ASIIN Seal & Euro-Inf® Label

Accreditation Report

Bachelor's Degree Programme
Computer Science
Computer Networks and Communications

Master's Degree Programme
Computer Science
Information Security

Provided by
International University, Vietnam National University Ho Chi Minh City – University of Information Technology

Version: 14 April 2025

Table of Content

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]
Cử nhân Khoa học máy tính	Bachelor of Science in Computer Science	ASIIN, Euro-Inf® Label	AUN-QA, 2024	04
Cử nhân Mạng máy tính và Truyền thông dữ liệu	Bachelor of Engineering in Computer networks and Communications	ASIIN, Euro-Inf® Label	AUN-QA, 2023	04
Thạc sĩ Khoa học máy tinh	Master of Science in Computer Science	ASIIN, Euro-Inf® Label		04
Thạc sĩ An toàn thông tin	Master of Science in Information Security	ASIIN, Euro-Inf® Label		04
Date of the contract: 15.04.2024 **Submission of the final version of the self-assessment report:** 25.09.2025 **Date of the onsite visit:** 13.&14.11.2024 **at: HCMUIT Campus, Ho Chi Minh City, Vietnam**				
Expert panel: Prof. Dr. Stefan Fischer, University of Lübeck Prof. Dr. Konstantin Knorr, Trier University of Applied Sciences				

[1] ASIIN Seal for degree programmes; Euro-Inf® Label: European Label for Informatics
[2] TC: Technical Committee for the following subject areas: TC 04 - Informatics/Computer Science.

Dang Ngoc Hai, Branch Director at Axon Active Nguyen Hoang Anh Tu, student at International University - Vietnam National University HCMC	
Representative of the ASIIN headquarter: David Witt	
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 March 28, 2023 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	Cử nhân/ Bachelor of Science		6	Full time	-/-	7 Semester	202,5 ECTS/ 126 Vietnamese Credits	2006
Computer Networks and Communications	Cử nhân/ Bachelor of Engineering		6	Full time	-/-	8 Semester	212 ECTS/ 130 Vietnamese Credits	2006
Computer Science	Thạc sĩ/Master of Science		7	Full time	-/-	5 Semester	100 ECTS / 60 Vietnamese Credits	2009
Information Security	Thạc sĩ/Master of Science		7	Full time	-/-	5 Semester	100 ECTS / 60 Vietnamese Credits	2020

In its Self-Assessment Report, the university provides the following background information regarding the university and the faculty in charge of the four degree programmes under review:

"The public university, VNUHCM—University of Information Technology (UIT), was established in 2006. It provides esteemed programmes in Information and Communication Technology (ICT). As a member of the Vietnam National University Ho Chi Minh City (VNUHCM), UIT is responsible for the training of a highly qualified labor force in information technology (IT) who are going to contribute to the growth of the national and regional IT industry. In the interim, it engages in scientific research and advances the transfer of advanced IT technology with the objective of fostering the country's industrialization and modernization.

[3] EQF = The European Qualifications Framework for lifelong learning

Vision

- UIT becomes a prestigious university in Information and Communications Technology (ICT) and other related fields in the Asia region.

Missions

- UIT is a graduate and undergraduate institution providing high-quality human resources to meet the demands of the labor market and to serve the community.
- UIT is a leading hub in scientific research and technology-transfer in Information and Communications Technology (ICT) and other related fields.

[…] The Faculty of Computer Networks and Communications (FCNC) and the Faculty of Computer Science (FCS) were established in 2006 at the time of the founding of UIT. Both faculties are devoted to providing a skilled and qualified workforce in the area of information technology, dedicated to scientific research and advanced IT technology transfer, aligned with the university vision and missions. FCNC comprises three departments: Communications, Computer Networks, and Information Security, with a diverse workforce including 26 lecturers, 2 researchers, and 2 support staff, including associate professors, doctors, master and engineers' degree. Meanwhile, FCS, consisting of 24 lecturers, 11 Ph.Ds., 09 Masters, 04 Engineers, and visiting lecturers from various faculties, universities, and international institutions, is dedicated to high-quality research in Computer Science, with two departments: Artificial Intelligence and Multimedia Computing."

C Expert Report for the ASIIN Seal[4]

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
- Programme Specification of each degree programme
- Module handbook of each degree programme
- Objective-module-matrix for each degree programme
- Diploma Supplement for each degree programme
- Faculty website
- Discussions during the audit

Preliminary assessment and analysis of the experts:

The experts base their assessment of the learning outcomes on the information provided in the module descriptions and in the Self-Assessment Report of the four degree programmes under review. For each degree programme, UIT has described Programme Objectives (PO), Programme Learning Outcomes (PLO), and Qualification Profiles. The PO and PLO are published on the Faculties' website and easily accessible for students as well as other stakeholders. Furthermore, there are regular revision processes in place that take into account feedback by external and internal stakeholders.

The experts refer to the Subject-Specific Criteria (SSC) of the Technical Committee Informatics/Computer Science and use the objective-module-matrices and module descriptions for each programme as a basis for judging whether the intended learning outcomes correspond with the competences as outlined by the SSC.

[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 experts note that the relationship between POs and PLOs has been established in a comprehensible and logical manner. The development of POs of each study programme under review involves both internal and external stakeholders so that the curricula can be adapted and modified according to the needs of the industry and the graduates on a regular basis. For example, UIT regularly conducts surveys, through which the different stakeholders get the chance to assess the programmes and their main objectives and adapt them if necessary. Internal stakeholders include all of UIT members (students, teaching staff, and non-academic employees), while the external stakeholders include the industry, alumni, the government, and society. A major revision including consultations of stakeholders takes place every two years.

For the Bachelor's degree programme in Computer Science, UIT defines the following Programme Objectives (PO) and Programme Learning Outcomes (PLO) (see more details in Appendix):

Programme Objectives:

- "PO1: Students have basic and in-depth knowledge of computer networks and communications field.
- PO2: Students have the ability to operate the information systems and network infrastructure.
- PO3: Students have the ability to do research and apply knowledge to design, install, evaluate, and operate information systems.
- PO4: The students have teamwork abilities, good political qualities, a sense of organization, discipline, and ethics."

Programme Learning Outcomes:

- "PLO1: Apply foundational knowledge of natural and social sciences to understand and solve problems in Computer Science.
- PLO2: Demonstrate mastery of foundational and in-depth knowledge in Computer Science.
- PLO3: Research, analyze, and propose solutions for Computer Science-related issues while fostering lifelong learning.
- PLO4: Design, implement, and evaluate systems and solutions in Computer Science.
- PLO5: Communicate and collaborate effectively in professional contexts.
- PLO6: Communicate professionally, interpret documents, and present solutions in a foreign language.
- PLO7: Understand and apply leadership and management principles.
- PLO8: Uphold professional ethics, legal responsibility, and respect for the law."

For the Bachelor's degree programme in Computer Networks and Communications, UIT defines the following Programme Objectives (PO) and Programme Learning Outcomes (PLO) (see more details in Appendix):

Programme Objectives:

- "PO1: Students have basic and in-depth knowledge of computer networks and communications field.
- PO2: Students have the ability to operate the information systems and network infrastructure.
- PO3: Students have the ability to do research and apply knowledge to design, install, evaluate, and operate information systems.
- PO4: The students have teamwork abilities, good political qualities, a sense of organization, discipline, and ethics."

Programme Learning Outcomes:

- "PLO1: Apply fundamental knowledge of natural and social sciences.
- PLO2: Utilize fundamental and advanced knowledge in Computer Networks and Communications applications.
- PLO3: Analyze and propose solutions to problems in the Computer Network and Communications industry; recognize the importance of lifelong learning.
- PLO4: Design and evaluate systems and solutions in the Computer Network and Communications industry.
- PLO5: Communicate and collaborate effectively with individuals and groups in various contexts.
- PLO6: Communicate at work, understand documents, and present specialized solutions in a foreign language.
- PLO7: Understand leadership and management principles.
- PLO8: Understand professional responsibilities and comply with legal and ethical standards."

For the Master's degree programme in Computer Science, UIT defines the following Programme Objectives (PO) and Programme Learning Outcomes (PLO) (see more details in Appendix):

Programme Objectives:

- "PO1: Students acquire knowledge in the natural and social sciences.
- PO2: Students possess strong foundational knowledge in computer science.

- PO3: Students develop a comprehensive understanding of specific areas of computer science.
- PO4: Students are capable of analyzing problems and developing solutions.
- PO5: Students comprehend and possess the capacity to implement new and advanced computer science knowledge.
- PO6: Students are capable of continuously updating their knowledge and technology, participating in scientific research, and self-learning.
- PO7: Students demonstrate effective communication, collaboration, presentation skills, and professional abilities.
- PO8: Students uphold professional ethics.
- PO9: Students develop language proficiency in order to satisfy job requirements and advance their careers."

Programme Learning Outcomes:

- "PLO1: Understand the principles of natural and social sciences and apply them to the field of Computer Science
- PLO2: Understand and apply foundational and specialized knowledge in Computer Science to solve complex problems
- PLO3: Evaluate and solve complex computer science problems using appropriate methodologies and algorithms
- PLO4: Conduct independent research and explore emerging trends in Computer Science
- PLO5: Demonstrate systematic thinking
- PLO6: Reflect on the importance of lifelong learning and engage in continuous self-improvement
- PLO7: Understand and comply to ethical standards and professional regulations
- PLO8: Collaborate effectively in teams
- PLO 9: Communicate effectively
- PLO10: Apply language proficiency in academic and professional contexts
- PLO11: Demonstrate the ability to design, build, and deploy applications."

For the Master's degree programme in Information Security, UIT defines the following Programme Objectives (PO) and Programme Learning Outcomes (PLO) (see more details in Appendix):

Programme Objectives:

- “PO1: Students become highly qualified experts to address complex problems and be able to apply theoretical knowledge and skills in Information Security careers.
- PO2: Students maintain and enhance professional competence by acquiring new knowledge and refining skills.
- PO3: Students solve specialized scientific problems in an ethical and responsible manner.
- PO4: Students demonstrate leadership skills in the workplace and function professionally in a globally competitive world.”

Programme Learning Outcomes:

- “PLO1: Understand the principles of natural and social sciences and apply them to the field of Information Security
- PLO2: Build and manage practical/research projects in the field of Information and Network Security
- PLO3: Conduct independent research and explore emerging trends in Information Security.
- PLO4: Understand and comply to ethical standards and professional regulations
- PLO5: Apply language proficiency in academic and professional contexts
- PLO6: Develop ideas, design, build and deploy applications/research/computer network systems and ensure information security based on social context and technology trends.”

In the experts’ opinion, the intended qualification profiles of all four programmes under review are generally clear, plausible and allow students to take up an occupation, which corresponds to their qualification. They learn that the graduates of UIT are much sought after in the labor market. The representatives of industry emphasize the high quality of the graduates of the programmes under review. In addition, the industry state that they are very satisfied with the scope of the collaboration with the university. Furthermore, students as well as graduates also state that they are satisfied with and well aware of their good job perspectives.

However, UIT offers three different pathways for both Master’s degree programmes: "application oriented”, “research type 1”, and “research type 2.” (see also criterion 1.3), which have different emphases. According to the experts, this leads to (slightly) different learning outcomes, which should also be reflected in the respective Diploma Supplements, on the

relevant webpages, in the POs and PLOs etc. Currently, however, no differentiation is made in the Diploma Supplements or any other official document or webpage provided by the university, which is why the experts argue that the listed learning outcomes should be adapted to the corresponding pathways and contents.

In summary, the experts confirm that all four degree programmes under review adequately reflect EQF 6 level (Bachelor's programmes) and EQF 7 level (Master's programmes) respectively. This can also be confirmed based on the module descriptions and discussions. The learning outcomes are consistent with the ASIIN Subject-Specific Criteria of the Technical Committees 04. They aim at the acquisition of specific competences and are well-anchored and binding.

Criterion 1.2 Name of the Degree Programme

Evidence:

- Self-Assessment Report
- Programme Specification of each degree programme
- Diploma Supplement for each degree programme

Preliminary assessment and analysis of the experts:
The experts confirm that the English translation and the original Vietnamese names of the four degree programmes under review correspond with the intended aims and learning outcomes.

