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lmpi licence master professionnel en protection informatique

LMPI - N°573901-EPP-1-2016-1-IT-EPPKA2-CBHE-JP
"Licence, Master professionnels pour le développement, l'administration, la gestion, la protection des systèmes et réseaux informatiques dans les entreprises en Moldavie, au Kazakhstan, au Vietnam »

Accreditation file

	Licence Pro	Master
Ho Chi Minh	non	création
Hanoi Agriculture	création	rénové
Hanoi Science et technology	rénové	creation

Rentrée 1ere session étudiants: September 2018

Grade: Mention :	*Bachelor of Computer Engineering*	Domaine : Network security	*Cybersecurity*

Université:	*HUST*	University chair: Hoang Minh Son	
Date de conception :	1 Mars 2018		

Author:	Tran Hoang Hai Tran Vinh Duc		

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PROTOCOL OF PROJECT DOCUMENT VALIDATION

PROCES VERBAL DE VALIDATION DE DOCUMENT DU PROJET

Work Package/lot	3
Activity/Activité	3.3
Name of the activity/ Nom de l'activité	Les programmes et cours des licence et master et 6 dossiers de demandes d'accréditation.
Name of the document/ nom du document:	Dossiers de demande d'accréditation (Vietnam)
Partner(s) concerne/partenaire(s) concerné(s)	P19, P20, P21
Referent EU University/université UE réferente	P06 University of Vigo
Person validating the document/personne qui valide le document	
Name/nom	Ana Fernández Vilas
Function/fonction	Professor. Local Coordinator at University of Vigo

Date: 14 juin 2019

Signature:

UNIVERSIDADE DE VIGO - 1990
RECTOR

Ana Fernández Vilas

I. Context of the degree

a) In which context you have a project to create the new curricula (aims, motifs...)

Our survey shows that in Vietnam more and more jobs, especially in Banking, Army, Telecommunications and Energy sector are requiring expertise in cybersecurity. The demand for Network Security is also greater given the context that network attack is more and more common in Vietnam. Four branches ranked most important are all linked to Network Security, namely:

- Security policy: 66.2%;
- Security devices et equipments (VPN-Firewall, etc.): 63.95%,
- Cryptography: 60.94%,
- Network supervision and management: 59.23%.

HUST currently offers bachelor degree in Cybersecurity. However, the current training program is still broad and does not follow international standardization. We therefore aim to restructure the training program towards more focused on Network Security and more standardized.

b) List the potential jobs covered by the new curriculum, refer to the official job classification

The potential jobs covered by the new program are as follows:

- Cybersecurity analyst
- Secure-software developers
- Data & information security engineer
- System security engineer

b) Indicate the predictions for the professional integration of young graduates.

Graduates from this major can work in different sectors related to cybersecurity such as banking, army, telecommunication and energy. We estimate that there are about 100 students annually at Hanoi University of Science and Technology, among whom:

- 30% in Cybersecurity
- 30% in Telecommunication
- 10% in Banking
- 30% in IT

We also estimate the potential jobs that students shall take upon graduation are as follow:

- Cybersecurity analyst (20%)
- Secure-software developers (30%)
- Data & information security engineer (40%)
- System security engineer (10%)

c) Indicate the origin of the students admitted, their number, and the methods of recruitment.

Vietnamese students graduating from high school with good academic results in science subjects can apply for this program. The recruitment is based on the result of the national exam with the subject of Maths, Physics and Chemistry. This program can register 100 students for each year.

(e) Indicate whether the possibility of access to adult learners as part of lifelong learning is offered.

Many subjects are offered online where adult learner can easily access. Besides, students with an equivalent university degree can register for this degree without entrance examination.

(f) Indicate the possible pursuit of studies.

After graduation, the student can pursue higher education (Master or PhD) or work in a company.

g) Indicate the modalities of composition of differentiated paths if necessary.

Students in this major can take additional specialized courses (about 30 ECTS) to get another degree in Computer Engineering, Computer Science or Data Science.

