOs describe the general goals, the ILO are worded more specific and describe in detail, what competencies the students should acquire during their studies. The PEOs 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 Schools' Scientific Committees (which include the members of Management Board, Representatives of Stakeholder and Lecturers). Therefore, the PEOs reflect the requirements of the University and the needs of regional and nationwide companies in the respective areas of computer science, information technology, and automation and control engineering. The PEOs are documented both on the programme's webpage and in the Student Handbook.

While the PEOs define the overall goals, the ILO interpret the PEOs 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 Electrical Engineering and the School of Computer Science and Engineering have aligned the ILOs with international standards e.g. the criteria from the Asian University Network.

The university states that all relevant stakeholders are involved in the process of designing and updating the learning outcomes of the program. Student feedback is considered in the form of survey results and discussions with academic advisors and faculty leaders, among others. Industry partners are regularly surveyed and included in the School Advisory Council (SAC), which discusses curriculum development and program learning outcomes.

According to the student handbooks, graduates of the Bachelor programme Computer Science "can participate in analysis, design, and development of software and information systems in professional software companies such as DXC, FSOFT, IBM, TMA Solutions, TPS Solutions, Robert Bosch, Microsoft...or government agencies, research institutes, science and technology institutes."

Graduates of the Bachelor programme Information Technology "can work in the analysis, design, and development of intelligent data mining software for businesses, government agencies, research institutes, or software development companies such as DXC, FSOFT, IBM, TMA Solutions, TPS Solutions, Robert Bosch, Microsoft...or operating in different fields related to data analysis, mining, and processing."

Finally, graduates of the Bachelor programme Control Engineering and Automation are able to “work in domestic or foreign companies related to IC design, consumer electronics, information technology, and automation, develop start-up companies and introduce new electrical and communication products to the market, work in domestic or foreign communication /network corporations, mobile network, air freight companies, and develop start-up companies and introduce new electrical and communication products to the market.”

The peers conclude that the objectives and intended learning outcomes of all degree programmes under accreditation are consistent with the EQF levels aimed at and adhere to the relevant ASIIN SSC. They confirm that the graduates are able to work in the aforementioned job settings. Since the university has also applied for the Euro-Inf[®] Label and the EUR-ACE[®]-Label, the peers assess whether the learning objectives correlate with the respective criteria of those labels. They conclude that the intended learning outcomes at the programme level also match the relevant subject-specific criteria of the Euro-Inf[®] Label and the EUR-ACE[®]-Label.

Criterion 1.2 Name of the degree programme

Evidence:

- Self-Assessment Report
- Diploma Supplements

Preliminary assessment and analysis of the peers:

The experts agree that the names of the degree programmes adequately reflect their respective aims, learning outcomes and curricula.

Criterion 1.3 Curriculum

Evidence:

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

Preliminary assessment and analysis of the peers:

The two Bachelor programmes Computer Science and Control Engineering and Automation have a duration of four years (8 semesters). The Bachelor programme Information Technology has a duration of 4.5 years (9 semesters).

An academic year at HCMIU consists of two semesters and a short summer term. The summer term is normally used for conducting the internship. 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 7th or the 8th week of a semester. The odd semester starts in August and ends January of the following year, while the even semester lasts from February to July.

Two main semesters are offered a year. Upon request, a few course works can be opened for the short summer semester. 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.

In the first year, students mainly take general courses such as mathematics, natural sciences, and English. From the second year, students can take part in core courses and specialized courses. Furthermore, students can select electives according to their personal interests and after consultation with their academic advisors. During their studies, all students must spend at least eight weeks to study and work in companies, factories, institutes, etc. during their internship. The internship is usually done in the summer after the third year with completing at least 90 credits hours. In the final year, students have to complete their Bachelor's thesis. For both internship and thesis, students have to submit their reports, present and defend it in front of a panel.

Regarding the internal assessment of the degree programmes, the experts are informed that there is an Academic and Scientific Committee (ASC) and a Quality Assurance Team (QAT) at the respective Schools, 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.

Overall, the peers gain the impression that the curriculum of the programmes under review are well designed and that the graduates are well prepared for entering the labour market and finding adequate jobs in Vietnam.

However, they critically note the high number of general modules that are irrelevant to the three degree programs. In addition to government-mandated courses on military training and national philosophy, history and politics, the experts note a significant number of modules in the natural sciences such as chemistry and physics. For example, students in the bachelor's degree program in computer science must take six modules in chemistry and

physics, amounting to a total of 14 credit points. Together with the compulsory subjects of English, mathematics, physical education and philosophy, the non-technical modules account for 57 credit points of the programme. Since the chemistry and physics modules are not required by the state and are largely irrelevant to the programs studied, experts agree that these modules should be eliminated from the degree programs. The positive effect of these removals is that the number of subject-specific courses in the degree programs can be increased. The reviewers therefore recommend that the irrelevant courses be replaced with additional electives that reflect the state of the art in the disciplines.

Criterion 1.4 Admission requirements

Evidence:

- Self-assessment report
- Admission Regulations

Preliminary assessment and analysis of the peers:

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 (VNUHCM).
- (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.

As the three programme under review are 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 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 Annual National Entrance 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 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.

The number of enrolled students has increased significantly in all three degree programmes in the last years: While 56 students were enrolled in the Ba Computer Science program in 2017, 121 students were admitted in 2021. In the Ba program in Information Technology, the increase was even more dramatic: from 7 students in 2017 to 87 enrolled students in 2021. In the Ba programme in Control Engineering and Automation, the number of enrolled students increased from 30 in 2017 to 69 in 2021.

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, faculty 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.

In the audit, the experts inquire whether students can make an appeal against the admission decision of HCMIU. Representatives of the rectorate explain that every university in Vietnam must follow the Ministry of Education's regulation (MOET), which allows students to appeal the admission decision. However, this option is not made mandatory in any document of HCMIU. For reasons of transparency, the experts recommend that the students' right to appeal against HCMIU's admission decision be included in the general admission regulations and communicated to the students.

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

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

The experts are pleased that HCMIU has implemented the experts' requirement to replace irrelevant modules in science with subject-relevant courses. HCMIU has provided evidence that with the start of the new academic year (2023-2024), a number of non-essential courses such as Physics, Calculus and Chemistry have been dropped. Instead, a number of technical electives such as "Digital Logic Design" (in the Computer Science programme) and "Internet of Things" (in the Information Technology programme) have been introduced. The experts therefore view this requirement as fulfilled.

With regard to the experts' recommendation to clarify the students' right to make an appeal against the admission decision of the university and to integrate it in the admission regulations, HCMIU clarifies that its admission policies follow exactly the regulation of the Ministry of Education, as every public university in Vietnam is required to. These regulations are accessible and transparent for all students in Vietnam. Thus, the experts view the recommendation as fulfilled.

The criterion is fulfilled.

2. The degree programme: structures, methods and implementation

Criterion 2.1 Structure and modules

Evidence:

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

Preliminary assessment and analysis of the peers:

The curriculum of the Bachelor's degree programmes is designed for eight semesters. Students can extend their study time if needed and the maximum length of time allowed for students to finish the programme is six years

The courses in the first two semesters (including the short summer semester) of the Bachelor's programme convey basic knowledge of natural sciences, mathematics and English. In addition, courses on social and political sciences as well as physical education have to be covered. The English courses are designed to help students to improve their English proficiency and achieve the required level equivalent upon graduation.

All courses are taught entirely in English except three courses (Philosophy Marx - Lenin, Marxist – Leninist Political Economy, History of Vietnamese Communist Party, and Ho Chi Minh Thought's). Each student, regardless of the specialization chosen, is required to take eight credits in English.

Elective courses can be chosen by the students in accordance with their areas of interest and after consultation with their academic advisor. In addition, all students have to conduct an internship. During the seventh and eighth semester, students must prepare and complete the Bachelor's thesis. 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. In addition, HCMIU annually organises a job fair for students from all majors.

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 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.

As outlined in chapter 1.3 of this report, the experts insist that the irrelevant compulsory courses such as physics and chemistry are removed from the study programmes. They suggest replacing these modules with additional elective modules enhancing the diversity of topics in the respective programmes.

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

International Mobility

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 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 at the ERASMUS+ programme and has around 60 international partner universities. This results in approximately 400 incoming and 210 going students. However, most of these students are from the business major, the academic mobility among science and engineering students is significantly lower. Representatives of the rectorate report that only about eleven students in the two programmes Information Technology and Control Engineering and Automation spent a semester abroad in the last years.

The students confirm during the discussion with the peers that some opportunities for international academic mobility exist. However, they also point out that they wish for 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 peers understand these problems; however, 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 students.

In order to increase the numbers it would be necessary to provide more scholarships, because financial restrictions and high living costs are the biggest obstacles that keep students from studying abroad. The peers support these plans and encourage HCMIU to increase the efforts and to establish more international cooperations in the areas of computer science, information technology, and control and automation engineering. 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 biotechnology programme.

In this context, the experts also recommend improving the students' English communication skills within technical courses. In the audit discussions, students report that they do not have the opportunity to practice their English in communicating with each other in either the language or technical courses. Therefore, they wish for more opportunities to converse in English to enhance their communicating skills. The experts agree with this suggestion and suggest that students should be given the opportunity to have more dialogues and discussions in technical subjects.

| |
|--|
| Criterion 2.2 Work load and credits |
|--|

Evidence:

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

Preliminary assessment and analysis of the peers:

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 3: Workload Calculation, Source: SAR HCMIU

According to the Self-Assessment Report and the module descriptions, one ECTS point is awarded for 30 hours of students’ workload. As a result, there cannot be the same conversion rate between Vietnamese credits and ECTS points for all courses. For theoretical lectures, the rate would be 1 to 1.5 and for practical work 1 to 2 (at least). However, HCMIU calculates with fixed conversion factor of 1.7 between Vietnamese credit hours and ECTS points.

