通信工程（留学生）专业培养方案

International Undergraduate Program of Telecommunication Engineering

（门类：工学；二级类：电子信息；专业代码：080703）

(Category: Engineering; Sub-category: Electronic Information; Specialty Code: 080703)

一、专业培养目标 Major Training Objectives

本专业旨在培养具备扎实的通信基础理论和专业知识的，掌握通信系统与网络方面相关技术的，具有创新精神的、宽知识面、高素质的应用创新人才, 毕业生能够在信息通信领域从事工程设计、研发开发、网络运营、设备制造和技术管理工作。

This program aims to cultivate high-quality personnel with practical and innovative abilities who shall have a good command of basic theory and professional knowledge of telecommunications, and technologies related to telecommunications system and networks. The graduates shall be able to engage in project design, research and development, network operation, equipment manufacturing, and technical management in the field of infocommunications.

二、毕业要求 Graduation Requirements

本专业以现代通信理论为基础，主要通过学习通信系统和通信网络方面的基础理论、组成原理和设计方法，掌握信息传输、交换和信号处理过程中的关键技术和系统知识，并接受到通信工程实践的基本训练，毕业生具备从事现代通信系统和网络的设计、开发、调测和工程应用的基本能力。

毕业生应获得以下几方面的知识和能力：

1.具有扎实的自然科学基础，良好的人文社会科学基础和健康的体魄；

2.掌握通信系统和信号处理的基本原理；掌握无线、多媒体等通信技术；掌握通信系统和通信网的分析与设计方法；

3.了解通信技术的最新进展与发展动态；

4.具备一定的工程实践和初步的科研开发能力，能够从事通信技术领域的分析、设计和设备开发工作；

5.具有一定的组织管理能力、表达能力和团队协作精神；

6.掌握基本创新方法，具有追求创新的态度和意识。

7.具有较宽的国际化视野及较好的国际交流能力。

The program is based on modern telecommunications theory, and students shall study the basic theory, composition principles and design approaches of telecommunications system and networks, acquire key technologies and systemic knowledge of information transmission, exchange and signal processing. After undergoing supervised practical trainings of telecommunications engineering, graduates shall have the ability of designing, developing, testing modern communication system and networks.

Graduates should acquire the following knowledge and abilities:

1. Solid natural scientific basis, good humanities and social science basis, and in good health;

2. Fundamentals of telecommunications system and signal processing, wireless and multimedia technology, and good grasp of methods to analyze and design telecommunications system and networks;

3. Understanding the latest development of telecommunication technology;

4. Abilities for engineering practice and preliminary research and development, capable of analyzing, designing and developing equipment in the domain of telecommunication technology.

5. Abilities for management, expression and teamwork spirit.

6. Basic innovative methods with attitude and awareness of innovation.

7. Broad international perspective and good international communicative competence.

三、主干学科 Major Disciplines

信息与通信工程、电子科学与技术、计算机科学与技术。

Information and Telecommunications Engineering, Electronic Science and Technology, and Computer Science and Technology.

四、专业核心课程 Specialty Core Courses

电路系列课程、计算机网络、信号与系统、数字信号处理、随机信号处理、电磁场与电磁波、通信原理以及信息论与编码。

Series courses of Circuits, Computer Networks, Signal & Linear Systems, Digital Signal

Processing, Stochastic Signal Analysis, Electromagnetic Fields and Waves, Principles of Communications, and Information Theory and Coding.

五、主要实践性教学环节 Main Practical Teaching and Internship

电子工艺实习、生产实习、毕业实习、毕业设计、专业相关实验、课程设计等。

Electronic Processing Practice; Internship; Graduation Practice; Graduation Project; Specialty Course Experiments, Course Design, etc.

六、 学制 Program Duration

四年 Four Years

七、授予学位 Degree to Be Awarded

工学学士 Bachelor of Engineering

八、毕业最低学分要求 Minimum Credit Requirement for Graduation

学生需修满通识教育课程学分 49 学分、专业必修课程学分 50 分、专业选修课程 25 学分和实践 31 学分，共计 155 学分，除小学期外每学期所修总学分不能低于 12 学分。

For a Bachelor Degree of engineering, a student must achieve 52 credits in general education courses, 44 credits in specialty required courses, 24 credits in specialty elective courses, and 31 credits for the practicals, amounting to a total of 151 credits. A minimum of 12 credits are required of the students for one semester except for the short summer semester.

