

PROGRAM CURRICULUM
INFORMATION TECHNOLOGY

*(Issued under Decision No. 158 /QĐ-UHNCT dated July 23, 07, 2022 of
Rector of Nam Can Tho University)*

Program name: **Information Technology**

Level of education: **Regular university**

Major: **Information Technology Engineer**

Code: **7480201**

Type of education: **Full-time**

1. Description of the training program

1.1. Introduction to the training program

Training Program in Information Technology aims to train Information Technology Engineers to have sufficient knowledge, professional skills, political qualities, ethics, professional manners, and good health to be able to work effectively in fields related to information technology activities.

1.2. General information about the training program

| | |
|----------------------------|--|
| Program Name (Vietnamese) | Công nghệ thông tin |
| Program Name (English) | Information Technology |
| Training industry code | 7480201 |
| Degree schools | Nam Can Tho University |
| Name of diploma | Information Technology Engineer |
| Training Level | University |
| Number of credits required | 150 |
| Forms of training | Regular |
| Duration of training | 4.5 years |
| Subjects of enrollment | High school graduates |
| Rating scale | 10 |
| Graduation requirements | <ul style="list-style-type: none">- Accumulate a sufficient number of modules and the volume of the training program reaches 150 credits;- An overall cumulative GPA of 2.0 or higher;- Meet the standards of English proficiency according to the general regulations of the school.- Meet the standards of Soft skills and professional skills;- Have certificates in Defense-Security Education and Physical Education. |
| Job Placement | <ul style="list-style-type: none">- IT staff in organizations and enterprises; |

| | |
|---------------------------------|--|
| | <ul style="list-style-type: none"> - Specialist in programming, database management, and information systems; - Employees working in the field of IT application in enterprises, organizations, agencies, and departments. |
| Advanced learning | It is possible to continue master's and doctoral studies at home and abroad. |
| Reference program when building | Overseas training programs; Can Tho University's Training Program; |
| Update time | 07/2022 |

1.3 Training Objectives of the Program

1.3.1 General Objectives

- Train human resources with engineer and bachelor degrees with sufficient health, solid knowledge, and professional capacity to meet the social requirements and needs of learners, in accordance with the process of industrialization and modernization of the country.

- Have moral qualities, the ability to self-study, and self-research in order to achieve standards of knowledge and study to improve professional qualifications.

- Train qualified human resources to work at agencies, schools, research institutes, and companies related to the field of information and communication technology

1.3.2 Specific Objectives

M1: Understand and apply the background and in-depth knowledge of the IT field to professional work.

M2: Form professional ideas in IT and develop the ability to manage and administer the process of working steps.

M3: Meet the requirements of professional skills, soft skills from society, working environment and research.

M4: Organize and implement IT professional activities, thereby developing creative capacity at work.

M5: Develop the capacity of administration, environmental management, working personnel.

M6: Forming the ability to self-study and self-study in the professional field, thereby developing corresponding competencies in both life and guiding those around them, thereby changing and improving social life.

2. Training period: 4.5 years

3. Full-course knowledge load: 150 credits (excluding Physical Education and Defense - Security Education modules), distributed as follows:

| BASIC KNOWLEDGE | Obligatory knowledge | Elective knowledge | Total |
|---|-----------------------------|---------------------------|--------------|
| General education knowledge | 34 | 2 | 36 |
| Professional education knowledge | 105 | 9 | 114 |
| - Basic knowledge | 39 | 3 | 42 |

| | | | |
|---|------------|-----------|------------|
| - Specialized knowledge | 62 | | 62 |
| - Graduate internship | 4 | | 4 |
| - Graduation thesis/Alternative courses | | 6 | 6 |
| Total mass | 139 | 11 | 150 |

4. Subjects of enrollment

- Admission is based on the results of the national high school graduation examination or the academic record of studying at the high school level according to a combination of subjects by discipline and admission throughout the country.

5. Training process, graduation conditions

5.1. Training process

- Implement regulations on formal university and college training according to the current credit system and training regulations of Nam Can Tho University.

5.2. Graduation conditions

- Students who complete the training program shall be considered for graduation and recognized for graduation according to article 27 of the training regulations under the credit system.