However, the experts recognize inconsistencies regarding the Master's degree programme Information Security. There were differences within the submitted documents and the website of the study programme. For instance, in the Self-Assessment report it says "Information Security", in the academic transcript it is called "Information and Network Security". The experts are of the opinion that "Information Security" would be the appropriate title. During the on-site discussion rounds, the programme coordinators also confirmed that "Information Security" is the correct English programme title. The experts therefore argue that the university must ensure that the English programme title is consistent in all published documents and on the website.

Criterion 1.3 Curriculum

Evidence:

- Self-Assessment Report
- Programme Specification of each degree programme
- Module handbook of each degree programme
- Objective-module-matrix for each degree programme
- Diploma Supplement for each degree programme
- Student handbooks
- Faculty website
- Discussions during the audit

Preliminary assessment and analysis of the experts:

Structure and Content of the programmes

The curricula of all four study programme under consideration are reviewed by the experts in order to identify whether the described POs and PLOs (see chapter 1.1) can be achieved by the available modules. Course descriptions as well as overviews and the objective-module-matrices matching the different PLOs and the various module contents were provided for a thorough analysis.

The curriculum of the Bachelor's degree programme Computer Science (BCS) is designed for 7 semesters and offered as full-time study programme. To complete the programme, students must complete at least 126 Vietnamese credits (equivalent to 202,5 ECTS credits, see chapter 1.5 for more details about the conversion from Vietnamese credit points to ECTS credits). The curriculum of the Bachelor's degree programme Computer Networks and Communication (BCNC) is designed for 8 semesters and offered as full-time study programme as well. To complete the programme, students must complete at least 130 Vietnamese credits (equivalent to 212 ECTS credits, see chapter 1.5 for more details about the conversion from Vietnamese credit points to ECTS credits). The students can extend their study time if needed.

For both Bachelor's degree programmes under review, UIT defines the following curriculum structure (for detailed course overviews of both programmes, see Appendix):

Blocks of knowledge		**BCNC**	**BCS**
General Knowledge Block	Political subjects	13	13
	Mathematics, Informatics, Natural Sciences	22	18
	Foreign Language	12	12
	Professional Skills	02	02
	Physical education – National Defense education	Certificate	
Professional Block	Foundation courses	49	45
	Specialized courses	12	16
	Elective courses	6	10
Graduation block	Internship, projects	04	
	Graduation thesis or Capstone project and Graduation courses	10	10
Total of accumulated credits		**130**	**126**

In its Self-Assessment report, UIT describes the structure of the curricula as follows: "General knowledge provides students with a background in mathematics, programming, and other natural science backgrounds that are essential for the programme. General knowledge also provides students with social and political knowledge that is essential for comprehending the impact of their work and study in a broader context. Professional knowledge encompasses a comprehensive blend of core professional courses, fundamental and specialized courses, as well as elective offerings. These courses are meticulously designed to equip students with both theoretical expertise and practical skills that are directly aligned with the current demands of the industry and the evolving job market. To further enhance their versatility and competitiveness, students are encouraged to select elective credits from other related programmes. This interdisciplinary approach not only broadens their skill set but also deepens their understanding of diverse aspects of their field, fostering a well-rounded and adaptable professional profile. By integrating knowledge from multiple disciplines, students are better positioned to excel in dynamic

and complex work environments. Graduation modules provide students with the opportunity to apply their accumulated knowledge and skills through either a comprehensive thesis or a capstone project, demonstrating their professional competence and readiness for industry challenges. Students may choose between conducting a 10-credit thesis or completing a 6-credit individual capstone project in conjunction with a 4-credit capstone course. These options ensure that students can tailor their experience to their professional goals while bridging academic theory with practical, real-world application." In the Bachelor's degree programme Computer Networks and Communications, an internship is a compulsory part of the curriculum, whereas in the Bachelor's degree programme Computer Science it is only an option as part of the electives.

Overall, the experts are satisfied with the curricula of both Bachelor's degree programmes under review. They see that the programmes are well structured and that the modules build on each other in a reasonable way, enabling the students to effectively reach the learning outcomes as laid down for each programme as a whole.

However, during the on-site discussion, the experts discuss with the programme coordinators whether the Bachelor's degree programme Computer Science includes a Software Project Development course as they see this as a good opportunity for students to gain experience during their studies. The programme coordinators agree that this is an important topic, which is already addressed in the 'Foundation of Computer Science' and 'Introduction to Software Engineering' courses, for example. In addition, students could also choose courses from UIT's Bachelor of Software Engineering programme in the elective area and work on respective projects. The experts recognise this and see it as positive that elective modules from other programmes can also be chosen. Nevertheless, they would like to encourage the university to introduce a dedicated project course on this topic to illustrate real-life tasks and structured methodologies of software development. Therefore, the experts recommend to introduce a dedicated Software Project Development course. This course could cover various software development methodologies and provide students with a structured framework for collaborating on projects. For instance, by incorporating concepts like Scrum or Kanban, students could gain practical experience managing tasks, timelines, and communication within a team. This course could also focus on essential skills like requirement gathering, design documentation, version control, and testing, preparing students for real-world software development scenarios.

The curricula of both Master's degree programmes under review are designed for 5 semesters and offered as full-time study programme. To complete the programmes, students must complete at least 60 Vietnamese credits (equivalent to 102 – 116,5 ECTS credits,

see chapter 1.5 for more details about the conversion from Vietnamese credit points to ECTS credits).

For both Master's degree programmes under review, UIT presents the curriculum structure:

KNOWLEDGE BLOCK		**CREDITS**		
		Research-Oriented		**Application-Oriented**
		Type 1	**Type 2**	
General Knowledge	Philosophy	3	3	3
Professional Education	Foundation courses	Research Scientific Methodology (2) Advanced Scientific Research Methodology (2)	Research Scientific Methodology (2)	Research Scientific Methodology (2)
	Specialized courses		≥ 28	≥ 43
Scientific Research (projects, research topics)			≥ 12	
Graduation Thesis		53	15	12
Total Credits		**≥ 60**	**≥ 60**	**≥ 60**
Total ECTS		**>=116.5**	**>=102**	**>=102**

(For an explanation of the different Total ECTS see criterion 1.5)

For both Master's degree programmes under review, the respective study plan is structured as follows (for detailed course overviews of both programmes, see Appendix):

	Research-oriented Programme		**Application-oriented Programme**
	Type 1	**Type 2**	
Semester 1	-General Knowledge (3-7 credits) -Scientific Research Methodology (2 credits) **ECTS = 13.5**	- General Knowledge (3-7 credits) - Scientific Research Methodology (2 credits) **ECTS = 13.5**	- General Knowledge (3-7 credits) - Scientific Research Methodology (2 credits) **ECTS = 13.5**
Semester 2	-Advanced Scientific Research Methodology (2 credits) -Graduation Thesis (53 credits) **ECTS = 109**	- Specialized Courses (14 credits) **ECTS = 22**	- Specialized Courses (15 credits) **ECTS = 24**
Semester 3		- Specialized Courses (14 credits) **ECTS = 22**	- Specialized Courses (14 credits) **ECTS = 22**
Semester 4		- Scientific Research (12 credits) **ECTS = 22**	- Specialized Courses (14 credits) **ECTS = 22**
Semester 5		- Graduation Thesis (15 credits) **ECTS = 30**	- Graduation Thesis (12 credits) **ECTS = 24**

In its Self-Assessment report, UIT describes the structure of the curricula as follows: "The master's programme in Computer Science/Information Security is structured to offer students two distinct orientations: Research-Oriented and Application-Oriented, allowing for a customized educational experience that aligns with the student's career aspirations. The programme is meticulously organized into three key knowledge blocks: General Knowledge, Professional Knowledge, and Graduation Knowledge, with a total of 60 credits required for completion. […] General Knowledge (3 credits). All students, regardless of their chosen orientation, begin with a foundational course in Philosophy (3 credits). This inclu-

sion highlights the program's emphasis on fostering critical thinking and ethical considerations in both research and application. Professional Knowledge. The Professional Knowledge block is tailored to the specific orientation of the student. It encompasses Core/Foundation Knowledge and Specialized Knowledge. Core/Foundation Knowledge: Courses such as Scientific Research Methodology (2 credits) are mandatory across all pathways, with Advanced Scientific Research Methodology (2 credits) required for Type 1 in the research orientation. This ensures that all students, regardless of focus, acquire essential research competencies. Specialized Knowledge: The credit requirements for specialized knowledge vary based on the chosen orientation. Students fulfil these credits by completing courses aligned with their focus area. Those in the Research-Oriented Type 1 and Type 2 tracks must complete a minimum of 28 credits, while students in the Application-Oriented track are required to earn at least 43 credits. This differentiation ensures that research-oriented students devote more time to developing advanced research methodologies, while application-oriented students concentrate on building practical, real-world skills. Additionally, students are given the flexibility to earn up to 12 credits by enrolling in courses from other master's programmes. This flexibility not only enriches the learning experience but also enhances the student's ability to adapt to various industry demands or research challenges. By allowing students to take courses from other programmes, the curriculum fosters cross-disciplinary competence. This aligns with the program's objective of producing versatile professionals capable of navigating complex technological and theoretical landscapes while excelling in both specialized and interdisciplinary environments. Graduation. The most significant divergence between the two orientations lies in the Graduation block. Research-Oriented Type 1 requires students to complete a rigorous 53-credit thesis, emphasizing original research contributions to the field. With Research-Oriented Type 2, students undertake a 15-credit thesis coupled with 12 credits of additional scientific research, offering a balance between research and coursework. If choosing Application-Oriented, students, in contrast, engage in a 12-credit thesis alongside at least 12 credits dedicated to practical application and scientific research, ensuring that their work is grounded in real-world implementation."

In principle, the expert group is very convinced of the structuring of the submitted curricula of both Master's degree programmes under review and the corresponding content level. This is also confirmed by the satisfaction of the various stakeholders, which is evident in the different discussion rounds with students, alumni, industry representatives and teachers.

Furthermore, the experts also generally support the approach of the different study programme pathways, research-oriented and application-oriented, even if they are of the opinion that the university should define different learning outcomes in each case, as the

content and skills to be taught are certainly different. This applies in particular to the ‘research-oriented-type 1’ pathway. Here, the experts see hardly any content overlaps with the other two pathways, as the main focus is explicitly placed on research and the graduation thesis. There should be a clear differentiation of the competences taught in each case (see also criterion 1.1). In the experts' opinion, the separation and definition of separate programmes could be a perspective as well.

With regard to the Master's programme Information Security, the experts also see the need to include a minimum of 2-3 of the elective courses offered in the area of ‘Information Security’ in the compulsory part of the curriculum. They recognise that the university offers sufficient courses in this area and that students on this degree programme normally attend many of these courses in order to justify a degree in ‘Information Security’. However, the fact that the Master's degree programme consists almost exclusively of elective courses means that there is a potential risk that students will not choose a sufficient number of courses from this area and still end up with a degree in ‘Information Security’. The experts also discuss the extent to which it can be ensured that students on the ‘research-oriented type 1’ pathway acquire sufficient skills in the field of information security. The programme coordinators then explain that only students who have also attended the Bachelor's degree in Information Security and have already distinguished themselves through outstanding (research) achievements are admitted to this degree programme. In most cases, these students already have a great deal of knowledge in this area, which allows them to complete a comprehensive Master's-level research thesis (EQF 7) in this field. The experts note that this might also be emphasised more strongly in the admission regulations.

The experts can understand these explanations and recognise that, on the one hand, the majority of students choose elective modules from the field of information security and that students on the ‘type 1’ pathway also have the specific prior knowledge to be able to carry out relevant research at Master's level. Nevertheless, the experts are of the opinion that the university should make at least two to three courses in the field of information security compulsory for all students in order to ensure that the relevant content and skills are taught to everyone, regardless of the elective modules or study path. This should ensure that the content taught and the competences acquired always correspond to the title of the degree programme.

In summary, the experts state that these are well-established and appropriately structured programmes that ultimately achieve the planned objectives very well. This is further confirmed by the high level of satisfaction among students, alumni and industry representatives.

