MINISTRY OF EDUCATION AND TRAINING
NAM CAN THO UNIVERSITY

SOCIALIST REPUBLIC OF VIET NAM
Independence – Freedom - Happiness

UNDERGRADUATE PROGRAM

(Issued together with Decision No. /QĐ-ĐHNCT dated / /2025 of The Rector of Nam Can Tho University)

Name of program: **Engineering in Information Technology**

Level: Undergraduate

Major: Information technology

Code: 7480201

Type of education: Full-time

1. Program description

1.1. Introduction to the program

1.2. General information about the program

Name of program	Information Technology
Program code	7480201
Degree-granting institution	Nam Can Tho University
Degree	Engineering in Information Technology
Level	Undergraduate
The number of required credits	**150**
Type of education	Regular
Program duration	4 years
Eligible candidates for admission	High school graduates
Grading scale	10
Graduation requirements	- Accumulate sufficient courses and complete the program requirements with 150 credits; - Cumulative GPA of the entire course is 5.0 or higher; - Meet the output standards of English proficiency according to the regulations of the University - Meet output standards of Soft Skills and Professional Skills - Obtain certificates in National Defense - Security Education and Physical Education
Job opportunities	- IT staff in organizations and businesses

	- Programmer, database manager, information system - IT application specialists in enterprises, organizations, agencies, and departments
Postgraduate study options	Can continue to study for master's and doctorate degrees in VietNam and internationally
Reference program	Overseas training program; Training program of Can Tho University
Update time	04/2025

1.3. Program goals

1.3.1. General goals

PO: Training engineers with specialized knowledge and skills in information technology, soft skills, self-study ability, foreign language ability, thinking ability, autonomy and responsibility, teamwork ability and the ability to start a business and be creative in work, meeting social requirements for information technology globally.

1.3.2. Specific goals

- **PO1:** Learners understand and apply basic and specialized knowledge of the IT field to professional work, forming specialized ideas in IT.
- **PO2:** Learners meet the requirements of professional skills, soft skills, working and research environment, organize and perform professional IT operations.
- **PO3:** Forming the ability to self-study and research in specialized fields, thus developing creativity and entrepreneurial ability, developing management capacity, environmental management, and working personnel, thereby developing related life skills and guiding others, contributing to the improvement of society.

1.4. Student learning outcomes

a. Knowledge

- **SO1:** Apply basic knowledge of political science, law and defense education to cultivate political ethics, professional ethics, practice the sense of national defense and civic responsibility.
- **SO2:** Demonstrate knowledge of natural sciences, especially mathematics, and foundational knowledge of the field to develop analytical thinking in information technology-related problems.
- **SO3:** Apply specialized knowledge of IT to solve real-world problems in the field of IT.

b. Skills

- **SO4:** Use English effectively in communication and IT-related professional contexts in accordance with the output standards set by the Ministry of Education and Training; Use effectively the digital competency standards of a global citizen.
- **SO5:** Apply methods of analysis, design, implementation, and operation of IT systems.
- **SO6:** Apply emerging technologies, particularly artificial intelligence and digital transformation, to improve work efficiency, develop leadership thinking, and foster entrepreneurial abilities.
- **SO7:** Analyze IT-related problems using critical and creative thinking; work independently, collaborate effectively in teams, and evaluate job performance in an IT environment.

c. Capacity for autonomy and responsibility

- **SO8:** Demonstrate adherence to professional ethics and social responsibility in the field of information technology.
- **SO9:** Engage in lifelong learning, stay updated with emerging technology trends, and share technological knowledge within the IT field.

1.5 Teaching and learning methods/strategies and assessment methods

1.5.1. Teaching and learning methods/strategies

The teaching methods are presented in the table below

Methods and form of teaching organization	Purpose
Presentation	- Provide information and new concepts in a systematic and focused manner. - Help learners grasp core content quickly. - Guide learners through clear presentation logic. - Emphasize the focus and connection between issues. - Convey a large amount of information to many people. - Lay the foundation for subsequent discussion and practice.
Discussion	- Create a positive learning environment, enabling learners to actively exchange ideas. - Develop critical thinking, practice logical reasoning skills. - Practice soft skills: Teamwork, communication, listening and responding, confidently presenting ideas in front of a crowd. - Assess the level of understanding.
Assignment	- Help students apply theory to practice, develop problem-solving skills and develop analytical and computational skills. - Teachers detect gaps in students' knowledge to promptly adjust and supplement. - Train self-awareness and discipline, prepare for independent learning and lifelong learning).
Self-study, reading of reference materials	- Expand and deepen knowledge, helping learners access multi-dimensional information, beyond the scope of basic curriculum.