- Achieve English proficiency according to the general regulations of the university.

- Obtained the Certificate of Defense and Security Education; Physical education; Soft Skills and Professional Skills.

- Assessment of department and module grades shall comply with articles 22 and 23 of the training regulations under the credit system.

- Academic year ranking and graduation ranking shall comply with articles 14 and 28 of the training regulations under the credit system.

6. Program Content

General Education Knowledge: 36 credits

Political theory

| TT | Module code | Module name | Credit number | Theory | Practice | Category |
|--------------|-------------|---|---------------|-----------|----------|----------|
| 1 | 0102000889 | Marxist–Leninist philosophy | 3 | 3 | | OB |
| 2 | 0102000641 | Political economy | 2 | 2 | | OB |
| 3 | 0101000890 | Scientific socialism | 2 | 2 | | OB |
| 4 | 0101000900 | Ho Chi Minh Thought | 2 | 2 | | OB |
| 5 | 0101000869 | History of the Communist Party of Vietnam | 2 | 2 | | OB |
| Total | | | 11 | 11 | | OB |

Humanities and Social Sciences

| TT | Module code | Module name | Credit number | Theory | Practice | Category |
|-----------------|-------------|---------------------|---------------|----------|----------|----------|
| 1 | 0101000891 | General legislation | 2 | 2 | | OB |
| Elective | | | 2 | 2 | | |

| | | | | | | |
|--------------|------------|--------------------|----------|----------|--|----|
| 1 | 0101000881 | General logic | 2 | 2 | | OP |
| 2 | 0102000894 | General psychology | 2 | 2 | | OP |
| Total | | | 4 | 4 | | |

Foreign language

| TT | Module code | Module name | Credit number | Theory | Practice | Category |
|--------------|-------------|-----------------|---------------|-----------|----------|----------|
| 1 | 0101000861 | Basic English 1 | 3 | 3 | | OB |
| 2 | 0101000862 | Basic English 2 | 3 | 3 | | OB |
| 3 | 0101000863 | Basic English 3 | 3 | 3 | | OB |
| 4 | 0101000990 | IT English | 3 | 3 | | OB |
| Total | | | 12 | 12 | | |

Mathematics - Informatics - Natural Sciences

| TT | Module code | Module name | Credit number | Theory | Practice | Category |
|--------------|-------------|--|---------------|----------|----------|----------|
| 1 | 0101000898 | Advanced Math 1 | 3 | 3 | | OB |
| 2 | 0101000883 | Probability theory and mathematical statistics | 3 | 3 | | OB |
| 3 | 0101000896 | Basic informatics | 3 | 2 | 1 | OB |
| Total | | | 9 | 8 | 1 | |

Physical education – Defense and Security education (*)

| TT | Module code | Module name | Credit number | Theory | Practice | Category |
|--------------|-------------|--------------------------------|---------------|----------|----------|----------|
| 1 | 0101000872 | Physical Education 1 | 1 | | 1 | |
| 2 | 0101000873 | Physical Education 2 | 1 | | 1 | |
| 3 | 0101000874 | Physical Education 3 | 1 | | 1 | |
| 4 | 0101000871 | Defense and security education | 8 | 5 | 3 | |
| Total | | | 11 | 5 | 6 | |

(*) Prerequisite modules, not counting overall GPA.

Professional Education Knowledge: 114 credits

Basic Knowledge

| TT | Module code | Module name | Credit number | Theory | Practice | Category |
|----|-------------|-------------------------------|---------------|--------|----------|----------|
| 1 | 0101000919 | Basic programming | 2 | 2 | | OB |
| 2 | 0101000973 | Basic Programming – Practice | 2 | | 2 | OB |
| 3 | 0101000921 | Discrete math 1 | 3 | 3 | | OB |
| 4 | 0101000922 | Discrete Math 2 | 3 | 3 | | OB |
| 5 | 0101000924 | Data structures | 3 | 3 | | OB |
| 6 | 0101000975 | Data Structures – Practice | 1 | | 1 | OB |
| 7 | 0101000976 | Algorithm analysis and design | 2 | 2 | | OB |

