

信息与通信工程学科 外国留学生（硕士研究生）培养方案

Information and Communication Engineering Training Program for Foreign Students (Master Degree Candidate)

一、学科简介

信息与通信工程是研究信息处理与信息交互的理论、方法、技术及其工程应用的学科。该学科包含通信与信息系统、信号与信息处理两个二级学科。该专业是一个基础知识面宽、应用领域广阔的综合专业性，涉及认知无线通信、网络信息处理、物联网技术、图像与信号处理、通信电路设计等众多高技术领域。培养学生拥有信息与通信工程专业的知识和技能，使之具有从事本学科领域科学研究与开发应用的能力。

I. Discipline Introduction

Information and Communication Engineering is a discipline to study the theories, methods, techniques and engineering applications of information processing and information interaction. This discipline includes the two secondary disciplines, Communication & Information System and Signal & Information Processing. This major is a comprehensive specialty with the broad basic knowledge and application fields. It involves the numerous high-tech fields, such as cognitive radio communication, network information processing, internet of things technology, image and signal processing, communication circuit design and so on. It cultivates the students to own the professional knowledge and skills of Information and Communication Engineering and enables them to have the abilities to work in the science research and applications developments.

二、培养目标

本学科外国留学生硕士研究生学位获得者应具有一定的汉语听、说、读、写能力，对学科研究前沿和发展趋势有较深入的了解，具有较深厚的信息与通信工程学科的基础理论和系统专门的知识，掌握相应的实验技能，熟练运用计算机，至少能熟练使用一个与本学科密切相关的软件，有严谨的科学态度和工作作风与高尚的职业道德，能胜任生产单位和高等院校的研究、开发、教学或技术管理工作。

II. Training Objectives

The foreign students pursuing the master's degree in this major should own the abilities to listen, speak, read, and write in Chinese to some extent. They should have deep understanding for the frontier and development trend of this discipline and own the solid basic theory knowledge and systemic professional knowledge about this discipline. They should grasp the related experimental skills and be good at using the computer. At least, they should be able to operate well a kind of software related to this major. Besides, they should have the rigorous scientific attitude, work style and

the noble professional ethics to work well in the scientific research, development, teaching, or technical management of the enterprises or institutions of higher learning.

三、研究方向

1. 认知无线通信
2. 网络信息处理
3. 物联网技术
4. 图像与信号处理
5. 通信电路设计

III. Research Directions

1. Cognitive radio communication
2. Network information processing
3. Internet of things technology
4. Image and signal processing
5. Communication circuit design

四、学习年限

攻读硕士学位者，学习年限为 2-4 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 4 年。

IV. Period of Schooling

The period of schooling for the students to pursue the master's degree is 2-4 years. If some students cannot finish their studies on time, they can apply to extend the period of schooling. But the longest period cannot be exceed four years.

五、培养方案与课程学习要求

外国留学生（硕士研究生）培养方式：

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（或研究报告），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、开展研究报告或学位论文工作。

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，基础课至少选修一门。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。学位课可代替非学位课，但非学位课不能替代学位课。有汉语基础者，可申请选修面向学校所有全日制研究生用中文讲授的专业课程，通过者获得相应学分。

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

V. Training program and curriculum learning requirements

Cultivation mode for foreign students (Master Degree Candidates):

The students should obtain totally 26 credits at least. The course credits cannot be less than 24 in which the credits of degree courses cannot be less than 15 and the credits of the required part cannot be less than 2. They should carry out the dissertation work, write a dissertation (or research report) and then pass the defense.

The cultivation for the foreign students is the tutor responsibility. The tutor should guide the students to make the personal training plan, choose the courses and develop the research report or the degree dissertation.

During learning, the students must pass the examinations of the required degree courses and the other elective courses. In the degree courses, the public basic courses are required courses. The basic courses should be chosen one at least. Under the guidance of tutors, the students can elect one or two interdisciplinary degree courses as the degree course of their own discipline. The degree courses can replace the non-degree courses, but not vice versa. One owing Chinese basis can apply to any professional course setting for the full time graduate students. After passing the course exam, they can obtain the corresponding credits.