	- Develop ability for independent learning, develop proactive skills in searching, selecting, and processing information, forming lifelong learning ability - Enhance critical thinking, as a basis for group discussion, report writing or problem solving).

1.5.2. Grading scale, form, assessment criteria, and weight of scores

(No.)	(Form)	**%**	(Assessment criteria)	(Maximum score)
1	Attendance	10	Proactivity, level of active preparation for lessons and participation in activities during class. Number of required class attendance.	10
2	Individual assignment	15	Percentage of homework completed and correct.	10
3	Progress assessment	15	According to the answers and grading scale of the test, apply the test forms according to the characteristics of each subject (Essay, multiple choice, oral, thematic report,...).	10
4	Final exam	60	According to the answers and grading scale of the exam, apply the exam forms according to the characteristics of each subject (Essay, multiple choice, oral, thematic report,...).	10

2. Program duration: 4 years

3. Required total credits

Required total credits: 150 credits (excluding the Physical Education and Defense and security education courses), distributed as follows:

Knowledge	Obligatory knowledge	Elective knowledge	Total
General knowledge	**30**	**0**	**30**
Professional knowledge	**94**	**26**	**120**
Fundamental knowledge	40	0	40
Specialized knowledge	50	**16**	**66**
Graduation internship	4	0	4
Graduation thesis/Alternative courses	0	10	10
Total	**124**	**26**	**150**

4. Eligible candidates for admission

Admission is based on the results of the high school graduation exam or the transcript of high school studies according to the combination of subjects by major and nationwide admission. For English-taught programs, applicants must meet the English language entry requirements as stipulated by the university.

5. Curriculum, graduation requirements

5.1. Curriculum

Implement the regulations for regular university and college training according to the credit system and current training regulations of Nam Can Tho University.

5.2. Graduation requirements

- Students who complete the training program will be considered for graduation and recognized as graduating according to Article 27 of the training regulations according to the credit system.

- Achieve English proficiency according to the general regulations of the University. For English-taught programs, applicants must meet the English language output requirements as stipulated by the university.

- Obtained certificates in National Defense-Security Education; Physical Education; Soft Skills and Vocational Skills.

- Evaluation of component scores and course scores is carried out according to Articles 22 and 23 of the training regulations according to the credit system

- Academic year ranking and graduation ranking are carried out according to Articles 14 and 28 of the training regulations according to the credit system

6. Program structure

6.1. General knowledge

No.	Course code	Course name	Number of credits	Theory	Practice	Category
A	Political theory					
1.	0101000889	Marxist-Leninist philosophy	3	3		Required
2.	0101000641	Marxist-Leninist political economy	2	2		Required
3.	0101000890	Scientific socialism	2	2		Required
4.	0101000900	Ho Chi Minh's Thought	2	2		Required
5.	0101000869	History of the Communist Party of Vietnam	2	2		Required
B	Social Sciences and Humanities					

No.	Course code	Course name	Number of credits	Theory	Practice	Category
6.	0101000891	General law	2	2		Required
7.	0101000896	Digital Transformation	2	2		Required
8.	0101000883	Generative Artificial Intelligence Application	2	1	1	Required
	Elective course		2	2		Elective
9.						
10.	0101000921	Management information system	2	2		Elective
11.	0101000898	General Sociology	2	2		Elective
12.	0101000881	General Logic	2	2		Elective
13.	0101000992	Vietnamese cultural foundation	2	2		Elective
C	Foreign languages					
14.	0101000861	Basic English 1	3	3		Exemption for English-taught Programs
15.	0101000862	Basic English 2	3	3		Exemption for English-taught Programs
16.	0101000863	Basic English 3	3	3		Exemption for English-taught Programs
17.	0101000864	Basic English 4	3	3		Exemption for English-taught Programs
18.	0101000990	English for IT	3	3		Required
D	Mathematics - Information Technology - Natural Sciences					
19.	0101000919	Advanced Math 1	3	3		Required
20.	0101000973	Digital Literacy	3	2	1	Required
21.	0101000924	Statistical Probability	3	3		Required
22.	0101000975	Introduction to Computers and Information Technology	1	1		Required
E	Physical education					
23.	0101000872	Physical Education 1 (*)	1		1	Elective