| TT | Module code | Module name | Credit number | Theory | Practice | Category |
|-----------------|-------------|---|---------------|-----------|----------|----------|
| 8 | 0101000977 | Algorithm Analysis and Design – Practice | 1 | | 1 | OB |
| 9 | 0101000925 | Databases | 2 | 2 | | OB |
| 10 | 0101000978 | Database – Practice | 1 | | 1 | OB |
| 11 | 0101001698 | Introduction to multimedia | 2 | 2 | | OB |
| 12 | 0101000926 | Computer architecture | 3 | 3 | | OB |
| 13 | | Introduction to Software Engineering | 2 | 2 | | OB |
| 14 | 0101000979 | Operating system principle | 2 | 2 | | OB |
| 15 | 0101000980 | Principles of operating systems – Practice | 1 | | 1 | OB |
| 16 | 0101000981 | Object-oriented programming | 2 | 2 | | OB |
| 17 | 0101000982 | Object-oriented programming – Practice | 2 | | 2 | OB |
| 18 | 0101000983 | Computer networks | 2 | 2 | | OB |
| 19 | 0101000984 | Computer Networks – Practice | 1 | | 1 | OB |
| 20 | 0101000123 | Research methods and writing scientific reports | 2 | 2 | | OB |
| Elective | | | 3 | 3 | | |
| 1 | 0101000923 | Modeling languages | 3 | 3 | | OP |
| 2 | 0101000992 | Graphic engineering | 3 | 3 | | OP |
| 3 | 0101000987 | Information theory | 3 | 3 | | OP |
| Total | | | 42 | 33 | 9 | |

Specialized knowledge

| TT | Module code | Module name | Credit number | Theory | Practice | Category |
|----|-------------|--|---------------|--------|----------|----------|
| 1 | 0101000985 | Analysis and design of information systems | 2 | 2 | | OB |
| 2 | 0101000986 | Information Systems Analysis and Design – Practice | 2 | | 2 | OB |
| 3 | 0101001350 | .NET programming | 2 | 2 | | OB |
| 4 | 0101001351 | .NET Programming – Practice | 2 | | 2 | OB |
| 5 | 0101000993 | Web Programming | 2 | 2 | | OB |
| 6 | 0101000994 | Web Programming – Practice | 2 | | 2 | OB |
| 7 | 0101000998 | Computer network administration | 2 | 2 | | OB |
| 8 | 0101000999 | Computer Network Administration – Practice | 2 | | 2 | OB |

| TT | Module code | Module name | Credit number | Theory | Practice | Category |
|--------------|-------------|---|---------------|-----------|-----------|----------|
| 9 | 0101001000 | Database Management System | 2 | 2 | | OB |
| 10 | 0101001001 | Database Management System – Practice | 1 | | 1 | OB |
| 11 | 0101000995 | Cloud computing | 2 | 2 | | OB |
| 12 | 0101000996 | Cloud Computing – Practice | 1 | | 1 | OB |
| 13 | 0101001077 | Mobile device programming | 2 | 2 | | OB |
| 14 | 0101001078 | Mobile Device Programming – Practice | 1 | | 1 | OB |
| 15 | 0101001699 | Graphic design | 2 | 2 | | OB |
| 16 | 0101001700 | Graphic Design – Practice | 2 | | 2 | OB |
| 17 | 0101001696 | Java Programming | 2 | 2 | | OB |
| 18 | 0101001697 | Java Programming – Practice | 1 | | 1 | OB |
| 19 | 0101001005 | Artificial intelligence | 3 | 3 | | OB |
| 20 | 0101001008 | Open source software development | 2 | 2 | | OB |
| 21 | 0101001009 | Open Source Software Development - Practice | 2 | | 2 | OB |
| 22 | 0101001547 | E-commerce system | 3 | 2 | 1 | OB |
| 23 | 0101000991 | Image processing | 3 | 3 | | OB |
| 24 | 0101001455 | Information security | 2 | 2 | | OB |
| 25 | 0118000997 | Distributed databases | 3 | 3 | | OB |
| 26 | | Blockchain technology | 2 | 2 | | OB |
| 27 | | Blockchain Technology-Practice | 1 | | 1 | OB |
| 28 | | UML modeling language | 2 | 2 | | OB |
| 29 | | UML Modeling Language – Practice | 1 | | 1 | OB |
| 30 | 0101001006 | Project 1 (Base Project - IT) | 3 | | 3 | OB |
| 31 | 0101001007 | Project 2 (IT Major) | 3 | | 3 | OB |
| Total | | | 62 | 37 | 25 | |

