MINISTRY OF EDUCATION AND TRAINING
QUY NHON UNIVERSITY

MASTER'S PROGRAM

Level:	**Master**
Major:	**Computer Science**
Code:	**8480101**
Mode of study:	**Full-time**

Gia Lai, 2025

MINISTRY OF EDUCATION AND TRAINING
QUY NHON UNIVERSITY

SOCIALIST REPUBLIC OF VIET NAM
Independence - Freedom - Happiness

MASTER'S PROGRAM

(Issued together with Decision No. 490/QĐ-ĐHQN dated February 14, 2025 of the Rector of Quy Nhon University)

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1. PROGRAM OBJECTIVES (POs)

1.1. General objectives

The Master of Science in Computer Science program emphasizes applied expertise, equipping graduates with a profound theoretical foundation and advanced technical proficiency. The curriculum fosters independent research capabilities and creative problem-solving skills within the field. Furthermore, students develop a rigorous methodological framework, enabling the integration of cutting-edge computational advancements into practical applications to meet evolving societal demands.

1.2. Specific objectives

A Master's degree in Computer Science will enable graduates to:

- In terms of knowledge:

+ PO1: Possess a comprehensive understanding of economic and social development linked to new achievements in science and technology.

+ PO2: Have in-depth knowledge of the field of computational science.

+ PO3: Have knowledge of the practical application of information technology.

- In terms of skills:

+ PO4: Possess skills in organizing and managing information systems and computer networks.

+ PO5: Possess skills in team management, time management, and work organization. Have

critical and creative thinking in management and leadership.

+ PO6: Possess skills in solving complex situations in their field of study.

- In terms of autonomy and responsibility:

+ PO7: Be able to conduct independent research and accumulate professional experience.

+ PO8: Be clearly aware of the importance of lifelong learning and research; Professional ethics and responsibility towards work, community, and society.

2. JOB OPPORTUNITIES AND PROFESSIONAL DEVELOPMENT

Graduates from the Computer Science program can:

- Manage IT at agencies, organizations, or businesses in positions such as network administrator, information system organizer and administrator.
- Join companies specializing in software, computer systems, and IT solutions.
- Teach at universities, colleges, or vocational schools.
- Participate in research at research institutes specializing in Information Technology and Communications.

3. PROGRAM DURATION AND TOTAL ACADEMIC WORKLOAD

3.1. Program Duration: 02 years

3.2. Total academic workload: 60 credits (including 6 internship credits and 9 graduation project credits)

Structure of the Master of Computer Science Program

Program structure	Number of Credits
General Education Knowledge	**3**
Fundamental and professional knowledge	**48**
Required courses	30
Elective courses	18
Research project	**9**
Total	**60**

4. ADMISSION REQUIREMENTS

- Graduated or have met the requirements for a university degree (or equivalent qualification or higher) in a field relevant to Computer Science;

- Possess a foreign language proficiency level of 3 or higher according to the 6-level Foreign Language Proficiency Framework for Vietnam or equivalent.

- Candidates with a relevant university degree:

  - Information Systems
  - Computer Science Education
  - Information Technology - Applied Informatics
  - Software Engineering
  - Computer Engineering Technology
  - Computer Networks and Data Communication
  - Computer Engineering
  - Mathematics - Informatics
  - Software Engineering

- Candidates with a university degree requiring additional knowledge. List of majors requiring additional knowledge and courses to be taken to supplement knowledge includes:

  + Major requiring additional knowledge:

    - Computer Science - Applied Mathematics – Informatics
    - Electronics – Informatics
    - Physics – Informatics
    - Electronics – Telecommunications
    - Electronic and Communication Engineering
    - Mathematics - Informatics Education
    - Other majors will be considered on a case-by-case basis

  + Courses to be taken to supplement knowledge:

    - Introduction to Algorithms
    - Data Structures and Solutions Techniques
    - Discrete Mathematics
    - Databases
    - Object-Oriented Programming
    - Formal Languages and Automata
    - Artificial Intelligence
    - Computer Networks
    - Depending on the specific case, the Department may propose additional courses, not exceeding 12 credits.

5. TRAINING METHOD, GRADUATION REQUIREMENTS

5.1. Training method:

Training is conducted according to the credit system in compliance with the current regulations of the Ministry of Education and Training and Quy Nhon University.