The module descriptions reveal the problem or rather the miscalculation of the workload: For example, the module description for “Programming for Engineers” mentions a total workload of 135 hours and three Vietnamese credits (5.1 ECTS points) are awarded. However, 5.1 ECTS points would mean 153 hours. As a result, the conversion from Vietnamese credit hours to ECTS points is faulty and inconsistent.

The peers point out that it is necessary to eliminate the inconsistencies in the workload and credit calculation of the Vietnamese as well as the ECTS system. HCMIU should follow the ECTS Users’ Guide and define how many hours of students’ total workload are required for one ECTS point. This is the time students typically need to complete all learning activities (such as lectures, seminars, projects, practical work, self-study and examinations).

In other words, a seminar and a lecture may require the same number of contact hours, but one may require significantly greater workload than the other because of differing amounts of independent preparation by students. Typically, the estimated workload will result from the sum of:

- the contact hours for the educational component (number of contact hours per week x number of weeks),

- the time spent in individual or group work required to complete the educational component successfully (i.e. preparation beforehand and finalising of notes after attendance at a lecture, seminar or laboratory work; collection and selection of relevant material; required revision, study of that material; writing of papers/projects/dissertation; practical work, e.g. in a laboratory),
- the time required to prepare for and undergo the assessment procedure (e.g. exams).

Since the workload is an estimation of the average time spent by students to achieve the expected learning outcomes, the actual time spent by an individual student may differ from this estimate. Individual students differ because some progress more quickly, while others progress more slowly. Therefore, the workload estimation should be based on the time an “average students” spends on self-study and preparation for classes and exams. The initial estimation of workload should be regularly refined through monitoring and student feedback.

During the discussions with the programme coordinators and the students, the peers learn that so far there has been no survey asking the students to evaluate the amount of time they spend outside the classroom for preparing the classes and studying for the exams. Since this is necessary in the ECTS framework, the peers suggest asking the students directly about their experiences. This could be done by including a respective question in the course questionnaires.

Furthermore, after reviewing the curricula of all three programmes, the experts note that the workload is unevenly distributed over the semesters. For example, in the Bachelor’s programme in Computer Science, students are expected to acquire 22 CP in semester 1 and 2 respectively, 23/24 CP in semester 3, 18 CP in semester 4, 17 CP in semester 5, 18 CP in semester 6, 16 CP in semester 7 and 10 CP in semester 8. The same phenomenon can be seen in the other programmes. The experts discuss this issue with students and programme coordinators. The coordinators indicate that they are aware of the problem and that they plan to take measures to achieve a more balanced workload when adapting the curriculum in the near future. The students state that they are generally satisfied with the workload and explain that each student has the possibility to adjust their workload by choosing the number of modules they want to complete per semester. Thus, it is possible to choose between 14 and 24 CPs per semester. According to the students, this mechanism allows them to manage their studies at their own pace. From the experts’ point of view, this does not change the actual issue, but rather underlines the problem of unevenly distributed workload: if the students feel the need to deviate from the regular study plan and reduce their workload/CPs per semester, it indicates that students are overloaded. Particularly in view of the low success rate of the study programmes, which will be discussed below, the

experts consider it essential for HCMIU to develop study plans with an evenly distributed workload for the three degree programmes.

According to the documents submitted by HCMIU, on average about 23% of students in the Bachelor's degree programmes in Computer Science and Information Technology need more than the expected four years to complete their studies. More surprising is the high dropout rate: about 38% of students drop out of the programmes, with the highest percentage in the fourth year. In the Bachelor's degree in Control Engineering and Automation, about 37% of the students take more than the expected 4 years to complete their studies and 38% of the students drop out of the programme. The programme coordinators explain that the high drop rate and the extension of the study times is mainly linked to the English courses. As a graduation requirement, students must achieve IELTS 6.0 or equivalent. Many students have difficulty passing the English courses and reaching the required English level, which is why they postpone these courses until the end of their studies or eventually fail to reach the English level and drop out.

In addition, the students explain that some students marked as "drop-outs" switched to another programme, which suits them more. Furthermore, according to the students and programme coordinators, various students have a side job and therefore complete less modules than specified in the standard study plan. Some students decide to take a practical semester and complete an internship in a company of their choice. The experts acknowledge these factors and are glad to hear that students do not refer to structural or academic challenges; yet, they do not see a systematic assessment by the university of the success rate. In other words, HCMIU does not systematically or officially assess the reasons for the low success rate, nor does it present measures to increase the rate. Therefore, the experts demand that HCMIU continuously monitors and evaluates the success rate of graduates and develops and implements measures against the low success rate on this basis. They also recommend the introduction of a part-time study form to officially record the number of students who work alongside their studies. This would "clean up" the statistics and show how many students actually extend their studies by taking a part-time job.

| |
|---|
| Criterion 2.3 Teaching methodology |
|---|

Evidence:

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

Preliminary assessment and analysis of the peers:

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 programmes. 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. In many courses students are given group project assignments 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.

As described in the Self-Assessment Report, students of all three programmes are required to complete an internship of at least eight weeks. Students have the option of either completing the internship at a company, where they are supervised by members of the firm, or staying at the university and conducting research.

In the Ba programme Control Engineering and Automation, students are also expected to participate in a capstone design project as an introduction to the engineering design process. This course consists of two semesters of lecture and design. Students will work in teams to complete an approved engineering design project that is fully documented and prototyped. During the course students will learn to define a problem, conduct research to propose the solutions, determine the realistic constraints, plan the schedule and the budget for the project, and develop the prototype based on the proposed design specifications.

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 all three undergraduate programmes comprise a variety of teaching and learning forms as well as practical parts that are adapted to the respective

subject culture and study format. It actively involves students in the design of teaching and learning processes (student-centred teaching and learning).

Criterion 2.4 Support and assistance

Evidence:

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

Preliminary assessment and analysis of the peers:

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 peer 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. The students confirm during the discussion with the peers 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. 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 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 organized 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.

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 peers 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 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. As will be explained in more detail in chapter 3 of this report, the experts learn however that currently there are no formal regulations on disability compensation measures.

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

HCMIU has submitted revised curricula showing that the workload is now more evenly distributed over the semesters. The auditors are pleased with the improvement and consider the requirement fulfilled. In addition, the university has submitted a new calculation formula for the conversion between HCMIU credits and ECTS. The auditors find the new

presentation of the calculation comprehensible, correct and consistent. The correct conversion of HCMIU credits to ECTS was adjusted in all documents. The experts view this requirement as fulfilled too.

With regard to the requirement that HCMIU must monitor and evaluate the success rate of graduates, and subsequently develop and implement measures against the low success rate of graduates, the university has stated that they will implement a systematic and comprehensive approach to collect the reasons for student drop-outs. HCMIU is considering setting up an early warning system that tracks various indicators of student academic performance in order to be notified in time if a student's performance declines. The auditors welcome HCMIU's ideas, but as they have not yet been implemented, the requirement is not yet met. The experts request evidence of implementation.

Regarding the recommendation to promote student mobility, HCMIU demonstrates that it has already taken several measures to encourage more students to study abroad. For example, information about student mobility opportunities is now more prominently displayed on the HCMIU's website.

With respect to the recommendation to further improve the students' English communication skills within technical courses, the university declares the intention to implement this suggestion. Since it is not yet implemented, the auditors see this recommendation as not fulfilled. Moreover, HCMIU has not responded to the recommendation to introduce the part-time form of study. Therefore, the suggestion remains.

The criterion is predominantly fulfilled.

3. Exams: System, concept and organisation

| |
|--|
| Criterion 3 Exams: System, concept and organisation |
|--|

Evidence:

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

Preliminary assessment and analysis of the peers:

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), Average good (60 to near 70) and Ordinary (50 to near 60). The maximum score for each course is 100 points, and 50 points are required to pass the course.

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 Bachelor's thesis is a major part of the degree programmes 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. 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 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 are requested to provide evidence of supervision arrangement 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. In the final stage, the thesis is reviewed by a lecturer.

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.

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.

The experts discuss with the programme coordinators the exact mechanisms that will be used if students feel that their grade is insufficient or unfair. The experts are informed that there is no independent examination board; instead, students must contact the lecturer or dean directly and ask for an appeal or revision of the examination grade. The experts believe that direct involvement of the teacher should be avoided and that an impartial third party should be responsible for these cases. Therefore, they recommend the introduction of an independent examination board to ensure fair grading of all students. The examination board should also include student representatives to reflect the students' perspective.

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. In these cases, students will take the final exam in the next semester without repeating the whole course. However, according to the information obtained during the discussions, there are currently no official rules and regulations on disability compensation measures. As a result, students solely depend on the initiative of the respective lecturers. To guarantee that students with disabilities can study on an equal footing, HCMIU must establish formal compensation measures that specify under which conditions and how exams are modified to accommodate students' special needs.

The peers 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.

The peers also inspect a sample of examination papers and Bachelor's theses and are overall satisfied with the general quality of the samples.