Student Mobility

HCMUT offers a variety of mobility opportunities for students, including semesters abroad, short-term programmes, internships, and participation in international conferences. In this regard, in its Self-Assessment report, UIT describes, that it "offers students valuable opportunities to gain international experience, expand their cultural horizons, and improve their global employability. As part of Vietnam National University—Ho Chi Minh City (VNU-HCM), UIT has established exchange agreements with both VNU-HCM member institutions and international partner universities […]. For instance, students benefit from the ASEAN Credit Transfer System, which facilitates student and academic mobility across the region […]. This system allows students to take courses at partner universities and transfer the credits back to their home institution, enhancing their academic flexibility while broadening their global perspective. […] The credit-based curriculum design at UIT [offers] students the flexibility to plan their studies around their individual needs. By allowing students to choose courses at their own pace—within a structured framework—they can adjust their course load in each semester. This flexibility is critical in helping students remain on track for graduation, even when they engage in international exchanges or other academic opportunities outside the main programme. Additionally, the ability to transfer credits from partner institutions helps students stay aligned with their graduation goals while benefiting from a more diverse educational experience." Credit recognition is facilitated through a learning agreement signed before the exchange, ensuring that courses taken abroad align with the home programme and are recognized upon return.

During the on-site discussion, the students state that they themselves or other students who have been abroad have generally only had good experiences with the university's support. They are also of the opinion that good and sufficient opportunities are offered. In summary, the students state to be satisfied with the existing opportunities for international academic mobility. Even though the corresponding mobility statistics are not that high, the expert group recognizes that the university has focused on expanding its network of partner institutions to further encourage student participation in exchange programmes and already offers a variety of opportunities for going abroad to their students as well as their teaching staff.

Periodic Review of the Curriculum

The curricula of all four degree programmes under review are designed to comply with the POs and PLOs and they are, according to UIT regulations, subject to constant revision processes. As such, the curricula will be reviewed regularly and commented on by students and teachers as well as by external stakeholders such as alumni or industry partners. The

faculty keeps in touch with former students through the faculty alumni network. Market needs are assessed through regular surveys, as well as through contacts with employers achieved through events such as the job fair.

The programmes and their respective learning outcomes are reviewed every two years for major updates to ensure that they are in accordance with the requirements of the stakeholders and the development of the field. In its Self-Assessment report, UIT states additionally, that "Programme specifications are updated periodically according to the regulation on the programme, including changes in the content, structure, LOs, and course lists. […] UIT follows a clear process for the development, updating, appraisal, and approval of undergraduate and graduate programmes […]. This process ensures that curricula are regularly reviewed and revised, especially based on feedback from internal and external stakeholders. Internal stakeholders include faculty, staff, and student representatives, while external stakeholders encompass alumni, employers, industry professionals, and relevant corporations. Major curriculum reviews occur every two years to align with stakeholder requirements and advancements in the field. This systematic approach ensures the programmes remain relevant, up-to-date, and responsive to both academic and industry needs."

Criterion 1.4 Admission Requirements

Evidence:

- Self-Assessment Report
- Regulations on admission to Undergraduate degrees
- Regulations on admission to Master's and doctoral degrees
- Webpage UIT
- Discussions during the audit

Preliminary assessment and analysis of the experts:
Regarding Bachelor's degree programmes, UIT has issued the Regulations on admission to Undergraduate degrees. Furthermore, information on the admission regulations are provided on UIT's website. As described in the Self-Assessment report, "[the] University Admission Committee is responsible for proposing admission schemes, quotas, and selection criteria. These proposals are reviewed and approved by the Council of Science and Academy, the University Council, and VNU-HCM, following the Ministry of Education and Training's regulations and guidelines. UIT employs various admission schemes, including:

- Admission based on National High School Graduation Examination results.

- Direct admission for talented students as per Ministry of Education and Training regulations.
- Priority admission for top students from selected high schools and other criteria set by UIT, VNU-HCM.
- Admission based on Competency Assessment Examination results from VNU-HN or VNUHCM.
- Admission for graduates from international high schools or with international certificates.

Candidates are selected in each scheme based on ranking until quotas are filled, with quotas varying annually according to selection criteria. UIT supports prospective students through multiple online platforms, including a website, hotline, social media, and chat systems. These channels provide easy access to programme information, admission benchmarks, enrolment quotas, tuition details, scholarship policies, and more. UIT also offers scholarships for outstanding admitted students across various schemes."

UIT provides the following table regarding student intake and types of student admission from 2019-2023:

No	Type of Student Admission	Admission Quota				
		2019	2020	2021	2022	2023
1	Priority admission according to MOET and VNUHCM Regulations	Maximum of 5%	Maximum of 1%	Maximum of 5%	25%	25%
2	Priority admission according to VNUHCM Regulation	Maximum of 15%	Maximum of 10%	Maximum of 15%		
3	National high school examination	Minimum of 50%	Minimum of 65%	Minimum of 25%	60%	60%
4	VNUHCM Competency Assessment Examination	Maximum of 30%	Maximum of 23%	Maximum of 50%		
5	Renowned international qualifications		Maximum of 1%	Maximum of 2%	15%	15%
6	Admission according to UIT regulation			Maximum of 2%		

Regarding Master's degree programmes, UIT has issued the Regulations on admission to Master's and doctoral degrees. Furthermore, information on the admission regulations are provided on UIT's website. In its Self-Assessment report, UIT describes the admission procedure as follows: "The Office of Graduate Studies, Science, and Technology oversees the

planning and organization of graduate admissions in accordance with training and admission regulations. The two primary admission schemes are priority admission and the entrance examination. […] For priority admission, exceptional candidates who have graduated from specialized programmes, such as high-quality programmes or internationally accredited programmes within VNUHCM, are given an advantage. This scheme recognizes the rigorous training these students have already undergone, ensuring that only the highest caliber of candidates—those with a minimum GPA of 7.0—are admitted without taking an entrance exam. Candidates who meet these criteria must also pass an interview conducted by a Council of 5-7 members. The Council's recommendation to the Rector for final approval ensures thorough vetting and fairness in the selection process. For candidates who do not meet the priority admission criteria, the entrance examination provides a clear and structured pathway to admission. The examination, covering mathematics, informatics, and a foreign language (with options in English, French, Russian, German, Chinese, or Japanese), ensures that all candidates possess the necessary foundational skills for the programme. The UIT admissions committee then determines the eligibility cutoff scores based on results and programme quotas, ensuring that admitted students meet the program's high standards. This two-tiered admission system offers flexibility while maintaining academic rigor, ensuring that graduate students are selected through a fair, comprehensive process that aligns with programme objectives. Whether admitted through priority pathways or entrance exams, successful candidates demonstrate both the technical competence and intellectual readiness required to thrive in graduate programmes. UIT also awards outstanding admitted students for both admission schemes of all programmes."

Students during the on-site discussions testify that they are informed in detail about the requirements and the necessary steps to apply for admission into the degree programmes under review.

The experts see evidence that UIT keeps track of its students' progress and achievements. In this way, an instrument is in place to monitor the performance records of students with various enrolment backgrounds. In their assessment, the experts find the admission rules to be binding, transparent, and based on UIT's written regulations. They confirm that the admission requirements support the students in achieving the intended learning outcomes. Regarding the credit transfer for students, adequate policies are in place.

Criterion 1.5 Workload and Credits

Evidence:

- Self-Assessment Report
- Study plans of each degree programme
- Module descriptions
- Guidelines for Transferring the UIT Credit System to the European Credit Transfer and Accumulation System (ECTS)
- Discussions during the audit

Preliminary assessment and analysis of the experts:
According to the legal requirements, a Bachelor's degree programme in Vietnam requires at least 120 Vietnamese credits and a Master's degree programme 60 Vietnamese credits, where 1 Vietnamese credit equals about 50 hours of workload. In the Bachelor's degree programme Computer Science, the total credit load is 126 Vietnamese credits and in the Bachelor's degree programme Computer Networks and Communications 130 Vietnamese credits. In both Master's degree programmes under review, graduates have to reach at least 60 Vietnamese credits.

UIT has issued a regulation on the conversion from Vietnamese Credits to ECTS credits, called "Guidelines for Transferring the UIT Credit System to the European Credit Transfer and Accumulation System (ECTS)" where it defines that one ECTS-point equals 27,5 hours of work. Furthermore, the regulation defines that "[a] contact hour is a measurement quantity of a student's study hours. A standard contact hour lasts for 50 minutes. […] One academic credit equates to 15 theoretical hours, 30 hours of discussion, experimentation, and practice in the laboratory using offline or online learning methods, or 45 - 60 hours of practice and thesis preparation. For theoretical, practical, and experimental modules: to receive one credit, students must spend at least 30 hours of personal preparation (self-study).

The workload of students at UIT is as follows:

- One theoretical credit, students need to spend 15 contact hours x 50 minutes + 30 hours of self-study = 42.5 hours
- One credit for practice/ internship/ project/ graduation thesis, students need to spend 30 contact hours x 50 minutes + 30 hours of self-study = 55 hours

Since each ECTS credit equates to 25–30 contact hours, hours on guided work, and hours in the lab (including hours on self-study) depending on different nations in Europe and the

regulations of the University, UIT unanimously decides to use an average of 27.5 hours per ECTS credit as the basis for an equivalent transfer at the UIT.

- One theoretical credit equates 42,5/27,5 = 1.5 ECTS (rounded)
- One credit for practice/ internship/ project/ graduation thesis equates to 55/27,5 = 2 ECTS."

This type of conversion also explains why, for example, both Master's programmes have a different number of ECTS credits depending on the study pathway, while 60 Vietnamese credits must be achieved in each case. This can be explained by the different proportions of theoretical and practical courses.

The UIT stipulates in its regulations that part of each course evaluation is also the enquiry of the workload that the students have to spend on the course. During the on-site discussions, students confirm that they are asked about their workload. In addition, they report experiences of the credit scope of courses being adjusted after the students had given corresponding feedback.

In summary, the experts can recognise from the workload information in the module descriptions that the overall workload is appropriate and corresponds to the Vietnamese credits. This is also confirmed in the surveys conducted by UIT each semester asking the students to evaluate the amount of time they spend outside the classroom for preparing the classes and studying for the exams. During the audit, the students emphasise that they consider the workload high but manageable and that it is possible to finish the degree programmes within the expected periods. Furthermore, a consistent and appropriate conversion from Vietnamese credits to ECTS is in place.

Criterion 1.6 Didactic and Teaching Methodology

Evidence:

- Self-Assessment Report
- Study plans of each degree programme
- Module descriptions
- Discussions during the audit

Preliminary assessment and analysis of the experts:
Various teaching and learning methods (including lectures, computer training and classroom and lab exercises, individual and group assignments, seminars and projects, etc.) have been implemented. Structured activities include tutorials, homework, assignments

(reading or problem exercises) and practical activities. Group project assignments are given in some courses to develop students' skills in teamwork, communication, and leadership. The assignments and exercises should help students to develop their abilities with respect to critical thinking, written/oral communication, data acquisition, problem solving, and presentations.

The most common method of learning is class session. 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. In addition, practical activities should enable students to be acquainted with practical activities for research.

Furthermore, UIT supports students in conducting independent scientific work. In its SAR, UIT describes that "students are provided with resources and opportunities for independent learning, including access to research facilities, academic advising, and mentorship. UIT provides free computational platforms for lecturers and students with UIT-Cloud and GPU server systems. In addition, students can apply for research funds for their individual research projects. The student research funds are called twice per year, with no limitation on the number of applications per student."

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 four programmes under review comprises 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. Moreover, they consider the support given to students to carry out independent research to be extraordinarily positive.

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

Criterion 1.1 (regarding the differentiation of the learning outcomes between the three different pathways for both Master's degree programmes):

UIT has submitted revised Diploma Supplements and Programme Specifications for both Master's programmes. In both, a difference is now made with regard to the learning outcomes to be achieved in the respective study pathways. This is sufficient for the experts to refrain from the first intended requirement.

Criterion 1.2:

UIT has revised the official study programme documents so that the title Information Security is now used uniformly everywhere for the corresponding Master's degree programme. The experts agree that this is the appropriate title for the programme and waive the intended requirement.

