MINISTRY OF EDUCATION AND TRAINING
**NAM CAN THO UNIVERSITY**

**SOCIALIST REPUBLIC OF VIETNAM**
**Independence - Freedom - Happiness**

# MASTER'S DEGREE TRAINING PROGRAM
# Application-Oriented
# Name of major: Information Technology
# Code: 8480201

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| 1 | **Name of training major** | Information Technology |
| 2 | **Code** | 8480201 |
| 3 | **Management unit** | Information Technology Department, Faculty of Information Technology |
| 4 | **Learning Incomes** | |
| 4.1 | **Relevant majors (*without additional knowledge needs*)** | 1. Computer Science (7480101)<br>2. Network and Data communication (7480102)<br>3. Software Engineering (7480103)<br>4. Information System (7480104)<br>5. Artificial Intelligence (7480107)<br>6. Data Science (7480109)<br>7. Information Technology (7480201)<br>8. Information Security (7480202) |
| 4.2 | **Relevant majors (*with additional knowledge needs*)** | 1. Computer Technology (7480106)<br>2. Computer Engineering Technology (7480108)<br>3. Informatics Teacher Education (7140210)<br>4. Mathematics - Informatics (7460117)<br>5. Management Information System (7340405)<br>6. E-commerce (7340122)<br>7. Multimedia Communication (7320104)<br>8. Information Management (7320205) |
| 4.3 | **General requirements** | Eligible candidates are citizens of the Socialist Republic of Vietnam who fully satisfy the following conditions:<br>- Graduated from university with relevant majors, or relevant majors (with additional knowledge) comparable with the registered major.<br>- Be healthy enough to study.<br>- Having foreign language ability at Level 3 or higher (B1) according to the 6-level Foreign Language Competency Framework or equivalent;<br>- Submit a complete application, on time as prescribed by the training institution. |
| 5 | **Training Objectives** | - General objective:<br>The Master's Degree Program in Information Technology (IT) has the goal of training senior human resources who are at the forefront of the team of analysis, consulting, design, development, and implementation of Information Technology solutions (including infrastructure construction, service provision, and IT application development) and application of information technology to solve production, business and management problems; that meet social |

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| | | needs about high-quality humane resources in the era of industrialization, modernization of the country and international integration.<br>After graduation, students are able to use English fluently; and have the ability to adapt to a diverse and ever-changing market economy. In addition to professional knowledge, students have the ability to demonstrate respect for professional ethical standards, social responsibility, motivation for lifelong learning, passion for creativity, scientific research, and entrepreneurship.<br>- Detail goal:<br>a. Master the basic principles and scientific methodology of Marxism - Leninism; improve foreign language knowledge and skills; self-adapt for professional responsibility, and professional working style.<br>b. Understand and apply advanced knowledge of algorithmic thinking; computer mathematics; computing power of the computer; storing, processing, searching, and security ensuring the information to solve specific problems in IT.<br>c. Analyze, evaluate, and propose IT-intensive solutions, focusing on digital transformation, with the full techniques and skills in designing and managing information technology projects and business electronic systems.<br>d. Forming thinking, methodology, and ability to apply in real-problems relative to IT majors.<br>e. Developing the capacity to approach the modern development trend of the computer field; the capacity to participate in consulting, proposing, presiding over, and implementing IT achievements into practice; the ability to apply the achievements of the IT industry to the country's socio-economic development and international integration. |
| 6 | **Graduate Performance Standards** | |
| 6.1 | **Knowledge** | a. General knowledge: Applying knowledge of Philosophy and English to work practice.<br>b. Industry knowledge: Synthesizing and applying proficiently advanced knowledge in computer mathematics, analysis and design of algorithms, computer architecture, operating systems, system programming, and artificial intelligence.<br>c. Specialized knowledge: Proficiently working in IT-related fields such as storing, processing, searching, and ensuring information security. Having the ability to analyze, evaluate and propose solutions to specialized issues such as digital transformation, techniques, and skills in designing and managing information technology projects and e-business systems.<br>d. Scientific research knowledge: Mastering scientific research methodology and application in solving specific problems in IT |
| 6.2 | **Skills** | a. Hard skills: Participating in consulting, proposing, leading, and implementing IT application projects to serve the socio-economic development of the region, the country, and the world.<br>b. Soft skills: Ability to work independently and creatively; and ability to present and work in groups. |
| 6.3 | **Attitude/Level of self-control and** | Demonstrate a professional working style, working with ethics and professional responsibilities, and lifelong learning habits. |