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

After inspecting the documents and the audit discussions, the experts conclude that HCMIU must have formal compensatory measures in place that specify how the examinations will be modified to meet the special needs of the students. In its statement, HCMIU refers to its general support services for disabled students, such as infrastructural measures. However, the statement does not mention any plans to introduce compensatory measures for disabled students during examinations. Therefore, the requirement remains.

With regard to the experts' recommendation to introduce an independent examination board including student representatives, HCMIU states that it has implemented the suggestion and established an examination board with a student representative, a faculty member and the dean of the school. The new examination board is expected to start its work at the beginning of the new academic year 2023-2024. The experts are pleased that HCMIU has followed the recommendation and expanded the quality assurance team.

Criterion is not fulfilled.

4. Resources

| |
|----------------------------|
| Criterion 4.1 Staff |
|----------------------------|

Evidence:

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

Preliminary assessment and analysis of the peers:

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 School of Electrical Engineering consists of 14 lecturers (1 Associate Professor, 11 PhD candidates, and 3 with a Master's degree. In addition, there are three guest lecturers (1 full Professor, and 2 Associate Professors). At the School of Computer Science and Engineering, there are 21 teachers (15 PhD candidates and 6 with a Master's degree). The majority of lecturers at both Schools holds an academic title from a foreign university (examples include the UK, Germany, France, USA, Australia, Japan and Korea): 81 % in SCSE and 100% in SEE. In order to be recruited as a lecturer at HCMU, the applicants have to fulfil seven criteria: (1) Academic qualification, (2) Place of training, (3) Teaching experiences, (4) Teaching methodology, (5) English ability, (6) Research ability, and (7) Professional experiences.

The peers confirm that the composition, scientific orientation and qualification of the teaching staff are suitable for successfully implementing and sustaining the degree programmes. They are particularly impressed by the international background of almost all teaching staff. However, they are critical of the small or even non-existent number of professors at both school. The representatives of the rectorate explain during the audit that in Vietnam the professor title is awarded exclusively by the government and not by the university. They inform the experts that HCMIU regularly submits applications to the government to appoint certain teachers as professors, but mostly receives rejections because the ministry has set a certain quota for the number of people who receive the professor title. The experts understand the situation but recommend enhancing the academic status of the teaching staff by making it more comparable to the Western system. Upon reviewing the staff handbooks and the short CVs of the teaching staff, the experts believe that several teachers are sufficiently qualified to be awarded the title of professor. The experts agree that their academic title should reflect their academic achievements.

Criterion 4.2 Staff development

Evidence:

- Self-Assessment Report
- Staff handbook

- Discussions during the audit

Preliminary assessment and analysis of the peers:

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 training 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, training, workshops, joint research, etc. Moreover, they are encouraged to present their research papers in national and international conferences, and to collaborate with colleagues from international universities. However, no 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.

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 peers 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 auditors 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.

| |
|--|
| Criterion 4.3 Funds and equipment |
|--|

Evidence:

- Self-Assessment Report
- Live video presentation of the facilities
- Discussions during the audit

Preliminary assessment and analysis of the peers:

HCMIU and the School of Electrical Engineering and the School of Computer Science and Engineering provide basic funding of the degree programmes and the facilities. HCMIU or the Vietnamese government can provide additional funds for research activities, 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 assigning the funds to the schools and departments. The main source of income are the students' tuition fees and the funds provided by the Vietnamese government (mostly for salaries). HCMIU also received funding from the World Bank and Ho Chi Minh City to invest in its equipment and laboratories.

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 Computer Science and Engineering has 10 laboratory rooms. These include among other things Data Science, Computing Network, Software Engineering, Information System, Micro-Processing & Embedded Systems Lab, Electronic Lab, and Signal and Image processing lab. The School of Electrical Engineering contains seven laboratories: a PLC and SCADA Lab, an Electronic Lab, a Telecommunication Lab, a Signal and Image Processing Lab, a Microprocessing and Embedded Systems Lab, a RF and Microwave Lab, a Robotic Lab, and a workshop lab. Both schools regularly carry out surveys regarding the equipment and laboratories. According to the results, more than 90% of staff and students are satisfied with the IU facilities and equipment.

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

Overall, the experts are satisfied with the staff and resources allocated to the study programmes under review. Regarding their recommendation to upgrade the academic status of teaching staff (i.e. awarding the title of professor to suitable teachers/promoters), HCMIU states that they agree with the auditors and are currently in discussions with the relevant authorities. However, HCMIU has not yet received a positive response from the Ministry indicating that more of its teachers with the required qualifications and expertise will be awarded the title of professor. Therefore, the recommendation remains.

The criterion is fulfilled.

5. Transparency and documentation

Criterion 5.1 Module descriptions

Evidence:

- Module Handbooks for all degree programmes

Preliminary assessment and analysis of the peers:

The experts review the module descriptions for the programmes and see that they provide adequate information about all relevant and required aspects: module identification code, respective content, learning outcomes, examinations, credit points and workload distribution, grading, person responsible for the module, teaching methods, admission requirements, recommended literature, and date of last amendment made. The students confirm during the discussions that information about the courses are always available online and that details concerning examinations and contents are provided at the beginning of each course by the teaching staff.

Criterion 5.2 Diploma and Diploma Supplement

Evidence:

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

Preliminary assessment and analysis of the peers:

The peers confirm that the students of the three programmes 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.

Criterion 5.3 Relevant rules

Evidence:

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

Preliminary assessment and analysis of the peers:

From the documents provided and the discussion during the audit, the peers learn that HCMIU follows a policy of transparent and open rules and regulations. All required rules, regulations are made accessible to students at any time online. The discussion with the students confirms that they feel well informed about regulations and comfortable about the access to any information about their degree programmes and the courses.

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

The experts conclude that the HCMIU takes all necessary measures to ensure transparent documentation and publication of the relevant documents for all stakeholders.

The criterion is fulfilled.

6. Quality management: quality assessment and development

| |
|---|
| Criterion 6 Quality management: quality assessment and development |
|---|

Evidence:

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

Preliminary assessment and analysis of the peers:

The Bachelor programmes Information Technology and Computer Science are managed by the School of Computer Science and Engineering while the Bachelor programme Control Engineering and Automation is managed by the School of Electrical Engineering. The schools are part of the Ho Chi Minh City International University (HCMIU). Ho Chi Minh City International University is a member of Vietnam National University – Ho Chi Minh City (VNUHCM), which is a ministerial-level university. The schools have 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 peers 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 programmes 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, such as a stakeholder surveys for work related issues, a lecturer survey, an alumni survey (one year after graduation, a final year students survey (on the overall quality of programmes and services), and a students' survey (every semester). At the end of the semester, lecturers and the courses are evaluated by students, faculty, and the university; lecturers will receive their teaching performance reports. Based on the report results and study performance of the current class compared with the previous years, further changes would be made to the course specification or syllabus.

As HCMIU is 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 of the programmes and continuously enhancing the training quality

The peers 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. As the peers 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.

At the end of each semester, the Office of Quality Assurance and Testing conducts an online students' survey about the teaching quality of lecturers for each course. Participation at the questionnaires is compulsory for the students, otherwise they cannot access their

account on Blackboard. QATO analyses the data and sends the results to SBT and relevant lecturers, which should help lecturers adjusting their teaching methods and improving the teaching quality. If the results show that a lecturer has not met the teaching quality requirements, the lecturer is reminded by the Dean to improve the teaching quality. If a lecturer, who has already been reminded before, does not meet the teaching quality again, SBT may stop assigning the course to the lecturer. In addition, a survey for first-year students is annually conducted through questionnaires. The objectives of this survey are to ensure the quality of welcome services and to understand the needs of new students.

However, teachers should get the aggregated results of the questionnaires and have the opportunity to talk with their students about the results and what could be improved, the students' feedback is essential for further improving the programme and it is likewise important to inform the students about the results and the possible improvements. It is necessary that the teachers discuss directly with the students about the results of the course questionnaires and what could be improved in the respective course. The feedback cycles need to be closed.

Overall, the experts consider the quality management system to be comprehensive and well-functioning. However, as outlined in section 2.2 of this report, statistics show a high drop-out rate and long study times in all three programmes. Programme coordinators and students explain that this is due to a variety of reasons: the difficulty of meeting English language requirements, the fact that many students have part-time jobs or voluntary long-term internships, or simply that students transfer to other programmes. However, these statements are based on observations rather than official assessments. Therefore, the experts agree that HCMIU needs to systematically identify and assess the reasons for the low success rate and subsequently develop and implement measures to increase the success rate.

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

Final assessment of the peers after the comment of the Higher Education Institution regarding criterion 6:

In order to close the feedback cycles, HCMIU has decided to publish the anonymous results of the teaching evaluations on the HCMIU website and thus make them accessible to all students. In addition, all measures derived from the results will also be presented there. The experts welcome the measures taken by HCMIU and agree that the requirement has been met.

The criterion is fulfilled.

D Additional Documents

No additional documents needed

E Comment of the Higher Education Institution (11.08.2023)

The following quotes the comment of the institution:

„Criterion 1.3 Curriculum

Thank you for your comment and for providing insightful feedback on the current structure of our degree programs.

SCSE: Starting this academic year (2023-2024), we updated our educational program to address the raised concerns. We understand the importance of aligning the curriculum with the specific needs of our degree programs and ensuring that students are equipped with the most relevant knowledge and skills.

As a result, the non-essential modules, including the chemistry and physics modules, will be removed from the degree programs.