The students who fail to meet the above requirements can make up or retake the relevant courses. However, if they cannot obtain the required credits within the prescribed time, they will get the academic termination.

六、课程设置

VI. Curriculum setting

课程类别 Course Type		课程编号 Course Number	课程名称 Course Name	学时 Class Hour	学分 Credits	开课学期 Semester	备注 Remark
学位课	公共基础课 Public Basic Courses	810101	综合汉语△ Comprehensive Chinese	32	2	1	必修 Required
		810102	中国概况△ Overview of China	32	2	1	
Degree courses	基础课 Basic Courses	811001	随机过程与应用 Stochastic Processes and Applications	48	3	1	至少三选一 Choose one at least
		811002	矩阵理论 Matrix Theory	48	3	2	
		811003	数值分析☆ Numerical Analysis	48	3	2	
	专业基础课	820101	数字通信理论 Digital	40	2.5	2	至少3门,

	Professional Basic Courses		Communication Theory				不低于8学分 At least 3 courses, not less than 8 credits
		820102	无线网络技术 Wireless Network Technology	48	3	1	
		820103	数字信号处理 Digital Signal Processing	40	2.5	1	
		820104	信号检测与估计 Signal Detection and Estimation	40	2.5	1	
非学位选修课 Non-degree Elective Courses	专业选修课 Professional Elective Courses	830101	高级图像处理 Advanced Image Processing	32	2	2	至少4门, 不低于9学分 At least 4 courses, not less than 9 credits
		830103	机器学习 Machine Learning	32	2	2	
		830103	计算机通信和网络 Computer Communications and Networks	32	2	2	
		830104	无线传感器网络 Wireless Sensor Networks	32	2	2	
		830105	现代信号处理 Modern Signal Processing	40	2.5	2	
		830106	模式识别 Pattern Recognition	40	2.5	1	
		830107	软件技术基础 Software Technology Foundation	32	2	1	
		830108	嵌入式系统设计 Embedded System Design	32	2	2	

			Embedded System Design				
		830109	DSP 系统设计 DSP System Design	32	2	2	
		830110	现代数字系统设计 Modern Digital System Design	32	2	2	
		830111	信息论与编码 Information Theory and Coding	32	2	2	
		830112	科技论文阅读与写作 Scientific Paper Reading and Writing	16	1	2	
	其他选修课 Other Elective Courses	840	信息检索与研究 Information Retrieval and Research	16	1	2	
			体育 Sport				
必修环节 Required Part		850101	学术活动 Academic Activities		1		
		850102	学术前沿 Academic Frontiers		1		

说明：1. ☆课程表示采用英语授课。2. “Δ”符号表示该课程硕博共选。

Instruction: 1. ☆ course is taught in English. 2. Δ represents that the course can be selected by master or doctor candidates.

七、必修环节

外国留学生（硕士研究生）必修环节包含两大部分，要求留学研究生分别完成以下内容：

1. 学术活动：为进一步活跃学术气氛并拓宽外国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，有举办学术活动单位的公章为依据，报所在学院研究生管理部门备案，全部完成后获得 1 学分。

2. 学术前沿：外国留学研究生通过阅读与研究课题相关的文献资料，在导师

的安排下做一次相关的学术前沿报告，完成后获得 1 学分。

VII. Required Part

The required part for the foreign students (master candidates) includes two sections. It requires the students to finish the following contents:

1. Academic Activities. In order to further promote the active academic atmosphere and enlarge the scope of knowledge for the foreign students, master candidates need to participant in the academic reports inside and outside the university more than five times during studying. These activities should be written in the form of academic activities with the corresponding official seals as the certificates and keep on the record to the administrative office. After finishing all activities, one credit can be got.

2. Academic Frontiers. The foreign students should read some literatures related to their research projects. Planned by their tutors, they make one academic frontiers report. After finishing it, one credit can be got.

