

**UNIVERSITY-LEVEL TRAINING PROGRAMS**  
**BACHELOR IN COMPUTER SCIENCE**

*(Issued under Decision No.: 144 /QD-ĐHNCT dated February 21 2021 of  
Rector of Nam Can Tho University)*

Program name: **Computer Science Training program**

Education level: **Full-time**

Education: **Computer Science**

Code: **7480101**

Type of training: **Official**

**1. Description of the training program**

**1.1. About the training program**

Computer Science training program is designed to train students comprehensively in terms of professional knowledge, skills, and ethical qualities, in which emphasis is placed on self-study, practice and a sense of social responsibility, ensuring students' well-being. Students get active learning and hands-on experience. Graduates meet the requirements of knowledge and professional qualifications of employers and society for Computer Science.

**1.2. General information about the training program**

Program name (Vietnamese)	Computer science
Program Name (English)	Computer Science
Training code	7480101
Degree School	Nam Can Tho University
Diploma title	Bachelor of Computer Science
Degree training	University
Number of credits required	133
Forms of training	Formal
Training time	4 years
Enrollment object	High school graduates
Assessment scale	4
Graduation conditions	<ul style="list-style-type: none"><li>- Accumulate enough courses and the volume of the training program reaches 133 credits;</li><li>- The cumulative GPA of the whole course is 5.0 or higher;</li><li>- Meet the output standards of English and computer skills according to the general regulations of the University;</li><li>- Meet the output standards of soft skills and occupational skills;</li><li>- Possess a Certificate of Defense Education and complete the required modules.</li></ul>

Job positions	<ul style="list-style-type: none"> <li>- Programmer, developer, tester, and intelligent system developer, and systems that recognize and process information from multimedia files, expert in project planning, planning, and master planning Books on developing intelligent systems and processing information mining from multimedia data and applications, analysis, design, installation, administration, maintenance of intelligent systems or processing information mining. Multimedia information meets different applications in offices, companies, schools,...</li> <li>- Computer science researchers and applications in institutes, research centers and universities and colleges. Lecturer in computer science-related subjects at universities, colleges, professional high schools,...</li> <li>- Working in manufacturing companies, outsourcing smart systems in the country as well as abroad. Work at consulting companies in proposing solutions, building and maintaining intelligent systems or working in the information technology department.</li> </ul>
Learning to improve level	It is possible to continue studying for a master's degree at home and abroad. Further study a second technical university or master's degree in Software Engineering, Computer Science, Information Technology, Information Systems, Communications and Computer Networks...
Reference programs	Undergraduate training program in Computer Science Can Tho University, Can Tho University of Engineering and Technology, Hanoi University of Science and Technology, Ton Duc Thang University.
Update time	02/2021

### 1.3. Training Objectives

#### 1.3.1. General objective

- Training human resources with bachelor's degrees with full health, solid knowledge, and professional capacity to meet social requirements and needs of learners, in line with the process of industrialization and modernity to transform the country.
- Having ethical qualities, the ability to self-study, and self-research in order to set output standards in terms of knowledge, skills, and capacity for autonomy and responsibility.
- Train qualified human resources to work at agencies, institutes, research centers, factories, and companies related to the field of computer science.

#### 1.3.2. Detail goal

**M1:** Understanding and applying the foundational and in-depth knowledge of IT and Computer Science in professional work.

**M2:** Forming professional ideas in Computer Science and developing the capacity to manage and operate the process of working steps in Computer Science.

**M3:** Meet the requirements of professional skills, soft skills from the society, working and research environment in the field of Computer Science .

**M4:** Organizing and implementing professional Computer Science activities, thereby developing creative capacity at work.

**M5:** Developing the capacity of operating, environmental management, and personnel working in the Computer Science industry.

**M6:** Forming the capacity for self-study and self-research in the field of Computer Science expertise, thereby developing the corresponding competencies in both life and guiding those around, thereby changing and improving Social life.