No.	Course code	Course name	Number of credits	Theory	Practice	Category
24.	0101000873	Physical Education 2 (*)	1		1	Elective
25.	0101000874	Physical Education 3 (*)	1		1	Elective
F	National Defense Education					
26.	0101000871	National defense and security education	8		8	

(*) Prerequisite courses, not included in the cumulative GPA calculation

6.2. Professional knowledge

No.	Course code	Course name	Number of credits	Theory	Practice	Category
Fundamental knowledge						
27.	0101000978	Basic programming	2	2	0	Required
28.	0101000987	Basic Programming – Practice	2	0	2	Required
29.	0101000981	Discrete Mathematics 1	3	3	0	Required
30.	0101000982	Discrete Mathematics 2	3	3	0	Required
31.	0101000993	Data structure	3	3	0	Required
32.	0101000994	Data Structures – Practice	1	0	1	Required
33.	0101000979	Algorithm analysis and design	2	2	0	Required
34.	0101000980	Algorithm Analysis and Design – Practice	1	0	1	Required
35.	0101000976	Database	2	2	0	Required
36.	0101000977	Databases – Practice	1	0	1	Required
37.	0101001000	Computer network	2	2	0	Required
38.	0101001001	Computer network – Practice	1	0	1	Required
39.	0101001350	Operating system principles	2	2	0	Required
40.	0101001351	Operating System Principles – Practice	1	0	1	Required
41.	0101000923	Computer architecture	3	3	0	Required
42.	0101000983	Object Oriented Programming	2	2	0	Required

No.	Course code	Course name	Number of credits	Theory	Practice	Category
43.	0101000984	Object Oriented Programming – Practice	2	0	2	Required
44.	0101001698	Artificial Intelligence	3	3	0	Required
45.	0101001810	Research methods and writing scientific reports	2	2	0	Required
46.	0101001006	Law on IT	2	2	0	Required
Specialized knowledge						
47.	0101002296	Multimedia data	2	2	0	Required
48.	0101000985	Information systems analysis and design	2	2	0	Required
49.	0101000986	Thực hành Information Systems Analysis and Design – Practice	2	0	2	Required
50.	0101000998	Principles of Machine Learning	2	2	0	Required
51.	0101000999	Principles of Machine Learning – Practice	1	0	1	Required
52.	0101001699	Web Programming	2	2	0	Required
53.	0101001700	Web Programming – Practice	2	0	2	Required
54.	0101000995	Computer Network Administration	2	2	0	Required
55.	0101000996	Computer Network Administration – Practice	2	0	2	Required
56.	0101001077	Database management system	2	2	0	Required
57.	0101001078	Database Management Systems – Practice	1	0	1	Required
58.	0101001008	Cloud computing	2	2	0	Required
59.	0101001009	Cloud Computing – Practice	1	0	1	Required
60.	0101000997	Mobile device programming	2	2	0	Required
61.	0101001007	Mobile Programming – Practice	1	0	1	Required