Final internship and Graduation thesis course

| TT | Module code | Subject name | Credit number | Theory | Practice | Category |
|----|--|-----------------------|---------------|--------|----------|----------|
| 1 | 0101001012 | Final Internship (IT) | 4 | | 4 | OB |
| 2 | The thesis course divided into 2 groups | | 6 | | 6 | |

| | | | | | | |
|--------------|------------|--|-----------|----------|-----------|----|
| 2.1 | 0101001034 | Group 1 - Graduate thesis course (IT) | 6 | | 6 | OP |
| 2.2 | | Group 2 – Additional study of 2 subjects: | 6 | 3 | 3 | |
| | 0101001017 | Software Management Project | 3 | 3 | | OP |
| | 0101001456 | Software testing | 3 | | 3 | OP |
| Total | | | 10 | | 10 | |

7. Instructional Plan (tentative)

7.1 Semester 1

| TT | Name of course | Credit number | Total period | Number of periods | | Category |
|---------------|--|---------------|--------------|-------------------|----|----------|
| | | | | TC | PC | |
| 1 | Basic English 1 | 3 | 45 | 45 | | OB |
| 2 | <i>Defense and security education(*)</i> | 8 | 165 | 75 | 90 | |
| 3 | <i>Physical Education 1 (*)</i> | 1 | 30 | | 30 | |
| 4 | Marxist–Leninist philosophy | 3 | 45 | 45 | | OB |
| 5 | Basic informatics | 3 | 60 | 30 | 30 | OB |
| 6 | Advanced Math 1 | 3 | 45 | 45 | | OB |
| 7 | Discrete math 1 | 3 | 45 | 45 | | OB |
| Total: | | 15 | | | | |

7.2 Semester 2

| TT | Name of course | Credit number | Total period | Number of periods | | Category |
|---------------|--|---------------|--------------|-------------------|----|----------|
| | | | | TC | PC | |
| 1 | Political economy | 2 | 30 | 30 | | OB |
| 2 | Basic English 2 | 3 | 45 | 45 | | OB |
| 3 | <i>Physical Education 2 (*)</i> | 1 | 30 | | 30 | |
| 4 | Probability theory and mathematical statistics | 3 | 45 | 45 | | OB |
| 5 | Scientific socialism | 2 | 30 | 30 | | OB |
| 6 | General legislation | 2 | 30 | 30 | | OB |
| 7 | Basic programming | 2 | 30 | 30 | | OB |
| 8 | Basic Programming – Practice | 2 | 60 | | 60 | OB |
| 9 | Discrete Math 2 | 3 | 45 | 45 | | OB |
| Total: | | 19 | | | | |

7.3 Semester 3

| TT | Name of course | Credit number | Total period | Number of periods | | Category |
|---------------|--------------------------------------|---------------|--------------|-------------------|----|----------|
| | | | | TC | PC | |
| 1 | Basic English 3 | 3 | 45 | 45 | | OB |
| 2 | <i>Physical Education 3 (*)</i> | 1 | 30 | | 30 | |
| 3 | Ho Chi Minh Thought | 2 | 30 | 30 | | OB |
| 7 | Computer architecture | 2 | 30 | 30 | | OB |
| 8 | Introduction to Software Engineering | 3 | 45 | 45 | | OB |
| 6 | Data structures | 3 | 45 | 45 | | OB |
| 7 | Data Structures – Practice | 1 | 30 | | 30 | OB |
| 8 | Databases | 2 | 30 | 30 | | OB |
| 9 | Database – Practice | 1 | 30 | | 30 | OB |
| | Elective modules | 2 | | | | |
| 1 | General logic | 2 | 30 | 30 | | OP |
| 2 | General psychology | 2 | 30 | 30 | | OP |
| Total: | | 19 | | | | |