八、学位论文（或研究报告）

（一）基本要求

学位论文或研究报告应有一定的理论意义或实用价值，表明作者掌握本学科的基础理论和专门知识，具有从事科学研究工作和综合运用基础理论和专门知识解决实际问题的能力。研究报告应是专题调研、工程设计或案例分析等。

（二）学位论文（或研究报告）工作

外国留学生（硕士研究生）在导师指导下确定选题后，开展学位论文（或研究报告）工作。

1. 开题报告

（1）开题报告时间。外国留学生（硕士研究生）在确定选题，大量阅读文献的基础上，原则上应在入学的第三学期期末之前完成开题报告。

（2）开题报告方式。开题报告应以报告会的形式，在教（科）研室或以上范围公开举行；开题报告会须有本学科及相近学科 3 位副教授或相当专业技术职称以上的专家组成考评组，并做出考评意见。

（3）开题报告提交。依据《开题报告表》的要求，做开题报告。在开题报告会会，及时完成《开题报告表》，交学院研究生管理部门，以备检查。

（4）若开题报告没能通过，在导师的指导下 3 个月后，方能重新申请开题。2 次开题报告不过者，应终止硕士生的学业。

（5）因正当原因改变选题，须按上述要求申请重新开始做开题报告。

（6）原则上论文开题通过 1 年后方能申请学位论文答辩。

2. 学位论文（或研究报告）工作

学位论文（或研究报告）可用中文或英文撰写；论文应有 800 字左右的中英文摘要，撰写格式参照《西南科技大学研究生学位论文撰写规范》执行。

（三）学位论文（含研究报告）的答辩申请、评阅、答辩与学位授予，参照《西南科技大学授予来华留学生硕士、博士学位工作细则（试行）》的规定执行。

VIII. Dissertation (or Research Report)

(I) Basic requirement

The dissertation or research report should be of theoretical or practical value. It shows that the author grasps the basic theory and special knowledge of the discipline, owns the ability to engage in the work of scientific research and can use the basic theory and professional knowledge comprehensively to solve the practical problems. The research report should be monographic investigation, engineering design or case analysis, and so on.

(II) Dissertation (or Research Report) work

The foreign students conduct the work of dissertation (or research report) after the research topic is determined under the guidance of tutor.

1. Thesis proposal

(1) The time of thesis proposal. The foreign students (master candidates) should complete the thesis proposal before the terminal of the third semester after determining the research topics and reading a lot of literatures in principle.

(2) The mode of thesis proposal. The thesis proposal should be organized as a report conference and be hold publicly in the scope of teaching and research section or larger scope. In the report conference, there should be three associate professors (or experts with the same or higher professional ranks) of this discipline or the similar discipline as the reviewing group to offer the reviewing suggestions.

(3) Submission of thesis proposal. The students should make the thesis proposals according to the requirement of “thesis proposal form”. After the report conference, they should finish the “thesis proposal form” timely and submit it to the corresponding department in the school to prepare for checking.

(4) If the student fails to pass the reviewing of the thesis proposal, he or she will apply to make the proposal again after three months under the guidance of the tutor. If he or she cannot pass the proposal twice, he or she will be terminated to continue to study for the master’s degree.

(5) If the student wants to change the research topic for the valid reason, he or she needs to apply to make the thesis proposal again according to the above requirement.

(6) In principal, the student can apply to defense the dissertation one year after finishing the thesis proposal.

2. Dissertation (or Research Report) work

The students can write the dissertation (or research report) in Chinese or English. In the dissertation (or research report), there should be Chinese and English abstract of 800 words and the writing format should be arranged according to the “Writing Standard of Graduate Thesis of Southwest University of Science and Technology”.

(III) The application of defense, reviewing, defense and degree granting of dissertation (or research report) should be conducted according to the rules of “Detailed Codes for Granting of Master’s Degree and Doctoral Degree for International Students in Southwest University of Science and Technology (trial implementation)”.