九、培养方案的构成及学时、学分分配

Program Composition and Distribution of Class Hours and Credits

表 1 培养方案学分构成表

Table 1 Program Composition of Class Credits

课程类别 Classification	课程类型 Course Type	学分数 Credits	学时数（或周数） Hours (or weeks)	占总学分比例 Percentage in Credits Total
通识教育课 General Education Courses	通识必修课 General Education Required Courses	49	956 学时 956 hours	31.6%
专业必修课 Specialty Required Courses	专业基础课 Specialty Fundamental Courses	29	512 学时 512 hours	18.7%
	专业核心课 Specialty Core Courses	21	352 学时 352 hours	15.6%

续表 1

课程类别 Classification	**课程类型 Course Type**	**学分数 Credits**	**学时数（或周数） Hours (or weeks)**	**占总学分比例 Percentage in Credits Total**
专业选修课 Specialty Elective Courses	-	25	约 430 学时 About 430 hours	16.1%
课程合计 Course Total		124	约 2028 学时 About 2028 hours	80%
实践环节 Practice	实习、课程设计等 Practices/Course Design, etc.	17	17 周 17 weeks	11%
	毕业设计（论文） Graduation Project (Thesis)	14	14 周 14 weeks	9%
实践环节合计 Practice Total		31	31 周 31 weeks	20%

表 2　各学期必修教学环节额定学分分配表

Table 2 Credits Distribution of Required Courses/Practice in Semesters

Semester / Type	1-1	1-2	2-1	2-2	2-3	3-1	3-2	3-3	4-1	4-2	学分合计 Total Credits
通识必修课 General Required Course	15	15	12	7	0	0	0	0	0	0	49
专业必修课 Specialty Required Course	1	3	5	15	0	17	7	0	2	0	50
实践环节 Practice	0	3	0		2	2	3	2	3	16	31
必修学分合计 Total of Required Credits	16	21	17	22	2	19	10	2	5	16	130

十、指导性教学计划进程安排 Guiding Arrangements

(一) 通识教育课进程表 General Education Course Table

课程类别 Classification	课程类型 Type	课程代码 Course Code	课程名称 Course Name	学分 Credit	学时 Hours					开课学期 Semester	考核方式 Test Mode	开课单位编号 Course-given Unit No.
					总学时 Total Hours	授课 Class Instruction	实验 Experiment	上机 Computer Practical	实践 Practice			
通识教育课 General Education Courses	通识必修课 General Required Course	2051000202	中国概况 Survey of China	2	32	32				1-1	考试 exam	qt
		2051000103 2051000203 2051000303 2051000403	汉语 Chinese	12	240	240				1-1;1-2; 2-1;2-2	考试 exam	qt
		0751000305 0751000405	高等数学 Advanced Mathematics	10	180	180				1-1;1-2	考试 exam	sx
		0751000502	线性代数 Linear Algebra	2	44	44				2-1	考试 exam	sx
		0751000203	概率论与数理统计 Probability and Statistics	3	54	54				2-2	考试 exam	sx
		1051000305 1051000405	大学物理 College Physics	10	180	164	16			1-2;2-1	考试 exam	dw
		0751000102	复变函数与积分变换 Complex Function & Integral Transformation	2	36	36				2-1	考试 exam	sx
		0751000401	矢量分析与场论 Vector Analysis and Field Theory	1	18	18				2-2	考试 exam	sx
		1051000203	计算机程序设计（C 语言） Computer Programming (C language)	3	54	36	18			1-1	考试 exam	dw
		1851000102 1851000202	体育 Physical Education	4	64	64				1-1;1-2	考试 exam	ty
			必修课合计	49	956	922	34					

(二) 专业必修课进程表 Specialty Core Course Table

课程类别 Classification	课程类型 Type	课程代码 Course Code	课程名称 Course Name	学分 Credit	学时 Hours					开课学期 Semester	考核方式 Test Mode	开课单位编号 Course-given Unit No.
					总学时 Total Hours	授课 Instruction	实验 Experiment	上机 Computer Practical	实践 Practice			
专业必修课 Specialty Required Courses	专业基础课 Specialty Fundamental Courses	1051001101	通信工程专业导论 Introduction to Telecommunications Engineering	1	18	18				1-1	考查 Test	dw
		0951000205	电路 Circuit Analysis	5	80	68	12			2-1	考试 Exam	zd
		0951000404	模拟电子技术 Analog Electronics Technology	4	72	60	12			2-2	考试 Exam	zd
		0951000504	数字电子技术 Digital Electronics Technology	4	72	60	12			2-2	考试 Exam	zd
		1051000903	电磁场与电磁波 Electromagnetic Fields and Waves	3	54	54				3-1	考试 Exam	dw
		1051001204	信号与系统 Signal and Linear Systems	4	72	72				2-2	考试 Exam	dw
		0951000103	单片机原理与应用 Principles and Applications of Microcontroller	3	54	46	8			2-2	考试 Exam	zd
		0951000603	制图基础 Engineering drawing	3	54	54				1-2	考试 exam	zd
		1051001002	随机信号处理 Stochastic Signal Processing	2	36	36				3-1	考试 Exam	dw
			合计 Total	29	512	468	44					
	专业核心课 Specialty Core Courses	1051000304	计算机网络 Computer Networks	4	64	56	8			3-1	考试 Exam	dw
		1051000504	数字信号处理 Digital Signal Processing	4	64	56	8			3-1	考试 Exam	dw
		1051000604	通信原理 Principles of Communications	4	72	64	8			3-2	考试 Exam	dw
		1051000404	射频通信电路 Radio Frequency Circuits	4	72	64	8			3-1	考试 Exam	dw
		1051000803	信息论与编码 Information Theory and Coding	3	54	54				3-2	考试 Exam	dw
		1051000702	无线通信系统 Wireless Communication System	2	36	36				4-1	考试 Exam	dw
			合计 Total	21	352	284	32					
			必修课合计 Total of Specialty Required Courses	50	864	780	84					

