Southwest Jiaotong University
Information and Communication Engineering

Program Objectives

The program aims to provide students with an opportunity to develop functional expertise, strategic perspectives that they require to operate effectively in a changing environment or to understand such an environment; help students to learn both the successes and failures in China's Information and Communication Engineering; introduce students the techniques of Information and Communication Engineering to meet the needs of modernization, as well as sharpen their leadership and communication skills.

Major

Information and Communication Engineering（Master/PhD）

Study Period

Master：Two years（course study for 1 year and thesis proposal for 1 year）

PhD：Four years（course study for 1 year and thesis proposal for 3 year）

Teaching Language

English

Curriculum

Level	Type	Code	Name	Credit/ hours	Semester			Evaluation
					I	II	III	
Level 5 Intermediate Course	公共课 Public Course		基础汉语Ⅰ Basic Chinese Ⅰ	2	√			Examination
			中国文化 Chinese Culture	2	√			
			基础汉语Ⅱ Basic Chinese Ⅱ	2		√		Examination
			中国概况 China Overview	2		√		Examination
			当代中国 Contemporary China	1		√		Examination
	公共基础课 Common Basic Course	54012001	Numerical Analysis※ 数值分析※	3/48	√			Examination
		54012002	Equations of Modern Mathematical Physics 现代数学物理方程	3/48	√			Examination
		54012003	Stochastic Process and Time Sequence Analysis 随机过程与时间序列分析	3/48		√		Examination
		54012004	Applied Fuzzy Mathematics 应用模糊数学	3/48		√		Examination

		54012005	Mathematical Statistics and Multivariate Statistics※ 数理统计与多元统计※	3/48	√			Examination
		54012006	Matrix Analysis※ 矩阵分析※	3/48	√			Examination
	专业基础课 Basic Professional Co-urse	50433003	Modeling and Simulation of Communication Systems※ 通信系统建模与仿真※☆	3/48	√			Examination
		50433004	Modern Digital Signal Processing ※ 现代数字信号处理※	3/48	√			Examination
		60413001	Fundamentals of Communication and Information Theory※ 通信与信息理论基础※	3/48	√			Examination
	专业课 Professional Course	50434007	Principle and Applications of Error-correcting Coding☆ 纠错编码原理与应用☆	2/32		√		Examination
		50434008	Multimedia Broadband Wireless Communication Networking 多媒体宽带无线通信网络	2/32		√		Examination
		50434009	Optical Fiber Transmission Theory and Optical Communication Systems 光纤传输理论与光通信系统	2/32		√		Examination
		50434010	Sensing and Detection in Rail Traffic 轨道交通传感与检测	2/32		√		Examination
		50434011	Mobile Communication System for Public and Rail Traffic 公用及轨道交通移动通信系统	2/32	√			Examination
		50434012	Optical Communication Devices: Principle and Applications 光通信器件原理及应用	2/32	√			Examination
		50434013	Digital Image Processing 数字图像处理	2/32	√			Examination
		50434014	Understanding and Recognition of Information Content 信息内容理解与识别	2/32	√			Examination
		50434015	Multimedia Information Security Technology 多媒体信息安全技术	2/32	√			Examination

		50434016	Information Security Engineering 信息安全工程	2/32	√			Examination
		50434034	Network Security: Attack and Defense 网络攻防技术	2/32		√		Examination
		50433011	Digital Signature and Its Applications 数字签名及应用	2/32		√		Examination
	实验课 **Lab experiment**	50425001	Electronic Design Automatic Technology 电子设计自动化（EDA）技术	3/48		√		Examination
		50425002	Digital Signal Processing Technology DSP 技术	3/48		√		Examination
		50425003	Embedded System 嵌入式系统	3/48		√		Examination
Level 6 Advanced Courses	公共基础课 **Common Basic Course**	64012001	Applied Functional Analysis 应用泛函分析	3/48	√			Examination
	专业基础课 **Basic Professional Course**	60433001	Optimization Theory and Methods＊ 优化理论与方法＊	3/48	√			Examination
		60413002	Finite Field and Number Theory for Computing＊ 有限域与计算数论＊	3/48	√			Examination
	专业课 **Professional Course**	60434001	Advanced Digital Communications 高等数字通信	3/48	√			Examination
		60434002	Microwave Photons and Optical Networks 微波光子与光网络	2/32	√			Examination
		60434003	Signal Detection and Estimation 信号检测与估计	2/32	√			Examination
		60434004	Fundamental Quantum Information Theory 量子信息理论基础	2/32		√		Examination
		60434005	Adaptive Signal Processing＊ 自适应信号处理＊	3/48		√		Examination
		60434006	Non-linear Signal Processing＊ 非线性信号处理＊	2/32		√		Examination
		60434007	Formal Analysis of Security Protocol	2/32		√		Examination