Criterion 1.3 (regarding Software Project Development course):

In its statement, UIT comments that "the 'Introduction to Software Engineering' course has been positioned as a key elective, alongside 'Programming Principles and Methods', allowing students to choose based on their career focus and interests. The popularity and feedback on the 'Introduction to Software Engineering' course underscore its importance and effectiveness in imparting critical software engineering skills. Acknowledging both its success and the evolving industry needs, we have considered to make 'Introduction to Software Engineering' a compulsory foundational course. […] Furthermore, we are enhancing our curriculum with the addition of a new course, 'Machine Learning Operations (MLOps)', which aims to provide hands-on experience in managing real-world machine learning projects." The experts appreciate the statement and recognise that UIT already agrees with the importance of these skills for students and has positioned the course as a 'key elective'. The further consideration of offering the course as a compulsory module is supported by the experts as well. As this is only a recommendation, the experts would like to retain it so that further development in this respect can be re-examined during reaccreditation.

Regarding criterion 1.3 (compulsory courses in the field of information security):

In its statement, UIT explains that currently one course from the field of information security is a compulsory part of the curriculum. Furthermore, the records show that 100% of the graduates of this programme have always chosen a minimum of three modules from this area. The UIT also describes that they "are currently conducting extensive surveys with all relevant stakeholders—including students, lecturers, and alumni—to evaluate the potential integration of one to two additional compulsory courses in information security. This initiative aims to ensure that the competencies our graduates acquire are robust and reflective of the rigorous demands of the information security field." The experts feel confirmed in their perception on site that this could merely be a formal point, as in practice all students already take at least three courses from this area. Nevertheless, they support the university's plans to make this compulsory. As the potentially recognised problem does not appear to occur in reality, the experts decide not to impose a requirement. However, they are in favour of a corresponding recommendation in order to be able to evaluate the further development of the curriculum in this direction as part of the reaccreditation process.

The experts consider criterion 1 to be fulfilled.

2. Exams: System, Concept and Organisation

Criterion 2 Exams: System, Concept and Organisation

Evidence:

- Self-Assessment Report
- Module handbook for each degree programme
- Exam regulations
- Thesis guidelines
- Sample of exams and theses
- Discussions during the audit

Preliminary assessment and analysis of the experts:

UIT presents the general rules for the examination and assessment systems applicable to the study programmes under review. Exams for all four degree programmes follow detailed policies by the University. At UIT, assessment is conducted according to the regulations on training at the university level issued by the Ministry of Education and Training (MOET) and the teaching regulations of UIT. According to these regulations, each course has to determine learning outcomes, which support the achievement of the objectives of the respective programme. Accordingly, each course must assess whether all defined learning outcomes stated in the module descriptions have been achieved.

The student assessment process at UIT encompasses various components. Learning outcomes are evaluated through formative and summative assessments. Formative assessments gauge student progress during the semester using methods such as written and oral examinations, quizzes, reports, essays, and presentations. These assessments aim to identify learning gaps and enhance skills in teamwork, analysis, modeling, and system design. In addition to formative assessments, practice sessions help lecturers evaluate practical skills, and midterm and final exams cover diverse question types, including essays, multiple-choice questions, oral sessions, or final projects. The assessment methods are clearly outlined in the syllabus, providing transparency regarding the relationship between module learning outcomes, program learning outcomes, module content, lesson plans, assessment components, and methods.

The final grade of each module is calculated based on the score of these individual kinds of assessment. At the first meeting of a course, the students are informed about what exactly is required to pass the module and about how the final grade is determined through the teaching and learning plan. UIT uses a grading system with a 10-point scale, where you

need at least 5 points to pass a module. UIT provides the following table regarding the grading system:

10-point scale	100-point scale	4-point scale	Grade	Classification	Study result
9.0 to 10	90 to 100	4.0	A+	Excellent	Pass
8.0 – below 9.0	80 – below 90	3.5	A	Very good	Pass
7.0 – below 8.0	70 – below 80	3.0	B+	Good	Pass
6.0 – below 7.0	60 – below 70	2.5	B	Fairly good	Pass
5.0 – below 6.0	50 – below 60	2.0	C	Average	Pass
4.0 – below 5.0	40 – below 50	1.5	D+	Weak	Fail
3.0 – below 4.0	30 – below 40	1.0	D	Poor	Fail
Less than 3.0	Less than 30	0.0	F	Poor	Fail

Based on the university regulation, the students must retake the whole course if they fail, whereas the number of repetitions is unlimited. However, students can request to post-pone the final exam due to important reasons (such as accidents, health problems, etc.). In these cases, students will take the final exam in the next semester without repeating the whole course. The reason, why there are no re-sits of the final exam is that the final grade depends on the assessment of the learning activities that will be carried out continuously through the semester and not only on the final exam. Students who have passed a course and want to improve the score, may also take the course again.

The students confirm that these regulations are effective and properly managed, and experts agree that provisions for disability accommodations, illness, and other exceptional circumstances are clearly established.

During the on-site visit, the experts had access to a selection of exams and final projects. They confirm that these represent an adequate level of knowledge as required by EQF-Level 6 and EQF-Level 7 respectively. The forms of exams are oriented in-line with the en-visaged learning outcomes of the respective courses, and the workload is allocated in an acceptable way.

The experts conclude that the criteria regarding the examinations system, concept, and organization are fulfilled and that the examinations are suitable to verify whether the intended learning outcomes are achieved or not.

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

The experts consider criterion 2 to be fulfilled.

3. Resources

Criterion 3.1 Staff and Development

Evidence:

- Self-Assessment Report
- Staff handbook
- Regulations on Staff Recruitment, Staff Evaluation, and Staff Development
- UIT Strategic Plan
- Discussions during the audit

Preliminary assessment and analysis of the experts:

HR Resources

UIT's teaching staff are categorised as 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 full-time teaching staff members are expected 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, depending on the academic position. For example, full professors spend more time on research activities and less on teaching than associate professors or lecturers.

Yearly, the Dean of the respective Faculty devises a recruitment plan. This plan is shaped by UIT departments, considering factors like workload, the academic staff-to-student ratio, and retirements. Once approved by the Rector, the plan is passed to the Department of Personnel & Administration for candidate selection programs. Teaching staff qualifications are rigorously assessed by a committee based on the criteria relating to their achievement in the field of their subject. Criteria include subject-specific achievements, a pedagogical standards certificate, and proficiency in English, as specified in UIT recruitment notices. Focused on securing adept lecturers, the recruitment policy is widely publicized through mass media. This approach ensures broad visibility and attracts candidates aligned with UIT's academic standards. UIT provides the following information on the teaching staff from both faculties involved for the last two years:

Year	Faculty	Number of staff	Lecturer			Researcher			Support staff		Studying abroad	Recruiment plans	Recruiment results
			Ph.D	MSc	BSc	Ph.D	MSc	BSc	MSc	BSc			
2023	FCS	24	11	8	3				1	1	01 post-doctoral lecturer	01 Lecturers for Department of Artificial Intelligence; 01 Lecturers for Multimedia computing Department; 2 Tutors	01 Tutors
	FCNC	34	8	16	6		2				02 Lecturer studying for a doctorate 02 post-doctoral lecturer	03 Lecturer and 03 Researcher for Department of Information Security	1 lecturer 2 tutors
2024	FCS	25	11	9	3				1	1		01 Lecturers for Department of Artificial Intelligence; 01 Lecturers for Multimedia computing Department; 2 Tutors	1 lecturer
	FCNC	34	8	16	6		2					03 Lecturer and 03 Researcher for Department of Information Security	

On frequent occasions, UIT invites guest lecturers from other members of VNU-HCM and international universities and institutes as well as from industry to teach parts of various core and major courses, as well as to supervise students for their internships, research projects, and theses.

The Vietnamese government has set specific staff-student ratios for universities, with a recommended ratio of 1:20 for optimal engagement which is ensured in all four programmes under review. The experts meet with students to assess their perceptions of the support provided and the appropriateness of class sizes for effective learning. Students express satisfaction with the accessibility of lecturers, both inside and outside the classroom, and do not perceive any problems with current class sizes.

In summary, the experts emphasise the highly committed and motivated staff and the satisfaction of the students. They conclude that UIT has defined adequate measures for staff selection and that all programmes under review can be carried out effectively with the existing staff.

HR Development

UIT encourages the training of its academic staff to improve their didactic abilities and teaching methods. As stated in the Self-Assessment Report, academic staff frequently undergo training in pedagogy, research, management, leadership, and quality assurance. Academic staff at UIT undergo continuous development through various degree and non-degree training programmes at UIT or other institutions of Vietnam National University Ho Chi Minh City. Faculty can choose doctoral programmes according to their research interests, and the English Centre at UIT provides language support. Participation in national and international forums is encouraged, and UIT is committed to supporting national and international training for teaching staff that meets university standards. Senior lecturers are required to mentor and train newly recruited staff in teaching, research and community service, while junior staff gain experience by assisting as sit-in lecturers for at least one semester.

In its Self-Assessment report, UIT additionally describes that “[s]trong emphasis is placed on continuous academic and professional development, offering a wide range of opportunities, including workshops, seminars, and conferences focused on both subject-specific knowledge and pedagogical skills. Regular peer reviews and performance evaluations are conducted to assess ongoing effectiveness, with student feedback playing a crucial role in identifying areas for improvement. This systematic approach ensures that faculty members

are well-equipped to deliver high-quality education that meets rigorous institutional standards […]. The evaluation system is tailored to specific job positions, assessing faculty on professional competence, teaching capacity, and research achievements, ensuring that faculty development aligns with institutional goals and industry needs."

The experts discuss the various opportunities available for personal skill development with the teaching staff members. The teachers express their satisfaction with the internal qualification programme and willingness to improve their didactic skills. Additionally, they can attend conferences, workshops, and seminars abroad.

All interviewed staff demonstrate high motivation and attachment to the institution. In the opinion of the experts, UIT offers sufficient support mechanisms and opportunities for teaching staff members who wish to strengthen their professional and teaching skills.

Criterion 3.2 Student Support and Student Services

Evidence:

- Self-Assessment Report
- Evaluation/survey results
- Discussions during the audit

Preliminary assessment and analysis of the experts:
During the on-site discussions with programme coordinators, lecturers, and particularly the students, the experts gain a thorough understanding of the available support services for students. UIT provides both subject-specific academic counselling and general non-academic guidance.

At the start of the first semester, every student is assigned an academic advisor. These advisors are members of the academic staff and are responsible for approximately 10 to 15 students from their classes. Their academic advisor is the first port of call if a student needs advice or support on academic or personal issues. They also offer suggestions regarding relevant careers and skills development and help if there are problems with other teachers. Before the start of the semester, the advisors help students plan for their next courses. Students register for courses through an online platform that allows advisors to look through all registered courses and make adjustments in alignment with the student's progress and abilities. The platform is also used by advisors to monitor the academic performance of their students. They arrange at least two meetings per semester to discuss issues affecting the student's academic achievement. During the discussion with the experts, the students confirm that they all have an academic advisor. In general, during their interaction with the experts, students highlight the approachability of teachers, which contributes to

building a fruitful interaction. The discussion lead the experts to the impression that students are well taken care of.

Students who prepare their thesis have one or more supervisors selected based on the topic of the final project. Each lecturer supervises up to five students and organises weekly meetings with them. The role of the thesis supervisor is to guide students in completing their final project, which includes finishing their research and the final project report.

During the campus tour, the experts observed a range of student services offered at UIT, including counselling provided by psychologists, medical doctors, lawyers, and educators, accessible through online, face-to-face sessions, and seminars.

UIT also helps students look for career orientations and job opportunities. Every year, UIT organises the Career Orientation Day to connect current students, alumni, and industry. In addition, specialised seminars invite alumni and people from the industry to present the needs of the labour market and share their working experiences.

Finally, there are several student organisations at UIT; these include student-led clubs, which are divided into arts, sports, religious and other non-curricular activities.