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| | **personal responsibility** | |
| 6.4 | **Foreign language level before the master's degree defense** | Self-study to achieve a B2 certificate (level 4/6) according to the 6-level Foreign Language Competency Framework for Vietnam or equivalent. |
| 7 | **Structure of the training program** | - General knowledge: 03 credits (Philosophy) + Foreign language<br>- Industry knowledge: 14 credits<br>- Specialized knowledge: 28 credits<br>- Scientific research: 15 credits |
| 8 | **Additional knowledge modules for the required fields in Section 4.2** | - Number of modules: 03, total credits: 09 credits<br>- Names of modules (name, code, number of credits)<br>1. Basic Programming, 0118000919, 3 credits<br>2. Analysis and Design of Algorithms, 0101000976, 3 credits<br>3. Discrete Math 1, 0101000921, 3 credits |
| 9 | **Entrance Exam** | 1. Basic Programming<br>2. Discrete Math 1 |
| 10 | **Admission conditions** | - Graduated university diploma from a relevant major.<br>- Have a foreign language level 3/6 (B1) according to the 6-level Foreign Language Competency Framework for Vietnam or equivalent. |

# EDUCATION PROGRAM

Total credits: 60 credits

Training period: 2 years

| No | Module Code | Module name | No of Credits | Obligatory | Elective | Theory | Practice | Pre requisite | Period |
|---|---|---|---|---|---|---|---|---|---|
| **General knowledge 3 credits** | | | | | | | | | |
| 1 | 001395 | Philosophy | 3 | x | | 45 | 0 | | |
| 2 | | Foreign Language | *Self-study to achieve a B2 certificate (level 4/6) according to the 6-level Foreign Language Competency Framework for Vietnam or equivalent.* | | | | | | |
| *Total: 3 credits (Obligatory 3 credits; Elective: 0 credits)* | | | | | | | | | |
| **Basic knowledge 14 credits** | | | | | | | | | |
| 3 | 001924 | Mathematical basics for information technology | 3 | x | | 30 | 30 | | |
| 4 | 001922 | Scientific research method | 2 | x | | 30 | 30 | | |
| 5 | 001925 | Advanced Artificial Intelligence | 3 | x | | 30 | 30 | | |
| 6 | 001926 | Advanced analysis and design of algorithms | 3 | | x | 30 | 30 | | |
| 7 | 001927 | Advanced operating system | 3 | | x | 30 | 30 | | |
| 8 | 001928 | Advanced computer architecture | 3 | | x | 45 | 0 | | |
| 9 | 001929 | Free and open-source software | 3 | | x | 30 | 30 | | |
| 10 | 001937 | Information search system | 3 | x | | 30 | 30 | | |
| *Total: 14 credits (Obligatory 11 credits; Elective: 3 credits)* | | | | | | | | | |
| **Specialized knowledge 28 credits** | | | | | | | | | |
| 11 | 001930 | Information technology project management | 3 | x | | 30 | 30 | | |
| 12 | 001932 | Cybersecurity Policy and Governance | 3 | x | | 30 | 30 | | |
| 13 | 001934 | Advanced Database | 3 | | x | 30 | 30 | | |
| 14 | 001935 | Advanced machine learning | 3 | | x | 30 | 30 | | |
| 15 | 001936 | Multimedia data processing | 3 | | x | 30 | 30 | | |

| No | Module Code | Module name | No of Credits | Obligatory | Elective | Theory | Practice | Pre requisite | Period |
|---|---|---|---|---|---|---|---|---|---|
| 16 | 001940 | Natural language processing | 3 | | x | 30 | 30 | | |
| 17 | 001941 | Big data mining | 3 | x | | 30 | 30 | | |
| 18 | 001943 | Multimedia database | 3 | | x | 30 | 30 | | |
| 19 | 001944 | Geographic information system | 2 | | x | 30 | 30 | | |
| 20 | 001945 | Suggestion system | 3 | | x | 30 | 30 | | |
| 21 | 001950 | Blockchain technology | 3 | x | | 30 | 30 | | |
| 22 | 001933 | Digital transformation | 3 | x | | 30 | 30 | | |
| 23 | 001954 | Decision support system | 3 | | x | 30 | 30 | | |
| *Total: 28 credits (Obligatory: 15 credits; Elective: 13 credits)* | | | | | | | | | |
| **Graduation module** | | | | | | | | | |
| 24 | | Internship | **6** | x | | | | | |
| 25 | 001951 | Graduation project | **9** | x | | | | | |
| *Cộng: 15 credits (Obligatory: 15 credits; Elective: 0 credits)* | | | | | | | | | |
| | | **Total** | **60** | **44** | **16** | | | | |