II. General description of the curriculum

II.1. Description of training outcomes

Training outcomes	Description
Disciplinary knowledge	Cybersecurity (focusing on the Network security employment profile)
Specific Skills	SC01. To update security systems to meet new demands and latest technologies. SC02. Skill to apply cybersecurity and privacy principles to organizational requirements (relevant to confidentiality, integrity, availability, authentication, non-repudiation). SC03. Skill in protecting a network against malware (e.g., NIPS, anti-malware, restrict/prevent external devices, spam filters). SC04. Skill in securing network communications. SC05. Skill in conducting vulnerability scans and recognizing vulnerabilities in security systems. SC06. Skill in performing packet-level analysis. SC07. Skill in using Public-Key Infrastructure (PKI) encryption and digital signature capabilities into applications (e.g., S/MIME email, SSL traffic). SC08. Skill in recognizing and categorizing types of vulnerabilities and associated attacks. SC09. Skill in using Virtual Private Network (VPN) devices and encryption. SC10. Skill in using incident handling methodologies. SC11.Skill in preserving evidence integrity according to standard operating procedures or national standards. SC12. Skill in detecting host and network-based intrusions via intrusion detection technologies (e.g., Snort).
Cross-curricular competencies	GC1. The ability to analyze systems, mechanisms and procedures related to protection of information entities and objects GC2. Problem solving ability, design ability GC5. Ability to apply theoretical knowledge to practice GC6. Ability for self-study GC7. Ability to work in a diversity group and in an international context (teamwork) GC8. Ability to project organization and planning GC9. Time management skill GC10. Representation skill: Ability to represent, illustrate, convince

II.2. Decomposition of curricula in semesters

FR bachelor = 3 years (180 ECTS) – Master = 2 years (120 ECTS)
VN bachelor =4 years, Master = 2 years
1 year of studies =60 ECTS

Year	Semester	Title of semester	EU Educational units
Year 1	S1	General education (100 ECTS)	EU01. Philosophy I (4 ECTS) EU02. General law (4 ECTS) EU03. English I (6 ECTS) EU04. Calculus I (8 ECTS) EU05. Algebra (8 ECTS) EU06. Physics I (6 ECTS)
	S2		EU07. Philosophy II (6 ECTS) EU08. English II (6 ECTS) EU09. Calculus II (6 ECTS) EU10. Calculus III (6 ECTS) EU11. Physics II (6 ECTS) EU12. Introduction to Management Science (4 ECTS)
Year 2	S3		EU13. Ho Chi Minh' s ideology (4 ECTS) EU14. Revolution Lines of Vietnam Communist Party (6 ECTS) EU15. Introduction to Computer Science (8 ECTS) EU16. Probability and Statistics (6 ECTS) EU17. Physics III (6 ECTS)
	S4	Mandatory course (28 ECTS)	EU18. Algorithms and data structures (6 ECTS) EU19. Discrete Mathematics (6 ECTS) EU20. Computer Architecture (6 ECTS) EU21. Operating Systems (6 ECTS) EU22. Introduction to Programming (4 ECTS)
Year 3	S5	Mandatory course (32 ECTS)	EU23. Probability and Computing (4 ECTS) EU24. Object-oriented programming (6 ECTS) EU25. Introduction to Linux (4 ECTS) EU26. Computer Networks (6 ECTS) EU27. Introduction to Information Security (6 ECTS) EU28. Project I (6 ECTS)
	S6	Mandatory course (32 ECTS)	EU29. Databases (6 ECTS) EU30. Information System Analysis and Design (4 ECTS) EU31. Cryptography (6 ECTS) EU32. Network Programming (4 ECTS) EU33. Information theory (4 ECTS) EU34. Secure Programming (4 ECTS) EU35. Project II (4 ECTS) EU36. Internship in company (4 ECTS)
Year 4	S7	Mandatory course (22 ECTS)	EU37. Network Security (6 ECTS) EU38. Malware Analysis (4 ECTS) EU39. Digital Forensics in Cybersecurity (4 ECTS) EU40. Database security (4 ECTS) EU41. Web security (4 ECTS)
		Elective courses (choose 8 of 16 ECTS)	EU42. Machine Learning (4 ECTS) EU43. Data mining (4 ECTS) EU44. Distributed Systems (4 ECTS) EU45. Project Management (4 ECTS)
	S8	Mandatory course (16 ECTS)	EU46. Information systems and risk management (4 ECTS) EU47. Bachelor Thesis (12 ECTS)
		Selective courses (choose 8 of 12 ECTS)	EU48. Mobile Application Development (4 ECTS) EU49. Bigdata Analytics (4 ECTS) EU50. Bitcoin and Cryptocurrency Technologies (4 ECTS)

II.3 Description of EU (educational units)

Distribution of the study plan measured in ECTS credits by type of subject. General outline of the study plan is described as following

Type of subjects/ courses	Credits to undertake	Credits offered
General	100	100
Mandatory	130	130
Optional	16	24
Bachelor Thesis	12	12
Total	248	256

EU semester 1 (1 semester = 30 ECTS)

EU	Objectif	Modules	ECTS	Lectures	TP	TL	Pers. work	Total
01	Philosophy I	M1: Historical philosophy M2: Basic	4	50	30	10	10	100h
02	General law		4	50	30	10	10	100h
03	English I		6	75	50	10	15	150h
04	Calculus I		8	100	60	20	30	200h
05	Algebra		8	100	60	20	30	200h
06	Physics I		6	75	50	10	15	150h

Legend:
TL : Laboratory work or supervised practical work
TP : practical work in small groups
W pers personal work (library, home, internship, etc.)