In details:

1. Computer Science:

a. Removed following courses from the curriculum

- Chemistry for Engineering and Chemistry Laboratory (4 credits)
- Critical thinking (3 credits) (the knowledge is already covered in the core courses of IT and CS)
- Physic 2
- Calculus 3

b. Changed the following courses to elective

- Theoretical model in computing (4 credits)
- Digital Logic Design (4 credits)

2. Information Technology

1. a) Removed the following courses from the curriculum

2. for Network Engineering

- Chemistry for Engineering và Chemistry Laboratory (4 credits)
- Critical thinking (3 credits)
- Calculus 3 (4 credits)
- Theoretical model in computing (4 credits)

for Computer Engineering

- Chemistry for Engineering và Chemistry Laboratory (4 credits)

- Critical thinking (3 credits)
- Software Engineering (4 credits)
- Theoretical model in computing (4 credits)

3. b) Added the following courses to the curriculum

Network Engineering

- Internet of Things (4 credits, replace Chemistry for Engineering)
- Introduction to Laws (3 credits)
- Linear Algebra (3 credits, replace calculus 3)
- Artificial Intelligent (4 credits, replace Theoretical model in computing)
- Supplement list of elective courses.

Computer Engineering

- Internet of Things (4 credits, replace Chemistry for Engineering)
- Introduction to Laws (3 credits)
- Principles of Database Management (4 credits, replace Software Engineering)
- Artificial Intelligent (4 credits, replace Theoretical model in computing)

Removing non-essential courses creates space for additional core and major courses that directly contribute to the core areas of study. In addition, we will be introducing a range of elective courses that reflect the state of the art in the respective disciplines. These electives will provide students with the opportunity to explore cutting-edge topics and further specialise in areas that align with their interests and career goals.

SEE: The SEE's curriculum has 31 credit points for non-technical modules. The non-technical modules include Political Education, Physical Training, English Proficiency, and Social Science. (SAR August 2023, section 2.1.1, table 2.1, <https://see.hcmiu.edu.vn/en/SAR/>).

Criterion 2.1 Structure and modules

Thank you for your comment and for providing insightful feedback on the current structure of our degree programs. Starting this academic year, we updated our educational program to address the concerns you raised. We understand the importance of aligning the curriculum with the specific skills and knowledges of our degree programs and ensuring that students are equipped with the most relevant knowledge and skills.

SCSE: As a result, the non-essential modules, including the chemistry and physics modules, will be removed from the degree programs. This will create space for an increased number of subject-specific courses that directly contribute to the core areas of study. In addition, we will be introducing a range of elective courses that reflect the state of the art in the respective disciplines.

For the Computer Science Program, we add 4 more elective courses including:

- Cloud computing,

- Security Technology and Implementation
- Software Quality Verification and Validation
- Game Application Development

For the Information Technology Program (IT), we try to add more elective courses. These elective courses are the required core or major courses of other majors in SCSE. Offering elective courses from other majors in SCSE for IT students allows them to diversify skills, specialize in specific areas, foster interdisciplinary learning, enhance teamwork, fulfill degree requirements, and improve employability.

The IT engineering program needs to incorporate adequate and pertinent background knowledge while adhering to the Ministry of Education and Training's regulations, which mandate a minimum of 150 credits. Consequently, we have not reduced the number of Physics subjects yet. This updated program has received approval from stakeholders and is set to be implemented in the 2023 training program.

About the International Mobility

SCSE: Thank you for providing this comment and sharing your perspective.

We provide an additional list of students who have interned overseas. However, the number is still limited. One reason is that the global COVID-19 pandemic indeed had a significant impact on international mobility. Travel restrictions, visa limitations, and health concerns have affected international student exchange opportunities worldwide. Besides, in Ho Chi Minh city, we have many foreign companies like TMA, FPT, Hitachi, TPS, TheGioiDiDong, Bosch, Samsung, and Toshiba, etc., where students can conduct their internship.

We agree that academic mobility among scholars and students is essential, and we will do more to improve academic exchange.

Currently, all of the policies and processes for exchange or international short-term programs are controlled/managed by the Center for International Mobility (CIM). The two schools will continue to support CIM in all the exchange or international short-term programs. To improve the number of international exchanges for both students and lecturers, CIM and the schools will take proactive measures as follows:

- Broadcasting the collaboration opportunities, international programs, announcements from partner institutions, testimonials/stories from the exchange students, etc., to various media channels so that the information can reach students and faculties
- Collaborating with European partners to seek more funding from Erasmus+ KA107/171 to support students and staff with international credit mobility/ semester abroad. Fundings from the Governments (USAID, Canadian, AusAID, DAAD, Sweden, etc.) will also be the resources for CIM and the schools to work on.

- Raising the awareness among the students of mobility opportunities is very important. CIM and the schools will make sure that this matter will be addressed properly in the next school years' action plans (in the welcome freshmen events, students-related activities or else).
- CIM will continue to invite faculty members from partner universities to give talks/to inspire students, encouraging them to apply for student exchange programs, and/or to promote any available scholarships at that time.
- CIM will coordinate with the schools and the international partners to run the short term study tours/ faculty-led program/hackathon for the students of both sides, to create an international environment at home, both academically and culturally. This will support students who cannot afford to study abroad due to the financial burden, inspiring them with next international events and a need to look for new challenging available opportunities to study overseas.
- CIM to develop more mobility partnerships in engineering and technology fields, increasing the chance for students to bring back home more equivalent courses.
- Improving students' English communication skills to prepare them for international experiences. Providing more discussions in English, especially within technical subjects, will help students feel more confident in communication in English.

Criterion 2.2 Work load and credits

We sincerely thank the ASIIN committee and for the valid comments of Criterion 2.2 Work load and credits, especially comments on the inconsistent conversion between HCMIU credits and ECTS, the International University board and school boards have discussed and HCMIU has issued Decision No. 54/TB-DHQT dated March 2, 2023 on the conversion of ECTS credits at International University as follows:

For theoretical courses or practical courses with experiments, to earn 1 credit, students must spend at least 30 hours for preparation.

The conversion for each programme is as follows:

1. **For theoretical courses:** 1 ECTS at International University = (15 periods x 50 minutes) /60 minutes + 30 hours of preparation = **42.5 hours = 1.54 ECTS**).

2. **For practical courses with experiments:** 1 ECTS at International University = (30 periods x 50 minutes) /60 minutes + 30 hours of personal preparation = **55 hours = 2 ECTS**);

3. **For internship:** 1 ECTS at **International** University = 90 hours = (Contact hours and self-study hour) x 2 = **180 hours = 6.5 ECTS**).

4. **For graduation (Thesis):** Total workload = 1020 hours = 300 hours (for discussion with the advisor, laboratory session) + 720 hours (for progress report, reading paper, analyzing data, writing thesis) = **1020 hours = 37.1 ECTS**).

All syllabi in the curriculum of the three programme have been added to convert from HCMIU credit to ECTS:

- *Module Handbook added ECTS;*
- *Program Specification added ECTS.*

SCSE: We acknowledge the importance of maintaining a balanced workload to ensure an optimal learning experience for our students.

We want to inform you that we are actively working on addressing this issue and the modified curriculums have been approved by the Scientific Committee of HCMIU. As part of this process, we will ensure a more even distribution of workload across the semesters. Additionally, we are taking steps to remove unrelated non-specialized courses to streamline the programs and make them more relevant to the students' educational and career goals.

The new curriculum, which will be implemented from the academic year 2023-2024, aims to offer a more structured and balanced approach to students' studies, enhancing their academic experience and helping them manage their workload more effectively [[Additional document 3. New Computer Science Curriculum; Additional Document 4. New Information Technology Curriculum](#)]. Our ultimate goal is to create an environment that supports students' learning while promoting their success in the study programs.

SEE: The SEE agreed with the recommendations from the ASIIN experts. We have followed the Plan, Do, Check, Act (PDCA) cycle. (P) After receiving the recommendation from the ASIIN expert panel, the School of Electrical Engineering held a meeting ([Additional document 8 SEE MOM April 6th 2023](#)) to review the workload distribution of the program. (D) The school reviewed the workload distribution, curriculum, compulsory courses, military training, and physical training. This review was conducted with the aim of evenly workload distributed over the semester. (C) The School of Electrical Engineering convened a meeting ([Additional document 9 SEE MOM April 20th 2023](#)) that included student representatives to discuss the issues at hand and to propose potential solutions. (A)As a result of the meeting, the school has decided to increase the workload distribution from 8 semesters to 9 semesters. This decision was made in order to optimize the curriculum and provide an even workload distribution for students. In addition, the school has also changed the name of the Summer Semester to Summer Sessions to reduce confusion and make it more clear to students. To provide evidence for these changes, the SAR and Handbook 2023 have been updated accordingly. (SAR August 2023, section 2.1.3,table2.7, section 2.2, table 2.8, <https://see.hcmiu.edu.vn/en/SAR/>) (Student Handbook 2023 [[Additional document 17. CEA - Student Handbook](#)], page 36-37 provides evidence for 9 semesters or 4 1/2 years, <https://see.hcmiu.edu.vn/en/students/student-handbook/>)

About the continuously monitors and evaluates the success rate of graduates

Thank you for your valuable feedback and recommendations. We are committed to addressing the concerns raised by the experts and continuously improving our degree programs.

