International Master Program of Computer Science & Technology

Confer a degree category: Master of Engineering

Program Code and Name of the First Level Discipline:

0812 Computer Science and Technology

Program Code and Name of the Second Level Discipline:

081201 Computer System Architecture

081202 Computer Software and Theory

081203 Computer Application Technology

Coding Unit：School of Information Science and Engineering

Version: 2017

1. Discipline Overview

The students of the Computer Science and Technology discipline will be able to study computer theories, methods, techniques and engineering applications. The students in this discipline are required to understand the theories, models, methods and techniques on computer architecture, information access and storage, processing and transmission, applications, and etc. The combination of the contents with specific research areas greatly favors the diversity of this discipline. This discipline serves as a good base to other disciplines like Information and Communication Engineering, Control Science and Engineering, Electronic Science and Technology, and Systems Engineering Theory and Methods. Therefore, via various interdisciplinary activities with other disciplines, the research domain of this discipline is expanding continuously.

This discipline has four main research branches: Computer System Architecture, Computer Software and Theory, Computer Application Technology, and Communication System and Information Security. After several decades of development, this discipline in CSU has formed several research directions, including Cloud Computing, Transparent Computing, Internet of Things, Big Data Processing, Computing Optimization Theory and its Applications, Distributed and Parallel Processing, Intelligent Information Processing, Modern Software Engineering and its Applications, Network Computing Theory, Models and Algorithms, Network Security Theory and Technology, Computer Network Theory and Communication Technologies, Computer Architecture, Multimedia Technical Theory and Applications, Database and Information Processing Technology, Semantic Web, Computer Virus attack and defense, Software Engineering, and etc.

2. Major Research Direction

1) Computing Optimization Theory and its Applications
2) Information Integration Technologies and Development of Large-scale Information Systems
3) Enterprise Information and E-Government
4) Intelligent Information Processing
5) Multimedia Technology and Applications
6) Distributed Computing and Parallel Processing
7) Modern Software Engineering
8) Network Computing Theory, Models and Algorithms
9) Computer Network and Communication Technologies
10) Database and Information Processing Technology
11) Web Service and Data Mining Techniques

12) Embedded Systems and Applications

13) Computer Image and Graphic Information Processing Technology

14) Information and Network Security Technology

15) Computer Architecture

16) Computer Access Technology and Storage System

17) Computer Control and Simulation

18) Biology-Information Engineering

19) Semantic Web

20) Computer Virus Attack and Defense

21) Software Engineering

22) Transparent Computing

23) Cloud Computing

24) Internet of Things

25) Big Data Processing

3. Educational Objectives

The aim of this discipline is to train professionals in the domain of Computer Science and Technology. The students should observe disciplines and obey laws; and have an open mind, a strong sense of dedication, innovative spirit, strong moral fiber, and good academic accomplishment. This discipline trains high-level professionals in the research areas including computer science and technology and other related fields; and equips them with a solid foundation in computer science and technology theory. The students will master the knowledge in a systematic manner, and be familiar with the latest trends in the research areas. They should have the ability to solve practical engineering problems and engaged in scientific pursuit independently. Also, they will become competent in research, software development and management in the domain of computer science and technology and other relevant disciplines.

4. Education System and Study Duration

According to the registration administration of Central South University for international graduate students, the minimum length and longest length of study for master students are 3 years and 5 years respectively, including 1-year course study.

5. The Credit Requirements and Course Arrangement

According to the rules, the training program covers 3 years, including course study, and thesis writing. The credits should be more about 26 (including Training Courses), in which degree courses (public courses and core courses) require 12 credits. Credits obtained in each semester cannot be more than 15 credits (excluding training courses).

The *Survey of China and Communicative Chinese* are compulsory courses, which will be arranged by the International Exchange and Cooperation Office and taught in Chinese language.