In its SAR, UIT provides the following summary on the student support activities carried out by UIT and both faculties involved:

Activity Type	UIT	FCNC	FCS
Co-curricular activities	• Scholarship opportunities from enterprises and organizations. • Research and seminars. • Job Fairs (e.g., UIT Career Day). • Company visits offering practical exposure. • Open English Club (OEC) for language development.	• Job Fairs (e.g., UIT NetSec Day). • Study groups for exam preparation. • Short-term courses on transferable skills and learning methods.	• CS Open Day featuring tutorials and research discussions. • CS Alumni Day with knowledge sharing from alumni. • Seminars by industry experts. • Company field trips.
Student competitions	• UIT Hackathon. • Network Challenge. • Netsec TOEIC English competition. • UIT Collegiate Programming Contest (UCPC). • UIT Artificial Intelligence Challenge (UIT AIC).	• Network Security competitions.	• Programming and research competitions.
Support activities	• Annual support activities by the Office of Student Affairs (OSA).	• Annual support activities by FCNC Youth Union.	• Annual support activities by FCS Youth Union.

In summary, the experts positively note the good and trustful relationship between the students and the teaching staff. Enough resources are available to provide individual assistance, advice and support for all students. The support system helps the students achieve the intended learning outcomes and complete their studies successfully. The students, in general, have access to sufficient information about the programmes and are well-informed about the services available. The comprehensive support and advisory system is one of the strengths of UIT.

Criterion 3.3 Funds and equipment

Evidence:

- Self-Assessment Report
- List of Equipment
- On-site visit of participating institutes and laboratories
- Discussions during the audit

Preliminary assessment and analysis of the experts:

UIT provides basic funding and facilities for the four programmes under review. UIT or the Vietnamese government can provide additional funds for research activities, but the teachers have to apply for them. In addition, there are several cooperation agreements with industry partners. The main sources of income are the students' tuition fees and the funds provided by the Vietnamese government (mostly for salaries). In its Self-Assessment report, UIT states that "[t]he financial structure is supported by several key revenue streams:

- Tuition Fees and Other Income: Revenue generated from tuition fees, training activities, scientific and technological services, and supporting services for educational activities forms the primary source of funding. These funds are essential for the development and maintenance of the university's infrastructure.
- Government Contracts and Assignments: UIT receives financial support through government contracts for training and research, as well as for fulfilling specific state-assigned tasks. This funding helps support the university's mission to contribute to national education and research objectives.
- Investments and Contributions: Domestic and international organizations, along with private investors, contribute to UIT's financial resources. Additionally, UIT reinvests the surplus from its annual operations to further enhance its financial stability.
- Business and Service Activities: Income is also generated through leasing, partnerships, and business activities that align with the university's educational mission. These activities include investments in financial instruments and community service-oriented enterprises.
- Loans and Grants: The university has access to loans from banks and credit institutions, as well as contributions from organizations and individuals for the purpose of expanding and developing its infrastructure. Moreover, UIT benefits from donations, grants, and endowments from alumni and benefactors, both domestic and international.
- Government Funding: For specific research activities, teaching and learning operations, and other state-directed initiatives, UIT receives funding from the national budget. This

includes both recurring and non-recurring expenditures related to the university's public service mandate.
- Investment Projects: Capital investment for development projects, approved under public investment laws, ensures the continuous enhancement of UIT's infrastructure."

All facilities and equipment are regularly validated and calibrated. Planning and maintaining the university's facilities. This includes evaluating, maintaining and improving the physical facilities and infrastructure of the university, such as teaching and learning facilities, laboratories, equipment, and tools, to meet the needs of education, research, and service.

The experts had a close look at the equipment used for practical training in the laboratories. The experts value the students' presentation of their practical work in the laboratories. They judge the facilities, including teaching labs, as adequate for teaching and confirm that they are well-equipped and contain everything necessary for the programmes' objectives. If students require additional resources to conduct their research, the programmes offer various partnerships with national and international institutes. Furthermore, the experts highlight the (partly) extracurricular opportunities provided for the students, e.g. the AI Club and the opportunity to carry out internships in the offices on campus funded by various, partly international cooperation partners

The experts find no severe bottlenecks due to missing equipment or infrastructure. The basic technical equipment for teaching students is available in sufficient numbers. In the discussion with the expert group, the students confirm that they are generally satisfied with the available equipment. Moreover, the teaching staff emphasise that from their point of view, the degree programmes receive sufficient funding for all teaching and learning activities. Of course, there is limited funding to modernise or add laboratory equipment, but there are sufficient resources for adequately teaching the classes.

Students are satisfied with the library and the literature, most of which is available digitally. They can access international literature, scientific journals, and publications online through different host services. Students have sufficient access to current international literature and databases, and they can access them remotely. Additionally, students can access all the resources of all member universities of the Vietnam National University Ho Chi Minh City. This means that if UIT does not have the required books, they can be obtained from other universities.

In summary, the expert group assesses that the available funds, the technical equipment, and the infrastructure (laboratories, library, seminar rooms, etc.) are well suited to the requirements for providing the four study programmes under review.

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

The experts consider criterion 3 to be fulfilled.

4. Transparency and Documentation

Criterion 4.1 Module Descriptions

Evidence:

- Modul Handbooks for each degree programme under review

Preliminary assessment and analysis of the experts:

The experts observe that the module descriptions of all four degree programmes under review mostly contain the necessary information about the persons responsible for each module, the teaching language, the teaching methods, the workload, the credit points, the module objectives and intended learning outcomes, the content, the admission and examinations requirements and regulations, and the literature. However, the experts recognize that in most module descriptions of all four degree programmes under review, information on the required and recommended prerequisites for joining the module, calculation of the final grade, and date of last amendment are missing. Furthermore, in the Bachelor's degree programme Computer Science, the module description of the course CS 526 - Multimedia Mobile Applications is missing. In the module descriptions of the courses CS 217 – Knowledge-Based Systems and CS 214 - Knowledge Representation and Reasoning, information on the estimated total workload is missing.

Summing up, the experts are of the opinion that the university has generally provided good and complete module descriptions overall. However, the module descriptions need to be reviewed, especially regarding information on the required and recommended prerequisites for joining the module, calculation of the final grade, date of last amendment as well as regarding the missing module descriptions.

Criterion 4.2 Diploma and Diploma Supplement

Evidence:

- Exemplary Diploma Supplements
- Exemplary Transcripts of Records

Preliminary assessment and analysis of the experts:
The experts confirm that the students of the four programmes under review are awarded a Diploma and a Diploma Supplement upon graduation. The Diploma consists of a Diploma Certificate and a Transcript of Records. The Transcript of Records lists all the courses that the graduate has completed, the achieved credits, grades, and cumulative GPA. The Diploma Supplement contains most of the necessary information about the degree programmes. However, it is missing information on the programmes' objectives and intended learning outcomes, the admission requirements, the credit point conversion, and the grading system, and it does not provide the number of ECTS points being awarded for the entire degree programme. Therefore, UIT has to adapt the Diploma Supplements for all four programmes under review and add the missing information.

Criterion 4.3 Relevant Rules

Evidence:

- Self-Assessment report
- All relevant regulations as published on the university's website

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

The experts appreciate that the websites of the programmes include sufficient information about the intended learning outcomes, study plans, module descriptions and academic guidelines of each degree programme and are made available to all relevant stakeholders.

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

Criterion 4.1:

UIT has issued revised module handbooks for all programmes, which the experts consider are now complete and adequate. In addition, UIT has made information on course relationships and prerequisites publicly available on its Department of Academic Affairs website. The experts therefore consider criterion 4.1 to be fulfilled

Criterion 4.2:

UIT has issued revised Diploma Supplements for all programmes, which the experts now consider to be complete and adequate. In addition, the university has adapted its own university-wide regulations for the creation of Diploma Supplements. These now also always require information on: "ECTS [awarded], […] learning outcomes, admission requirements, career opportunities, and the current educational system, [and] on the distribution of graduation grades based on student score statistics." Therefore, the experts consider criterion 4.2 to be fulfilled.

The experts consider criterion 4 to be fulfilled.

5. Quality management: quality assessment and development

Criterion 5 Quality management: quality assessment and development

Evidence:

- Self-Assessment report
- Student handbooks
- Quality Assurance Guidelines
- Surveys' reports

Preliminary assessment and analysis of the experts:
UIT's quality management revolves around its Internal Quality Assurance System, which is in line with MOET regulations. The QA system, managed by the Office of Inspection, Legal Affairs, and Quality Assurance (OILAQA), operates at both institutional and faculty levels to uphold and improve academic quality. UIT aims to continuously assess, evaluate, control, maintain and improve key activities in accordance with the University's mission, vision and strategic goals.

UIT uses various monitoring and assessment tools within its QA framework. Student progress is closely monitored using tools such as UIT's Moodle system, academic information

portals and online surveys. Dropout and completion rates are regularly tracked, with interventions such as academic alerts and specific processes to address dropout concerns.

Assessment tools include bi-annual student surveys to evaluate teaching activities. These surveys cover module organisation, teaching activities and assessment methods. The results are analysed by OILAQA and reports are sent to UIT management and departments. Students also provide feedback on the quality of teaching through mandatory end-of-semester surveys.

The University conducts surveys to gather feedback from graduates, alumni and employers. Graduating students evaluate modules and training programmes, while alumni and employers evaluate the quality of the education and graduates' readiness for the work-place. The results of these surveys are used to improve programme effectiveness and align the curriculum with labour market needs.

UIT's commitment to continuous improvement is evident in its biennial surveys, which gather feedback from teaching and support staff. These surveys assess job satisfaction, including factors such as policies, training opportunities, support activities and evaluation by managers and colleagues. Feedback from students, alumni and industry representatives is used to update the curriculum.

During the audit, the experts asked about student and industry satisfaction with their involvement in decision-making. Students expressed satisfaction, noting that their feedback was genuinely taken into account and had an impact on programme improvements. Industry partners echoed this sentiment, acknowledging UIT's commitment to incorporating their insights and observing tangible changes. Overall, both groups confirmed their satisfaction, highlighting UIT's inclusive and responsive approach to stakeholder feedback.

However, the experts also discuss with the programme managers the main reasons they see for the relatively high drop-out rates in the two Master's degree programmes and whether these are explicitly evaluated. In response, the programme coordinators state that this is one of the key issues they are focusing on and want to improve. An internal research project has already been launched to analyse the relevant data and gain further insights. The programme coordinators believe that the main reason why students do not complete their Master's degree is that many students work alongside their studies. It sometimes then happens that students who already have a Bachelor's degree earn enough money so that they no longer aim to complete the Master's programme. The experts recognise that the university is already addressing this issue of drop-out rates. However, they are of the opinion that the reasons for the drop-out rates should be investigated further and therefore support the research project that has been launched.

In summary, the experts are of the opinion that UIT's quality management system, guided by internal and external feedback loops, involves students, alumni and industry stakeholders and ensures a comprehensive and continuous approach to programme improvement. However, regarding both Master's degree programmes under review, they recommend to further investigate on the reasons for the relatively high-drop-out rates.

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

UIT states in their statement that they have already classified the investigation of drop-out rates as a top priority and have already taken several strategic measures to address the identified reasons (mainly students' employment). This is strongly supported by the experts. To ensure that as part of the reaccreditation process it is again specifically looked at how the various measures taken by UIT have worked and how the drop-out figures have developed, the experts would like to retain the initial planned recommendation.

The experts consider criterion 5 to be fulfilled.

D Additional Documents

No additional documents needed.

E Comment of the Higher Education Institution

The institution provides updated documents as reviewed Diploma Supplements, Regulation on Diploma Supplement, Programme Specifications, Regulation on training at the master's level, and Module Descriptions. Furthermore, UIT provides the following statement:

Regarding Criterion 1.1:

"We appreciate the experts' insights regarding the need for distinct learning outcomes across the three pathways of our Master's degree programs: "application-oriented," "research type 1," and "research type 2." While these differences were partially reflected in the programme specifications and the matrix of relationships between courses and Programme Learning Outcomes (PLOs), especially for the MIS program, we recognize the importance of more explicitly documenting these distinctions. Based on your recommendation, we have revised the Diploma Supplements and other official documents to clearly delineate the learning outcomes associated with each pathway. Specifically:

- Section 2.4 (The Training Programme) of the Diploma Supplement now clearly states the specific pathway.
- Section 4.2 (The Programme Learning Outcomes) lists the respective PLOs tailored to each pathway.

