

武汉理工大学信息工程学院

School of Information Engineering of
Wuhan University of Technology

2015 版本本科培养方案

Undergraduate Education Plan (2015)

武汉理工大学教务处

Academic Affairs Office of Wuhan University of Technology

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【电子信息工程专业】2015 版本本科培养方案

Undergraduate Education Plan for Specialty in Electronic Information Technology (2015)

专业名称	电子信息工程	主干学科	信息与通信工程， 电子科学与技术
Major	Electronic Information Technology	Major Disciplines	Information and Communication Engineering, Electronic Science and Technology
计划学制	四年	授予学位	工学学士
Duration	4 Years	Degree Granted	Bachelor of Engineer
所属大类	电子信息类（工学）	大类培养年限	1 年
Disciplinary	Electronic Information (Engineer)	Duration	1 years

最低毕业学分规定

Graduation Credit Criteria

课程类 Course Classification 课程性质 Course Nature	通识课程 Public Basic Courses	学科大类课程 Basic Disciplinary Courses	专业课程 Specialized Courses	个性课程 Personalized Course	集中性实践 Practice Courses	课外学分 Study Credit after Class	总学分 Total Credits
必修课 Required Courses	35	48	37.5	\	25.5	\	190
选修课 Elective Courses	9	\	15	10	\	10	

一、培养目标与毕业要求

I Educational Objectives & Requirement

(一) 培养目标

- (1) 身心健康，具备良好的敬业精神、社会责任感和工程职业道德，关注当代全球和社会问题，具有质量意识、环境意识和安全意识。

The students should be physical and mental health, have good professional dedication and sense of social responsibility and engineering ethics, focus on the contemporary global and social issues, quality consciousness, environmental awareness and safety awareness.

- (2) 具有从事电子信息工程领域科学研究、工程设计和技术服务等工作所需的数理知识和其它相关自然科学知识，并能将数学和科学工具运用于解决工程问题。

The students should be engaged in scientific research, engineering design of electronic information engineering and technical services and other related mathematical knowledge needed for the work and other natural science knowledge, and be able to apply mathematical and scientific tools to solve engineering problems.

- (3) 具有综合运用科学理论和工程技术分析、设计、开发、测试和应用电子系统、信息处理系统和通信系统的能力。

The students should have a comprehensive analysis on the basis of the theory of science

and engineering, design, development, test and application of electronic systems, the ability of information processing system and communication system.

- (4) 精通设计、开发和测试电子信息系统的工具和软硬件技术。

The students should be proficient in design, development and testing tools and electronic information system hardware and software technology.

- (5) 具有良好的口头和书面表达和交流沟通能力、良好的团队意识和合作精神，具有终身学习的能力。

The students should have good oral , written expression and communication ability, also they have good team consciousness , cooperation spirit and the ability of lifelong learning.

(二) 毕业要求

- (1) 学生掌握从事本专业领域所需的数学、相关自然科学和管理知识。

Students master the necessary professional in the field of mathematics, natural sciences and related management knowledge.

- (2) 学生掌握本专业的基本理论知识和工程基础知识，能够利用原理性知识进行自主发现、自主设计和自主解决与电子信息工程相关的科学问题。

The students master the basic theory of professional knowledge and basic knowledge of engineering, use the original rational knowledge to find, independent design and solve the problems related to electronic information engineering science.

- (3) 学生掌握电子信息系统的的设计语言和开发平台，能理解电子信息系统的的设计方法和步骤。

Students master the design language and development platform of electronic information systems, comprehend the electronic information system design methods and procedures.

- (4) 学生能够设计和实现基于微处理器的应用系统以及实现对外围设备的控制。

Students can design and implementation the application system based on Microprocessor and realize the control of peripheral devices.

- (5) 学生能够理解高级语言和数据结构。

Students can comprehend the high-level language and data structure.

- (6) 学生具备有关电子电路、集成电路、数字信号处理和电子信息系统的应用知识。

Students should have the knowledge about electronic circuit, integrated circuit, digital signal processing and electronic information system.

- (7) 学生具备有效进行实验和模拟仿真设计与操作的能力，并能够对实验结果进行分析和解释。

Students should have the ability to effectively test and simulation design and operation, and be able to analyze and interpret the experimental results.

- (8) 学生了解本专业的发展动态和前沿，熟悉电子信息工程领域的最新开发工具种类和发展方向。

Students should understand the development trends and frontier of their professional, and familiar with the types and the development direction of the latest development tools of Electronic Information Engineering.