SCSE: Here are the steps we will take to achieve these goals:

1. Accurate collection of reasons for student drop-outs: From the side of the School of Computer Science and Engineering (SCSE), we will implement a systematic and comprehensive approach to collect the reasons for student drop-outs. By understanding the specific factors contributing to drop-outs, we can develop targeted interventions to mitigate these issues and provide better support to our students.
2. Collaboration with QATO: We will work closely with the Quality Assurance and Testing Office (QATO) to address the challenges related to student success and retention. Together, we will create a process to regularly monitor and evaluate the success rate of our graduates and identify areas for improvement.
3. Suggest HCMIU to implement an early warning tool: we will suggest the implementation of an early warning tool that will track various indicators of students' academic performance. This tool will monitor non-registration for courses, GPAs below 40, and non-attendance, among other factors. The tool will help us identify struggling students early on, allowing us to intervene and provide the necessary support to help them stay on track and succeed in their studies.

By taking these steps and collaborating with relevant stakeholders, we aim to improve student success, reduce drop-out rates, and create a more supportive learning environment for all our students at HCMIU's School of Computer Science and Engineering.

SEE: The School of Electrical Engineering acknowledges the concerns raised by the ASIIN expert panel regarding our current approach to tracking the dropout rate of our students. Currently, we only track the number of students who graduate on time, which does not provide a comprehensive and detailed picture of the situation. To address this issue, we have decided to use the PDCA cycle as our approach to change. To begin with (P), the school held a meeting on *(Additional document 8 SEE MOM April 6th 2023)* to plan the course of action. We decided to track the dropout rate based on the number of graduated students, transferred students, and dropout students. (D), as a result of the meeting, we will collect data at the beginning of each academic year. (C), after collecting the data, the school will hold a meeting to review and analyze the dropout rate. During this meeting, we will discuss the factors that contribute to the dropout rate and explore strategies to address them. (A), the correct actions will be implemented for the next academic year. By doing so, we hope to reduce the dropout rate. The data will be updated in the SAR report yearly, (starting academic year 2023-2024).

A new form of Questionnaires which was added with question no.5 has been applied from Semester 2 of Academic year 2022-2023 for tracking student on their spending time outside the classroom for preparing the classes and studying for the exams.

Criterion 2.4 Support and assistance

Thanks to ASIIN experts' recommendations and assessments.

We currently have the Regulations on Students services of IU that mentions the formal priority for special students, particularly in *Article 4. Counseling, support, and other student services, in item 2. Mental health counseling, healthcare, financial and other aids* of Chapter 2 [[Additional document 11: IU Regulations on Students services](#)]. For your convenience, we would like to quote it here:

d) Special aid: Facilitates assistance for disabled students, beneficiaries of state policies, underprivileged students, and victims of natural and man-made disasters.

3. Exams: System, concept and organisation

SCSE: We appreciate your valuable feedback and the insights provided by the experts regarding the grading mechanisms and student appeals process. We have taken your recommendations and are pleased to inform you that we have taken significant steps to address this matter.

In response to the concerns raised, we have established an independent examination board that will play a vital role in ensuring the fairness and transparency of our grading procedures. This board includes a diverse representation of stakeholders, including student representatives [[Additional document 12. Quality Assurance Team](#)], to ensure a holistic perspective. This development aligns with our commitment to upholding the highest standards of academic integrity and student support.

The detailed procedure has been made accessible to all stakeholders and interested parties on our official website. The comprehensive information about the examination board and the appeals process can be found by visiting: <https://it.hcmiu.edu.vn/examination-board/>.

SEE: The School of Electrical Engineering agrees with the ASIIN expert panel. Our approach to change is based on the PDCA cycle. (P) Therefore, we have a meeting on ([Additional document 8 SEE MOM April 6th 2023](#)) to plan the course of action. (D) As the result of the meeting, we have decided to form an examination board starting at the beginning of the academic year 2023-2024. (C) The examination board will have 3 members, including 1 student representative, 1 faculty member, and the Dean of the school. (A) The process of

the attesting the examination during school year is posted on our website. (<https://see.hcmiu.edu.vn/en/students/examination-board/>)

Criterion 4.1. Staff

About the number of professors

Thank you for your comment and for drawing our attention to the issue regarding the limited number of professors at our institutions. We appreciate your concern and the thorough analysis you have provided.

SCSE: We understand the need to enhance the academic status of our teaching staff, making it more comparable to international institutions. As you correctly understand and mentioned, awarding the professor title in Vietnam is governed by the government and not by ourselves, the university. We also know that several lecturers possess the necessary qualifications and expertise to be awarded the title of professor.

Your recommendation also aligns with our aspirations to ensure that the academic achievements of our teachers are adequately recognized. It serves as evidence supporting our request for a change in the current law governing the awarding of the professor title. We are committed to pursuing this matter and engaging in discussions with the appropriate authorities to bring about a positive change that will benefit our teaching staff, the institutions, and, ultimately, the quality of education we provide.

SEE: The SEE agreed with the ASIIN experts' recommendations and assessments.

6. Quality management: quality assessment and development

SEE: The School of Electrical Engineering agrees with the recommendation from the ASIIN expert panel. Our approach to change is based on the PDCA cycle. (P) Therefore, we have had a meeting on ([Additional document 8 SEE MOM April 6th 2023](#)) to plan the course of action. (D) As the result of the meeting, we have decided to posted the feedbacks from the students on our website ([Additional document 8 SEE MOM April 6th 2023](#)). (C) The website is currently posting the feedback from students, includes Junior Survey, Alumni Survey, Student Course Evaluation, and Graduating Senior Survey (<https://see.hcmiu.edu.vn/en/student-feedback/>). (A) In addition to the SAR report, we will also post on the website the results of the course of action taken to improve negative feedbacks. (SAR August 2023, section 6.1.2, <https://see.hcmiu.edu.vn/en/SAR/>) (<https://see.hcmiu.edu.vn/en/student-feedback/>).

SCSE:

About the opportunity to talk with the students

At present, HCMIU is actively involved in an ongoing process of continuous improvement, which encompasses both post-survey analysis and subsequent enhancements. Following the completion of surveys, all the collected data is transmitted to schools/departments for further evaluation and the formulation of improvement plans. To aid schools/departments in this endeavor, a Quality Assurance Team has been established, with 1 to 3 student representatives serving as members [[Additional document 12. Quality Assurance Team](#)].

In the following semester, SCSE actively engages with students through various communication channels, including supervisor meetings and annual student gatherings involving both HCMIU and SCSE leaders [[Additional document 13. Annual Student Gatherings](#)]. These interactions aim to address any issues or concerns that are of particular interest to the students. The minutes from class meetings are also made publicly available on our website at <https://it.hcmiu.edu.vn/class-meeting-minutes/>.

In addition to general surveys, subject-specific surveys are conducted by students after their mid-term exams. The feedback from these surveys is made accessible to lecturers through QATO's system. By utilizing this valuable feedback, teachers can directly address student concerns during their classroom sessions. Due to the anonymity of the surveys, lecturers can respond to the feedback without disclosing individual identities, ensuring that students are well-informed about pertinent information without any privacy concerns.

About the high drop-out rate

Thank you for the feedback and the acknowledgment of our comprehensive quality management system. We understand the concerns raised regarding the high drop-out rate and long study times in the degree programs. To address this issue and gain a better understanding of the reasons behind the low success rate, we are committed to implementing measures for systematic identification and assessment.

To facilitate this process and to ensure transparency and open communication, we are taking steps to establish an anonymous system where students who wish to drop out can provide a final message to the university. This system will allow students to share their feedback, reasons for leaving the program, and any suggestions they may have for improvement. By providing a safe and confidential platform for students to express their views, we hope to gain valuable insights that can guide us in developing targeted measures to increase the success rate and address the challenges our students may be facing.

We believe that creating such a channel for feedback will not only contribute to improving our degree programs but also demonstrate our commitment to listening to the concerns

of our students and continuously enhancing their educational experience. Through this approach, we aim to work collaboratively with our student community to create a more supportive and conducive learning environment for all students.”

F Summary: Peer recommendations (21.08.2023)

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

| Degree Programme | ASIIN Seal | Maximum duration of accreditation | Subject-specific label | Maximum duration of accreditation |
|---|--------------------------------|-----------------------------------|------------------------|---|
| Bachelor of Science in Computer Science | With requirements for one year | 30.09.2029 | Euro-Inf® | 30.09.2029 |
| Bachelor of Engineering in Information Technology | With requirements for one year | 30.09.2029 | EUR-ACE® | Subject to the approval of the ENAEE Administrative Council |
| Bachelor of Engineering in Control Engineering and Automation | With requirements for one year | 30.09.2029 | EUR-ACE® | Subject to the approval of the ENAEE Administrative Council |

Requirements

For all Programmes

- A 1. (ASIIN 2.2, 6) Monitor and evaluate the success rate of graduates. Develop and implement measures against the low success rate of graduates.
- A 2. (ASIIN 3) Disability measures and compensation measures for disabled students must be implemented.

Recommendations

For all programmes

- E 1. (ASIIN 2.1) It is recommended to further improve the students' English communication skills within technical courses.
- E 2. (ASIIN 2.2) It is recommended to introduce the part-time form of study.

- E 3. (ASIIN 4.1) Enhance the academic status of the teaching staff by making it more comparable to the Western system.

G Comment of the Technical Committees

Technical Committee 02 – Electrical Engineering/Information Technology (04.09.2023)

Assessment and analysis for the award of the ASIIN seal:

The TC discusses the accreditation procedure. They follow the vote of the experts without any changes.