[…] Additionally, we have improved the presentation of the programme specifications to better articulate existing content. This revision enhances clarity, ensuring all stakeholders clearly understand which Programme Learning Outcomes (PLOs) are associated with each pathway. This update is purely in the presentation for enhanced transparency and does not involve any changes to the content or educational goals of the pathways."

LEVEL			Programme Learning Outcomes (PLOs)	Research Type 1	Research Type 2	Application Oriented
1st	2nd	3rd				
9	3		Skills in developing social relationships	×	×	×
PLO 10. Apply language proficiency in academic and professional contexts						
10	1		Communication skills in listening, speaking, reading, and writing	×	×	×
10	2		Ability to comprehend specialized documents in a foreign language			
10	2	1	Use basic specialized terms	×	×	×
10	2	2	Ability to comprehend specialized documents	×	×	×
PLO 11. Demonstrate the ability to design, build, and deploy applications						
11	1		Ability to identify requirements, design, build, and deploy applications			
11	1	1	Ability to identify requirements			×
11	1	2	Ability to design, build, and deploy applications			×
11	2		Ability to evaluate, optimize operational processes, and deploy.			×

Regarding criterion 1.2:

“In response to your feedback, we have conducted a thorough review of all official documents, including the Self-Assessment report, academic transcripts, and our website content. We have updated all references to ensure that the title “Information Security” is used consistently. These changes are aimed at eliminating any discrepancies and providing clarity to our students, faculty, and external stakeholders.”

Regarding criterion 1.3 (Software Project Development course):

“We are grateful to the expert panel for recognizing the potential benefits of integrating more structured software project development experiences into our Computer Science curriculum. Your observations coincide with our ongoing curriculum enhancements, reflecting a shared vision for preparing students effectively for the software development industry.

Our curriculum strategy has always prioritized practical and applicable skills. In line with this approach, the "Introduction to Software Engineering" course has been positioned as a key elective, alongside "Programming Principles and Methods," allowing students to choose based on their career focus and interests. The popularity and feedback on the "Introduction to Software Engineering" course underscore its importance and effectiveness in imparting critical software engineering skills. Acknowledging both its success and the evolving industry needs, we have considered to make "Introduction to Software Engineering" a compulsory foundational course. This adjustment will ensure that all our Computer Science students acquire a solid grounding in essential project management skills, such as requirement gathering, design documentation, version control, testing, and deployment.

Programming and Software Engineering (12 credits)						
2.	IT002	Object-Oriented Programming	BB	4	3	1
3.	SE104	Introduction to Software Engineering	Choose 1 out of 2	4	3	1
4.	CS111	Programming Principles and Methods		4	3	1
5.	CS526	Development of Multimedia Applications on Mobile Devices	Choose 1 out of 3	4	3	1
6.	CS311	Programming Techniques in Artificial Intelligence		4	3	1
7.	CS116	Machine Learning with Python		4	3	1

Introduction to Software Engineering" course has been positioned as a key elective, alongside "Programming Principles and Methods," students are required to choose one of them.

Furthermore, we are enhancing our curriculum with the addition of a new course, "Machine Learning Operations (MLOps)," which aims to provide hands-on experience in managing real-world machine learning projects. This course is a testament to our commitment to staying at the forefront of technological education and ensuring our graduates are well-prepared for the demands of the industry."

Regarding criterion 1.3 (differentiation of the competences in the several pathways):

"We wholeheartedly agree with the expert panel's insights regarding the distinctiveness of the 'research-type-1' pathway within our study programs. This pathway is uniquely designed for exceptional candidates who are deeply committed to full-time research activities, reflecting their significant foundation in their respective fields and an intense focus on advancing research capabilities.

To ensure that these students are guided appropriately, our regulations stipulate rigorous criteria for both students and their advisors. Students are required to engage full-time in research, culminating in the publication of their work in a recognized international scientific journal (WoS indexed) as a prerequisite for their final thesis defense. This requirement underscores the pathway's intensive research focus and aligns with the highest standards of academic excellence.

Moreover, the qualifications required of thesis advisors are equally stringent, ensuring that our faculty are well-equipped to mentor these high-caliber students. Advisors must meet one of the following criteria within the five years prior to their approval as a thesis instructor:

- Be the first author on at least one paper published in a scientific journal indexed in WoS/Scopus.
- Be the author or co-author of a registered intellectual property result that is nationally or internationally protected, related to research or scientific applications.
- Be the first author or co-author of two papers presented at international conferences or published in peer-reviewed journals relevant to the student's research topic.
- Be the first author of three scientific papers published in journals recognized by the National Professor Council, or have two publications in specialized fields such as education science and teacher training, humanities, social sciences, business, and management.

These criteria not only ensure that our advisors possess the necessary expertise and credentials but also align our programme with the strategic goals of preparing a highly skilled research workforce for the challenges of the fourth industrial revolution. By setting these high standards, we maintain the integrity and intensity of the 'research-type-1' pathway, which is designed to foster cutting-edge research and innovation. This pathway is strategically designed to align with both national priorities and the goals of Vietnam National University, Ho Chi Minh City (VNUHCM), especially in preparing a highly skilled research workforce for the challenges of the fourth industrial revolution. To clarify these unique competencies and ensure transparency, we have updated our programme specification and Diploma Supplement. These updates explicitly outline the competencies specific to the 'research-type-1' pathway, ensuring that all stakeholders have a clear understanding of its focus and requirements."

Regarding criterion 1.3 (compulsory courses in the field of information security):

“We appreciate the expert panel's recommendation to strengthen the core curriculum of our Information Security degree program. Currently, our programme mandates that all students complete one compulsory course in information security, which provides a solid foundation in essential concepts and practices. Additionally, it is noteworthy that our records show that 100% of our graduates have elected to take at least three courses in this specialized field, demonstrating a strong engagement and recognition of the importance of comprehensive security training.

Encouraged by the insights from the ASIIN experts, our faculty is taking proactive steps to ensure our curriculum continuously aligns with both academic and industry standards. We are currently conducting extensive surveys with all relevant stakeholders—including students, lecturers, and alumni—to evaluate the potential integration of one to two additional compulsory courses in information security. This initiative aims to ensure that the competencies our graduates acquire are robust and reflective of the rigorous demands of the information security field.

This strategic review and the planned enhancements are part of our commitment to providing an education that is not only comprehensive but also anticipatory of future security challenges. We believe that these efforts will further solidify the alignment of our program's content with the title and expectations of the degree, ensuring that our graduates are exceptionally well-prepared to contribute to and lead in the field of information security.”

Regarding criterion 4.1:

“We sincerely appreciate the detailed feedback provided by the expert panel concerning the completeness of our module descriptions across the degree programmes under review. We apologize for the oversight in the translation process which led to the omission of crucial information in the module descriptions for CS526 - Multimedia Mobile Applications and CS217 - Knowledge-Based Systems.

In response to your observations, we have taken immediate steps to rectify these issues. The module handbook has now been updated to include all missing information, such as the estimated total workload, prerequisites for joining the module, methods for the calculation of the final grade, and the date of the last amendment. We have also ensured that the module description for CS526 is now complete and accurately reflected in our documentation.

We have made information on course relationships and prerequisites publicly available on our Department of Academic Affairs website, which can be accessed at https://daa.uit.edu.vn/danh-muc-mon-hoc-dai-hoc."

Regarding criterion 4.2:

"We greatly appreciate the expert panel's detailed observations regarding the content of our Diploma Supplements. We recognize the importance of providing comprehensive and transparent information that aligns with ASIIN standards and meets the expectations of our stakeholders.

In response to your feedback, we have thoroughly reviewed and revised the Diploma Supplements for all four degree programmes under review. We have now implemented official regulations to ensure that each Diploma Supplement includes complete details on the programmes' objectives and intended learning outcomes, admission requirements, credit point conversion, the grading system, and the total number of ECTS points awarded for the entire degree programme.

These enhancements were guided by the need to ensure clarity and comprehensiveness in our documentation, reflecting our commitment to maintaining high standards of accuracy and transparency in our academic offerings. We believe these updates will provide our students, as well as international and national educational bodies, with a clearer and more detailed understanding of the qualifications our graduates receive."

Regarding criterion 5:

"We wholeheartedly agree with the expert panel on the critical importance of continuously investigating the dropout rates in our Master's degree programs. This issue is a top priority in our action plan, and we have been actively addressing it through a series of targeted initiatives.

Our preliminary investigations have provided valuable insights into the primary reasons for the high dropout rates. Notably, many of our Master's students are employed full-time, and they face significant challenges in balancing work and study commitments. Additionally, students whose undergraduate degrees are not in Computer Science often find it difficult to adapt to the advanced level of knowledge required.

In response to these challenges, we have implemented several strategic measures:

- We have introduced more flexible scheduling options, including weekend and evening classes, to accommodate the needs of working students.
- We have enhanced our preparatory offerings with updated supplementary courses designed to better prepare non-CS background students for the rigors of our programs.
- We have established an academic advisor system for all graduate programs, providing personalized guidance and support to help students navigate their educational journey.
- Following the promising results of our Early Warning System in identifying students at risk of dropping out early in their academic path, we are now planning to extend this system to include our graduate programs.

These actions are indicative of our ongoing commitment to understanding and mitigating the factors contributing to dropout rates. We are dedicated to ensuring that our programs not only meet but exceed the expectations for educational excellence and student support."

F Summary: Expert recommendations

Taking into account the additional information and the comments given by UIT the experts 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
Ba Computer Science	Without requirements	30.09.2030	Euro-Inf®	30.09.2030
Ma Computer Science	Without requirements	30.09.2030	Euro-Inf®	30.09.2030
Ba Computer Networks and Communications	Without requirements	30.09.2030	Euro-Inf®	30.09.2030
Ma Information Security	Without requirements	30.09.2030	Euro-Inf®	30.09.2030

Recommendations

Bachelor's degree programme Computer Science

E 1. (ASIIN 1.3) It is recommended to introduce a dedicated Software Project Development Course.

Master's degree programme Information Security

E 2. (ASIIN 1.3) It is recommended to make two to three courses in the field of information security a compulsory part of the curriculum.

Both Master's degree programmes

E 3. (ASIIN 5) It is recommended to further investigate on the reasons for the relatively high drop-out rates.

G Comment of the Technical Committee 04 - Informatics/Computer Science

Assessment and analysis for the award of the ASIIN seal:

The Technical Committee discusses the procedure and follows 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**
Ba Computer Science	Without requirements	30.09.2030	Euro-Inf®	30.09.2030
Ma Computer Science	Without requirements	30.09.2030	Euro-Inf®	30.09.2030
Ba Computer Networks and Communications	Without requirements	30.09.2030	Euro-Inf®	30.09.2030
Ma Information Security	Without requirements	30.09.2030	Euro-Inf®	30.09.2030

H Decision of the Accreditation Commission

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

The Accreditation Commission discusses the procedure and follows the assessment of the experts and the Technical Committee without any changes.

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

The Accreditation Commission 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 Accreditation Commission decides to award the following seals:

Degree Programme	**ASIIN Seal**	**Maximum duration of accreditation**	**Subject-specific label**	**Maximum duration of accreditation**
Ba Computer Science	Without requirements	30.09.2030	Euro-Inf®	30.09.2030
Ma Computer Science	Without requirements	30.09.2030	Euro-Inf®	30.09.2030
Ba Computer Networks and Communications	Without requirements	30.09.2030	Euro-Inf®	30.09.2030
Ma Information Security	Without requirements	30.09.2030	Euro-Inf®	30.09.2030

Recommendations

Bachelor's degree programme Computer Science

E 1. (ASIIN 1.3) It is recommended to introduce a dedicated Software Project Development Course.

Master's degree programme Information Security

E 2. (ASIIN 1.3) It is recommended to make two to three courses in the field of information security a compulsory part of the curriculum.

Both Master's degree programmes

E 3. (ASIIN 5) It is recommended to further investigate on the reasons for the relatively high drop-out rates.