- (9) 学生具有良好的思想素质、身体素质、心理素质、文化修养、社会道德和责任担当等人文素养。

Students should have the good ideological quality, physical quality, psychological quality, culture, morality and social responsibility and other humanistic literacy.

- (10) 学生了解当代全球问题和社会问题，在工程设计中综合考虑经济、环境、法律、安全和伦理等制约因素。
Students should understand contemporary global issues and social issues, as well as take economic, environmental, legal, safety and ethical constraints into consideration in engineering design.
- (11) 学生具有逻辑思维和辩证思维的能力，具有批判意识和求真务实的科学思维方法，具有创新意识，掌握基本的创新方法。
Students have the ability of logical thinking and dialectical thinking, critical awareness and practical scientific thinking method, have innovation consciousness and mastering the basic method of innovation.
- (12) 学生掌握运用现代信息技术跟踪并获取信息的方法，熟练进行文献检索和资料查询。
Students master the use of modern information technology and the method of tracking and obtaining information, being skilled in document retrieval and data query.
- (13) 学生具有良好的口头和书面表达和交流能力，至少掌握一门外语熟练进行技术沟通和交流。具有良好的团队意识和合作精神。
Students possess the ability of good verbal, written expression and communication skills, fluency in at least one foreign language in technical communication and exchange. They should have a good sense of team spirit and cooperation.
- (14) 学生能够胜任本专业入门级的职业岗位，具备研究生课程学习所需的认知和基础能力。
Students should be able to do this professional entry-level jobs, graduate courses required basis and cognitive ability.
- (15) 学生具有进行终身学习的愿望和能力，具有对电子信息技术发展变化的适应能力。
Students have the desire and ability of lifelong learning and have the ability to adapt to the electronic information technology development changes

附：培养目标实现矩阵

	培养目标 1	培养目标 2	培养目标 3	培养目标 4	培养目标 5
毕业要求 1		✓			
毕业要求 2		✓	✓		
毕业要求 3		✓	✓	✓	
毕业要求 4		✓	✓	✓	
毕业要求 5		✓	✓	✓	
毕业要求 6			✓	✓	
毕业要求 7			✓	✓	
毕业要求 8				✓	
毕业要求 9	✓				
毕业要求 10	✓				
毕业要求 11		✓	✓	✓	
毕业要求 12		✓	✓	✓	
毕业要求 13					✓
毕业要求 14		✓	✓	✓	
毕业要求 15	✓	✓	✓	✓	✓

