

## **Department of Computer Science and Engineering**

### **Program of Computer Science and Technology**

#### **I. Introduction**

Computer Science is one of specialties with great developing potential, seeing an acute shortage of advanced talents. With the rapid development of computer technology and the modernization of enterprises, the phenomenon will become more and more serious. The society urgently needs high-quality talents due to the intensive, permeability, interdisciplinary integration, technology innovation, and the fierce competition in the market in current and future periods of time.

#### **II. Objectives**

Computer Science and Engineering will cultivate high-quality science and technology interdisciplinary students with firm professional theory knowledge, mastering the frontier computer system design principle, possessing corresponding research and development ability, and capable of utilizing English and computer technology. These graduates with the corresponding research ability are well competent to the various positions including the design of computer systems, application of computer. They can continue to study for a computer related graduate degree as well. One can serve in computer teaching, scientific research and application in scientific research department, education units, enterprises, business, technology and administrative management, service industry sectors.

### **III. Program Length and Degree Requirement**

Program length: Four years

Degree conferred: Bachelor of engineering

The minimum credit requirement for graduation: 147.5 credits

### **IV. Discipline**

Category: Engineering

Disciplines: Computer science and engineering

Major Disciplines: Computer science and engineering

## **V. Main Courses**

Embedded system and microcomputer principle, Artificial intelligence, Computer networks, Object-oriented analysis and design, Operating systems, Software engineering, Intelligent Robot and so on.

## **VI. Practice-Based Courses**

Practice-Based Courses: industrial practice ( junior year ), Advanced computer science experiment (undergraduate students are engaged in scientific research in professor's laboratory) and academic competitions in domestic and overseas.

## **VII. Course Structure and Credit Requirements**

General Education (GE) Required Courses: 66.5 credits

General Education (GE) Elective Courses: 10 credits

Major Foundational Courses: 18 credits

Major Core Courses: 27 credits

Major Elective Courses: 13 credits

Practice course (including Undergraduate Thesis/Projects, Advanced computer science experiment and Internship): 13 credits

The minimum requirement credits for graduation: 147.5 credits

## VIII. Course Arrangement

**Table 1 Major Required Courses ( Foundational and Core Courses )**

Course Category	Course Code	Course Name	Credit	Lab Credits	Hours/Week	Terms	Instruction language	Prerequisite	Dept.
	CS102	Computer programming fundamentals	3	1	4	Spr.	E	NA	
	CS201	Discrete mathematics	3		3	Fall	E	MA101b MA102b MA103b	
	CS203	Data structures and algorithm analysis	3	1	4	Fall	E	NA	
	CS207	Digital logic	3	1	4	Fall	E	NA	
	MA212	Probability and statistics	3		3	Spr.	E	NA	MATH
	CS202	Computer organization principle	3	1	4	Spr.	E	CS207	
	<b>Sub-total</b>		<b>18</b>	<b>4</b>	<b>22</b>				
<b>Major core courses</b>	CS301	Embedded system and microcomputer principle	3	1	4	Fall	E	CS207	
	CS303	Artificial intelligence	3	1	4	Fall	E	CS102 CS203	
	CS305	Computer networks	3	1	4	Fall	E	CS102	
	CS307	Database principle	3	1	4	Fall	E	NA	
	CS309	Object-oriented programming	3	1	4	Fall	E	CS202 CS203 CS102	
	CS302	Operating systems	3	1	4	Spr.	E	CS301	
	CS304	Software engineering	3	1	4	Spr.	E	CS309	

	CS401	Intelligent Robot	3	1	4	Fall	E	NA	
	CS317	Frontier seminars in computer science and technology I	1		1	Fall	E	NA	
	CS318	Frontier seminars in computer science and technology II	1		1	Spr.	E	NA	
	CS415	Frontier seminars in computer science and technology III	1		1	Fall	E	NA	
	<b>Sub-total</b>		<b>27</b>	<b>8</b>	<b>35</b>				
	CS470	Industrial practice	2	2					
	CS319	Advanced computer science experiment I	1	1					
	CS322	Advanced computer science experiment II	1	1					
	CS417	Advanced computer science experiment III	1	1					
	CS490	Thesis (Graduation project)	8	8	16				
	<b>Total</b>		<b>58</b>	<b>25</b>	<b>73</b>				