(三) 专业选修课进程表 Specialty Elective Course Table

课程类别 Classification	课程类型 Type	课程代码 Course Code	课程名称 Course Name	学分 Credit	学时 Hours					开课学期 Semester	考核方式 Test Mode	开课单位编号 Course-given Unit No.
					总学时 Total Hours	授课 Instruction	实验 Experiment	上机 Computer Practical	实践 Practice			
选修课 Elective Courses	专业选修课 Specialty Elective Courses	1052000202	MATLAB 基础与应用 Fundamental & Application of MatLab	2	36	28	8			2-1	考试 Exam	dw
		1052000903	通信网与交换技术 Telecommunication networks & Switching Technology	3	48	48				3-2	考试 Exam	dw
		1052000103	Java 语言程序设计 Java Language Programming	3	54	42	12			3-1	考试 Exam	dw
		1052000402	光纤通信系统 Optical Fiber Communication Systems	2	36	36				3-2	考试 Exam	dw
		1052001303	微波技术与天线 Microwave & Antennas technology	3	48	40	8			3-2	考试 Exam	dw
		1052001001	通信学科前沿新技术 Frontier Technology of Communication	1	18	18				4-1	考查 Test	dw
		1052000302	Web 应用程序设计 Web Application Program Design	2	36	28	8			4-1	考试 Exam	dw
		1052001103	图像与语音信号处理 Image & Voice Signal Processing	3	54	46	8			3-2	考试 Exam	dw
		1052000802	数据库技术应用 Application of Database Technology	2	32	24	8			2-1	考试 Exam	dw
		1052000502	近距离通信与个人网络技术 Near Field Communication & PAN Technology	2	32	24	8			4-1	考查 Test	dw
		1052001202	网络信息安全 Network Information Security	2	32	32				4-1	考查 Test	dw
		1052000702	软件无线电 Software Defined Radio	2	32	24	8			4-1	考查 Test	dw
		1052000602	科技汉语 Scientific Chinese	2	32	32				4-1	考查 Test	dw
			选修课合计 Total of Specialty Elective Courses	29	490	422	68					

注：专业选修课程需修满 25 学分。

Note：Students are required to obtain a minimum of 25 credits from the specialty elective courses.

(四)实践环节进程表（不包含非独立课内实验）

Internship and Practical Training Table（Non-independent course experiments are not included）

课程代码 Course Code	课程名称 Course name	学分 Credits	学时 Hours	周数 Weeks	开课学期 Semester	教学形式 Teaching form		开课单位编号 Course-given Unit No.
						集中 Grouped	分散 Individual	
1053000101	C 语言课程设计 C language Course Design	1		1	1-2	集中 Grouped		dw
0953000102	单片机课程设计 Design of Microsystem	2		2	2-2	集中 Grouped		zd
1053000402	电子工艺实习 Electronic Process Practice	2		2	2-3	集中 Grouped		dw
1053000802	信号处理课程设计 Design of Signal Processing	2		2	3-1	集中 Grouped		dw
1053000703	通信系统综合课程设计 Design of Telecommunications System	3		3	3-2	集中 Grouped		dw
1053000602	生产实习 Internship	2		2	3-3	集中 Grouped		dw
1053000503	计算机程序设计实践 Programming Practice	3		3	4-1	集中 Grouped		dw
1053000302	毕业实习 Graduation Practice	2		2	4-2	集中 Grouped		dw
1053000214	毕业设计 Final Project Design	14		14	4-2	集中 Grouped		dw
合计 Total		31		31				