Degree Courses for Master Students Majoring in Computer Science and Technology

Courses Category	Courses Number	Courses Name	Hours	Credit	Term	Remarks
Public Courses	10000008101	Communicative Chinese	32	2	1,2	Compulsory
	11000008102	Survey of China	32	2		

Core Courses	46081218201	Modern Computer Algorithm	32	2	2	8 credit points
	46081218202	Artificial Intelligence	32	2	2	
	46081218203	Modern Software Engineering	32	2	1	
	46081218204	Advanced Computer Network Technology	32	2	1	
Professional Courses	46081218301	Digital Image Processing and Application	32	2	2	4 credit points
	46081218302	Database Design	32	2	2	
Optional Courses	46081218401	Big Data Processing	32	2	1	Can choose courses in other disciplines, 2 credit points
	46081218402	Advanced Multimedia Computing	32	2	2	
	46081218403	Object-Oriented and Component Technology	32	2	2	
Seminar	00000000505	Academic Exchanges and Academic Report		6	2	Compulsory
Training Courses	00000000602	Thesis Proposal		1	3	Compulsory
	00000000603	Research Training		1	2	

6. Academic exchanges and academic report

In the condition that master students have obtained the necessary credits for those required, optional and training courses, it is encouraged to improve the weight of research discussion and communication in the master program credits. On one hand, it is necessary to give more time to the master students and their supervisors, in order to actively promote the interaction between the students and their supervisors. On the other hand, it is necessary for the international master student to participate high-level academic exchange activities, in order to improve those students' academic performance.

A seminar will be held each year for research discussion and cooperation between foreign graduate students and Chinese graduate students. Each foreign graduate student must submit a full paper to the seminar for getting a certain credit, which is a summary of the research work done. The seminar is open to all the graduate students of the whole departments. Several advisors will be invited to attend the seminar for giving direct tutoring.

For the "academic exchanges and academic report" training course, the specific requirements are as follows.

(1) 3 credits will be given to the "project study", which will be held in the first year. No more than three students can be grouped to do a project, which will be evaluated three times during the whole process. Initially, a project proposal report needs to be submitted. In the mid-term, a report on technical scheme needs to be submitted. Finally, a summary report needs to be reported, and an oral defense is also required. In each of the above three steps, the advisors' supervision is required. The credits will not be given without the advisor's prove.

(2) 1 or 2 credit will be given to those master students, who attend academic reports 10 or 20 times, respectively.

(3) Each master student must submit a paper to the Academic Annual Conference organized by School of Information Science and Engineering. The accepted papers will be counted as 1 credit. 1 credit will be given to those master students, who make an academic presentation in the Academic Annual Conference of our school.

(4) 3 credits will be given to those master students, who attend an academic conference recognized by CCF as class A, B, or C. 1 credit will be given to those master students, who attend other domestic or international conference.

(5) 1 credit will be given to those master students, who attend summer school, organized by domestic or international universities, and obtain course certificate or other verified documents.

7. Thesis Proposal

During the first year, master students under the guidance of their supervisors should identify the direction of thesis research. More than 60 literatures should be reviewed for the thesis topics and each student should write the public report on the direction of thesis research which should have certain academic significance or application value, or have some practical merit on the national economy, education, cultural and social development. The reports on thesis topics are held openly with faculties. The student should fill "*the thesis proposal towards Master's Thesis at Central South University*" in the "*Graduate Education Management Information System*" online. If the report has been adopted, the Graduate School of Management Office will keep it on file. If not, the student should redo it within the next 6 months.

8. Research Training

Research Training is a required course for master students. Each master student should participate in at least one research project. The purpose of this training is to enforce international master students to obtain the right research method, develop their capability to conduct research or special technique. The credit will be given to students once their supervisors approve that they have met the requirement.

9. Progress and Assessment of Thesis

The school reviews the progress of thesis, phased results of the thesis, the problems in the thesis, and the gap between the thesis and the expectation. The examination will be carried out in the early October each year. If the student cannot pass the examination, sanctions will be imposed on the student according to the rules.

10. Regulations for Master of Degree

1) Requirements on Academic Papers

One of the following requirements on academic achievement must be met as a pre-condition for thesis defense.

(1) publish (or accept) a paper in a journal indexed by SCI, EI, or CSCD recognized by School of Information Science and Engineering, CSU;

(2) publish (or accept) a paper in a conference recognized by China Computer Federal (CCF) as Class A, B, or C;

(3) An authorized patent or a patent application that has been accepted；

(4) An excellent paper recognized by the academic annual conference for CSU graduate students.

2) Thesis

The shortest working hours on the master's thesis shall not be less than 12 months. Thesis should be completed independently under the guidance of the supervisor, and in accordance with the school format. Thesis should demonstrate that the student has achieved the requirements of training objectives.

3) Thesis Review, Defense and Degree-granting

Acting on "Degree-granting rules of Central South University", "Rules of dissertation defense of Central South University", "Rules of dissertation review of Central South University"