5.2. Graduation Requirements:

According to the current regulations of the Ministry of Education and Training and Quy Nhon University:

a) Completed all modules of the training program and successfully defended the thesis;

b) Possess a foreign language proficiency level that meets the output standards of the training program before the graduation consideration date; evidenced by one of the following foreign language diplomas or certificates equivalent to Level 4 according to the 6-level Foreign Language Proficiency Framework for Vietnam as stipulated in the Appendix of the Regulations on Admission and Training of Master's Degrees of Quy Nhon University, or other equivalent certificates published by the Ministry of Education and Training, or a university degree or higher in a foreign language, or a university degree or higher in another field where the program is conducted entirely in a foreign language;

c) Fulfill all responsibilities as stipulated by Quy Nhon University; not subject to criminal prosecution and not currently under disciplinary action or suspension from studies.

6. ASSESSMENT METHODS AND GRADING SCALE

6.1. Grading Scale

A 10-point scale is used for all assessment methods in the course.

6.2. Assessment Methods, Criteria, and Weighting

- Theoretical Courses: A 10-point scale is used, with detailed information provided for each course and in the course description.
- Internship/Project Courses: Grading of internship reports. Assessment criteria are specified in section M4 of the course.
- Graduation Project Courses: Conducted according to the Regulations on Admission and Training of Master's Degrees of Quy Nhon University. Specific criteria are detailed in section M4 of the course.

6.3. Assessment Methods

The assessment methods used in the Master's program in Computer Science are divided into two main types: Formative Assessment and Summative Assessment.

7. PROGRAM CONTENT

No	Course code	Course	Semester	Number of credits	Prerequisite Course Code	Department in charge	Note

	Letter	Number			Total	Theory	Practise			
I. General Education Knowledge										
1	XHTH	501	Philosophy	1	3	3			DPSLM	
II. Fundamental and professional knowledge					**48**					
II.1. Required courses					**30**					
Foundation knowledge										
2	KHTĐ	502	The Design and Analysis of Algorithms		3	2	1		DIT	
3	KHCD	503	Advanced Database		3	2	1		DIT	
4	KHMT	504	Advanced Computer Network		3	2	1		DIT	
5	KHCN	505	Advanced Software Engineering		3	2	1		DIT	
Professinal knowledge										
6	KHXN	506	Natural language processing		3	2	1		DIT	
7	KHHM	507	Machine Learning		3	2	1		DIT	
8	KHTM	508	Computer Vision		3	2	1		DIT	
9	KHĐT	509	Cloud computing		3	2	1		DIT	
10	KHTT	510	Intern Project 1		3		3		DIT	
11	KHDA	511	Intern Project 2		3		3		DIT	
II.2. Elective courses (6/11 modules)					**18**					
Students choose 2 of the following modules.										
12	KHLU	512	Fuzzy logic and its Applications		3	2	1		DIT	
13	KHTA	513	Virtual Reality		3	2	1		DIT	
14	KHTN	514	Advanced AI		3	2	1		DIT	
15	KHTF	522	Time series Forcasting		3	2	1		DIT	

Students choose 2 of the following modules.										
16	KHKP	515	Data mining in applications		3	2	1		DIT	
17	KHBD	516	BigData Analytics		3	2	1		DIT	
18	KHDS	517	Decision Support System		3	2	1		DIT	
19	KHAB	518	Information safety and security		3	2	1		DIT	
Students choose 2 of the following modules.										
20	KHKĐ	519	Software verification		3	2	1		DIT	
21	KHLT	520	Advanced Programming		3	2	1		DIT	
22	KHPT	521	Object-Oriented Analysis and Design		3	2	1		DIT	
III. Graduation project					**9**					
23	Graduation project				9				DIT	
Total					**60**					

8. TRAINING PLAN

No	Course code		Course	Number of credits	Training plan *(semester)*				Expected instructors	Department in charge
	Letter	Number			1	2	3	4		
I. General Education Knowledge				**3**						
1	XHTH	501	Philosophy	3	1				According to the assignment from the Department in charge	DPSLM
II. Fundamental and professional knowledge				**48**						
II.1. Required courses				**30**						
2	KHTĐ	502	The Design and Analysis of Algorithms	3	1				Dr. Le Xuan Viet Dr. Ho Van Lam	DIT
3	KHCD	503	Advanced Database	3	1				Dr. Tran Thien Thanh Dr. Ho Van Lam	DIT