No.	Course code	Course name	Number of credits	Theory	Practice	Category
62.	0101001787	UML modeling language	2	2	0	Required
63.	0101002072	UML Modeling Language – Practice	1	0	1	Required
64.	0101002070	Python Programming	2	2	0	Required
65.	0101002071	Python Programming – Practice	1	0	1	Required
66.	0101002162	Data Mining	2	2	0	Required
67.	0101002163	Data Mining – Practice	1	0	1	Required
68.	0101001005	Information security and safety	2	2	0	Required
69.	0101002313	Image processing	2	2		Required
70.	0101002314	Image Processing – Practice	1		1	Required
71.	0101001456	Computer Vision	2	2	0	Required
72.	0101001617	Computer Vision - Practice	1	0	1	Required
73.	0101001017	Project 1	3	0	3	Required
74.	0101001034	Project 2	3	0	3	Required
75.	0101001784	Practical Training	1	0	1	Required
Elective course of specialized knowledge 1						
76.	0101000123	Information technology project management**	2	2	0	Elective
77.	0101001012	Graphic design**	1	1	0	Elective
78.	0101001013	Graphic Design – Practice**	1	0	1	Elective
79.	0101002162	WPF Programming***	2	2	0	Required
80.	0101002163	WPF Programming - Practice ***	1	0	1	Required
81.	0101002070	E-commerce system***	2	2	0	Required
82.	0101002071	E-commerce Systems – Practice***	1	0	1	Required

No.	Course code	Course name	Number of credits	Theory	Practice	Category
83.	0101001002	Data Analysis***	2	2	0	Elective
84.	0101002330	Data Analysis - Practice ***	1	0	1	Elective
85.	0101002319	.NET Programming***	2	2	0	Elective
86.	0101002320	.NET Programming – Practice***	1	0	2	Elective
87.	0101001785	Software testing	2	2	0	Elective
88.	0101002327	Software Testing – Practice	1	0	1	Elective
Graduation internship						
89.	0101000991	Final Internship IT	4	0	4	Required
Graduation thesis/Alternative courses						
90.	0101001547	Graduation thesis IT	10	0	10	Elective
Alternative courses						
91.	0101002166	Blockchain Technology	2	2	0	Elective
92.	0101002666	Blockchain Technology – Practice	1	0	1	Elective
93.	0101002346	Open source software development	2	2	0	Elective
94.	0101002347	Open source software development – Practice	1	0	1	Elective
95.	0101002342	Java Programming	2	2	0	Elective
96.	0101002343	Java Programming - Practice	2	0	2	Elective

(**) Elective courses currently used for both the standard programs and the English-taught programs.

(***) Elective courses currently used for the English-taught programs only.

7. Tentative teaching plan for standard programs

7.1. Semester 1

(No.)	Course name	Number of credits	Total periods	Class periods		Category
				Theory	Practice	
	Required Courses					
1	Marxist-Leninist philosophy	3	45	45	0	Required
2	Digital Transformation	2	30	30	0	Required
3	Physical Education 1	1	30	0	30	Required
4	Digital Literacy	3	60	30	30	Required
5	Advanced Math 1	3	45	45	0	Required
6	Discrete Mathematics 1	3	45	45	0	Required
7	Introduction to Computers and Information Technology	1	15	15	0	Required
8	Generative Artificial Intelligence Application**	2	45	15	30	Required
	Total	**17**				
	Elective courses	**0**				
9	General Sociology	2	30	30	0	Elective
10	Vietnamese cultural foundation	2	30	30	0	Elective
	Total	**17**				

Note: Courses marked with ** are currently selected for the current course

7.2. Semester 2

No.	Course name	Number of credits	Total periods	Class periods		Category
				Theory	Practice	
1	English for IT	3	45	45	0	Required
2	Physical Education 2 (*)	1	30	0	30	Required
3	National defense and security education (*)	8	165	0	165	Required
5	Basic programming	2	30	30	0	Required
6	Basic programming - Practice	2	60	0	60	Required
7	Discrete Mathematics 2	3	45	45	0	Required
8	General law	2	30	30	0	Required

No.	Course name	Number of credits	Total periods	Class periods		Category
				Theory	Practice	
	Total	**12**				
	Elective courses	**0**				
	Total	**12**				