**Table 2 Major Elective Courses**

Course Code	Course Name	Credit	Lab Credits	Hours/Week	Terms	Instruction language	Prerequisite	Dept.
CS101	Introduction to Computer	2		2	Fall	E	NA	
EE104	Fundamentals of electric circuits	2		2	Spr.	E	NA	EE
EE201	Analog circuit	3	1	4	Fall	E	NA	EE
EE205	Signals and systems	3	1	4	Fall	E	NA	EE
CS205	C/C++ Programming Design	3		3	Fall	E	NA	
CS209	Computer system design and application	3	1	4	Fall	E	NA	
CS204	Digital Media and Creative programming	3	1	4	Spr.	E	CS102	
CS208	Algorithm design and analysis	3	1	4	Spr.	E	CS102 CS203	
MA206	Mathematical model	3		3	Spr.	E	NA	MATH
EE411	Information theory and coding	2		2	Fall	E	MA212	EE
EE332	Digital system design	3	1	4	Fall	E	NA	EE
MA305	Numerical analysis	3		3	Fall	E	NA	MATH
EE304	Integrated circuit design	3	2	5	Spr.	E	NA	EE
CS306	Data mining	2		2	Spr.	E	NA	
CS308	Computer Vision	3	1	4	Spr.	E	NA	
CS312	Computer graphics	2		2	Spr.	E	NA	
CS314	Internet of things	3	1	4	Spr.	E	CS309 CS305	
CS316	Parallel and Cloud Computing	3	1	4	Spr.	E	NA	
CS403	Cryptography and network security	2		2	Fall	E	NA	
CS405	Machine learning	3	1	4	Fall	E	MA212 MA103b	
CS407	Virtual reality technology	3	1	4	Fall	E	CS102	
CS411	Evolutionary computing	2		2	Fall	E	CS102 CS203	
CS402	Frontier seminars in computer science and technology IV	1		1	Fall	E	NA	
<b>Total</b>		<b>60</b>	<b>13</b>	<b>73</b>				

**Table 3 Overview of Practice-based Courses**

Course Code	Course Name	Credit	Lab Credits	Hours/week	Terms	Instruction language	Prerequisite	Dept.
CS102	Computer programming fundamentals	3	1	4	Spr.	E	NA	
EE201	Analog circuit	4	1	5	Fall	E	NA	EE
EE205	Signals and systems	3	1	4	Fall	E	NA	EE
CS209	Computer system design and application	3	1	4	Fall	E	NA	
CS203	Data structures	3	1	4	Fall	E	NA	
CS207	Digital logic	3	1	4	Fall	E	NA	
CS202	Computer organization principle	3	1	4	Spr.	E	CS207	
CS204	Digital Media and Creative programming	3	1	4	Spr.	E	CS102	
CS208	Algorithm design and analysis	3	1	4	Spr.	E	CS102 CS203	
CS301	Embedded system and microcomputer principle	3	1	4	Fall	E	CS207	
CS303	Artificial intelligence	3	1	4	Fall	E	CS102 CS203	
CS305	Computer networks	3	1	4	Fall	E	CS102	
CS307	Database principle	3	1	4	Fall	E	CS102	
CS309	Object-oriented programming	3	1	4	Fall	E	CS202 CS203 CS102	
CS302	Operating systems	3	1	4	Spr.	E	CS301 (EE319)	
CS304	Software engineering	3	1	4	Spr.	E	CS309	
CS308	Computer Vision	3	1	4	Spr.	E	NA	
EE332	Digital system design	3	1	4	Fall	E	NA	
EE304	Integrated circuit design	3	2	5	Spr.	E	NA	EE
CS314	Internet of things	3	1	4	Spr.	E	CS309 CS305	
CS316	Parallel and Cloud Computing	3	1	4	Spr.	E	NA	
CS401	Intelligent Robot	3	1	4	Fall	E	NA	
CS405	Machine learning	3	1	4	Fall	E	MA212	

							MA103b	
CS407	Virtual reality technology	3	1	4	Fall	E	CS102	
CS470	Industrial practice	2	2					
CS319	Advanced computer science experiment I	1	1					
CS322	Advanced computer science experiment II	1	1					
CS417	Advanced computer science experiment III	1	1					
CS490	Thesis(Graduation project)	8	8					
<b>Total</b>		<b>86</b>	<b>38</b>	<b>114</b>				

**Table 4 Overview of Course Hours and Credits**

	The total period	The total credit	The minimum required credits
General Education (GE) Required Courses	1312	66.5	66.5
General Education (GE) Elective Courses	3144	182.5	10
Major Foundational Courses	384	18	18
Major Core Courses	560	27	27
Major Elective Courses	1136	58	13
Undergraduate Thesis/Projects, Research Projects, Internship	380	13	13
<b>Total</b>	<b>6916</b>	<b>365</b>	<b>147.5</b>