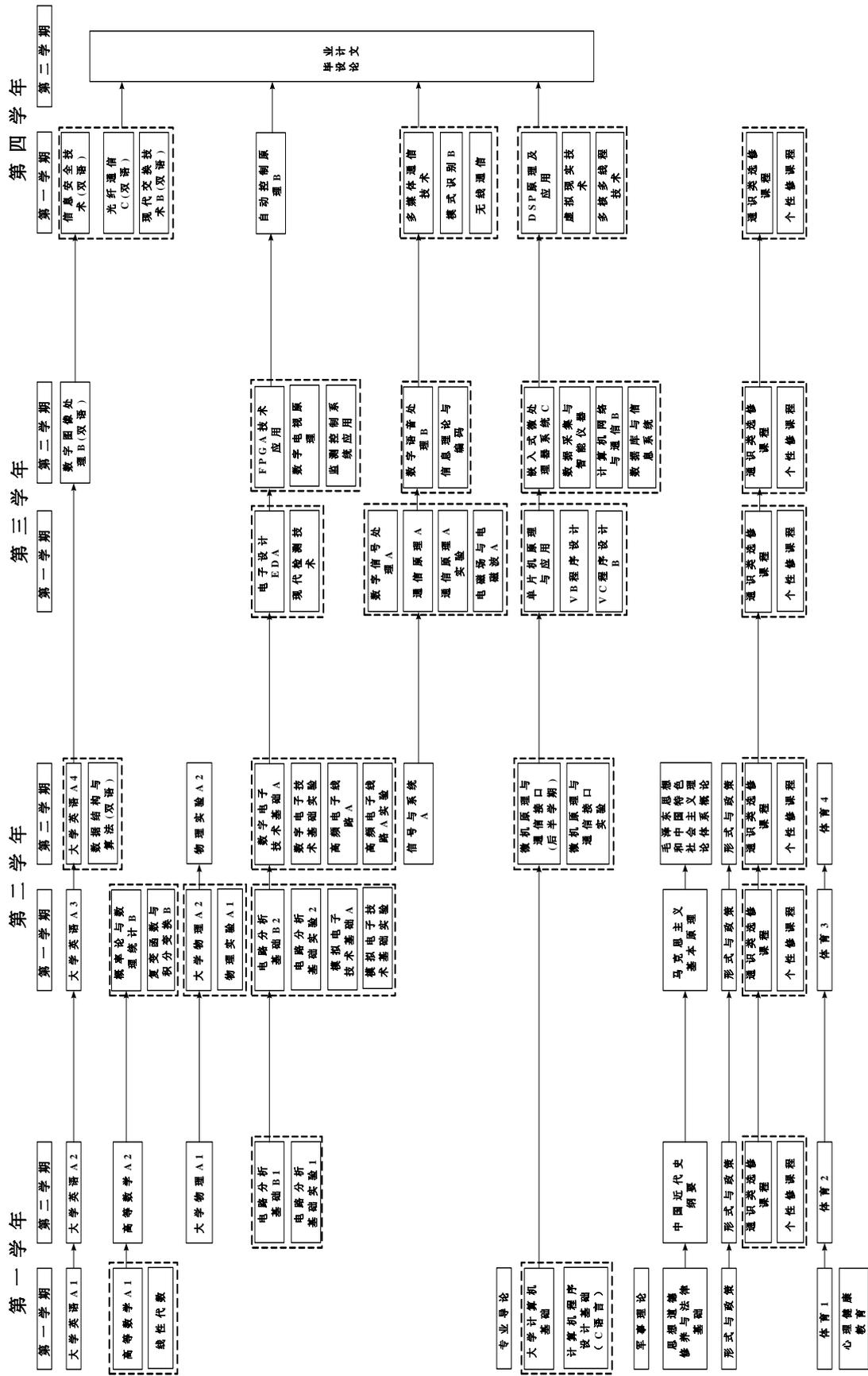
专业 核心 课程	专业 特色 课程	课程名称	电子信息工程专业毕业要求														
			(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)
		专业导论								✓	✓	✓					✓
		高等数学	✓														
		线性代数	✓	✓													
		概率论与数理统计 B	✓	✓													
		大学物理	✓	✓													
		物理实验	✓	✓					✓								
✓		电路分析基础		✓													
✓		电路分析基础实验		✓					✓								
✓		模拟电子技术基础 A		✓												✓	✓
✓		模拟电子技术基础实验		✓					✓							✓	✓
✓		数字电子技术基础 A		✓												✓	✓
✓		数字电子技术基础实验		✓					✓							✓	✓
✓		信号与系统 A		✓					✓							✓	✓
		复变函数与积分变换 B	✓	✓													
		数据结构与算法			✓		✓					✓				✓	✓
✓		高频电子线路 A		✓				✓								✓	✓
✓		高频电子线路 A 实验		✓				✓	✓							✓	✓
✓		微机原理与通信接口				✓		✓				✓				✓	✓
✓		微机原理与通信接口实验				✓		✓	✓							✓	✓
✓		数字信号处理 A		✓				✓	✓	✓		✓				✓	✓
✓		通信原理 A		✓				✓		✓		✓				✓	✓
✓		通信原理 A 实验		✓				✓	✓			✓				✓	✓
✓		电磁场与电磁波 A		✓													
✓		现代检测技术		✓				✓	✓								
		电子设计 EDA			✓			✓	✓			✓				✓	✓