The program is built and is based on the references of many institutions that have specialized in Information Technology such as:

- Can Tho University-Master program in Information Technology (in Vietnamese) (https://gs.ctu.edu.vn/kctdt2020/ctdt/8480201.pdf)
- University of Information Technology - Vietnam National University, Ho Chi Minh City, Master program in Information Technology (in Vietnamese) (https://www.uit.edu.vn/dao-tao-thac-si-cong-nghe-thong-tin)

## A. MATRIX RELATIONSHIP BETWEEN TRAINING OBJECTIVES AND GRADUATE PERFORMANCE STANDARDS

| Training Objectives (5) | Graduate Performance Standards (6) | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | *Knowledge (6.1)* | | | | *Skills (6.2)* | | *Level of self-control and personal responsibility (6.3)* | *Foreign Language (6.4)* |
| | **a** | **b** | **c** | **d** | **a** | **b** | **a** | |
| **a** | 3 | | | | | | 3 | 3 |
| **b** | | 3 | | 3 | | | 2 | |
| **c** | | | 3,4,5 | | 3 | 3 | 3 | 3 |
| **d** | | 2 | 3 | 3 | 3 | 3 | | |
| **e** | | | 4 | 3 | 3 | 3,4,5,6 | | 3 |

**B. MATRIX RELATIONSHIP BETWEEN TRAINING MODULES AND GRADUATE PERFORMANCE STANDARDS**

| Module | | | Graduate Performance Standards (6) | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | *Knowledge (6.1)* | | | | *Skills (6.2)* | | *Level of self-control and personal responsibility (6.3)* | *Foreign Language (6.4)* |
| | | | **a** | **b** | **c** | **d** | **a** | **b** | | |
| **General knowledge** | | | | | | | | | | |
| 1 | 001395 | Philosophy | 3 | | | | | | | |
| 2 | | Foreign Language | | | | | | | | 3 |
| **Basic knowledge** | | | | | | | | | | |
| 3 | 001924 | Mathematical basics for information technology | | 3 | | | | | | 3 |
| 4 | 001925 | Advanced Artificial Intelligence | | 3 | | | | | | 3 |
| 5 | 001926 | Advanced analysis and design of algorithms | | 3 | | | | | | 3 |
| 6 | 001927 | Advanced operating system | | 3 | | | | | | 3 |
| 7 | 001928 | Advanced computer architecture | | 3 | | | | | | 3 |
| 8 | 001929 | Free and open-source software | | 3 | | | | | | 3 |
| 9 | 001937 | Information search system | | 3 | | | | | | 3 |
| **Specialized knowledge** | | | | | | | | | | |
| 10 | 001930 | Information technology project management | | | 3 | | 3 | 3 | 3 | 3 |
| 11 | 001932 | Cybersecurity policy and governance | | | 3 | | | | | 3 |
| 12 | 001934 | Advanced Database | | | 3 | | | | | 3 |
| 13 | 001935 | Advanced machine learning | | | 3 | | | | | 3 |
| 14 | 001936 | Multimedia data processing | | | 3 | | | | | 3 |
| 15 | 001940 | Natural language processing | | | 3 | | | | | 3 |
| 16 | 001941 | Big data mining | | | 3 | | | | | 3 |
| 17 | 001943 | Multimedia database | | | 3 | | | | | 3 |
| 18 | 001944 | Geographic information system | | | 3 | | | | | 3 |
| 19 | 001945 | Suggestion system | | | 3 | | | | | 3 |
| 20 | 001950 | Blockchain technology | | | 3 | | | | | 3 |
| 21 | 001933 | Digital transformation | | | 3 | | | | | 3 |
| 22 | 001954 | Decision support system | | | 3 | | | | | 3 |
| 23 | | Internship | | | 3 | | 3 | 3 | 3 | 3 |
| 24 | 001951 | Graduation project | | | 3 | | 3 | 3 | 3 | 3 |
| **Scientific research** | | | | | | | | | | |
| 25 | 001922 | Scientific research method | | | | 3 | | | | 3 |

*Cantho, Date: ……../2022*

**DEAN OF FACULTY** **PRESIDENT OF COUNCIL FOR TRAINING PROGRAM**

**RECTOR**

**Dr. NGUYỄN VĂN QUANG**