

# **Master Program (for International Students) in Computer Science and Technology**

With its postdoctoral research station set up as early as in 1999, the discipline enjoys a rather strong comprehensive advantages and has demonstrated great competence in fundamental and applied researches. With its substantially enhanced research abilities, the discipline is drawing close to the national first level as a whole with part of its achievements coming up as the most advanced in the country. Altogether, cheerful results have been achieved in aspects of discipline orientations, academic teams, discipline platform constructions, scientific researches, cultivation of talents and academic exchanges.

## **1.Objectives**

Masters of the discipline are expected to have a sound grasp of the fundamental theories and systematic expertise, and a thorough knowledge of the trend of the field. As masters of modern experimental approaches and skills of the field, they are enabled to carry out academic researches in their orientations. On graduation, they are competent in academic researches related to the computer field, in software developments and analysis of computer application system, and in computer teaching work.

Masters of the discipline are also expected to have a basic knowledge of Chinese history and culture, be capable of reading Chinese scientific literatures in simple Chinese, and communicating with basic skills in the Chinese language. A Survey of China and Comprehensive Chinese are compulsory for international postgraduates, who are required to pass the HSK 3 or equivalent Chinese language test by graduation.

## **2.Orientations**

- 1)Information Security
- 2)Embedded System
- 3)Computer Networks
- 4)Artificial Intelligence
- 5)Cloud Computing

## **3.Duration**

The duration set for master candidates is 2 years full-time. An extension can be applied for by those who cannot finish their courses in time owing to objective causes, yet altogether 4 years is the last due.

## **4.Progression and Requirements**

The minimum sum total credits for international students of master candidates are 26. Master candidates should complete the course work of no less than a total of 24 credits (out of which at least 15 credits should be acquired from degree courses), compulsory sections of no less than 2 credits, complete the thesis (or a research report) independently, and pass the degree thesis defense.

The supervisor responsibility mechanism is adopted in the education for international master candidates. The supervisor is responsible for the student's making of personal study plan, the choice of courses, and the completion of the research report or the degree thesis. The personal study plan cannot be changed without permission of the supervisor.

During the course work, according to specifications by the discipline, the student is to pass examinations held for the degree courses and examinations or assessments held for the other optional courses. Of all the degree courses, common core courses are compulsory; at least one in core courses should be taken. Master candidates are allowed to choose 1~2 inter-disciplinary core courses as their degree courses under supervisors' guidance. However, it is not a substitute for compulsory courses. Degree courses can be taken to substitute non-degree courses, but not vice versa. International students of Chinese language abilities can apply to take courses given in Chinese to local full-time graduate students and acquire corresponding credits if pass.

Those who fail to meet the requirements as described above can fill up the gap by repetition or make-up in the limit of one year. Those who fail to meet the credit requirements even till the end of the due time are to be terminated.

## 5. Curriculum

| Course Categories           |                       | Course Number | Course Name                                  | Class Hours | Credits | Semester | Notes             |
|-----------------------------|-----------------------|---------------|----------------------------------------------|-------------|---------|----------|-------------------|
| Degree Courses              | Common Core Course    | 6900005001    | Comprehensive Chinese                        | 60          | 2       | 1        | Compulsory        |
|                             |                       | 6900005004    | A Survey of China                            | 36          | 2       | 1,2      |                   |
|                             | Major Core Course     | 1100016009    | Matrix Theory                                | 48          | 3       | 1        | At least 1 from 3 |
|                             |                       | 1100016010    | Numerical Analysis                           | 48          | 3       | 1/2      |                   |
|                             |                       | 1100016011    | Stochastic Processes and Applications        | 48          | 3       | 1        |                   |
|                             |                       | 0808126040    | Mobile Computing                             | 32          | 2       | 2        |                   |
|                             |                       | 0808126041    | Embedded Operating System and Application    | 32          | 2       | 2        |                   |
|                             |                       | 0808126042    | The Design of Cryptographic Algorithm        | 32          | 2       | 2        |                   |
|                             |                       | 0808126043    | Software Development Technology              | 32          | 2       | 1        |                   |
|                             |                       | 0808126051    | Big Data Analysis and Mining                 | 32          | 2       | 2        |                   |
| Non-degree Optional Courses | Elective Major Course | 0808127039    | Frontiers in Algorithms                      | 16          | 1       | 1        |                   |
|                             |                       | 0808127052    | Cloud Computing                              | 16          | 1       | 1        |                   |
|                             |                       | 0808127063    | Foundation of Cryptography                   | 32          | 2       | 2        |                   |
|                             |                       | 0808127064    | Database Technique                           | 32          | 2       | 2        |                   |
|                             |                       | 0808127065    | Computer Graphics                            | 32          | 2       | 2        |                   |
|                             |                       | 0808127066    | Operating System: Structure and Applications | 32          | 2       | 2        |                   |