Appendix: Programme Learning Outcomes and Curricula

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

LEVEL			**Programme Learning Outcomes (PLOs)**
1st	**2nd**	**3rd**	
PLO1. Apply foundational knowledge of natural and social sciences to understand and solve problems in Computer Science.			
1	1		Apply fundamental knowledge in Natural Sciences
1	2		Apply fundamental knowledge in Social Sciences, Political Theory, and Legal Principles
1	3		Utilize Physical Education and National Defense Education principles
PLO2. Demonstrate mastery of foundational and in-depth knowledge in Computer Science.			
2	1		Understand foundational knowledge in the Computer Science field
2	1	1	Programming and Software Engineering
2	1	2	Algorithms and Data Structures
2	1	3	Computer Architecture and Operating Systems
2	1	4	Information Management and Database
2	2		Analyze and apply in-depth knowledge in the Computer Science field

PLO3. Research, analyze, and propose solutions for Computer Science-related issues while fostering lifelong learning.			
3	1	Investigate, identify, and formulate problems	
3	2	Develop models, reason, and analyze data	
3	3	Generate innovative ideas and solutions	
3	4	Evaluate and improve solutions	
3	5	Recognize the importance of, and engage in, lifelong learning	
PLO4. Design, implement, and evaluate systems and solutions in Computer Science.			
4	1	Design effective systems and solutions	
4	2	Implement and realize systems	
4	3	Experiment with systems to gain knowledge	
4	4	Verify and evaluate system outcomes	
PLO5. Communicate and collaborate effectively in professional contexts.			
5	1	Demonstrate teamwork skills	
5	2	Deliver effective presentations	
5	3	Develop and maintain professional social relationships	
PLO6. Communicate professionally, interpret documents, and present solutions in a foreign language.			
6	1	Demonstrate general communication skills in a foreign language	
6	2	Interpret specialized documents in a foreign language	
6	2	1	Basic Specialized Terminology
6	2	2	Reading and Understanding Specialized Documents
6	3	Present specialized solutions in a foreign language	
6	3	1	Textual Presentation

6	3	2	Non-textual PresentationTop of Form
PLO7. Understand and apply leadership and management principles.			
7	1	Demonstrate knowledge of basic management skills.	
7	2	Exhibit confidence in professional environments and adapt to new settings.	
PLO8. Uphold professional ethics, legal responsibility, and respect for the law.			
8	1	Apply ethical standards and principles.	
8	2	Demonstrate professional responsibility and conduct.	
8	3	Exhibit honesty, integrity, and loyalty.	

The following **curriculum** is presented:

	Course ID	Course name	Credits	Theory	Practice	ECTS
Semester 1	IT001	Introduction to Programming	4	3	1	6.5
	MA006	Calculus	4	4	0	6.0
	MA003	Linear Algebra	3	3	0	4.5
	CS005	Introduction to Computer Science	1	1	0	1.5
	ENG01	English 1	4	4	0	6.0
	SS006	Introduction to Law	2	2	0	3.0
	ME001	National Defense Education				
	Total Credits for Semester 1		**16**	**15**	**1**	**27.5**
Semester 2	IT002	Object-Oriented Programming	4	3	1	6.5
	IT003	Data Structures and Algorithms	4	3	1	6.5
	IT012	Computer Organization and Architecture II	4	3	1	6.5
	MA004	Discrete Structures	4	4	0	6.0
	MA005	Probability and Statistics	3	3	0	4.5
	ENG02	English 2	4	4	0	6.0
	Total Credits for Semester 2		**23**	**20**	**3**	**36**
Semester 3	IT004	Fundamental Database	4	3	1	6.5
	IT005	Introduction to Computer Network	4	3	1	6.5

	IT007	Operating Systems	4	3	1	6.5
	ENG03	English 3	4	4	0	6.0
	CS115	Mathematics for Computer Science	4	4	0	6.0
	SS007	Marxist-Leninist Philosophy	3	3	0	4.5
	Total Credits for Semester 3		**23**	**20**	**3**	**36**
Semester 4	CS112	Algorithm Analysis and Design	4	3	1	6.5
		Core Subject – Programming 1: Elective	4	3	1	6.5
		Core Subject - Algorithms: Elective	4	3	1	6.5
		Specialized Course 1	4	3	1	6.5
	SS004	Professional Skills	2	2	0	3.0
	SS008	Marxist-Leninist Political Economy	2	2	0	3.0
	PE231	Physical Education 1				
	Total Credits for Semester 4		**20**	**16**	**4**	**32**
Semester 5		Core Subject - Programming 2: Elective	4	3	1	6.5
		Specialized Course 2	4	3	1	6.5
		Elective Courses	8	6	2	13
	SS009	Scientific Socialism	2	2	0	3.0
	SS010	History of the Communist Party of Vietnam	2	2	0	3.0
	PE232	Physical Education 2				
	Total Credits for Semester 5		**20**	**16**	**4**	**32**
Semester 6		Specialized Course 3	4	3	1	6.5
		Specialized Course 4	4	3	1	6.5
		Elective Courses	8	6	2	13
	SS003	Ho Chi Minh's Thought	2	2	0	3.0
	Total Credits for Semester 6		**20**	**16**	**4**	**32**
Semester 7	Students choose one of the three options					
	CS505	Graduation Thesis	10			20
	CS554	Industry Capstone Project	10			20
		Capstone Projects (CS553) + Graduation courses	10			20

	Total Credits for Semester 7	**10**			**20**

Group of Courses in the Artificial Intelligence Specialization

No.	ID	Course name	Credits	Theory	Practice
1.	CS106	Artificial Intelligence	4	3	1
2.	CS114	Machine Learning	4	3	1
3.	CS211	Advanced Artificial Intelligence	4	3	1
4.	CS313	Data Mining and Applications	4	3	1
5.	CS314	Symbolic Programming in Artificial Intelligence	4	3	1
6.	CS315	Symbolic Programming in Artificial Intelligence	4	3	1
Other courses as per the Faculty's recommendations					

Group of Knowledge Technology Oriented Courses

No.	ID	Course name	Credits	Theory	Practice
1	CS217	Knowledge-Based Systems	4	3	1
2	CS214	Knowledge Representation and Reasoning	4	3	1
3	CS312	Multi-Agent Systems	4	3	1
4	CS316	Intelligent Problem Solving Systems	4	3	1
Other courses as per the Faculty's recommendations					

Group of Natural Language Processing Courses

No.	ID	Course name	Credits	Theory	Practice
1	CS221	Natural Language Processing	4	3	1
2	CS229	Computational Semantics	4	3	1
3	CS226	Computer Linguistic	4	4	0
4	CS222	Advanced Natural Language Processing	4	3	1
5	CS324	Machine Learning for Natural Language Processing	4	3	1
6	CS323	Question-Answering Systems	4	3	1

7	CS321	Corpus Linguistics	4	3	1
8	CS325	Machine Translation	4	3	1
9	CS114	Machine Learning	4	3	1
Other courses as per the Faculty's recommendations					

Group of Introduction to Multimedia Computing Oriented Courses

No.	ID	Course name	Credits	Theory	Practice
1	CS232	Introduction to Multimedia Computing	4	3	1
2	CS336	Multimedia Information Retrieval	4	3	1
3	CS313	Data Mining and Applications	4	3	1
4	CS337	Speech and Audio Signal Processing	4	3	1
5	CS535	Speech Synthesis	4	3	1
Other courses as per the Faculty's recommendations					

Group of Computer Vision Oriented Courses

No.	ID	Course name	Credits	Theory	Practice
1	CS231	Introduction to Computer Vision	4	3	1
2	CS331	Advanced Computer Vision	4	3	1
3	CS338	Pattern Recognition	4	3	1
4	CS532	Computer Vision in Human-Computer Interaction	4	3	1
5	CS114	Machine Learning	4	3	1
6	CS105	Introduction to Computer Graphics	4	3	1
Other courses as per the Faculty's recommendations					

Further Elective Courses

No.	ID	Course name	Credits	Theory	Practice
1	CS519	Sciencitific Research Methodology	3	3	0
2	CS529	Selected topics for research and application in Computer Science	4	4	0
3	CS551(*)	Internship	2	2	

4	CS332	Machine Learning in Computer Vision	4	3	1
5	CS333	Computer Graphics in Game	3	2	1
6	CS527	Virtual Reality	4	3	1
7	CS528	Information Visualization	4	3	1
Other courses as per the Faculty's recommendations					

According to Programme Specification the following **objectives** and **learning outcomes (intended qualifications profile)** shall be achieved by the Bachelor's degree programme Computer Networks and Communications:

LEVEL		**Programme Learning Outcomes (PLOs)**
1st	**2nd**	
PLO1		**Apply fundamental knowledge of natural sciences and social sciences**
1	1	Apply knowledge of natural sciences and social sciences
PLO2		**Apply fundamental and advanced knowledge in Computer networks and Communications application**
2	1	Apply fundamental professional knowledge in IT field
2	2	Apply advanced knowledge
PLO3		**Survey documents, analyze and propose solutions to problems related to the Computer Networks and Communications industry; awareness of the need for lifelong learning**
3	1	Interpret and analyze basic issues of the IT field
3	2	Search, read and understand documents related to professional field and apply them to real-life problem
3	3	Interpretand analyze issues of the Computer Networks and Communications industry
3	4	Develop ideas and solutions
3	5	Determine needs, goals and plan for independent study and research, thereby realizing the need for lifelong learning

PLO4		**Design and evaluate systems and solutions of the Computer Networks and Communications industry**
4	1	Design basic systems of the industry
4	2	Design and realize systems of the Computer Network and Data Communications industry
4	3	Evaluate industry systems and solutions
PLO5		**Communicate and cooperate effectively with individuals and groups in certain contexts**
5	1	Form a group, communicate and cooperate effectively with individuals in the group
5	2	Present solutions in certain contexts
PLO6		**Communicate at work, read and understand documents and present a specialized solution in a foreign language**
6	1	Communicate and read documents in foreign languages
6	2	Read and understand specialized documents in a foreign language and present a specialized solution in a foreign language
PLO7		**Understand leadership and management**
7	1	Understand basic knowledge of management skills
7	2	Be confident in the professional environment, ready to adapt to new environments
PLO8		**Understand of professional responsibilities, comply to the law and ethical values**
8	1	Understand basic regulations on Vietnamese law and ethical values

The following **curriculum** is presented:

Semester	Code ID	Course name	Credits	Theory	Practice	ECTS
Semester 1	IT001	Introduction to programming	4	3	1	6.5
	MA006	Calculus	4	4	0	6
	MA003	Linear algebra	3	3	0	4.5

	PH002	Introduction to digital circuit	4	3	1	6.5
	NT005	Introduction to Computer Networks and Data communications program	1	1	0	1.5
	ENG01	English 1	4	4	0	6
	ME001	Military education				
		Total credits of semester 1	**20**	**18**	**2**	**31**
Semester 2	IT002	Object-oriented programming	4	3	1	6.5
	IT005	Introduction to computer networks	4	3	1	6.5
	MA004	Discrete structures	4	4	0	6
	IT006	Computer architecture	3	3	0	4.5
	ENG02	English 2	4	3	0	6
		Total credits of semester 2	**19**	**17**	**2**	**29.5**
Semester 3	IT004	Database	4	3	1	6.5
	IT007	Operating systems	4	3	1	6.5
	IT003	Data structures and algorithms	4	3	1	6.5
	NT106	Basic network programming	3	2	1	5
	ENG03	English 3	4	4	0	6
		Total credits of semester 3	**19**	**15**	**4**	**30.5**
Semester 4	NT132	Networks and Systems Administration	4	3	1	6.5
	NT105	Data communications	4	3	1	6.5
	NT131	Wireless Embedded Network Systems	4	3	1	6.5
	MA005	Probability and statistics	3	3	0	4.5
	SS004	Professional skills	2	2	0	3
		Total credits of semester 4	**17**	**14**	**3**	**27**
Semester 5	NT101	Network security	4	3	1	6.5
	NT118	Mobile application development	3	2	1	5
		Specialized course 1	3	2	1	5

