

INTER-INSTITUTIONAL AGREEMENT OF COOPERATION

DOUBLE-DEGREE PROGRAMME

HO CHI MINH CITY UNIVERSITY OF TECHNOLOGY, VIETNAM

Master of Engineering in Computer Science, major in Cyber Security

UNIVERSITY OF VIGO, SPAIN

Master Inter-Universities in Cyber Security

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Two handwritten signatures in blue ink, one on the left and one on the right, representing the representatives of the two institutions.

Universidade de Vigo



INTER-INSTITUTIONAL AGREEMENT OF COOPERATION

BETWEEN

**FACULTY OF COMPUTER SCIENCE AND ENGINEERING
HO CHI MINH CITY UNIVERSITY OF TECHNOLOGY**

268 Ly Thuong Kiet Street, District 10
Ho Chi Minh City, Vietnam

and

SCHOOL OF TELECOMMUNICATION ENGINEERING

UNIVERSITY OF VIGO

C/. Maxwell s/n, Campus Universidad de Vigo, 36310 Vigo, Spain

**CONCERNING THE EXCHANGE OF STUDENTS FOR A DOUBLE-DEGREE
PROGRAM IN**

Master of Engineering in Computer Science, major in Cyber Security
at HCMUT

and

Master in Cyber Security
at University of Vigo

Preamble

Universidade de Vigo, Spain (hereafter UVigo), and Ho Chi Minh City University of Technology, Vietnam (hereafter HCMUT), are international academic institutions and have mutually agreed to establish a long term and fruitful academic collaboration in teaching and research.

Within the frame of their existing Cooperation Agreements, both institutions HCMUT represented by its Rector Prof. Dr. Mai Thanh Phong, and Universidade de Vigo, represented by its Rector Manuel Joaquín Reigosa Roger, hereby agree to offer a collaborative double degree program as follows:

Article 1 – Aim of the Agreement

The aim of this agreement is to specify the general terms under which exchange students from HCMUT studying at UVigo (School of Telecommunication Engineering) and from UVigo studying at HCMUT may be awarded, upon successful fulfilment of all requirements for graduation at each institution, the academic degrees and diplomas of equivalent academic levels from both institutions. Selected students from both institutions will have the opportunity to pursue studies at each of the colleges, which will result in the award of a “Master of Engineering in Computer Science, major in Cyber Security” from HCMUT and a “Master in Cybersecurity” issued by the School of Telecommunication Engineering from UVigo.

Participating students are required to fulfill the in-residence class requirements of both institutions to obtain their respective degrees. In addition, each institution will honor core classes that are completed at the other, in the manner described in the sections below. Students are required to stay at least one academic year (two study semesters) at the host institution to meet the requirements for a double degree.

Article 2 – Study Plan and Course of Study

An individual study plan for the total duration of the double degree programme must be established and approved by the academic representatives of both institutions before commencing coursework. The individual study plan has to be revised in collaboration and in written form with the approval of the two institutions.

In Appendixes 1, 1.A and 1.B descriptors for both degrees are included together with the following academic requirements:

- Previous academic requirements that students from HCMUT must meet.
- Previous academic requirements that students from UVigo must meet.
- Credits offered at the UVigo that students from HCMUT must complete to obtain the double degree.
- Credits offered at HCMUT that students from UVigo must complete to obtain the double degree.
- Global list of credits



In addition to what is detailed in the mentioned appendixes, the general requirements to be awarded with the double degree are the following:

A. Requirements for HCMUT students at UVIGO

The selected subjects need to be fixed in a learning agreement, signed by their academic supervisors at UVigo and HCMUT.