## 2. Training period: 4 years

**3. The total amount of knowledge: 133** credits (excluding the Physical Education and Defense-Security Education modules), distributed as follows:

<b>BLOCK OF KNOWLEDGE</b>	<b>Obligatory knowledge (MD<sup>1</sup>)</b>	<b>Elective knowledge (OP<sup>2</sup>)</b>	<b>Total</b>
<b>General knowledge</b>	<b>34</b>	<b>2</b>	<b>36</b>
<b>Professional knowledge</b>	<b>85</b>	<b>12</b>	<b>97</b>
- Basic knowledge	32	0	32
- Specialized knowledge	34	12	46
- Additional knowledge	5	0	5
- Graduation internship/Graduation thesis/Alternative subjects	14	0	14
<b>total weight</b>	<b>119</b>	<b>14</b>	<b>133</b>

## 4. Subjects of enrollment:

Admission is based on the results of the national high school graduation exam or the high school transcript scores according to the combination of subjects by industry and nationwide admission .

## 5. Training process, graduation conditions

### 5.1. Training process

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

### 5.2. Graduation conditions

- Students who complete the training program will be considered for graduation and recognized for graduation according to Article 27 of the training regulations under the credit system.
- Achieve the level of English and Informatics according to the general regulations of the University (for Informatics, achieve from modules 01 to 06 of the standard of skills in using information technology according to Circular 03/2014/TT-BTTTT)
- Obtaining the Certificate of National Defense-Security Education; Physical education; Soft Skills and Occupational Skills.
- Evaluation of division points and course points shall comply with Articles 22 and 23 of the

<sup>1</sup> Mandatory or Obligatory

<sup>2</sup> Optional or Elective

training regulations according to the credit system.

- Ranking of the academic year and ranking of graduation is done according to Articles 14 and 28 of the training regulations according to the credit system.

## 6. PROGRAM CONTENT

### 6.1. General knowledge:

No	Course code	Course name	No. of Credits	Theory	Practice	Category
<b>A</b>	<b>Political theory</b>		<b>11</b>			
1	000889	Marxist-Leninist philosophy	3	3		OB
2	000641	Marxist-Leninist Political Economy	2	2		OB
3	000890	Socialism Science	2	2		OB
4	000900	Ho Chi Minh's Thought	2	2		OB
5	000869	History of the Communist Party of Vietnam	2	2		OB
<b>B</b>	<b>Humanities and Social Sciences</b>		<b>2+2</b>			
6	000891	General laws	2	2		OB
7	001799	Text and archiving	2	2		OP
8	000656	Communication skills	2	2		OP
9	001141	People and the environment	2	2		OP
<b>C</b>	<b>Foreign Language</b>		<b>9</b>			
10	000861	Basic English 1	3	3		OB
11	000862	Basic English 2	3	3		OB
12	000863	Basic English 3	3	3		OB
<b>D</b>	<b>Math, Informatics, Natural Science</b>		<b>12</b>			
13	000898	Advanced Math 1	3	3		OB
14	000899	Advanced Math 2	3	3		OB
15	000902	General Physics	3	2	1	OB
16	000883	Probability theory and mathematical statistics	3			OB
<b>E</b>	<b>Physical education</b>		<b>3</b>			
17	000872	Physical Education 1 (*)	1		1	CD
18	000873	Physical Education 2 (*)	1		1	CD
19	000874	Physical Education 3 (*)	1		1	CD
<b>F</b>	<b>Defense Education</b>		<b>8</b>			
20	000871	Defense and Security Education (*)	8			CD

(\*) OB: Obligatory courses; OP: Optional courses; CD: Conditional courses, cumulative GPA is not calculated

**6.2. The volume of professional knowledge:**

No	Course code	Course name	No. of Credits	Theory	Practice	Category
<b>Basic knowledge</b>			<b>32</b>			
1	000924	Data structures and algorithms	3	2	1	OB
2	000921	Discrete math	3	3		OB
3	000926	Computer architecture	2	1	1	OB
4	000896	General information	3	2	1	OB
5	000919	Programming techniques	3	2	1	OB
6	000929	Operating system	3	2	1	OB
7	000983	Computer Network	2	1	1	OB
8	000925	Database	3	2	1	OB
9	000981	Object Oriented Programming	3	2	1	OB
10	001005	Artificial intelligence	3	3		OB
11	000989	Scientific research method	2	2		OB
12	001784	Introduction Software Technology	2	2		OB
<b>Specialized knowledge</b>			<b>34+1 2</b>			
13	000990	English for specific purposes	3	3		OB
14	001787	Modeling language UML	2	1	1	OB
15	001786	Software Architecture	2	1	1	OB
16	001788	Software requirements analysis	2	2		OB
17	000991	Image processing	3	2	1	OB
18	001613	Data Mining	2	2		OB
19	001812	Computer vision	3	2	1	OB
20	001000	Database management system	3	2	1	OB
21	000985	Analysis and design of information systems	3	2	1	OB
22	001820	Information technology project management	2	1	1	OB
23	001790	Principles of machine learning	3	2	1	OB
24	001785	Practical project part 1	2	0	2	OB
25	001789	Practical project part 2	2	0	2	OB
26	001798	Practical project part 3	2	0	2	OB
27	001811	XML Technology	2	1	1	OP
28	001792	Knowledge base system	3	2	1	OP
29	001810	Information safety and security	2	1	1	OP
30	001819	Mobile programming	3	2	1	OP
31	000992	Graphic Engineering	3	2	1	OP
32	001796	Natural language processing	2	1	1	OP