EU semester 2 (1 semester = 30 ECTS)

EU	Objectif	Modules	ECTS	Lectures	TP	TL	Pers. work	Total
07	Philosophy II		6	75	50	10	15	150h
08	English II		6	75	50	10	15	150h
09	Calculus II		6	75	50	10	15	150h
10	Calculus III		6	75	50	10	15	150h
11	Physics II		6	75	50	10	15	150h
12	Introduction to Management Science		4	50	30	10	10	100h

EU semester 3 (1 semester = 30 ECTS)

EU	Objectif	Modules	ECTS	Lectures	TP	TL	Pers. work	Total
13	Ho Chi Minh's ideology		4	50	30	10	10	100h
14	Revolution Lines of Vietnam Communist Party		6	75	50	10	15	150h
15	Introduction to Computer Science		8	100	60	20	30	200h

16	Probability and Statistics		6	75	50	10	15	150h
17	Physics III		6	75	50	10	15	150h

EU semester 4 (1 semester = 30 ECTS)

EU	Objectif	Modules	ECTS	Lectures	TP	TL	Pers. work	Total
18	Algorithms and data structures	M1: Basic Algorithms M2: Introduction to data structure	6	75	50	10	15	150h
19	Discrete Mathematics	M1: Combinatorics M2: Graphs	6	75	50	10	15	150h
20	Computer Architecture		6	75	50	10	15	150h
21	Operating Systems		6	75	50	10	15	150h
22	Introduction to Programming		4	50	30	10	10	100h

EU semester 5 (1 semester = 30 ECTS)

EU	Objectif	Modules	ECTS	Lectures	TP	TL	Pers. work	Total
23	Mathematics for Security	M1: Discrete Probability M2: Computational number theory	4	50	30	10	10	100h
24	Object-oriented programming		6	75	50	10	15	150h
25	Introduction to Linux	M1: Basic Command M2: Programming	6	75	50	10	15	150h
26	Computer Networks		6	75	50	10	15	150h
27	Introduction to Information Security	M1: Intro to Cryptography M2: System Security	6	75	50	10	15	150h
28	Project I		6	75	50	10	15	150h

EU semester 6 (1 semester = 30 ECTS)

EU	Objectif	Modules	ECTS	Lectures	TP	TL	Pers. work	Total
29	Databases		6	75	50	10	15	150h
30	Information System Analysis and Design		4	50	30	10	10	100h
31	Cryptography	M1: Crypto Primitives M2: Applications	6	75	50	10	15	150h
32	Network Programming		4	50	30	10	10	100h
33	Information theory		4	50	30	10	10	100h
34	Secure Programming		4	50	30	10	10	100h
35	Project II		4	50	30	10	10	100h
36	Internship in company		4	50	30	10	10	100h

EU semester 7 (1 semester = 30 ECTS)

EU	Objectif	Modules	ECTS	Lectures	TP	TL	Pers. work	Total
37	Network Security		6	75	50	10	15	150h
38	Malware Analysis		4	50	30	10	10	100h
39	Digital Forensics in Cybersecurity		4	50	30	10	10	100h
40	Database security		4	50	30	10	10	100h
41	Web security		4	50	30	10	10	100h
42	Machine Learning		4	50	30	10	10	100h
43	Data mining		4	50	30	10	10	100h
44	Distributed Systems		4	50	30	10	10	100h
45	Project Management		4	50	30	10	10	100h

EU semester 8 (1 semester = 30 ECTS)

EU	Objectif	Modules	ECTS	Lectures	TP	TL	Pers. work	Total
46	Information systems and risk management	M1: Information systems M2: Risk management	6	75	50	10	15	150h
47	Bachelor Thesis		12	0	0	0	300	300h
48	Mobile Application Development		4	50	30	10	10	100h
49	Bigdata Analytics	M1: Algorithms M2: Applications	4	50	30	10	10	100h
50	Bitcoin and Cryptocurrency Technologies	M1: Bitcoin M2: Blockchain & applications	4	50	30	10	10	100h

II.3. Tableau de mise en corrélation entre compétences et unités d'enseignement:

Specific Skills

	1	2	3	4	5	6	7	8	9	10	11	12
UE18				x			x					
UE19				x			x					
UE20												
UE21												
UE22												
UE23				x			x					
UE24												
UE25												
UE26			x	x								
UE27		x		x		x	x			x	x	x
UE28	x											
UE29												
UE30										x		
UE31		x		x			x			x	x	
UE32			x	x								
UE33				x			x					
UE34			x	x								
UE35	x											
UE36	x											
UE37		x	x	x	x	x	x	x	x			x
UE38			x		x							
UE39		x						x			x	
UE40				X	x		X					
UE41				X	X		x					
UE42	x	X										
UE43	x	x										
UE44				x								
UE45		x										
UE46					x					x		
UE47	x											
UE48	x	x										
UE49	x	x										
UE50	x	x										

Cross-curricular competencies

	GC1	GC2	GC5	GC6	GC7	GC8	GC9	GC10
UE01						x		
UE02						x		x
UE03					x			
UE04		x						
UE05		x						
UE06		x						
UE07						x		
UE08					x			
UE09		x		x		x	x	
UE10		x						
UE11		x						
UE12		x			x	x	x	x
UE13						x		
UE14						x		
UE15		x						
UE16		x						
UE17		x						
UE18		x				x		
UE19		x				x		
UE20								
UE21								
UE22		x	x					
UE23		x				x		
UE24		x	x					
UE25	x							
UE26								
UE27								
UE28		x	x	x	x	x	x	x
UE29								
UE30	x							
UE31	x	x	x					
UE32								
UE33		x				x		
UE34								
UE35		x	x	x	x	x	x	x
UE36		x	x	x	x	x	x	x
UE37								
UE38								

UE39								
UE40								
UE41								
UE42	x	x						
UE43	x	x						
UE44								
UE45		x			x	x	x	x
UE46								
UE47		x	x	x	x	x	x	x
UE48	x	x						
UE49	x	x						
UE50	x	x						

II.4. The final dissertation

a) What will be asked from students for the dissertation (When? Number of pages? Relationship with the contents.
At the end of the 7th semester, students can choose the subject and the advisor(s) for their thesis. There is no constraint in the number of pages of thesis, but the typical number is 40 to 60 pages. The thesis subject must be in cybersecurity (forcus on Network security). The students have to defend the thesis before a committee or jury formed by 3–5 professors from HUST. The jury does not include the thesis advisor. Students must submit a written report to the jury, after approval by the advisor and the two reviewers. Publication of research papers in conferences or journals is optional, not a requirement.

b) Describe the role of the two types of tutors, the university tutor, the company tutor

- University tutor: provide administrative duty and advising students on academic and related matters.
- Company tutor (optional): provide technical support, internship and advice

c) Describe the expected results of the final dissertation
The final thesis is expected to be an original, unpublished and significant contribution to the field of digital security and cybersecurity, in any of its possible domains of application (industry, manufacturing, administration, public services, social services, baseline & fundamental technologies, applied products and services, etc.)

d) Describe the modalities of defense of final dissertation
The dissertation is publicity defended in front of a committee or jury formed by 3-5 professors from HUST. The jury does not include the thesis advisor. Each thesis is reviewed by two reviewers. Students must submit a written report to the jury, after approval by the advisor and the two reviewers.

e) Indicate the timetable for the realization of the final dissertation
Students start prepare their thesis from the first semester of 4th year. They contact with the supervisor for choosing and defining a topic and acquiring the background; the second semester of 4th year for doing the technical work, the experimental work and preparing the report. Time for submission of the final thesis in advance.

f) Indicate the number of ECTS granted to the final dissertation
12 ECTS is assigned to a successful final thesis.

II.5. Internship in company

In the 6th semester, the students have an internship in a company. This aims to familiarize students with professional environment.

II.6. Internship in a company abroad

We do not have plan for internship in a company abroad.

II.7. Mobility to foreign companies (if any)

We do not have plan for internship in a company abroad.

III Modalities for the control of knowledge

a) For each EU, indicate the methods of checking knowledge
There are 2 methods of evaluation, depending on the lecturer's choice:
(i) Two exams (mid-term and final exams);
(ii) Exercises, presentation and final exam; report and final exam.