- i. UVigo will provide a list of courses taught in English and Spanish, listed in Appendix 1B, which HCMUT students will follow.
- ii. Each offered course out of this list has to be described by UVigo in a brief document in advance, including study objectives, contents, lecturers, workload and credit points as an information basis for HCMUT students and for their home University for an acceptance of the chosen courses in the required learning agreement.
- iii. The Master thesis (referred as TFM in UVigo), as part of the double degree programme, will have to be written by HCMUT students in English, and will be carried out under the supervision of one authorized Professor from both institutions and defended either in person in Vigo (Spain) or via video conference in HCMUT. The supervisor from the host institution UVigo, where the project has to be carried out, will be the primary supervisor, responsible for the arrangements for topic and subject area of the thesis, and a faculty member from the partner institution HCMUT will serve as the second supervisor. After defense of the final thesis (TFM), UVigo will award 15 ECTS credits for the Master Thesis, which are included in the required ECTS for the Spanish degree diploma.
- iv. HCMUT students will necessarily have to register and complete the Master Thesis to be achieve the degree in "Master in Cyber Security" by the University of Vigo.
- v. In order to validate the master thesis carried out and defended at UVigo by HCMUT students, the decision to establish the master thesis evaluation committee, consisting of members from both universities, should be issued by the HCMUT Rector prior to the thesis defense date. A minute of meeting of the thesis defense from the evaluation committee is also required. HCMUT and UVigo members can join the thesis defense via videoconference. HCMUT students completing the courses and the master thesis (following the above mentioned procedure) at the UVigo are considered to meet the requirements of the degree "Master of Engineering in Computer Science, major in Cyber Security" by HCMUT.
- vi. HCMUT students will complete their curriculum at UVigo studying at least 2 semesters in the programme "Master in Cyber Scecurity" in the same way as regular UVigo students do. In particular, they have to meet all requirements of the examination regulations which are necessary to achieve the same degree awarded by UVigo.



- vii. In order to obtain the Spanish degree, the HCMUT double degree student must be admitted to UVigo. A condition for admission is that the student has an appropriate knowledge of English. The total number of credits to complete the degree must be at least 120 ECTS: 60 ECTS or more studied in HCMUT and 60 ECTS or more studied in UVigo.
- viii. The Master Thesis (TFM) will be the last subject passed and cannot be recognized or substituted by any other subject studied before. This will result in the automatic awarding of the "Master in Cyber Security" at UVigo, providing the student has met all necessary requirements.

B. Requirements for UVIGO students at HCMUT

The selected subjects need to be fixed in a learning agreement, signed by their academic supervisors at UVigo and HCMUT.

- i. HCMUT will provide a list of courses taught in English, listed in Appendix 1A, which UVigo students will follow, with 62 ECTS for the "Master of Engineering in Computer Science, major in Cyber Security". For the purpose of establishing an equivalence, 2 ECTS represent the same workload as 1 credit at HCMUT (see Appendix 1A).
- ii. Each offered course in of this list has to be described in advance by HCMUT in a brief document including study objectives, content, lecturers, workload and credit points as an information basis for UVigo students and for their home University for an acceptance of the chosen subjects in the required learning agreement.
- iii. The Master Thesis, as part of the double degree programme, will be written by UVigo students in English and will be carried out under the supervision of one authorized Professor from both institutions and defended either in person in HCMUT or via video conference in Vigo. The supervisor from the host institution HCMUT, where the project has to be carried out, will be the primary supervisor, as a responsible person for the arrangements for topic and subject area of the thesis, and a faculty member from the partner institution UVigo will serve as second supervisor. After defense of the final thesis, HCMUT will recognize 20 ECTS credits (10 HCMUT credits) for the Master Thesis.
- iv. UVigo students will complete their curriculum at HCMUT by studying at least 1 semester (30 ECTS) in the program "Master of Engineering in Computer Science, major in Cyber Security" in the same way as regular HCMUT students do. In particular, they have to meet all requirements of the examination regulations which are necessary to achieve the Master degree of HCMUT.
- v. In order to validate the master thesis carried out and defended at HCMUT by UVigo students, the decision to establish the master thesis evaluation committee, consisting of members from both universities, should be issued by the HCMUT Rector prior to the thesis defense date. A minute of meeting of the thesis defense from the evaluation committee is also required. HCMUT and UVigo members can join the thesis defense via videoconference. UVigo students



completing the courses and the master thesis (following the above mentioned procedure) at the HCMUT are considered to meet the requirements of the degree “Master of Engineering in Computer Science, major in Cyber Security” by HCMUT.

- vi. In order to be issued with the Vietnamese “Master of Engineering in Computer Science, major in Cybersecurity”, UVigo students must be admitted into HCMUT. A condition for admission is that the student has an appropriate knowledge of English. The Vietnamese Master degree will be awarded upon successful completion of the required ECTS at HCMUT, including the Master Thesis, and compute a total period of study of 4 Semesters. The total number of credits to complete the degree has to be at least 120 ECTS: no less than 60 ECTS studied at UVigo, and 60 ECTS or more studied at HCMUT.
- vii. The Master Thesis will be the last subject passed and cannot be recognised or substituted by any other subject studied before. This will result in the automatic awarding of the “Master of Engineering in Computer Science, major in Cyber Security” at HCMUT, providing the student has met all necessary requirements.
- viii. With the aim that HCMUT and UVigo students participating in the double-degree programme do only one Master Thesis, this will be carried out during the exchange period and must be included in the learning agreement.