No	Course code	Course name	No. of Credits	Theory	Practice	Category
<b>Additional knowledge</b>			<b>5</b>			
33	001813	Suggestion system	3	2	1	OB
34	000847	Ecommerce	2	1	1	OB
<b>Graduation internship</b>			<b>4</b>			
35	001821	Graduate Internship (COMPUTER SCIENCE)	4		4	OB
<b>Graduation thesis/Alternative subjects</b>			<b>10</b>			
36	001034	Graduation Thesis (COMPUTER SCIENCE)	10		10	OP
37	001079	Graduate essay	4		4	OP
38	001008	Open source software development	3	2	1	OP
39	000995	Cloud computing services and infrastructure	3	2	1	OP

## 7. TEACHING PLAN (INTENDED)

### 7.1. Semester 1

TT	Course name	No. of Credits	Total period	Number of periods		Category
				Theory	Practice	
1	Basic English 1	3	45	45		OB
2	Advanced Math 1	3	45	45		OB
3	Marxist-Leninist Philosophy	3	45	45		OB
4	General information	3	60	30	30	OB
5	General Physics	3	60	30	30	OB
6	Physical Education 1*	1	30		30	CD
7	Defense and Security Education*	8	165	75	90	CD
<b>total accumulated credits</b>		<b>15</b>				

### 7.2. Semester 2

TT	Course name	No. of Credits	Total period	Number of periods		Category
				Theory	Practice	
1	Basic English 2	3	45	45		OB
2	Advanced Math 2	3	45	45		OB
3	Marxist-Leninist Political Economy	2	30	30		OB

4	Computer architecture	2	30	15	15	OB
5	Programming techniques	3	60	30	30	OB
6	General law	2	30	30		OB
7	Probability theory and mathematical statistics	3	30	30		OB
8	Physical Education 2	1	30		30	CD
	<b>total accumulated credits</b>	<b>18</b>				

### 7.3. Semester 3

TT	Course name	No. of Credits	Total period	Number of periods		Category
				Theory	Practice	
1	Basic English 3	3	45	45		OB
2	Socialism Science	2	30	30		OB
3	Data structures and algorithms	3	60	30	30	OB
4	Discrete math	3	45	45		OB
5	Database	3	60	30	30	OB
6	Introduction to Software technology	2	30	30		OB
7	Scientific research method	2	30	30		OB
8	Physical Education 3	1	30		30	CD
	<b>total accumulated credits</b>	<b>18</b>				

### 7.4. Semester 4

TT	Course name	No. of Credits	Total period	Number of periods		Category
				Theory	Practice	
1	Ho Chi Minh's Thought	2	30	30		OB
2	Software Architecture	2	30	15	15	OB
3	Computer Network	2	30	15	15	OB
4	Object Oriented Programming	3	60	30	30	OB
5	Analysis and design of information systems	3	60	30	30	OB
6	Practical project part 1	2	60		60	OB
7	Operating system	3	60	30	30	OB
	<b>total accumulated credits</b>	<b>17</b>				

### 7.5. Semester 5

TT	Course name	No. of	Total period	Number of periods	Category
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		Credits		Theory	Practice		
1	History of the Communist Party of Vietnam	2	30	30		OB	
2	Modeling language UML	2	30	15	15	OB	
3	Software request analysis	2	30	30		OB	
4	Artificial intelligence	3	45	45		OB	
5	Database management system	3	60	30	30	OB	
6	Graphic Engineering	Choose 1 course	3	60	30	30	OP
7	Mobile programming						
8	Practical project part 2	2	60		30	OB	
<b>total accumulated credits</b>		<b>17</b>					