7.3. Semester 3

No.	Course name	Number of credits	Total periods	Class periods		Category
				Theory	Practice	
1	Computer architecture	3	45	45	0	Required
2	Physical Education 3 (*)	1	30	0	30	Elective
3	Scientific socialism	2	30	30	0	Required
4	Data structure	3	45	45	0	Required
5	Data Structures – Practice	1	30	0	30	Required
6	Database	2	2	2	0	Required
7	Databases – Practice	1	30	0	30	Required
8	Object Oriented Programming	2	30	30	0	Required
9	Object Oriented Programming – Practice	2	60	0	60	Required
10	UML modeling language	2	30	30	0	Required
11	UML Modeling Language – Practice	1	30	0	30	Required
	Total	**19**				
	Elective courses	**0**				
	Total	**19**				

7.4. Semester 4

No.	Course name	Number of credits	Total periods	Class periods		Category
				Theory	Practice	
1	Ho Chi Minh Thought	2	30	30	0	Required
2	Statistical Probability	3	45	45	0	Required
3	Operating system principles	2	30	30	0	Required

No.	Course name	Number of credits	Total periods	Class periods		Category
				Theory	Practice	
4	Operating System Principles – Practice	1	30	0	30	Required
5	Algorithm analysis and design	2	30	30	0	Required
6	Algorithm Analysis and Design – Practice	1	30	0	30	Required
7	Web Programming	2	30	30	0	Required
8	Web Programming – Practice	2	60	0	60	Required
9	Law on IT	2	30	30	0	Required
	Total	**17**				
	Elective courses	**5**				
10	Information technology project management***	2	30	30	0	Elective
11	.NET Programming***	2	30	30	0	Elective
12	.NET Programming – Practice***	1	30	0	30	Elective
13	Software testing	2	30	30	0	Elective
14	Software Testing – Practice	1	30	0	30	Elective
	Total	**22**				

7.5. Semester 5

No.	Course name	Number of credits	Total periods	Class periods		Category
				Theory	Practice	
1	Marxist-Leninist political economy	2	30	30	0	Required
2	Artificial Intelligence	3	45	45	0	Required
3	Information systems analysis and design	2	30	30	0	Required
4	Information Systems Analysis and Design – Practice	2	60	0	60	Required
5	Computer network	2	30	30	0	Required
6	Computer network – Practice	1	30	0	30	Required
7	Mobile device programming	2	30	30	0	Required
8	Mobile Programming – Practice	1	30	0	30	Required
9	Python Programming	2	30	30	0	Required

No.	Course name	Number of credits	Total periods	Class periods		Category
				Theory	Practice	
10	Python Programming – Practice	1	30	0	30	Required
	Total	**18**				
	Elective courses	**3**				
11	Data Analysis***	2	30	30	0	Elective
12	Data Analysis - Practice ***	1	30	0	30	Elective
13	Software testing	2	30	30	0	Elective
14	Software Testing – Practice	1	30	0	30	Elective
	Total	**21**				

7.6. Semester 6

No.	Course name	Number of credits	Total periods	Class periods		Category
				Theory	Practice	
1	History of the Communist Party of Vietnam	2	30	30	0	Required
2	Data Mining	2	30	30	0	Required
3	Data Mining – Practice	1	30	0	30	Required
4	Multimedia data	2	30	30	0	Required
5	Principles of Machine Learning	2	30	30	0	Required
6	Principles of Machine Learning – Practice	1	30	0	30	Required
7	Image processing	2	30	30	0	Required
8	Image Processing – Practice	1	30	0	30	Required
9	Information security and safety	2	30	30	0	Required
10	Practical Training	1	30	0	30	Required
11	Project 1	3	90	0	90	Required
	Total	**19**				
	Elective courses	**3**				
12	E-commerce system***	2	30	30	0	Elective
13	E-commerce Systems – Practice***	1	30	0	30	Elective
14	Software testing	2	30	30	0	Elective

No.	Course name	Number of credits	Total periods	Class periods		Category
				Theory	Practice	
15	Software Testing – Practice	1	30	0	30	Elective
	Total	**22**				