7.4 Semester 4

| TT | Name of course | Credit number | Total period | Number of periods | | Category |
|---------------|---|---------------|--------------|-------------------|----|----------|
| | | | | TC | PC | |
| 1 | History of the Communist Party of Vietnam | 2 | 30 | 30 | | OB |
| 5 | Specialized English (IT) | 3 | 45 | 45 | | OB |
| 3 | Algorithm analysis and design | 2 | 30 | 30 | | OB |
| 4 | Algorithm Analysis and Design – Practice | 1 | 30 | | 30 | OB |
| 5 | Operating System Principle | 2 | 30 | 30 | | OB |
| 6 | Principles of Operating System – Practice | 1 | 30 | | 30 | OB |
| 6 | Object-oriented programming | 2 | 30 | 30 | | OB |
| 7 | Object-oriented programming – Practice | 2 | 60 | | 60 | OB |
| | Elective modules | 3 | | | | |
| 1 | Modeling languages | 3 | 45 | 45 | | OP |
| 2 | Graphic engineering | 3 | 45 | 45 | | OP |
| 3 | Information theory | 3 | 45 | 45 | | OP |
| Total: | | 18 | | | | |

7.5 Semester 5

| TT | Name of course | Credit number | Total period | Number of periods | | Category |
|---------------|--|---------------|--------------|-------------------|----|----------|
| | | | | TC | PC | |
| 1 | Computer networks | 2 | 30 | 30 | | OB |
| 2 | Computer Networks – Practice | 1 | 30 | | 30 | OB |
| 3 | Analysis and design of information systems | 2 | 30 | 30 | | OB |
| 4 | Information Systems Analysis and Design – Practice | 2 | 60 | | 60 | OB |
| 5 | Web programming | 2 | 30 | 30 | | OB |
| 6 | Web Programming – Practice | 2 | 60 | | 60 | OB |
| 7 | Database Management System | 2 | 30 | 30 | | OB |
| 8 | Database Management System – Practice | 1 | 30 | | 30 | OB |
| 9 | Introduction to multimedia | 2 | 30 | 30 | | OB |
| Total: | | 16 | | | | |

7.6 Semester 6

| TT | Name of course | Credit number | Total period | Number of periods | | Category |
|---------------|--|---------------|--------------|-------------------|----|----------|
| | | | | TC | PC | |
| 1 | Computer network administration | 2 | 30 | 30 | | OB |
| 2 | Computer Network Administration – Practice | 2 | 60 | | 60 | OB |
| 3 | Artificial intelligence | 3 | 45 | 45 | | OB |
| 4 | UML modeling language | 2 | 30 | 30 | | OB |
| 5 | UML Modeling Language – Practice | 1 | 30 | | 30 | OB |
| 6 | Graphic design | 2 | 30 | 30 | | OB |
| 7 | Graphic Design – Practice | 2 | 60 | | 60 | OB |
| 8 | .NET programming | 2 | 30 | 30 | | OB |
| 9 | .NET Programming – Practice | 2 | 60 | | 60 | OB |
| Total: | | 18 | | | | |

7.7 Semester 7

| TT | Name of course | Credit number | Total period | Number of periods | | Type |
|---------------|--------------------------------------|---------------|--------------|-------------------|----|------|
| | | | | TC | PC | |
| 1 | Cloud computing | 2 | 30 | 30 | | OB |
| 2 | Cloud Computing – Practice | 1 | 30 | | 30 | OB |
| 3 | Project 1 (IT Specialization) | 3 | 90 | | 90 | OB |
| 4 | Java Programming | 2 | 30 | 30 | | OB |
| 5 | Java Programming – Practice | 2 | 60 | | 60 | OB |
| 6 | Mobile device programming | 2 | 30 | 30 | | OB |
| 7 | Mobile Device Programming - Practice | 1 | 30 | | 30 | OB |
| 8 | Information security | 2 | 30 | 30 | | OB |
| Total: | | 15 | | | | |