			安全协议形式化分析					
		60434027	Sequence Cipher Theory and Design＊ 序列密码理论与设计＊	2/32	√			Examination
		60433005	Advanced cryptography 高等密码学	2/32	√			Examination
Level 7 Frontier Courses	公共课 **Public Course**		基础汉语Ⅰ Basic Chinese Ⅰ	2	√			Examination
			中国文化 Chinese Culture	2	√			Examination
			基础汉语Ⅱ Basic Chinese Ⅱ	2		√		Examination
			中国概况 China Overview	2		√		Examination
			当代中国 Contemporary China	1		√		Examination
	公共基础课 **Common Basic Course**	74012001	Modern Mathematics 现代数学	3/48		√		Examination
		74012002	Reliability Mathematics 可靠性数学	3/48		√		Examination
		74032001	Rough Set Model and Its Applications 粗糙集模型及其应用	2/32	√			Examination
	专业课 **Professional Course**	70414001	Modern Information and Communication Theory＊ 现代信息与通信理论＊	3/48	√			Examination
		70414002	Modern Signal Representation Theory＊ 现代信号表示理论＊	2/32	√			Examination
		70414003	Modern Information Security Theory 现代信息安全理论	2/32	√			Examination
		70434001	Micro-and Nano-Photonics＊ 微纳光子学＊	2/32	√			Examination
		70434002	Nonlinear Fiber Optics 非线性光纤光学	2/32	√			Examination
		70434003	Modern Wireless Communication System 现代无线通信系统	2/32		√		Examination
		70434005	Digital Video Processing and Transmission	2/32		√		Examination

			数字视频处理与传输					

Note: Level 5 is for Master program, Level 6 is for Master/PhD program, Level 7 is for PhD program.

Thesis

(1)Topic selection

Students are expected to select a topic which has important application value and theoretical significance to the construction of national economy, and it also should be combined with tutor's research projects as far as possible. The selected topic must be approved by mentor and through the arguments.

(2)Thesis proposal

Mater students are required to complete the thesis proposal during the second semester；PhD Students are required to complete the thesis proposal during the second academic year. In the report meeting, students should solicit opinions widely, and the thesis proposal will be determined by the related discipline experts after the examination and approval. The contents and requirements of the thesis proposal consist of: dynamic and research level about thesis topic; the purpose and significance of the selected topic; the research contents and research methods; the results and level expected to achieve; thesis writing arrangements; qualifications for subject research and so on.

(3)Thesis writing program

Students are supposed to formulate a detailed thesis writing program under the guidance of tutor. In the program, there should be a detailed arrangements and instructions about research methods, experiments, funds and equipment, thesis writing deadline and the results expected to achieve.

(4) Thesis appraisement and defense and degree awarding should be executed according to relevant regulations of Southwest Jiaotong University.

Degree Requirements

Master：Students are required to successfully complete 26 credit-worth course work and a master thesis and thesis defense within the required time period. After meeting the above requirements and with the approval of Southwest Jiaotong University Degree Committee, the master degree will be awarded.

PhD: Students are required to successfully complete 17 credit-worth course work and a doctor thesis and thesis defense within the required time period. After meeting the above requirements and with the approval of Southwest Jiaotong University Degree Committee, the doctor degree will be awarded.