### 7.6. Semester 6

TT	Course name	No. of Credits	Total period	Number of periods		Category	
				Theory	Practice		
1	Principles of machine learning	3	60	30	30	OB	
2	Data Mining	2	30	30		OB	
3	English for specific purposes	3	45	45		OB	
4	Natural language processing	Choose 1 course	2	30	15	15	OP
	XML Technology						
5	Knowledge base system	Choose 1 course	3	60	30	30	OP
	Graphic Engineering						
	Mobile programming						
6	Text and archiving outline	Choose 1 course	2	30	30		OP
	Communication skills						
	People and the environment						
7	Practical project part 3	2	60		60	OB	
<b>total accumulated credits</b>		<b>17</b>					

### 7.7. Semester 7

TT	Course name	No. of Credits	Total period	Number of periods		Category
				Theory	Practice	
1	IT project management	2	30	15	15	OB



TT	Course name		No. of Credits	Total period	Number of periods		Category
					Theory	Practice	
2	Information safety and security	Choose 2 courses	2	30	15	15	OP
	XML Technology		2	30	15	15	OP
	Natural language processing						
3	Computer vision		3	60	30	30	OB
4	Suggestion system		3	60	30	30	OB
5	Ecommerce		2	30	15	15	OB
6	Image processing		3	60	30	30	OB
<b>total accumulated credits</b>			<b>17</b>				

### 7.8. Semester 8

TT	Course name		No. of Credits	Total period	Number of periods		Category
					Theory	Practice	
1	Graduation Internship (COMPUTER SCIENCE)		4	120		120	OB
2	Graduate essay	Choose Graduate Thesis (COMPUTER SCIENCE) or 3 alternative modules*	4	120		120	
3	Open source software development		3	60	30	30	
4	Cloud computing services and infrastructure		3	60	30	30	
5	Graduation Thesis (COMPUTER SCIENCE)		10	300		300	
<b>total accumulated credits</b>			<b>14</b>				

(\*) If students are not qualified to do the graduation thesis, they will study alternative modules.

## 8. INSTRUCTIONS FOR IMPLEMENTATION OF THE PROGRAM

### 8.1. For lecturers

- When a lecturer is assigned to teach one or more modules, it is necessary to carefully study the content of the detailed outline of the course to prepare the lecture and appropriate teaching aids and tools.
- Lecturers must fully prepare lectures, textbooks, and study materials and provide them to students to prepare before going to class.

- Organizing Seminar, focusing on organizing group study and guiding students to make essays, projects, lecturers identify methods of transmission; class presentations, guide discussions, solve problems in class, in practice rooms, in laboratories and guide students to write essays.
- Paying attention to developing students' self-study and self-research ability during the course of teaching and guiding practice and practice.
- It is necessary to pay attention to the logic of imparting and absorbing knowledge blocks, specifying prerequisite courses of Obligatory courses, and preparing lecturers to meet the requirements of teaching elective courses.

## **8.2. For students**

- Must consult with the academic advisor to select the course to suit the progress. You must study the lesson yourself before going to class to easily absorb the lecture. Make sure you have enough time in class to listen to the instructor's lecture instructions. Self-discipline in self-study and self-study, and at the same time actively participate in group learning, fully attend Seminar sessions.
- Actively and actively exploit resources online and in the school's library to serve self-study, self-research and graduation projects. Strictly comply with regulations on examination, examination, and evaluation.
- Regularly participate in mass and cultural activities to practice communication skills, understanding about society and people.

## **8.3. For faculties and departmental groups**

- Faculty of professional management is responsible for reviewing, presiding over, and compiling detailed outlines of modules in the basic knowledge of disciplines, branches, and majors according to the number of credits of this program. Provide the list of textbooks, lectures, and reference materials of all courses to the University Library and keep it in 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 a master's degree or higher (in the same discipline or related major) to teach theoretical courses, and provide detailed course outlines for lecturers to ensure that they follow the teaching plan. General of the School.
- The academic advisor team must thoroughly understand the entire credit-based training program to guide students to register for courses.

## **8.4. Facilities and equipment for teaching and practice**

- System of theoretical classrooms with traditional equipment, equipped with additional teaching aids (projectors).
- Computer practice room is installed with software for basic informatics training.
- The practice room for basic and specialized modules is installed with specialized sections for Computer Science.
- The practice room for the basic and specialized modules is provided with specialized equipment and tools for the field of Computer Science.

**RECTOR**

*(signature, full name, stamp)*

**Dr. NGUYEN VAN QUANG**