Article 3 – Number of students

Each academic year, the international co-ordinators of both institutions will inform each other of the projected student flows for double-degree students, usually with a **maximum of two students** starting at the partner institution **per academic year**.

These flows may be negotiated prior to the deadline for submitting applications. A balance will be pursued with regard to the number of students from each institution participating in the programme. Although this balance is not expected to be maintained each year, it is desirable target over each five-year period.

Article 4 – Selection and admission of students and validation of study results

The exchange of students under this agreement will be conducted in accordance with the following principles:

- Students are selected and admitted to the double degree programme based on their academic results, motivation and language skills.
- The selection is carried out in collaboration between the two institutions. Admission of students is always at the discretion of the receiving institution.
- UVigo students should have an English language level no lower than B2.
- HCMUT students should have an English language level no lower than B2. They are candidates to receive Spanish language courses at UVigo at no extra cost. UVigo will offer Spanish courses for HCMUT students.
- Students will be responsible for covering the travel costs to the host country and living costs during the stay, including accommodation, books, equipment,



consumables, administration fees at the host University and other expenses arising out of the exchange.

- Students have to hand in a copy of their health insurance, covering the period of stay at the host university.
- The host institution will render assistance to the incoming students in finding appropriate accommodation and support them in social and cultural integration at the host University.
- Students participating under the terms of this programme will be entitled to participate in any introductory programme that may customarily be arranged for foreign students.
- An optional Internship (without credit points) may be carried out within the study exchange period in the host country, although it is responsibility of the student to find an internship place.
- The period of full-time course work at the host institution should not exceed two semesters, and the total duration of the nominal study period for the individual student should not be prolonged by more than one year.
- At the end of the period of study at the host institution, the individual student should be issued with an academic transcript with the courses successfully attended at the host institution.
- The receiving institution shall communicate the sending institution the results of each student at the end of each academic year.
- The parties agree that exams/courses shall be graded and awarded credits according to the rules of the institution where the exam/course is taken.

Article 5 – Tuition fees, costs

No tuition fees are required at the receiving institution for students involved in the double degree program. Both parties agree to take action to obtain financial support for student exchanges under European programmes or from other financial resources.

Should this be necessary for legal reasons, UVigo students at HCMUT will have to pay the compulsory administrative fees per semester in the same way as local students. Similarly, students from HCMUT in UVigo will have to register and pay the public fees for administrative services. For issuing the corresponding certificates, both HCMUT and UVigo students will have to pay the legally established fees.

Article 6 – Terms for students

Article 6.1 - Conditions for application

The deadline for submitting applications in both directions is 31st May. Each institution will screen its applicants for the double degree programme. The receiving institution will have the right to make the final decision on admission of nominated students. Acceptance letters should be mailed to the students by 1st of July.

Applications must include online application, passport or ID, document issued by the home institution indicating the applicant's selection for this programme, curriculum vitae, a transcript of the student's records, including courses and marks and the



application form for the UVigo-HCMUT double degree, duly signed and stamped by the home institution.

Article 6.2 – Conditions during study period

Students participating under this agreement shall be subject to the rules and regulations of the host institution. They will have the rights and privileges enjoyed by other students enrolled at the host institution.

Article 6.3 - Delivery of the academic degrees

Each institution decides, on its own internal criteria, if the student has fulfilled all requirements to obtain its degree. Each institution grants the student credit transfer from the partner university according to the rules, laws and regulations in force.

Article 7 - Academic and administrative representatives

Each institution will nominate its own academic and administrative representatives, and such representatives will be responsible for ensuring that measures are taken in accordance with this Agreement. The representatives will organize advisory and other academic services to students participating under this Agreement.

Article 8- Terms of agreement

This Agreement shall take effect by both parties from the academic year 2020/21 (starting in the winter semester September/October 2020) and will be valid for five years. Each institution may cancel this agreement provided that written notice of the intent is given at least six months prior to termination. Commitments already in progress shall be fulfilled.

Article 9- Amendments or changes

Amendments or changes to this agreement, including appendices, shall be made in written form and signed by the duly authorised representatives of the institutions.

Four original samples of this agreement have to be signed.

