

控制科学与工程学科 外国留学生（硕士研究生）培养方案

一、学科简介

控制科学与工程学科是四川省重点建设的一级学科，包含控制理论与控制工程、检测技术与自动化装置、模式识别与智能系统、系统工程等 4 个二级学科。其中控制理论与控制工程学科是四川省优势学科。在检测技术及应用方向上拥有跟踪国际先进研究水平的科研平台和实力。此外，在机器人与机电系统方向上也具有雄厚的科研实力和广泛的学术影响。

1. Discipline introduction

Control science and engineering is a key discipline of Sichuan Province, and it comprises four sub-disciplines: control theory and control engineering, detection technology and automatic equipment, pattern recognition and intelligent system, system engineering, among which control theory and control engineering is one of the dominant disciplines of Sichuan Province. Research in detection technology and its application is facilitated by research team and platform with international advanced level. Besides, researches in robot and mechatronic systems also have a good academic reputation.

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，具有较深厚的控制科学与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，能胜任科研、生产单位和高等院校的研究、开发、教学或技术管理工作。

2. Training objectives

International graduate students should have the capability of listening, speaking, reading and writing in Chinese, an in-depth knowledge of research frontier and trends, a solid theoretical basis and systematic in-depth expertise in control science and engineering. They should master corresponding experimental skills, be skillful in computer operation, and have a good command of at least one software closely related to this discipline. Students should have rigorous scientific attitude and style of work as well as noble professional ethics, which enable them to be competent for research, development, teaching or technical management of scientific research, production units and institutions of higher learning

三、研究方向

1. 检测技术及应用
2. 模式识别及智能系统
3. 控制理论与控制工程
4. 机器人与机电系统
5. 复杂系统与网络测控

3. Research areas

- 1). Detection technology and applications
- 2). Pattern recognition and intelligent system

- 3). Control theory and control engineering
- 4). Robot and mechatronic systems
- 5). Complex system and network measurement and control

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。

4. Period of study

The period of study for graduate students ranges from 2 to 4 years. Those who cannot complete the study due to excusable causes can apply for an extension as long as the total period of study does not exceed 4 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。

5. Training modes and requirements for courses

Training mode for international graduate students:

Total credits should be more than 26, among which total credits of the courses should be no less than 24, including more than 15 credits for degree courses and more than 2 credits for required procedures. Dissertation is required and students must write a thesis (or a research report) and pass the defense before graduation.

Cultivation of the international graduate students is under the tutorial system. The supervisor is responsible for his/her own students' training plan formulation, course selection, as well as research report and dissertation work development.

During the study, the students should pass the tests of the degree courses required by this discipline, as well as formal or informal tests of other selective disciplines. For the degree course, the public basic courses are compulsory and at least one basic course should be selected. The students may take one or two cross-disciplinary degree courses as this discipline's degree course. Degree courses can substitute non-degree course, but not the other way. Students with Chinese foundation can apply to take Chinese-taught specialized courses for all full-time postgraduate

students and gain the credits after passing the courses.

Students, who cannot meet the above claimant, can take a make-up examination or reorder the courses with a year. Those who fail to get enough credits will be terminated with the study.

六、课程设置（样表）

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	810101	综合汉语△	40	2	1	必修
		810102	中国概况△	40	2	2	
	基础课	811001	随机过程与应用	60	3	1	至少三选一
		811002	矩阵理论	60	3	2	
		811003	数值分析☆	60	3	2	
	专业基础课	820101	现代信号处理☆△	40	2	2	
		820102	模式识别☆△	40	2	1	
		820103	系统辨识与建模☆△	40	2	2	
		820104	线性系统理论	40	2	1	
		820105	先进传感与检测技术	40	2	1	
		820106	人工智能☆△	40	2	1	
	非学位选修课	专业选修课	830101	机器人控制技术	40	2	1
830102			信号检测与估计	40	2	2	
830103			数字信号处理	40	2	1	
830104			高级图像处理	40	2	2	
830105			嵌入式系统设计	40	2	2	
830106			现代数字系统设计	40	2	2	
830107			DSP 系统设计	40	2	1	
830108			无线网络基础☆	40	2	1	
830109			无线传感网络☆	40	2	2	
其他选修课		840	信息检索与研究	20	1	1	
		840	体育	20	1	1	
必修环节		850	素质教育选修课		1		
		850102	学术活动		1		