- Form of examination: written or presentation.
- Duration of the control: 60 – 120 minutes for exams.
- Test coefficient (if applicable): 40% mid-term + 60% final exams
- Score: the maximum score is 10

b) Indicate the rules of obtaining a EU (UE)

- Rules for the allocation of EU: Pass the exams, exercises, presentation, ... that depend on method of evaluation.
- Compensation rule between units (if applicable): The students must pass all mandatory courses. For optional courses, students can choose and finish some courses from the list to get the minimum number of credits required for optional course.
- Period of validity of a EU obtained (UE): During the training time of program.
- Eliminary scores: No

IV Composition of pedagogical team

a) The general pedagogical responsible of the new curriculum

Name: Ngo, First name: Hong Son; Function: Dean of SoICT University: HUST

b) Pedagogical responsibles by EU Educational units (Teachers by EU)

EU	Responsible of EU	University of attachment
1-17	Invited Lecturer	HUST
18	Nguyen Duc Nghia	SoICT – HUST (School of Infomation and Comunication Technology, Hanoi University of Science and Technology)
19	Dinh Viet Sang	SoICT – HUST
20	Nguyen Kim Khanh	SoICT – HUST
21	Pham Dang Hai	SoICT – HUST
22	Cao Tuan Dung	SoICT – HUST
23	Nguyen Khanh Van	SoICT - HUST
24	Cao Tuan Dung	SoICT - HUST
25	Ngo Hong Son	SoICT - HUST
26	Tran Hoang Hai	SoICT - HUST
27	Nguyen Linh Giang	SoICT - HUST
28	Invited Lecturer	SoICT - HUST
29	Nguyen Kim Anh	SoICT - HUST
30	Nguyen Thi Oanh	SoICT - HUST
31	Tran Vinh Duc	SoICT - HUST
32	Bui Trong Tung	SoICT - HUST
33	Trinh Van Loan	SoICT - HUST
34	Vu Thi Huong Giang	SoICT - HUST
35	All Lecturers	SoICT - HUST
36	All Lecturers	SoICT - HUST
37	Bui Trong Tung	SoICT – HUST
38	Hoang Van Hiep	SoICT – HUST
39	Tran Quang Duc	SoICT – HUST
40	Nguyen Tuan Dung	SoICT – HUST
41	Cao Tuan Dung	SoICT - HUST
42	Than Quang Khoat	SoICT - HUST
43	Trinh Anh Phuc	SoICT - HUST
44	Tran Hai Anh	SoICT - HUST
45	Nguyen Thanh Hung	SoICT - HUST
46	Nguyen Kim Anh	SoICT - HUST
47	All Lecturers	SoICT - HUST
48	Nguyen Tuan Dung	SoICT - HUST
49	Dinh Viet Sang	SoICT - HUST
50	Tran Vinh Duc	SoICT - HUST

c) Teachers involved in the curriculum (=renovateurs)

Name	University	Disciplines taught	Number of hours of intervention	Concerned EU
Tran Hoang Hai	SoICT- HUST	Computer Network	500	25, 26, 32, 33, 34, 41, 44
Ngo Hong Son	SoICT - HUST	Computer Network	900	20, 21, 25, 33, 37, 44
Tran Vinh Duc	SoICT - HUST	Cryptography and Security	500	18, 19, 23,27, 31, 49, 50

d) Professionals involved in the curriculum
(=professionals animating a training course/a lecture on a professional theme)
We don't have any Professionals involved in the curriculum.

V Professional Insertion

a) Indicate the methods used to support the professional integration of young graduates

- Internship: There are three internships for any student at semester 7, 8 and 9
- Job Search Techniques
- Creation of corporate databases: The university has a network of companies, which regularly attends the thesis defense to select outstanding students. Besides we collaborate with companies like BKAV, Viettel in projects where students can experience professional working environment.

(b) Indicate the composition and role of the employment office of the university

- Prof Pham Huy Hoang, Vice Dean, SoICT, HUST: in charge of developing and maintaining partnership with companies.
- BK Holdings (Bach Khoa Hanoi Technology Investment and Development One Member Company Limited): The objective of company is resources mobilization of government, organizations and individuals, domestic and foreign enterprises to participate in the research process, incubator and commercialization of Science and Engineering technology products of university. Scientists have become the subject of capital contribution, wisdom and effort to build the business.

VI The Diploma Supplement

See Examples in the section "Lot2 / 2.1.1. Common methodological guide / E. Other Europass documents.

Annex 1 : Partnership with training institutions

1.1. Universities implied in the training

Universities	Role in the training course

Join contracts.

1.2. Other training institutions implied

Institution	Role in the training course

Join contracts.

Annex 2 : Cooperation with companies

2.1. Companies implied in the training

Company	Role in the training course

Join contracts.

2.2. Other companies supporting the training course

Companies	Adress

Join support letter

Annexe 3 : Job description profile (fiche métier)

Join job description profiles which resulted from the survey