Article 10 – In case of controversy

The parties agree to solve in a friendly manner any controversy rising from the interpretation of the present agreement. In the event that the disagreement cannot be resolved, the issue(s) will be submitted for arbitration; each party will appoint a member of the arbitration panel and one member will be chosen by mutual consent.

Ho Chi Minh City University of Technology

Prof. Dr. Mai Thanh Phong

Vice-Rector

Date:



Universidade de Vigo

Manuel J. Reigosa Roger

Rector

Date: 30/11/2018



APPENDIX I
ACADEMIC REQUIREMENTS
OF THE SPECIFIC AGREEMENT OF COOPERATION BETWEEN
THE UNIVERSIDADE DE VIGO (SPAIN) AND HO CHI MINH CITY UNIVERSITY OF
TECHNOLOGY (VIETNAM)
FOR THE DOUBLE DEGREE PROGRAMME
Master in Cyber Security
UNIVERSIDADE DE VIGO
Master of Engineering in Computer Science, major in Cyber Security
HCMUT

1. Preamble

For the sake of clarity, this appendix presents the measure of workload of the courses in the plans of study using the European Credit Transfer System. Nevertheless, HCMUT uses as unit of measure a credit which amounts to 0.5 ECTS, or 1 ECTS = 2 credits.

2. Previous academic requirements that HCMUT students must meet

To participate in this double degree programme, HCMUT students must have completed the following studies taught at HCMUT corresponding to the “Master of Engineering in Computer Science, major in Cyber Security” or that legally recognised in that university for the ones here described.

- Semesters 1 and 2 within the Master of Engineering degree course at HCMUT totalling 60 ECTS credits (equivalent to 30 HCMUT credits), 30 ECTS for each semester (equivalent to 15 HCMUT credits).

2. Previous academic requirements that UVigo students must meet

To participate in this double degree programme, UVigo students must have completed the following studies taught at the **School of Telecommunication Engineering** corresponding to the “Master in Cyber Security” or that legally recognised in that university for the ones here described.

- First year of the “Master in Cyber Security” at UVigo, completing 60 ECTS credits”.

3. Credits taught at the UVigo that HCMUT students will have to pass to be awarded the double degree



Once the academic requirements specified in section number 1 of this appendix have been met, HCMUT students within the “Master of Engineering in Computer Science, major in Cyber Security” will have to pass 62 credits taught at the Universidade de Vigo within the “Master in Cyber Security”, selecting the subjects listed below, not studied in their home university and including the Master Thesis as the last subject to pass.

First semester		Second semester	
Information Security	6	Hardening of operating systems	5
Management of Security	6	Intrusion tests	5
Secure Applications	6	Malware analysis	5
Master’s Thesis	12	Security in business	3
		Elective course*	3
		Elective course*	3
		Master’s thesis	8
Total first semester	30	Total second semester	32

*List of elective courses

Security for mobile devices (3 ECTS)

Forensic analysis (3 ECTS)

Ubiquitous security (3 ECTS)

Management of incidents (3 ECTS)

Industrial cybersecurity (3 ECTS)

4. Credits taught at HCMUT that UVigo students will have to pass to be awarded the double degree.

Once the academic requirements specified in section number 2 of this appendix have been met, UVigo students within the “Master in Cyber Security” will have to pass 62 credits taught at HCMUT within the “Master of Engineering in Computer Science, major in Cyber Security”, selecting the subjects listed below, not studied at their home university and including the Master Thesis as the last subject to pass.

First semester		Second semester	
Advanced Database Systems	6	Elective course**	6
Advanced Computer Architecture	6	Elective course**	6
Advanced Computer Networks	6	Master’s thesis	20
Elective course**	6		
Elective course**	6		
Total first semester	30 ECTS	Total second semester	32 ECTS

** Elective courses

UE5 Principles of data science (6 ECTS)

UE7 Applied cryptography (6 ECTS)

UE10 Computer network security assessment (6 ECTS)

UE16 Enterprise system security (6 ECTS)

UE17 Biometric security (6 ECTS)

UE18 Mobile system security (6 ECTS)

UE20 Security in modern computing platforms (6 ECTS)

Note: the elective courses offered in semester 1 and semester 2 of year 2 of the master programme will be based on the number of students registering in the courses.

5. Global credit list

The following table will be completed. The percentage difference between A and B as $(|A - B| / \max\{A, B\}) \times 100$ will be calculated.