专业 核心 课程	专业 特色 课程	课程名称	电子信息工程专业毕业要求														
			(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)
✓		单片机原理与应用			✓	✓		✓	✓	✓		✓	✓			✓	✓
✓		信息理论与编码		✓				✓									
✓	✓	数字图像处理 B		✓	✓			✓	✓			✓				✓	✓
✓	✓	数字语音处理 B		✓	✓			✓	✓			✓				✓	✓
	✓	DSP 原理及应用		✓	✓	✓		✓	✓	✓		✓	✓			✓	✓
		VB 程序设计			✓		✓	✓									
		数字电视原理		✓				✓									
	✓	FPGA 技术应用			✓			✓	✓	✓		✓	✓			✓	✓
		计算机网络与通信 B		✓	✓			✓									
	✓	数据采集与智能仪器		✓	✓	✓		✓									
	✓	嵌入式微处理器系统 C			✓	✓		✓	✓			✓	✓			✓	✓
		监测控制系统应用				✓		✓	✓							✓	✓
		光纤通信 C		✓				✓									
		VC 程序设计 B			✓		✓	✓									
		数据库与信息系统			✓			✓									
		多媒体通信技术			✓			✓									
	✓	信息安全技术		✓	✓		✓	✓	✓			✓					
		模式识别 B		✓				✓									
		无线通信		✓				✓	✓			✓					
	✓	多核多线程技术		✓		✓	✓	✓	✓			✓					
		现代交换技术 B		✓				✓									
		虚拟现实技术		✓	✓			✓	✓			✓					
		自动控制原理 B		✓													
		军事训练									✓						
		电工电子实习 A		✓				✓	✓								

专业 核心 课程	专业 特色 课程	课程名称	电子信息工程专业毕业要求														
			(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)
		模拟电子技术基础课程设计						✓	✓				✓			✓	
		数字电子技术基础课程设计						✓	✓				✓			✓	
		专业基础实践			✓				✓				✓	✓		✓	
		单片机应用实践			✓	✓		✓	✓			✓	✓	✓	✓	✓	
		信号分析与处理课程设计		✓	✓			✓	✓				✓	✓	✓	✓	
		数字通信系统课程设计		✓	✓			✓	✓				✓	✓	✓	✓	
		PROTEL 应用课程设计						✓	✓					✓		✓	
		专业综合实践		✓	✓	✓		✓	✓			✓	✓	✓	✓	✓	
		毕业实习								✓		✓					
		毕业设计（论文）										✓	✓	✓	✓	✓	✓

三、课程教学进程图

III Teaching Process Map



四、理论教学建议进程表

IV Theory Course Schedule

课程类别 Course Classification	课程性质 Course Nature	课程编号 Course Number	课程名称 Course Title	学分 Crs	学时分配 Including					建议修读学期 Suggested Term	先修课程 Prerequisite Course	第二专业 Second Major		
					总学时 Tot hrs.	实验 Exp.	上机 Operation	实践 Practice	课外 Extra-cur					
通识课程 Public Basic Courses	必修课 Required Courses	4220001110	思想道德修养与法律基础 Morals, Ethics and Fundamentals of Law	3	48			8		1-6				
		4220002110	中国近现代史纲要 Outline of Contemporary and Modern Chinese History	2	32					1-6				
		4220003110	毛泽东思想和中国特色社会主义理论体系概论 Introduction to Mao Zedong Thought and Socialism with Chinese Characteristics	4	96			32		1-6				
		4220005110	马克思主义基本原理 Marxism Philosophy	3	48			8		1-6				
		1060003130	军事理论 Military Theory	1	32			16		1-4				
		4210001110	体育 1 Physical Education I	1	32					1				
		4210002110	体育 2 Physical Education II	1	32					2	体育 1			
		4210003110	体育 3 Physical Education III	1	32					3	体育 2			
		4210004110	体育 4 Physical Education IV	1	32					4	体育 3			
		4030002110	大学英语 A1 College English A 1	3	64				16	1				
		4030003110	大学英语 A2 College English A II	3	64				16	2	大学英语 A1			
		4030004110	大学英语 A3 College English A III	3	64				16	3	大学英语 A2			
		4030005110	大学英语 A4 College English A IV	3	64				16	4	大学英语 A3			
		4120017110	大学计算机基础 Foundation of Computer	2	32		12			1				
		4120023110	计算机程序设计基础(C语言) Fundamentals of Computer Program Design(C Language)	3	48		12			1				
		1050001110	心理健康教育 Mental Health Education	1	16					1				
		小 计 Subtotal				35	736		24	64	64			
		选修课 Elective Courses	创新创业类 Innovation and Entrepreneurship Courses			<p>全校学生要求至少取得 9 个学分,且必须选修艺术体育类课程中的艺术类相关课程,取得至少 2 个学分。理工科专业学生至少选修一门人文社科类或经济管理类课程,其他专业学生至少选修一门科学技术类课程。</p> <p>All students are required to obtain at least 9 credits, and must select art courses from <i>Art and Physical Education Courses</i> to obtain at least 2 credits. Science and engineering students should select at least one course from <i>Arts and Social Science Courses</i> or <i>Economy and Management Courses</i>, and other students should select at least one course from <i>Science and Technology Courses</i>.</p>								
人文社科类 Arts and Social Science Courses														
经济管理类 Economy and Management Courses														
科学技术类 Science and Technology Courses														
艺术体育类 Art and Physical Education Courses														