说明：1.☆课程表示采用英语授课。2.“△”符号表示该课程硕博共选。

6. Curriculum

Course Type		Course Number	Course Name	Hours	Credits	Term	Remarks
Degree Courses	Public Basic Courses	810101	Comprehensive Chinese△	40	2	1	required

		810102	Introduction to China △	40	2	2	
	Basic course	811001	Random process and applications	60	3	1	either
		811002	Matrix theory	60	3	2	
		811003	Numerical analysis☆	60	3	2	
	Specialized Basic Courses	820101	Modern signal processing☆△	40	2	2	
		820102	Pattern recognition☆ △	40	2	1	
		820103	System identification and modeling☆△	40	2	2	
		820104	linear system theory	40	2	1	
		820105	Advanced sensor and detection technology	40	2	1	
		820106	Artificial intelligence ☆△	40	2	1	
Non-Degree Courses	Specialized Elective Courses	830101	Robot control theory	40	2	1	
		830102	Signal detection and estimation	40	2	2	
		830103	Digital signal process	40	2	1	
		830104	Advance image process	40	2	2	
		830105	Embedded system design	40	2	2	
		830106	Modern digital system design	40	2	2	
		830107	DSP system design	40	2	1	
		830108	Fundamentals of wireless network☆	40	2	1	
		830109	Wireless sensor network☆	40	2	2	
	Other elective course	840	Information retrieval and research	20	1	1	
		840	P.E.	20	1	1	
Required Procedures		850	Elective Courses of Quality Education		1		
		850102	Academic Activities		1		

Note: 1. Courses marked with “☆” are lectured in English. 2. Courses marked with “△” are shared courses of graduate and doctoral students

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.素质教育选修课：以介绍学术前沿知识、中外文化和艺术等为主，加强外国留学研究生综合素质教育，研究生可选修一门，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。

7. Compulsory procedures

Compulsory procedures for international students (postgraduate students) contain two main parts, and they should fulfill the following contents respectively:

1. Elective courses of quality education: mainly introduce the academic frontier knowledge, Chinese and foreign culture, and art, in order to strengthen the comprehensive quality education of international postgraduate students. The students can elective one of the courses and gain one credits after passing the tests.

2. Academic activities: to further activate the academic atmosphere as well as to enlarge their knowledge extension, the international postgraduate students 'are required to attend no less than 5 times symposium inside and outside the university. They should fill the academic activity registration form (with the official seal of the academic event holder), and report to the graduate student management department. The students can gain one credit after they finish the task.

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

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，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。

8. Dissertation (or research report)

1) Basic requirement

Dissertation or research report should have a level of theoretical meaning or practical value, indicating that the writer has mastered fundamental theories and specific knowledge of this discipline, possessing the ability to do scientific research work, and utilize basic theories and specific knowledge to solve the practical problem comprehensively. For the research report, it should be the Project investigation, engineering design or case analysis, and etc.

2) Dissertation (or research report) work

The international postgraduate students select the topic with the guidance of the tutor and conduct the dissertation (or research report) work

① Thesis proposal

A. Time of thesis proposal: after topic selecting and extensive paper reading, the international postgraduate students should finish thesis proposal before the end of the third semester

B. Mode of thesis proposal: the thesis report should be reported publicly in the teaching and research section or above; the assessment group attending the report should have three associate professors (or experts have equal or above professional titles) and give out the evaluate results.

C. Submission of thesis proposal: Do the thesis proposal according to the requirement of thesis proposal form. After the thesis report, please finish the thesis proposal form ASAP and submit it to the graduate student management department.

D. If fail to pass the thesis proposal, the students should be guided by their tutors and have to wait three months to re-apply for thesis proposal. Anyone, who fails to pass the thesis proposal twice, will be terminated of their graduate studies.

E. If the topic of the paper is changed for proper reasons, the student should re-apply for thesis proposal according to the above requirements.

F. In principle, the students can only apply for dissertation defense after one year of the thesis proposal

2). Dissertation (or research report) work

Dissertation (or research report) should write either in Chinese or in English; the paper should have 800 words or so of Chinese and English abstract, and the format is written in reference to *The Writing Code for Postgraduate Dissertation of Southwest University of Science and Technology*.

3).Dissertation defense (including research report) application, review, defense and degree-conferring, should execute according to *Regulations of The International Students Master, Doctor Degree Awarded Work for Southwest University of Science and Technology (try out)*.