Degree	Previous requirements			To study	STCDR (60)
	Degrees (RT)	Credits (RM)	TOTAL RT+RM (T)	Credits (MC)	
HCMUT	60	0	60	62	122
UVIGO	60	0	60	62	122
Percentage difference			0%		0%

6. Academic staff at charge

The people responsible for the academic and coordination aspects of the international double degree are the following:

- From **UNIVERSIDADE DE VIGO**:
Surname and name: Costa Montenegro, Enrique
Position: Vicedean of International Affairs
Address: Escola Enxeñaría de Telecomunicación, C. Maxwell s/n, Campus
Universidad de Vigo, 36310 Vigo (Spain)
Telephone: (+34) 986 813474
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E-mail: teleco.subdir.internacional@uvigo.es
- From **HO CHI MINH CITY UNIVERSITY OF TECHNOLOGY**:
Name and surname: Pham Tran Vu
Position: Dean of the Faculty of Computer Science and Technology
Address: 268 Ly Thuong Kiet Street, Ward 14, District 10, Ho Chi Minh City, Vietnam
Telephone: +84 838 647 256 – Ext. 5847
Fax: +84 838 645 137
E-mail: ptvu@hcmut.edu.vn



APPROVAL REPORT

- a. Approval of the academic conditions included in this appendix by the **UNIVERSIDADE DE VIGO** (the corresponding certification will be attached as Appendix II)

Competent qualified organization:

Date of approval:

Signature:

Approval



Name:

Position:

Name: *W. G. C. V. G. A. T.*

Position: *Dean of Technical Eng. Sch.*

- b. Approval of the academic conditions included in this appendix by the **HO CHI MINH CITY UNIVERSITY OF TECHNOLOGY** (the corresponding certification will be attached as Appendix III)

Competent qualified organization: Office of Post Graduate Study

Date of approval:

Signature:

Approval



Name: Assoc. Prof. Hoang Trang

Position: Director, Office of Post Graduate Study

Name: Assoc. Prof. Pham Tran Vu

Position: Dean, Faculty of Comp. Science & Engineering



APPENDIX 1A

STUDY PLAN – MASTER OF ENGINEERING IN COMPUTER SCIENCE, MAJOR IN CYBER SECURITY HCMUT, VIETNAM

Year	Semester	Title of semester (*)	EU Educational units
Year 1	S1	Fundamental Courses	UE1. Advanced Philosophy (6 ECTS) UE2. Advanced Database Systems (6 ECTS) UE3. Advanced Computer Architecture (6 ECTS) UE4. Advanced Computer Network (6 ECTS) UE5. Principles of Data Science (6 ECTS)
	S2	Mandatory Courses	UE6. Laws, Policies and Standards in Cyber-Security (6 ECTS) UE7. Applied Cryptography (6 ECTS) UE8. Database Security (6 ECTS) UE9. Network Security (6 ECTS) UE10. Computer Network Security Assessment (6 ECTS)
Year 2	S3	Optional Courses NOTE: Optional courses opened on S3 and S4 will be based on the number of students registering to the courses	UE11. Leadership Management (6 ECTS) UE12. Innovation and Entrepreneurship (6 ECTS) Selective course** (6 ECTS) Selective course** (6 ECTS) Selective course** (6 ECTS) Thesis proposal (0 ECTS)
	S4	Thesis	Master Thesis (20 ECTS) Selective course** (6 ECTS) Selective course** (6 ECTS)

(*) General theme of the semester from a pedagogical point of view

(**) The list of **Selective courses** is as follows:

- UE13. Malware Analysis (6 ECTS)
- UE14. Digital Forensics (6 ECTS)
- UE15. Blockchain Technology and Applications (6 ECTS)
- UE16. Enterprise Systems Security (6 ECTS)
- UE17. Biometric Security (6 ECTS)
- UE18. Mobile Systems Security (6 ECTS)
- UE19. Management of Information Security (6 ECTS)
- UE20. Security in Modern Computing Platforms (6 ECTS)



APPENDIX 1B

STUDY PLAN – MASTER IN CYBER SECURITY UVIGO, SPAIN

Module	Courses	E C T S	Type	Semester	Year
Management & law in cybersecurity	Law & regulations in cybersecurity	3	Compulsory	2	1
	Management of security	6	Compulsory	1	1
Foundations of cybersecurity	Information security	6	Compulsory	1	1
	Secure communications	6	Compulsory	1	1
	Secure applications	6	Compulsory	1	1
	Network security	6	Compulsory	1	1
Cybersecurity techniques	Hardening of operating systems	5	Compulsory	2	1
	Intrusion tests	5	Compulsory	2	1
	Malware analysis	5	Compulsory	2	1
	Business aspects of security	3	Compulsory	2	1
Supplementary training	Security for mobile devices	3	Elective	2	1
	Forensic analysis	3	Elective	2	1
	Ubiquitous security	3	Elective	2	1
	Management of incidents	3	Elective	2	1
	Industrial cybersecurity	3	Elective	2	1
Internship & Master thesis	Internship	15	Internship	1	2
	Master's thesis	15	Master's thesis	1	2