课程类别 Course Classification	课程性质 Course Nature	课程编号 Course Number	课程名称 Course Title	学分 Crs	学时分配 Including					建议修读学期 Suggested Term	先修课程 Prerequisite Course	第二专业 Second Major
					总学时 Tot hrs.	实验 Exp.	上机 Operation	实践 Practice	课外 Extra-cur			
专 业 课 程	必 修 课 Required Courses	4110062110	数据结构与算法 C Data Structure And Algorithm	2.5	40		8			4	计算机程序设计基础(C语言)	
		4110028110	高频电子线路 A High-frequency Electronic Circuits A	3.5	56					4	模拟电子技术基础 A	
		4110029110	高频电子线路 A 实验 Experiments of High- frequency Electronic Circuit A	0.5	16	16				4	高频电子线路 A	
		4110247110	微机原理与通信接口 Principles of Microcomputer and Communication	3	48					4	数字电子技术基础 A	
		4110232110	微机原理与通信接口实验 Experiments of Principles of Microcomputer and Communication	0.5		16				4	微机原理与通信接口	
		4110071110	数字信号处理 A Digital Signal Processing A	4	64	10				5	信号与系统 A	
		4110077110	通信原理 A Communication Principles A	3.5	56					5	信号与系统 A	
		4110078110	通信原理 A 实验 Experiments of Communication Principles A	0.5	16	16				5	通信原理 A	
		4110244130	电磁场与电磁波 Electromagnetic Fields and Wave	2.5	40					5	电路分析基础 B2	
		4110189120	现代检测技术 Modern Sense Technique	3	48	8				5		
		4110165120	电子设计 EDA Electronic Design Automation	2	32	16				5	数字电子技术基础 A	
		4110010110	单片机原理与应用 Principles and Application of Single Chip Microcomputer	3	48	8				5	数字电子技术基础 A 计算机程序设计基础(C语言)	
		4110096110	信息理论与编码 Information Theory and Coding	3	48	8				6	概率论与数理统计 B	
		4110070110	数字图像处理 B Digital Image Processing B	2	32	6				6	数字信号处理 A	
		4110074110	数字语音处理 B Digital Voice Processing B	2	32	8				6	数字信号处理 A	
		4110001110	DSP 原理及应用 Principle and Application of DSP	2	32	8				7	单片机原理与应用	
	小 计 Subtotal				37.5	624	120	8				
	选 修 课 Elective Courses	4110005110	VB 程序设计 VB Programming	2	32	8				5	计算机程序设计基础(C语言)	
		4110065110	数字电视原理 Digital Television Principle	2	32					6	高频电子线路 A	
		4110003110	FPGA 技术应用 FPGA Technique Application	2	32	32				6	电子设计 EDA	
4110043110		计算机网络与通信 B Computer Networks and Communication B	2	32	8				6	通信原理 A		
4110060110		数据采集与智能仪器 Data Collection and Intelligent Instrumentation	2	32	8				6	单片机原理与应用		
4110055110		嵌入式微处理器系统 C Embedded Microprocessor System C	2	32	8				6	单片机原理与应用		
4110044110		监测控制系统应用 Application of Monitoring Control System	2	32	32				6	单片机原理与应用		