4	KHMT	504	Advanced Computer Network	3	1				Dr. Nguyen Thanh Dat Assoc. Prof. Vo Thanh Tu	DIT
5	KHCN	505	Advanced Software Engineering	3	1				Dr. Pham Van Viet Assoc. Prof. Nguyen Thanh Binh	DIT
6	KHXN	506	Natural language processing	3		2			Dr. Le Quang Hung Assoc. Prof. Le Anh Cuong	DIT
7	KHHM	507	Machine Learning	3	1				Dr. Le Xuan Vinh Dr. Le Xuan Viet	DIT
8	KHTM	508	Computer Vision	3		2			Dr. Le Thi Kim Nga Dr. Huynh Huu Hung	DIT
9	KHĐT	509	Cloud computing	3		2			Dr. Tran Thien Thanh Dr. Ho Van Lam	DIT
10	KHTT	510	Intern Project 1	3		2			Dr. Nguyen Thanh Binh Dr. Le Thi Kim Nga	DIT
11	KHDA	511	Intern Project 2	3			3		Dr. Nguyen Thanh Binh Dr. Le Thi Kim Nga	DIT
II.2. Elective courses				**18**	**0**	**6**	**12**			
II.2.1. Computer Science knowledge group (2/4 modules)				**6**		**3**	**3**			
12	KHLU	512	Fuzzy logic and its Applications	3					Dr. Le Xuan Vinh Dr. Le Xuan Viet	DIT
13	KHTA	513	Virtual Reality	3					Dr. Le Thi Kim Nga Dr. Huynh Huu Hung	DIT
14	KHTN	514	Advanced AI	3					Dr. Le Xuan Vinh Dr. Le Xuan Viet	DIT
15	KHTF	522	Time series Forcasting	3					Dr. Le Xuan Viet Dr. Le Xuan Vinh	DIT
II.2.2. Information Systems knowledge group (2/4 modules)				**6**		**0**	**6**			
16	KHKP	515	Data mining in applications	3					Dr. Tran Thien Thanh Dr. Ho Van Lam	DIT
17	KHBD	516	BigData Analytics	3					Dr. Tran Thien Thanh Dr. Ho Van Lam	DIT
18	KHDS	517	Decision Support Systems	3					Dr. Ho Van Lam	DIT

									Dr. Tran Thien Thanh	
19	KHAB	518	Information safety and security	3					Dr. Lai Minh Tuan Assoc. Prof. Luong The Dung	DIT
II.2.3. Software Engineering knowledge group (2/3 modules)				**6**		**3**	**3**			
20	KHKĐ	519	Software verification	3					Dr. Pham Van Viet Assoc. Prof. Nguyen Thanh Binh	DIT
21	KHLT	520	Advanced Programming	3					Dr. Nguyen Thanh Binh Dr. Pham Van Viet	DIT
22	KHPT	521	Object-Oriented Analysis and Design	3					Dr. Le Quang Hung Dr. Pham Van Viet Dr. Tran Thien Thanh	DIT
III. Graduation project				**9**				4		DIT
Total				**60**	**18**	**18**	**15**	**9**		

9. GUIDELINES FOR PROGRAM IMPLEMENTATION

- This training program will be applied from the 2025 enrollment period for Computer Science students.

- The training process is based on the designed curriculum, training objectives and target audience, human resource requirements, and specific training requirements. For elective courses, depending on the actual situation of development trends and social needs, the Department will advise students on choosing appropriate courses.

- The Head of the Department is responsible for organizing and guiding the principles for developing detailed syllabi to ensure that the objectives, content, and requirements are met, while also satisfying the needs of learners and society.

- The training program is reviewed and updated at least every two years to meet the development of the Computer Science industry and align with socio-economic development needs.

Gia Lai, February 14, 2025

DEAN OF DEPARTMENT	***HEAD OF TRAINING OFFICE***	***BY THE DELEGATION OF THE RECTOR VICE-RECTOR***
Dr. Le Xuan Viet	**Dr. Le Xuan Vinh**	**Dr. Dinh Anh Tuan**