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|                                   |                             |            |                                                     |    |     |     |                          |
|-----------------------------------|-----------------------------|------------|-----------------------------------------------------|----|-----|-----|--------------------------|
| Non-degree<br>Optional<br>Courses | Elective<br>Major<br>Course | 0808127067 | Mathematical Fundamental of<br>Information Security | 40 | 2.5 | 1   |                          |
|                                   |                             | 0808127068 | Object Oriented Technology                          | 24 | 1.5 | 1   |                          |
|                                   |                             | 0808127082 | Advanced Computer Network<br>and Its Programming    | 16 | 1   | 1   |                          |
|                                   |                             | 0808127084 | Advanced Network Computing                          | 16 | 1   | 1   |                          |
|                                   |                             | 0808127104 | Neural Networks and Machine<br>Learning             | 32 | 2   | 2   |                          |
|                                   |                             | 0808397014 | Data Recovery and Digital<br>Forensics              | 16 | 1   | 1   |                          |
|                                   | Other<br>Elective<br>Course | 6900005005 | Chinese Reading and Writing                         | 32 | 2   | 1/2 |                          |
|                                   |                             | XX0004XXXX | High-Level International<br>Courses                 | /  | /   | 1/2 |                          |
| Compulsory Section                |                             | 6400006003 | Academic Activities                                 | 0  | 1   | 1,2 | Compulsory<br>at least 5 |
|                                   |                             | 6900006001 | Chinese Proficiency<br>Assessment                   | 60 | 0   | 1,2 | Compulsory               |
|                                   |                             | XX00025XXX | Elective Competence<br>Development Courses          | 0  | 1   | 1,2 |                          |

Directions: All courses, except for the Chinese ones specified by the requirements, are totally given in English.

## 6. Compulsory Sections

The compulsory sections for international students of master candidates include three parts, a candidate is required to complete the following aspects:

1) Elective Competence Development Courses: through introducing the academic cutting edge knowledge, culture, arts and sports, etc, such courses are given to improve the master candidates' comprehensive competence. A candidate should take at least one course and get one credit after assessment.

2) Academic Activities: to enliven academic atmosphere and to further and broaden master candidates' scope of knowledge, one should attend at least five academic lectures within and out of UESTC, and fill in the Academic Activities Registration Form and get the official stamp upon attendance. One credit can be granted to the candidate when he/she succeeds in completing the above procedures.

3) Chinese Proficiency Assessment: The Ministry of Education requires the Chinese language ability of international graduates' to reach the level 3 based on the International Chinese Proficiency Standards at the time of graduation. Master's/doctoral students are required to undergo a Chinese assessment level 3 during their stay at the university, and those who meet the requirements are eligible to apply for their graduation defense. Chinese Proficiency Assessment is accredited by School of International Education.

## 7. Degree Thesis

Degree thesis is a comprehensive reflection of a master candidate's scientific research ability, basic theoretical level and mastery of professional knowledge, and is an important basis for degree conferring. Master candidates should complete their thesis independently under the guidance of their supervisors. The writing of thesis should be carried out in accordance with UESTC Graduate Dissertation(Thesis) Writing Standards; The application, review, defense and degree conferment of thesis shall refer to UESTC Regulations for Postgraduate Degree Conferring.

## 计算机科学与技术 来华留学硕士培养方案

电子科技大学“计算机科学与技术”于 1999 年建成一级学科博士后流动站，本学科已形成强有力的基础研究和应用研究能力，具有较强的学科综合优势。学科研究水平和研究能力大幅度提升，整体接近国内一流水平，部分研究方向达到国内先进水平。在学科方向、学术团队、学科平台、科学研究、人才培养、学术交流等方面取得了突出的成绩。

### 1.培养目标

硕士学位获得者应具有本学科坚实的基础理论、系统的专业知识，了解本学科主要的技术发展状况，掌握本学科的现代实验方法和技能。在所学专业方向上，具有从事学术研究工作的能力。毕业后能胜任与计算机领域相关的学术研究、计算机应用系统的软件开发与分析，以及计算机领域教学工作。

硕士学位获得者还应对中国的历史与文化有初步的了解，能阅读简单的中文科技文献，并具有简单的汉语对话能力。留学研究生必修中国概况和综合汉语等课程，毕业时须通过《国际汉语能力标准》三级水平考试或通过同等难度的汉语水平考试。

### 2.研究方向

1. 信息安全
2. 嵌入式系统
3. 计算机网络
4. 工智能
5. 云计算

### 3.培养方式与学习年限

攻读硕士学位者，学习年限为两年。若因客观原因不能按时完成学业者，可申请适当延长学习年限，但最长学习年限不超过四年。

### 4.学分与课程学习基本要求

总学分要求不低于 26 学分，课程总学分不低于 24 学分，其中学位课不低于 15 学分；必修环节不低于 2 学分。开展学位论文工作，撰写一篇学位论文，通过答辩。