Assessment and analysis for the award of the EUR-ACE® Label:

The Technical Committee deems that the intended learning outcomes of the degree programmes do comply with the engineering specific parts of Subject-Specific Criteria of the Technical Committee 02 – Electrical Engineering/Information Technology

The Technical Committee 02 – Electrical Engineering/Information Technology recommends the award of the seals as follows:

| Degree Programme | ASIIN Seal | Maximum duration of accreditation | Subject-specific label | Maximum duration of accreditation |
|---|--------------------------------|--|-------------------------------|--|
| Bachelor of Engineering in Information Technology | With requirements for one year | 30.09.2029 | EUR-ACE® | 30.09.2029 |
| Bachelor of Engineering in Control Engineering and Automation | With requirements for one year | 30.09.2029 | EUR-ACE® | 30.09.2029 |

Technical Committee 04 – Informatics/Computer Science (14.09.2023)

Assessment and analysis for the award of the ASIIN seal:

The TC discusses the procedure and is in favor of an editorial change to recommendation E1. In addition, the TC proposes a rewording of recommendation E3 to make it clearer. Apart from that, the TC agrees with the assessment of the experts without any changes.

Assessment and analysis for the award of the Euro-Inf® Label:

The Technical Committee deems that the intended learning outcomes of the degree programmes do comply with the Subject-Specific Criteria of the Technical Committee 04 – Informatics/Computer Science.

The Technical Committee 04 – Informatics/Computer Science recommends the award of the seals as follows:

| Degree Programme | ASIIN Seal | Maximum duration of accreditation | Subject-specific label | Maximum duration of accreditation |
|---|--------------------------------|-----------------------------------|------------------------|-----------------------------------|
| Bachelor of Science in Computer Science | With requirements for one year | 30.09.2029 | Euro-Inf® | 30.09.2029 |
| Bachelor of Engineering in Information Technology | With requirements for one year | 30.09.2029 | EUR-ACE® | 30.09.2029 |

- E 1. (ASIIN 2.1) It is recommended to further improve the students' English communication skills.
- E 4. (ASIIN 4.1) It is recommended to enhance the promotion of qualified teachers to a higher academic status, e.g. to professors, to make it more comparable to academic standards.

H Decision of the Accreditation Commission (22.09.2023)

Assessment and analysis for the award of the ASIIN seal:

The Commission discusses the procedure and recommends changing the wording of requirement A1. Since the success rate refers to students who have not yet completed their studies, the Commission suggests replacing the word “graduates” with “students”. In order to emphasize and illustrate the issue of the poor success rate in more detail, the commission suggests including a reference to the long study durations and the high drop-out rate as well. With regard to the other requirements and recommendations, the commission follows the vote of the experts and the technical committees.

Assessment and analysis for the award of the EUR-ACE® Label:

The Accreditation Commission deems that the intended learning outcomes of the degree programmes do comply with the engineering specific parts of Subject-Specific Criteria of the Technical Committee 02 – Electrical Engineering/Information Technology.

Assessment and analysis for the award of the Euro-Inf® Label:

The Accreditation Commission deems that the intended learning outcomes of the degree programme do comply with the Subject-Specific Criteria of the Technical Committee 04 – Informatics/Computer Science.

The Accreditation Commission decides to award the following seals:

| Degree Programme | ASIIN Seal | Maximum duration of accreditation | Subject-specific label | Maximum duration of accreditation* |
|---|--------------------------------|--|-------------------------------|---|
| Bachelor of Science in Computer Science | With requirements for one year | 30.09.2029 | Euro-Inf® | 30.09.2029 |
| Bachelor of Engineering in Information Technology | With requirements for one year | 30.09.2029 | EUR-ACE® | Subject to the approval of the ENAEE Administrative Council |

| Degree Programme | ASIIN Seal | Maximum duration of accreditation | Subject-specific label | Maximum duration of accreditation* |
|---|--------------------------------|-----------------------------------|------------------------|---|
| Bachelor of Engineering in Control Engineering and Automation | With requirements for one year | 30.09.2029 | EUR-ACE® | Subject to the approval of the ENAEE Administrative Council |

Requirements and recommendations for the applied labels

Requirements

For all Programmes

- A 1. (ASIIN 2.2, 6) Monitor and evaluate the success rate of graduates. Develop and implement measures against the low success rate of graduates.
- A 2. (ASIIN 3) Disability measures and compensation measures for disabled students must be implemented.

Recommendations

For all programmes

- E 1. (ASIIN 2.1) It is recommended to further improve the students' English communication skills.
- E 2. (ASIIN 2.2) It is recommended to introduce the part-time form of study.
- E 3. (ASIIN 4.1) It is recommended to enhance the promotion of qualified teachers to a higher academic status, e.g. to professors, to make it more comparable to academic standards.

I Fulfilment of Requirements (24.09.2024)

Analysis of the experts and the Technical Committee/s (11.09.2024)

Requirements

For all degree programmes

- A 1. (ASIIN 2.2, 6) Monitor and evaluate the success rate of graduates. Develop and implement measures against the low success rate of graduates.

| Initial Treatment | |
|-------------------|---|
| Peers | Fulfilled Justification: The university provides detailed information on the new process for monitoring and evaluating the success rate of graduates (e.g. including minutes of meetings) and outlines specific measures that have already been put in place to improve the success rate. |
| TC 02 | fulfilled Vote: unanimous Justification: The TC follows the vote of the experts. |
| TC 04 | fulfilled Vote: unanimous Justification: The TC follows the vote of the experts. |
| AC | fulfilled Vote: unanimous Justification: The Commission follows the vote of the experts and TCs. |

- A 2. (ASIIN 3) Disability measures and compensation measures for disabled students must be implemented.

| Initial Treatment | |
|-------------------|---|
| Peers | <p>not fulfilled</p> <p>Justification: HCMIU provides a document granting a reduction in tuition fees for disadvantaged students. Otherwise, the university does not provide any official information on the systematic support of students with special needs. The experts only find a vague reference in which the university states that they “have different special support” and give a few examples. Therefore, the experts require HCMIU to provide an official document formalising the precise disability and compensatory measures for students with special needs (e.g. as part of the examination regulations).</p> |
| TC 02 | <p>Not fulfilled</p> <p>Vote: unanimous</p> <p>Justification: The TC follows the vote of the experts.</p> |
| TC 04 | <p>Not fulfilled</p> <p>Vote: unanimous</p> <p>Justification: The TC follows the vote of the experts.</p> |
| AC | <p>Not fulfilled</p> <p>Vote: unanimous</p> <p>Justification: The Commission follows the vote of the experts and TCs.</p> |

Decision of the Accreditation Commission (24.09.2024)

| Degree programme | ASIIN-label | Subject-specific label | Accreditation until max. |
|---------------------------------------|-----------------------------|------------------------|--------------------------|
| Ba Computer Science | Requirement 2 not fulfilled | Euro-Inf® | 6 months prolongation |
| Ba Information Technology | Requirement 2 not fulfilled | EUR-ACE® | 6 months prolongation |
| Ba Control Engineering and Automation | Requirement 2 not fulfilled | EUR-ACE® | 6 months prolongation |

J Appendix: Programme Learning Outcomes and Curricula

According to the Diploma Supplement the following **objectives** and **learning outcomes (intended qualifications profile)** shall be achieved by the Bachelor degree programme Control Engineering and Automation:

“(1) an ability to identify, formulate, and solve complex engineering problems by applying principles of engineering, science, and mathematics

(2) an ability to apply engineering design to produce solutions that meet specified needs with consideration of public health, safety, and welfare, as well as global, cultural, social, environmental, and economic factors

(3) an ability to communicate effectively with a range of audiences

(4) an ability to recognize ethical and professional responsibilities in engineering situations and make informed judgments, which must consider the impact of engineering solutions in global, economic, environmental, and societal contexts

(5) an ability to function effectively on a team whose members together provide leadership, create a collaborative and inclusive environment, establish goals, plan tasks, and meet objectives

(6) an ability to develop and conduct appropriate experimentation, analyze and interpret data, and use engineering judgment to draw conclusions

(7) an ability to acquire and apply new knowledge as needed, using appropriate learning strategies.

Students who graduate from Control Engineering and Automation (CEA) have great chances to:

- Design and management engineering of production lines in factories
- Software engineering includes designing and programming chip, embedded programming applications for mobile phones, car, and smart devices
- Sales engineering and field engineering specialized in installation, maintenance, and management
 - Instrument related to control and automation field, measurement, and smart control
 - Control and monitoring systems (PLCs and SCADA)
 - Industrial and autonomous robotics”