7.8 Semester 8

| TT | Name of course | Credit number | Total period | Number of periods | | Category |
|---------------|---|---------------|--------------|-------------------|----|----------|
| | | | | TC | PC | |
| 1 | Distributed databases | 3 | 45 | 45 | | OB |
| 2 | Project 2 (IT Major) | 3 | 90 | | 90 | OB |
| 3 | Open-source software development | 2 | 30 | 30 | | OB |
| 4 | Open-source Software Development - Practice | 2 | 60 | | 60 | OB |
| 5 | Blockchain technology | 2 | 30 | 30 | | OB |
| 6 | Blockchain Technology- Practice | 1 | 30 | | 30 | OB |
| 7 | Image processing | 3 | 45 | 45 | | OB |
| Total: | | 16 | | | | |

7.9 Semester 9

| TT | Name of course | Credit number | Total period | Number of periods | | Category |
|----|---|---------------|--------------|-------------------|-----|----------|
| | | | | TC | PC | |
| 1 | Research methods and writing scientific reports | 2 | 30 | 30 | | OB |
| 2 | Graduate Internship (IT) | 4 | 120 | | 120 | OB |
| 3 | E-commerce system | 3 | 60 | 30 | 30 | OB |

| | | | | | | |
|---------------|-----------------------------|-----------|-----|----|-----|----|
| | Elective modules | 6 | | | | |
| 1 | Graduate thesis course (IT) | 6 | 180 | | 180 | OP |
| 2 | Alternative studies | 6 | 135 | 45 | 90 | |
| 2.1 | Software Project Management | 3 | 45 | 45 | | OP |
| 2.2 | Software Testing | 3 | 90 | | 90 | OP |
| Total: | | 15 | | | | |

8. Program Implementation Guide

8.1 For Faculties and Departments

- The Faculty and Department are responsible for reviewing and presiding over the compilation of detailed outlines of modules of basic knowledge of sectors, disciplines, and majors according to the credit volume of this program. Provide lists of textbooks, lectures, and reference materials of all modules to the Library of the university and store them at the Faculty Office. At the beginning of each semester, coordinate with units of the University to implement the training plan on schedule.

- Assign lecturers with master's degrees or higher (same discipline or related major) to teach theoretical modules, and provide detailed module outlines to lecturers to ensure that they follow the general teaching plan of the University.

- The academic advisor team must thoroughly understand the entire credit-based curriculum to guide students to register for modules.

8.2 For Lecturers

- When teachers are assigned to teach one or more modules, it is necessary to carefully study the contents of the detailed module outline to prepare lectures and appropriate teaching facilities and supplies.

- Teachers must prepare all lectures, textbooks, and learning materials and provide them to students to prepare before class.

- Organizing seminars, focusing on organizing group study and guiding students to make essays, projects, and lecturers to determine transmission methods; Giving presentations in class, guiding discussions, solving problems in class, in the lab, and in the lab, and guiding students in harvest writing.

- Pay attention to developing students' self-study and self-research abilities throughout the teaching process and guide internships and practices.

- Attention should be paid to the logic of imparting and acquiring blocks of knowledge, prescribing prerequisite modules of compulsory modules, and preparing teachers to meet the requirements of teaching elective modules.

8.3 For Students

- Consult your academic advisor to select modules to suit your progress. You must study the lesson yourself before going to class to easily absorb the lecture. Adequate class time must be ensured to listen to the lecturer's instructions. Self-discipline in self-study and self-research, at the same time actively participating in group learning, and attending all seminars.

- Proactively and actively exploit resources online and in the school's library to serve self-study, self-research, and graduation projects. Strictly implement regulations on examination, examination, and evaluation.

- Regularly participate in mass and cultural activities to practice communication skills and understanding of society and people.

8.4 Facilities and equipment for teaching and practice, practice

- Theoretical classroom system with traditional equipment, equipped with teaching support tools (projector).

- Computer labs are installed with software for basic informatics training, graphic application informatics, design application informatics, and process simulation applied informatics.

RECTOR

(signed, full name, stamped)

Dr. NGUYEN VAN QUANG