留学研究生培养实行导师负责制。导师负责指导研究生制定个人培养计划、选课、开展学位论文工作。

课程学习期间，应通过本专业规定的学位课程考试，以及其他选修课程的考试或考查。学位课中，公共基础课为必修课，基础课至少选修 1 门。允许在导师指导下跨学科选修 1~2 门学位课作为本学科的学位课，但不可替代必修课。学位课可替代非学位课，但非学位课不能替代学位课。有汉语基础者，可申请选修面向国内全日制研究生用中文讲授的专业课程，通过后获得相应学分。

未达到上述要求者，可以在一年内补修或重修有关课程，在规定期限内仍没有达到学分要求者，将被终止学业。

## 5.课程设置

| 课程类别  |            | 课程编号       | 课程名称        | 学时 | 学分  | 开课学期         | 备注                   |
|-------|------------|------------|-------------|----|-----|--------------|----------------------|
| 学位课   | 公共基础课      | 6900005001 | 综合汉语        | 60 | 2   | 1            | 必修                   |
|       |            | 6900005004 | 中国概况        | 36 | 2   | 1,2          |                      |
|       | 专业基础课      | 1100016009 | 矩阵理论        | 48 | 3   | 1            | 第 1 组，<br>必须选 1- 3 门 |
|       |            | 1100016010 | 数值分析        | 48 | 3   | 1/2          |                      |
|       |            | 1100016011 | 随机过程及应用     | 48 | 3   | 1            |                      |
|       |            | 0808126040 | 移动计算技术      | 32 | 2   | 2            |                      |
|       |            | 0808126041 | 嵌入式操作系统及应用  | 32 | 2   | 2            |                      |
|       |            | 0808126042 | 密码算法设计      | 32 | 2   | 2            |                      |
|       |            | 0808126043 | 软件开发技术      | 32 | 2   | 1            |                      |
|       |            | 0808126051 | 大数据分析与管理    | 32 | 2   | 2            | 全英文，<br>中外共选         |
| 非学位课  | 专业选修课      | 0808127039 | 前沿算法        | 16 | 1   | 1            |                      |
|       |            | 0808127052 | 云计算         | 16 | 1   | 1            |                      |
|       |            | 0808127063 | 密码学基础       | 32 | 2   | 2            |                      |
|       |            | 0808127064 | 数据库技术       | 32 | 2   | 2            |                      |
|       |            | 0808127065 | 计算机图形学      | 32 | 2   | 2            |                      |
|       |            | 0808127066 | 操作系统结构与应用   | 32 | 2   | 2            |                      |
|       |            | 0808127067 | 信息安全数学基础    | 40 | 2.5 | 1            |                      |
|       |            | 0808127068 | 面向对象编程技术    | 24 | 1.5 | 1            |                      |
|       |            | 0808127082 | 高级计算机网络及其编程 | 16 | 1   | 1            |                      |
|       |            | 0808127084 | 高级网络计算      | 16 | 1   | 1            |                      |
|       |            | 0808127104 | 神经网络与机器学习   | 32 | 2   | 2            |                      |
|       | 0808397014 | 数据恢复与数字取证  | 16          | 1  | 1   | 全英文，<br>中外共选 |                      |
| 其他选修课 | 6900005005 | 汉语阅读与写作    | 32          | 2  | 1/2 |              |                      |
|       | XX0004XXXX | 前沿与交叉课程    | /           | /  | 1/2 |              |                      |
| 必修环节  |            | 6400006003 | 学术活动        | 0  | 1   | 1,2          | 必修<br>不少于 5 次        |
|       |            | 6900006001 | 汉语水平测评      | 60 | 0   | 1,2          | 必修                   |
|       |            | XX00025XXX | 素质教育公选课     | 0  | 1   | 1,2          |                      |

说明：除规定的汉语课程以外，其他课程均采用英语授课。

## 6.必修环节

来华留学硕士研究生必修环节包含三大部分，要求留学研究生分别完成以下内容：

1) 素质教育公选课：以介绍学术前沿知识、中外文化、艺术和体育等为主，加强来华留学研究生综合素质教育，可选修一门，考核通过后获1个学分。

2) 学术活动：为进一步活跃学术气氛并拓宽来华留学研究生的知识面，硕士研究生在校期间须参加5次以上校内外学术报告会，填写学术活动登记表，加盖举办学术活动单位的公章，报所在学院研究生科备案，全部完成后获得1学分。

3) 汉语水平测评：教育部要求留学研究生在毕业时中文能力应至少达到《国际汉语能力标准》三级水平。留学硕士/博士研究生在校期间须接受汉语三级水平测评，达到要求者方可申请毕业论文答辩。由国际教育学院进行水平认定。

## **7.学位论文**

学位论文是对研究生科研能力、基础理论水平及专门知识掌握程度的综合反映，是学位授予的重要依据。研究生应在导师指导下独立完成学位论文。学位论文的撰写应按照《电子科技大学研究生学位论文撰写格式规范》执行；学位论文的答辩申请、评阅、答辩与学位授予应按照《电子科技大学研究生学位授予实施细则》的规定执行。