	SS003	Ho Chi Minh thought	2	2	0	3
	SS007	Marxist-Leninist philosophy	3	3	0	4.5
	PE231	Physical education 1				
		Total credits of semester 5	**15**	**12**	**3**	**24**
Semester 6	NT114	Specialized project	2	0	2	4
	NT113	Network design	3	2	1	5
		Specialized course 2	3	2	1	5
		Specialized course 3	3	2	1	5
		Elective course 1	3	2	1	5
	SS009	Scientific socialism	2	2	0	3
	PE232	Physical education 2	*Tính riêng*			
		Total credits of semester 6	**16**	**10**	**6**	**27**
Semester 7	NT215	Internship	2	0	2	4
		Specialized course 4	3	2	1	5
		Elective course 2	3	3	1	5
	SS006	Introduction to law	2	2	0	3
	SS008	Marxist Leninist political economy	2	2	0	3
	SS010	History of Vietnamese communist party	2	2	0	3
		Total credits of semester 7	**14**	**10**	**4**	**23**
Semester 8	**Choice 1**					
	NT505	Thesis	**10**			**20**
	Choice 2					
	NT506	*Industry capstone project*	10			**20**
	Choice 3					
	NT504	Capstone project	6			
		Graduation course	4			
		Total credits of semester 8	**10**			**20**

Total	**130**			**212**

Specialized Courses

No.	Code ID	Course name	Credits	Theory	Practice
1.	NT531	Modeling and performance evaluation of network and computer systems	3	2	1
2.	NT532	Advanced Internet of Things Technologies	3	2	1
3.	NT533	Distributed computing system	3	2	1
4.	NT535	Security and Privacy in Internet of Things	3	2	1
5.	NT536	Multimedia Communication Technologies	3	2	1
6.	NT402	Communications technology	3	2	1
7.	NT538	Algorithms in parallel and distributed computing	3	2	1
8.	NT540	Next-generation wireless networks	3	2	1
9.	NT542	Scripting for administration, automation and security	3	2	1
10.	NT543	Signal and communication system	3	2	1
11.	NT545	Fundamental techniques in Telecomunication System Design	3	2	1
12.	NT546	Design and implementation high-speed networks	3	2	1
13.	NT209	Computer system programming	3	2	1

According to Programme Specification the following **objectives** and **learning outcomes (intended qualifications profile)** shall be achieved by the Master's degree programme Computer Science:

LEVEL			Programme Learning Outcomes (PLOs)
1st	2nd	1st	
PLO 1. Understand the principles of natural and social sciences and apply them to the field of Computer Science			
PLO 2. Understand and apply foundational and specialized knowledge in Computer Science to solve complex problems			
2	1	Apply foundational knowledge in Computer Science	
2	1	1	Understand and demonstrate the ability to apply scientific research methods
2	1	2	Understand algorithms
2	1	3	Apply problem-solving methods
2	2	Apply specialized knowledge in various directions within Computer Science	
PLO 3. Evaluate and solve complex computer science problems using appropriate methodologies and algorithms			
3	1	Identify and formulate problems	
3	2	Model and analyze	
3	3	Infer and formulate solutions	
3	4	Analyze and evaluate solutions	
PLO 4. Conduct independent research and explore emerging trends in Computer Science			
4	1	Literature review and information gathering	
4	2	Hypothesis formulation	
4	3	Design, analyze, and experiment to explore knowledge	
4	4	Verify and defend hypotheses.	
PLO 5. Demonstrate systematic thinking			

5	1	Think globally	
5	2	Analyze and identify interactions among components in a system	
5	3	Determine priorities and significance	
5	4	Evaluate systems	
PLO 6. Reflect on the importance of lifelong learning and engage in continuous self- improvemen			
6	1	Understand the necessity of lifelong learning	
6	2	Seek new knowledge and technologies	
PLO 7. Understand and comply to ethical standards and professional regulations			
7	1	Understand ethical standards and principles	
7	2	Understand responsibility and professional conduct	
7	3	Apply professional standards, ethical principles, and professional norms.	
PLO 8. Collaborate effectively in teams			
8	1	Ability to form and establish a team	
8	2	Ability to maintain team activities	
PLO 9. Communicate effectively			
9	1	Ability to present	
9	2	Ability to exchange, communicate, and interact	
9	3	Skills in developing social relationships	
PLO 10. Apply language proficiency in academic and professional contexts			
10	1	Communication skills in listening, speaking, reading, and writing	
10	2	Ability to comprehend specialized documents in a foreign language	
10	2	1	Use basic specialized terms
10	2	2	Ability to comprehend specialized documents
PLO 11. Demonstrate the ability to design, build, and deploy applications			

11	1	Ability to identify requirements, design, build, and deploy applications	
11	1	1	Ability to identify requirements
11	1	2	Ability to design, build, and deploy applications
11	2	Ability to evaluate, optimize operational processes, and deploy.	

The following **curriculum** is presented:

No.	Course ID	Name Courses	Programme Learning Outcomes – PLOs										
			1	2	3	4	5	6	7	8	9	10	11
General knowledge													
1	PH2001	Philosophy	✓										
2	MA2001	Mathematics	✓										
Foundation Knowledge													
3	CS2205	Scientific Research Methodology			✓	✓		✓				✓	
4	CS3205	Advanced Scientific Research Methodology			✓	✓	✓	✓				✓	
Specialized Knowledge													
5	NT2102	Information System Safety and Security		✓	✓		✓					✓	
6	IT2011	Advanced Database Systems		✓	✓	✓						✓	
7	IT2021	Advanced Signal Processing		✓	✓	✓						✓	
8	IT2030	Advanced Geographic Information Systems		✓	✓		✓					✓	
9	CS2201	Knowledge Representation and Reasoning		✓	✓							✓	
10	CS2202	Computational Linguistics		✓	✓							✓	
11	CS2203	Image Processing and Computer Vision		✓	✓		✓			✓		✓	
12	CS2207	Data Mining and Applications		✓	✓		✓					✓	✓
13	CS2208	Decision Support Systems		✓	✓		✓					✓	
14	CS2209	Machine Translation		✓								✓	
15	CS2213	Speech Processing and Hu-man – Computer Interaction		✓	✓		✓					✓	
16	CS2215	Grid and Cloud Computing		✓			✓					✓	
17	CS2218	Coding Theory		✓		✓						✓	

18	CS2223	Principles of Programming Languanges		☐	☐		☐						
19	CS2224	Visual Information Retrieval		☐	☐					☐	☐	☐	
20	CS2225	Visual Recognition and Applications		☐			☐			☐	☐	☐	
21	CS2226	Ontology and Applications		☐	☐		☐					☐	☐
22	CS2227	Machine Learning in Medical Data Processing		☐	☐		☐				☐	☐	
23	CS2228	Evolutionary Algorithms		☐	☐	☐					☐	☐	
24	CS2229	Machine Learning: Theory and Algorithms		☐	☐	☐						☐	
25	CS2230	Deep Learning and Applications		☐	☐		☐					☐	☐
26	CS2231	Relational Knowledge Models and Applications		☐	☐		☐					☐	☐
Research Topics													
27	CS2307	Research on Knowledge Engineering		☐	☐	☐		☐	☐			☐	☐
28	CS2308	Research on Natural Language Processing		☐	☐	☐		☐	☐			☐	☐
29	CS2309	Research Topics in Computer Vision		☐	☐	☐		☐	☐			☐	☐
30	CS2310	Research Topics in Machine Learning and Artificial Intelligence		☐	☐	☐		☐	☐			☐	☐
31	CS2311	Research Topics in Selected Issues in Computer Science		☐	☐	☐		☐	☐			☐	☐
Thesis													
32	CS2505	Thesis – Research-oriented Type 1		☐	☐	☐	☐	☐	☐			☐	
33	CS2506	Thesis – Research-oriented Type 2		☐	☐	☐	☐	☐	☐	☐		☐	
34	CS2501	Thesis - Application-oriented		☐	☐	☐	☐	☐	☐	☐		☐	☐

According to Programme Specification the following **objectives** and **learning outcomes (intended qualifications profile)** shall be achieved by the Master's degree programme Information Security:

#	Contents
PLO 1	**Understand the principles of natural and social sciences and apply them to the field of Information Security**
PLO 1.1	Apply the knowledge of natural science on information security
PLO 1.2	Apply in-depth Information and Network Security knowledge design,
	build and operate specialized information technology systems.
PLO 1.3	Apply in-depth Information and Network Security knowledge to design and build a security solution for an information technology systems.
PLO 2	**Build and manage practical/research projects in the field of Information and Network Security**
PLO 2.1	Survey, synthesize, analyze, evaluate and propose solutions to solve an Information Security problem.
PLO 2.2	Plan, organize, operate and manage practical/research projects.
PLO 3	**Conduct independent research and explore emerging trends in Information Security**
PLO 3.1	Do scientific research and discovery knowledge in the field of information security
PLO 3.2	Propose, design and execute scientific research.
PLO 3.3	Propose a scientific article
PLO 4	**Understand and comply to ethical standards and professional regulations**
PLO 5	**Apply language proficiency in academic and professional contexts**
PLO 5.1	Read, understand, and synthesize professional documents in English.

PLO 5.2	Design and write a scientific report/article in English.
PLO 5.3	Propose a presentation and present in English in front of a crowd.
PLO 6	**Develop ideas, design, build and deploy applications/research/computer network systems and ensure information security based on social context and technology trends**
PLO 6.1	Understand social context and technology trends
PLO 6.2	Develop ideas, design, build and deploy applications/research/computer network systems and ensure information security.

The following **curriculum** is presented:

#	Course ID	Semester	Course name	Credits			
				Credits	**Theory**	**Practice**	**ECTS**
A. General knowledge							
1.	PH2001	I	Philosophy	3	3	0	4.5
General elective course							
2.	MA2001	I	Mathematics	4	4	0	6
B. Professional education							
I. Foundation courses							
3.	CS2205	I	Scientific research methodology	2	2	0	3
4.	CS3205	I	Advanced scientific research methodology	2	2	0	3
II. Mandatory course							
5.	IT2003	II	Modern network and communication technology	4	3	1	6.5
6.	NT2102	II	Information system security and safety	4	3	1	6.5
7.	IT2004	II	Modern computer technology	3	2	1	5
III. Specialized elective courses							
8.	NT2201	II, III, IV	Application and system security	4	3	1	6.5

9.	NT2202	II, III, IV	Advanced malware operating mechanism	4	3	1	6.5
10.	NT2203	II, III, IV	Advanced IoTs technology	4	3	1	6.5
11.	NT2204	II, III, IV	Advanced distributed computing system	4	3	1	6.5
12.	NT2205	II, III, IV	Cryptography and applications	4	3	1	6.5
13.	NT2206	II, III, IV	New generation wireless network	4	3	1	6.5
14.	NT2207	II, III, IV	Digital forensics on computers and networks	4	3	1	6.5
15.	NT2208	II, III, IV	Advanced antenna design	4	3	1	6.5
16.	NT2209	II, III, IV	Information security management in enterprises	4	3	1	6.5
17.	NT2210	II, III, IV	Modern robot-automation technology	4	3	1	6.5
18.	NT2211	II, III, IV	Machine learning in network and system security	4	3	1	6.5
19.	NT2212	II, III, IV	VHDL design and FPGA programming	4	3	1	6.5
20.	IT2028	II, III, IV	Mobile and wireless security	3	2	1	5
21.	IT2029	II, III, IV	Advanced malware analysis techniques	3	2	1	5
22.	IT2033	II, III, IV	Stenography on digital data and applications	3	2	1	5
23.	IT2034	II, III, IV	Big data processing	4	3	1	6.5
IV. Scientific Research							
24.	NT2301	IV	Research topic 01	3	3	0	4.5
25.	NT2302	IV	Research topic 02	3	3	0	4.5
26.	NT2303	IV	Research topic 03	3	3	0	4.5
27.	NT2304	IV	Project	4	0	4	8
V. Thesis							
28.	NT2501	V	Thesis - Application-oriented	12	0	12	24

29.	NT2502	IV, V	Thesis – Research-oriented Type 2	15	0	15	30
30.	NT2503	III, IV, V	Thesis – Research-oriented Type 1	53	0	53	106