J Appendix: Programme Learning Outcomes and Curricula

The following **curriculum** is presented:

| Freshman Year (1 st year) | | | | | |
|---------------------------------------|---|----|----------------------|------------------------------|----|
| <i>Semester 1</i> | | | <i>Semester 2</i> | | |
| MA001IU | Calculus 1 | 4 | MA003IU | Calculus 2 | 4 |
| PH013IU | Physics 1 (Mechanics) | 2 | PE008IU | Critical Thinking | 3 |
| PE015IU | Philosophy of Marxism and Leninism | 3 | PH014IU | Physics 2 (Thermodynamics) | 2 |
| EN007IU | Writing AE1 | 2 | PE017IU | Scientific socialism | 2 |
| EN008IU | Listening AE1 | 2 | EN011IU | Writing AE 2 | 2 |
| PE016IU | Political economics of Marxism and Leninism | 2 | EN012IU | Speaking AE2 | 2 |
| PT001IU | Physical Training 1 | 0 | MA027IU | Applied Linear Algebra | 2 |
| EE050IU | Intro to Computer for Engineers | 3 | EE049IU | Intro to EE | 3 |
| | | | PT002IU | Physical Training 2 | 0 |
| <i>Total Credits</i> | | 18 | <i>Total Credits</i> | | 20 |
| <i>Summer Semester</i> | | | | | |
| PE018IU | History of Vietnamese Communist Party | 2 | | | |
| <i>Total Credits</i> | | 2 | | | |
| Sophomore Year (2 nd year) | | | | | |
| <i>Semester 1</i> | | | <i>Semester 2</i> | | |
| EEAC001IU | Materials Science & Engineering | 3 | MA026IU | Probability & Random Process | 3 |
| EEAC021IU | Mathematics for Engineers | 4 | MA024IU | Differential Equations | 4 |
| EE051IU | Principles of EE 1 | 3 | PH012IU | Physics 4 (Optics & Atomics) | 2 |
| EE052IU | Principles of EE 1 Lab | 1 | EE010IU | Electromagnetic Theory | 3 |
| EE053IU | Digital Logic Design | 3 | EE055IU | Principles of EE 2 | 3 |
| EE054IU | Digital Logic Design Lab | 1 | EE056IU | Principles of EE 2 Lab | 1 |
| EE057IU | Programming for Engineers | 3 | EE090IU | Electronics Devices | 3 |

J Appendix: Programme Learning Outcomes and Curricula

| | | | | | |
|--|--|----|----------------------|---------------------------------------|----|
| EE058IU | Programming for Engineers Lab | 1 | EE091IU | Electronics Devices Lab | 1 |
| <i>Total Credits</i> | | 19 | <i>Total Credits</i> | | 20 |
| Junior Year (3rd year) | | | | | |
| <i>Semester 1</i> | | | <i>Semester 2</i> | | |
| EE088IU | Signals & Systems | 3 | EE092IU | Digital Signal Processing | 3 |
| EE089IU | Signals & Systems Lab | 1 | EE093IU | Digital Signal Processing Lab | 1 |
| EE083IU | Micro-processing Systems | 3 | EEAC004IU | PC Based Control and SCADA System | 3 |
| EE084IU | Micro-processing Systems Lab | 1 | EEAC005IU | PC Based Control and SCADA System Lab | 1 |
| EEAC020IU | Theory of Automatic Control | 4 | EEAC006IU | Programmable Logic Control | 3 |
| EE130IU | Capstone Design 1 | 2 | EEAC007IU | Programmable Logic Control Lab | 1 |
| | General Elective | 3 | EEAC008IU | Sensors and Instrumentation | 3 |
| PE020IU | Engineering Ethics and Professional Skills | 3 | EE131IU | Capstone Design 2 | 2 |
| PE019IU | Ho Chi Minh's Thoughts | 2 | EEAC--IU | AC Elective Course | 4 |
| <i>Total Credits</i> | | 22 | <i>Total Credits</i> | | 21 |
| <i>Summer Semester</i> | | | | | |
| EE112IU | Summer Internship | 3 | | | |
| Senior Year (4th year) | | | | | |
| <i>Semester 1</i> | | | <i>Semester 2</i> | | |
| EE107IU | Senior Project | 2 | EE097IU | Thesis | 10 |
| EEAC__IU | AC Elective Course | 3 | | | |
| EEAC--IU | AC Elective Course | 3 | | | |
| EEAC--IU | AC Elective Course | 3 | | | |
| EEAC--IU | AC Elective Course | 3 | | | |
| EE114IU | Entrepreneurship | 3 | | | |
| <i>Total Credits</i> | | 17 | <i>Total Credits</i> | | 10 |

Total: 152 credits

According to the Diploma Supplement the following **objectives** and **learning outcomes (intended qualifications profile)** shall be achieved by the Bachelor degree programme Computer Science:

“The Computer Science program of IU-VNUHCM is designed to train highly qualified and prestigious bachelors. Prospective Bachelor’s graduates will meet the demands of the global job market by being able to apply basic knowledge to solve a variety of problems in the software industry. In addition to professional knowledge, bachelors who graduated from the Department of Computer Science at International University are able to communicate fluently in English, display teamwork skills, and adapt well to a wide variety of work environments.

The intended learning outcomes of Computer Science Program are detailed below:

- (1) Analyze a complex computing problem and to apply principles of computing and other relevant disciplines to identify solutions.
- (2) Design, implement, and evaluate a computing-based solution to meet a given set of computing requirements in the context of the program’s discipline.
- (3) Communicate effectively in a variety of professional contexts.
- (4) Recognize professional responsibilities and make informed judgments in computing practice based on legal and ethical principles.
- (5) Function effectively as a member or leader of a team engaged in activities appropriate to the program’s discipline.
- (6) Apply computer science theory and software development fundamentals to produce computing-based solutions.

Bachelor of Computer Science can participate in analysis, design, and development of software and information systems in professional software companies such as DXC, FSOFT, IBM, TMA Solutions, TPS Solutions, Robert Bosch, Microsoft, or government agencies, research institutes, science and technology institutes. Furthermore, the students can continue their higher education in the information technology field.”

The following **curriculum** is presented:

| Subject ID | Year 1. Semester 1 | Credits | Subject ID | Year 1. Semester 2 | Credits |
|------------|--------------------|---------|------------|--------------------|---------|
| | | | | | |

J Appendix: Programme Learning Outcomes and Curricula

| | | | | | |
|--------------|---------------------------|-----------|---------|----------------------|-----------|
| CH011IU | Chemistry for Engineers | 3 | EN011IU | Writing AE2 | 2 |
| CH012IU | Chemistry Laboratory | 1 | EN012IU | Speaking AE2 | 2 |
| EN007IU | Writing AE1 | 2 | IT116IU | C/C++ Programming | 4 |
| EN008IU | Listening AE1 | 2 | MA003IU | Calculus 2 | 4 |
| IT064IU | Introduction to Computing | 3 | PE008IU | Critical Thinking | 3 |
| MA001IU | Calculus 1 | 4 | PH015IU | Physics 3 | 3 |
| PH013IU | Physics 1 | 2 | PH016IU | Physics 3 Laboratory | 1 |
| PH014IU | Physics 2 | 2 | PT002IU | Physical Training 2 | 3 |
| PT001IU | Physical Training 1 | 3 | | | |
| Total | | 22 | | | 22 |

| Subject ID | Year 2. Semester 1 | Credits | Subject ID | Year 2. Semester 2 | Credits |
|------------|---------------------------------|---------|------------|-------------------------------------|---------|
| IT131IU | Theoretical Models in Computing | 4 | IT013IU | Algorithms and Data Structures | 4 |
| IT067IU | Digital Logic Design | 3 | IT079IU | Principles of Database Management | 4 |
| IT069IU | Object-Oriented Programming | 4 | IT089IU | Computer Architecture | 4 |
| IT099IU | Digital Logic Design Laboratory | 1 | IT090IU | Object-Oriented Analysis and Design | 4 |

J Appendix: Programme Learning Outcomes and Curricula

| | | | | | |
|--------------------|------------------------------------|-----------------|---------|---|-----------|
| IT153IU | Discrete Mathematics | 3 | PE016IU | Political economics of Marxism and Leninism | 2 |
| MA023IU or IT154IU | Calculus 3 or Linear Algebra | 4 or 3 | | | |
| PH012IU | Physics 4 | 2 | | | |
| PE015IU | Philosophy of Marxism and Leninism | 3 | | | |
| Total | | 24 or 23 | | | 18 |

| Subject ID | Year 3. Semester 1 | Credits | Subject ID | Year 3. Semester 2 | Credits |
|--------------|---|-----------|------------|---------------------------------------|-----------|
| IT076IU | Software Engineering | 4 | IT092IU | Principles of Programming Languages | 4 |
| IT017IU | Operating Systems | 4 | IT093IU | Web Application Development | 4 |
| IT091IU | Computer Networks | 4 | IT159IU | Artificial Intelligence | 4 |
| MA026IU | Probability, Statistic & Random Process | 3 | | Elective | 4 |
| PE017IU | Scientific Socialism | 2 | PE018IU | History of Vietnamese Communist Party | 2 |
| Total | | 17 | | | 18 |

| Subject ID | Year 3. Semester 3 | Credits |
|------------|--------------------|---------|
|------------|--------------------|---------|

J Appendix: Programme Learning Outcomes and Curricula

| | | |
|--------------|------------|----------|
| IT082IU | Internship | 3 |
| Total | | 3 |

| Subject ID | Year 4. Semester 1 | Credits | Subject ID | Year 4. Semester 2 | Credits |
|--------------|----------------------------|-----------|------------|--------------------|-----------|
| IT083IU | Special Study of the Field | 3 | IT058IU | Thesis | 10 |
| IT120IU | Entrepreneurship | 3 | | | |
| | Elective | 4 | | | |
| | Free Elective | 4 | | | |
| PE019IU | Ho Chi Minh's Thoughts | 2 | | | |
| Total | | 16 | | | 10 |

According to the Diploma Supplement the following **objectives** and **learning outcomes (intended qualifications profile)** shall be achieved by the Bachelor degree programme Information Technology:

“The Information Technology program of IU-VNUHCM is designed to train highly qualified and prestigious bachelors. Prospective Bachelor’s graduates will meet the demands of the global job market by being able to apply basic knowledge to solve a variety of problems in the information technology industry. In addition to professional knowledge, bachelors who graduated from the School of Computer Science and Engineering at International University are able to communicate fluently in English, display teamwork skills, and adapt well to a wide variety of work environments.