7.7. Semester 7

No.	Course name	Number of credits	Total periods	Class periods		Category
				Theory	Practice	
	Required Courses					
1	Cloud computing	2	30	30	0	Required
2	Cloud Computing – Practice	1	30	0	30	Required
3	Computer Vision	2	30	30	0	Required
4	Computer Vision - Practice	1	30	0	30	Required
5	Computer Network Administration	2	30	30	0	Required
6	Computer Network Administration – Practice	2	60	0	60	Required
7	Database management system	2	30	30	0	Required
8	Database Management Systems – Practice	1	30	0	30	Required
9	Project 2	3	90	0	90	Required
	Total	**16**				
	Elective courses	**5**				
10	Graphic design**	1	15	15	0	Elective
11	Graphic Design – Practice**	1	30	0	30	Elective
12	WPF Programming ***	2	30	30	0	Elective
13	WPF Programming - Practice ***	1	30	0	30	Elective
	Total	**21**				

7.8. Semester 8

No.	Course name	Number of credits	Total periods	Class periods		Category
				Theory	Practice	
	Required Courses					

No.	Course name	Number of credits	Total periods	Class periods		Category
				Theory	Practice	
1	Research methods and writing scientific reports	2	45	15	30	Required
2	Final Internship IT	4	120	0	120	Required
	Total	**6**				
	Elective courses	**10**				
3	Graduation Thesis IT	10	300	0	300	Elective
	Study alternative course for graduation thesis	10				
4	Blockchain Technology	2	30	30	0	Elective
5	Blockchain Technology – Practice	1	30	0	30	Elective
6	Open source software development	2	30	30	0	Elective
7	Open source software development – Practice	1	30	0	30	Elective
8	Java Programming	2	30	30	0	Elective
9	Java Programming - Practice	2	60	0	60	Elective
	Total	**16**				

(*) If students do not meet the requirements to complete their graduation thesis, they will take alternative courses

8. Guidelines for Program Implementation

8.1 Faculties and departments

- The Faculty of Professional Management is responsible for reviewing and developing detailed course outlines for fundamental, core, and specialized knowledge areas, ensuring the correct credit allocation according to this program. Providing a list of textbooks, lectures and reference materials of all subjects to the School Library and storing them in the Faculty Office. At the beginning of each semester, coordinate with the units of the University to implement the training plan on schedule. For English-taught programs, all materials must be prepared in English.

- Assign lecturers with a master's degree or higher (in the same or related field) to teach theoretical courses, provide detailed course outlines to lecturers to ensure compliance with the University's general teaching plan. For English-taught programs, all materials must be prepared in English.

- The academic advisor team must thoroughly understand the entire credit-based training program to guide students in registering for courses. For English-taught programs, all materials must be prepared in English.

8.2 Lecturers

- When a lecturer is assigned to teach one or more courses, he/she must carefully study the detailed course outline to prepare lectures and appropriate teaching aids and tools. For English-taught programs, all materials must be prepared in English.

- Lecturers must fully prepare lectures, textbooks, learning materials and provide them to students to prepare before class. For English-taught programs, all materials must be prepared in English.

- Organizing seminars, focusing on organizing group study and guiding students to write essays and projects. Lecturers determine teaching methods; give presentations in class, guide discussions, solve problems in class, in the practice room, in the laboratory and guide students to write reports. For English-taught programs, all materials must be prepared in English.

- Pay attention to developing students' self-study and research abilities throughout the teaching and internship and practice process.

- It is necessary to pay attention to the logic of conveying and acquiring knowledge blocks, specifying prerequisite courses of Required courses and preparing lecturers to meet the requirements of teaching elective courses.

8.3 Students

- Must consult with academic advisor to choose courses that are suitable for progress. Must study the lesson before class to easily absorb the lecture. Must ensure enough class time to listen to the lecturer's lecture instructions. Be proactive in self-study and self-research, and actively participate in group study, attend all seminars.

- Proactively and actively exploit resources on the Internet and in the University library to serve self-study, self-research and graduation project. Strictly implement regulations on examination, testing and evaluation.

- Regularly participate in group activities, literature, sports and arts to practice communication skills, understanding of society and people.

8.4 Facilities and equipment for teaching, practice, and internships

- Theoretical classroom system with traditional equipment, equipped with additional teaching aids (projector).

- The computer lab is installed with software for basic computer training, computer graphics applications, computer design applications, and computer simulation applications, all software used is installed in the English language version.

RECTOR	DEPARTMENT OF ACADEMIC AFFAIRS	FACULTY