APPENDIX 2A
STUDY PLAN OF EXCHANGE STUDENTS FROM HCMUT TO UVIGO

Year	Semester	Title of semester (*)	EU Educational units
Year 1 (at HCMUT)	S1	Fundamental Courses	UE1. Advanced Philosophy (6 ECTS) UE2. Advanced Database Systems (6 ECTS) UE3. Advanced Computer Architecture (6 ECTS) UE4. Advanced Computer Network (6 ECTS) UE5. Principles of Data Science (6 ECTS)
	S2	Mandatory Courses	UE6. Laws, Policies and Standards in Cyber-Security (6 ECTS) UE7. Applied Cryptography (6 ECTS) UE8. Database Security (6 ECTS) UE9. Network Security (6 ECTS) UE10. Computer Network Security Assessment (6 ECTS)
Year 2 (at UVigo)	S3	Management & law in cybersecurity (Compulsory courses)	Management of Security (6 ECTS)
		Foundations of cybersecurity (Compulsory courses)	Information Security (6 ECTS) Secure Applications (6 ECTS)
		Thesis	Master's Thesis (12 ECTS)
	S4	Cybersecurity techniques (Compulsory courses)	Hardening of operating systems (5 ECTS) Intrusion tests (5 ECTS) Malware analysis (5 ECTS) Business aspects of security (3 ECTS)
		Supplementary training (Elective) – total (6 ECTS)	<i>List of elective courses (choose two courses among this list)</i> Security for mobile devices (3 ECTS) Forensic analysis (3 ECTS) Ubiquitous security (3 ECTS) Management of incidents (3 ECTS) Industrial cybersecurity (3 ECTS)
		Thesis	Master's Thesis (8 ECTS)



APPENDIX 2B
STUDY PLAN OF EXCHANGE STUDENTS FROM HCMUT TO UVIGO

Year	Semester	Title of modules (*)	EU Educational units
Year 1 (AT UVIGO)	S1	Management & law in cybersecurity (Compulsory courses)	Management of security (6 ECTS)
		Foundations of cybersecurity (Compulsory courses)	Information security (6 ECTS) Secure communications (6 ECTS) Secure applications (6 ECTS) Network security (6 ECTS)
	S2	Management & law in cybersecurity (Compulsory courses)	Law & regulations in cybersecurity (3 ECTS)
		Cybersecurity techniques (Compulsory courses)	Hardening of operating systems (5 ECTS) Intrusion tests (5 ECTS) Malware analysis (5 ECTS) Business aspects of security (3 ECTS)
		Supplementary training (Elective)	Security for mobile devices (3 ECTS) Forensic analysis (3 ECTS) Ubiquitous security (3 ECTS) Management of incidents (3 ECTS) Industrial cybersecurity (3 ECTS)
Year 2 (AT HCMUT)	S3	This list, consisting of compulsory and selective courses, is suggested by the HCMUT academic faculty.	Thesis proposal (0 ECTS) UE2. Advanced Database Systems (6 ECTS) UE3. Advanced Computer Architecture (6 ECTS) UE4. Advanced Computer Network (6 ECTS) Selective course** (6 ECTS) Selective course** (6 ECTS)
	S4		Master Thesis (20 ECTS) Selective course** (6 ECTS) Selective course** (6 ECTS)

(**) The list of **Selective courses** is as follows:

UE5. Principles of Data Science (6 ECTS)
UE7. Applied Cryptography (6 ECTS)
UE10. Computer Network Security Assessment (6 ECTS)
UE15. Blockchain Technology and Applications (6 ECTS)
UE16. Enterprise Systems Security (6 ECTS)
UE17. Biometric Security (6 ECTS)
UE18. Mobile Systems Security (6 ECTS)
UE20. Security in Modern Computing Platforms (6 ECTS)

NOTE: The selective courses opened on semester 1 and semester 2 (Year 2 of the master program) will be based on the number of students registering to the courses