The intended learning outcomes of the Information Technology Program are detailed below:

- ILO1 - an ability to apply knowledge, techniques, skills, and modern tools of mathematics, science, engineering, and technology to solve broadly-defined engineering problems appropriate to the discipline;

- ILO2 - an ability to design systems, components, or processes meeting specified needs for broadly-defined engineering problems appropriate to the discipline;
- ILO3 - an ability to apply written, oral, and graphical communication in broadly-defined technical and non-technical environments; and an ability to identify and use appropriate technical literature;
- ILO4 - an ability to analyze and interpret the results to improve processes;
- ILO5 - an ability to function effectively as a member as well as a leader on technical teams.
- ILO6 - an ability to conduct standard tests, measurements, and experiments

Career opportunities are to...

- Become a global citizen, possible to continue to study MSc. and Ph.D., live, and work in any country in the world.
- Participate in activities in companies specialized in the field of microprocessors, micro-controllers, IC design, embedded software, automatic control devices, and robots.
- Work in international and domestic companies involved in information technology.
- Employed as technical staff at universities, research institutes, and companies.”

The following **curriculum** is presented:

- a) Bachelor of Engineering in Information Technology – Computer Engineering Major (AE1):
IELTS >=5.5

| Subject ID | Year 1. Sem 1 | Credits | Subject ID | Year 1. Semester 2 | Credits |
|------------|--------------------------------|---------|------------|---------------------------|---------|
| CH011IU | Chemistry for Engineers | 3 | EN011IU | Writing AE2 | 2 |
| CH012IU | Chemistry Laboratory | 1 | EN012IU | Speaking AE2 | 2 |
| EN007IU | Writing AE1 | 2 | IT116IU | C/C++ Program- ming | 4 |
| EN008IU | Listening AE1 | 2 | MA003IU | Calculus 2 | 4 |
| IT064IU | Introduction to Compu- ting | 3 | PH015IU | Physics 3 | 3 |
| MA001IU | Calculus 1 | 4 | PH016IU | Physics 3 Labora- tory | 1 |
| PH013IU | Physics 1 | 2 | PT002IU | Physical Training 2 | 3 |
| PH014IU | Physics 2 | 2 | PE008IU | Critical Thinking | 3 |
| PT001IU | Physical Training 1 | 3 | | | |
| Total | | 22 | | | 22 |

J Appendix: Programme Learning Outcomes and Curricula

| Subject ID | Year 2. Sem 1 | Credits | Subject ID | Year 2. Semester 2 | Credits |
|----------------------|---------------------------------|---------|---------------------|---|---------|
| IT131IU | Theoretical Models in Computing | 4 | IT013IU | Algorithms and Data Structures | 4 |
| IT154IU | Linear Algebra | 3 | IT089IU | Computer Architecture | 4 |
| IT067IU/ EE053IU/ | Digital Logic Design | 3 | PE016IU | Political economics of Marxism and Leninism | 2 |
| IT069IU | Object-Oriented Programming | 4 | IT103IU | Digital Signal Processing Or EE092IU (3 Credit / EE093IU (1 Credit) Digital Signal Processing & Laboratory | 4 |
| IT099IU/EE054IU | Digital Logic Design Laboratory | 1 | IT128IU/ EE083IU | Micro-processing Systems | 3 |
| IT153IU | Discrete Mathematics | 3 | IT129IU/ EE084IU | Micro-processing Systems Laboratory | 1 |
| IT068IU/ EE051IU | Principles of EE1 | 3 | PE015IU | Philosophy of Marxism and Leninism | 3 |
| IT098IU/ EE052IU | Principles of EE1 Laboratory | 1 | | | |
| Total | | 22 | | | 21 |

| Subject ID | Year 3. Sem 1 | Credits | Subject ID | Year 3. Sem 2 | Credits |
|---------------------|--|---------|---------------------|---------------------------------------|---------|
| IT076IU | Software Engineering | 4 | IT105IU/ EE063IU | Digital System Design | 3 |
| IT017IU | Operating Systems | 4 | IT106IU/ EE117IU | Digital System Design Laboratory | 1 |
| MA026IU | Probability, Statistic & Random Process | 3 | IT115IU/ EE104IU | Embedded Systems | 3 |
| IT074IU/ EE090IU | Electronics Devices | 3 | IT127IU/ EE118IU | Embedded Systems Laboratory | 1 |
| IT101IU/ EE091IU | Electronics Devices Laboratory | 1 | PE018IU | History of Vietnamese Communist Party | 2 |
| PE017IU | Scientific Socialism | 2 | PH012IU | Physics 4 | 2 |
| PE020IU | Engineering Ethics and Professional Skills | 3 | | Elective | 4 |
| IT091IU | Computer Networks | 4 | | | |
| Total | | 24 | | | 16 |

J Appendix: Programme Learning Outcomes and Curricula

| Subject ID | Year 3. Sem 3 | Credits |
|------------|---------------|---------|
| IT082IU | Internship | 3 |
| Total | | 3 |

| Subject ID | Year 4. Sem 1 | Credits | Subject ID | Year 4. Sem 2 | Credits |
|---------------------|---|---------|------------|---------------|---------|
| IT083IU | Special Study of the Field | 3 | IT058IU | Thesis | 10 |
| IT120IU | Entrepreneurship | 3 | | | |
| PE019IU | Ho Chi Minh's Thoughts | 2 | | | |
| IT110IU/ EE066IU | Concepts in VLSI Design | 3 | | | |
| IT126IU/ EE121IU | Concepts in VLSI Design La- boratory | 1 | | | |
| | Elective | 4 | | | |
| Total | | 16 | | | 10 |

Curriculum overview of IT (NE)

b) Bachelor of Engineering in Information Technology – Network Engineering Major. English level (AE1): IELTS \geq 5.5

| Subject ID | Year 1. Semester 1 | Credits | Subject ID | Year 1. Semester 2 | Credits |
|------------|---------------------------|---------|------------|----------------------|---------|
| CH011IU | Chemistry for Engineers | 3 | EN011IU | Writing AE2 | 2 |
| CH012IU | Chemistry Laboratory | 1 | EN012IU | Speaking AE2 | 2 |
| EN007IU | Writing AE1 | 2 | IT116IU | C/C++ Programming | 4 |
| EN008IU | Listening AE1 | 2 | MA003IU | Calculus 2 | 4 |
| IT064IU | Introduction to Computing | 3 | PE008IU | Critical Thinking | 3 |
| MA001IU | Calculus 1 | 4 | PH015IU | Physics 3 | 3 |
| PH013IU | Physics 1 | 2 | PH016IU | Physics 3 Laboratory | 1 |
| PH014IU | Physics 2 | 2 | PT002IU | Physical Training 2 | 3 |
| PT001IU | Physical Training 1 | 3 | | | |
| Total | | 22 | | | 22 |

| Subject ID | Year 2. Semester 1 | Credits | Subject ID | Year 2. Semester 2 | Credits |
|--------------------|--------------------------------------|---------|------------|---|---------|
| IT153IU | Discrete Mathematics | 3 | IT013IU | Algorithms and Data Structures | 4 |
| IT067IU/ EE053IU | Digital Logic Design | 3 | IT079IU | Principles of Database Management | 4 |
| IT069IU | Object-Oriented Programming | 4 | IT089IU | Computer Architecture | 4 |
| IT099IU/EE054IU | Digital Logic Design Laboratory | 1 | IT125IU | System and Networks Administration | 4 |
| IT091IU | Computer Networks | 4 | PE016IU | Political economics of Marxism and Leninism | 2 |
| MA023IU or MA024IU | Calculus 3 or Differential Equations | 4 | | | |
| PH012IU | Physics 4 | 2 | | | |
| PE015IU | Philosophy of Marxism and Leninism | 3 | | | |

J Appendix: Programme Learning Outcomes and Curricula

| Total | | 24 | | | 18 |
|------------|--|---------|------------|---------------------------------------|---------|
| Subject ID | Year 3. Semester 1 | Credits | Subject ID | Year 3. Semester 2 | Credits |
| IT139IU | Scalable and Distributed Computing | 4 | IT096IU | Net-Centric Programming | 4 |
| IT017IU | Operating Systems | 4 | IT093IU | Web Application Development | 4 |
| IT131IU | Theoretical Models in Computing | 4 | IT094IU | Information System Management | 4 |
| MA026IU | Probability, Statistic & Random Process | 3 | | Elective | 4 |
| PE020IU | Engineering Ethics and Professional Skills | 3 | PE018IU | History of Vietnamese Communist Party | 2 |
| PE017IU | Scientific Socialism | 2 | | | |
| Total | | 20 | | | 18 |

| Subject ID | Year 3. Semester 3 | Credits |
|------------|--------------------|---------|
| IT082IU | Internship | 3 |
| Total | | 3 |

| Subject ID | Year 4. Semester 1 | Credits | Subject ID | Year 4. Semester 2 | Credits |
|------------|-----------------------------|---------|------------|--------------------|---------|
| IT083IU | Special Study of the Field | 3 | IT058IU | Thesis | 10 |
| IT120IU | Entrepreneurship | 3 | | | |
| | Elective | 4 | | | |
| | Elective | 4 | | | |
| IT117IU | System and Network Security | 4 | | | |
| PE019IU | Ho Chi Minh's Thoughts | 2 | | | |
| Total | | 20 | | | 10 |