课程类别 Course Classification	课程性质 Course Nature	课程编号 Course Number	课程名称 Course Title	学分 Crs	学时分配 Including					建议修读学期 Suggested Term	先修课程 Prerequisite Course	第二专业 Second Major	
					总学时 Tot hrs.	实验 Exp.	上机 Operation	实践 Practice	课外 Extra-cur				
		4110037110	光纤通信 C Optical Fiber Communication C	2	32	8				7	通信原理 A		
		4110006110	VC 程序设计 B VC Programming B	2	32	8				5	计算机程序设计基础(C 语言)		
		4110063110	数据库与信息系统 Data Base and Information Systems	2	32	8				6	计算机程序设计基础(C 语言)		
		4110025110	多媒体通信技术 Multimedia Communication Technology	2	32	8				7	数字图像处理 B 数字语音处理		
		4110095110	信息安全技术 Information Security Technology	2	32					7	计算机程序设计基础(C 语言)		
		4110052110	模式识别 B Pattern Recognition B	2	32		8			7	概率论与数理统计 B		
		4110186120	无线通信 Wireless Communication	2	32					7	通信原理 A 单片机原理		
		4110166120	多核多线程技术 Multicore Multithread Technology	2	32	8				7	计算机程序设计基础(C 语言)		
		4110090110	现代交换技术 B Stored Program Control Switching Technology B	2	32	8				7	通信原理 A		
		4110237130	虚拟现实技术 Virtual Reality Technology	2.5	40		16			7			
		4100065110	自动控制原理 C Automatic Control Theory C	2.5	40	8				7	信号与系统 A		
			小 计 Subtotal	37	592	152	24						
修读说明：要求至少选修 15 学分。 NOTE: Minimum subtotal credits: 15.													
个性化课程 Personalized Course	选修课 Elective Courses	4110245130	移动设备应用开发技术 Mobile Device Application Development Technology	2	32	8				6	计算机程序设计基础(C 语言)		
		4110246130	QT 程序设计 QT Program Design	2	32	8				6	计算机程序设计基础(C 语言)		
		4110247130	智能信息处理 Intelligent Information Processing	2.5	40	8				7	高等数学 A1		
					小 计 Subtotal	6.5	104	16					
修读说明：学生可跨专业自主选择修读全校其他专业的课程，建议修读以上课程。要求至少选修 10 学分。 NOTE: Students can choose any courses from the other specialties, and are especially suggested to choose the courses above. Minimum subtotal credits: 10.													

五、集中性实践教学环节

V Practice Schedule

课程编号 Course Number	实践环节名称 Practice Courses Name	周数 Weeks	学分 Crts	建议修读学期 Suggested Term	第二专业 Second Major
1060002110	军事训练 Military Training	3	1.5	1	
4100068110	电工电子实习 A Practice in Electrical Engineering & Electronics A	2	2	3	
41100128110	模拟电子技术基础课程设计 Course Design on Fundamentals of Analog Electronics Circuit	1	1	3	
4110129110	数字电子技术基础课程设计（期末） Course Design on Fundamentals of Digital Electronic Circuit	1	1	4	
4110209120	专业基础实践 Practice of Specialty foundation	1	1	5	
4110215130	单片机应用实践 Practice of Single Chip Microcomputer Application	1	1	5	
4110234130	信号分析与处理课程设计 Course Design On Signal Analysis And Processing	1	1	5	
4110130110	数字通信系统课程设计 Course Design On Digital Communication System	1	1	5	
4110107110	PROTEL 应用课程设计 Courses Design on Protel Application	1	1	6（分散）	
4110210120	专业综合实践 Practice of Specialty Synthesis	1	1	6	
4110114110	毕业实习 Practice of Specialty	3	3	7	
4110198120	毕业设计（论文） Graduation Design (Thesis)	17	11	8	
小 计 Subtotal		33	25.5		

六、修读指导

VI Recommendations on Course Studies

《形势与政策》课程，平均每学期 16 学时，一般按专题进行，在第七学期末考核，计 2 个课外学分，具体由学校学生发展指导中心负责组织落实。

Situation & Policy, a 16 hours/term with 2 credits course, is taught according to topics and tested at the end of the 7th term . The course will be arranged by the University Students' Affairs' Department in each school.

学院教学责任人：艾青松
专业培养方案责任人：王 虹

【电子科学与技术专业】2015 版本本科培养方案

Undergraduate Education Plan for Specialty in Electronic Science and Technology (2015)

专业名称	电子科学与技术	主干学科	电子科学与技术
Major	Electronic Science and Technology	Major Disciplines	Electronic Science and Technology
计划学制	四年	授予学位	工学学士
Duration	4 Years	Degree Granted	Bachelor of Economics
所属大类	电子信息类	大类培养年限	1 年
Disciplinary	Electronic Information	Duration	1 years

最低毕业学分规定

Graduation Credit Criteria

课程类 Course Classification 课程性质 Course Nature	通识课程 Public Basic Courses	学科大类课程 Basic Disciplinary Courses	专业课程 Specialized Courses	个性课程 Personalized Course	集中性实践 Practice Courses	课外学分 Study Credit after Class	总学分 Total Credits
必修课 Required Courses	35	48	38	\	24.5	\	190
选修课 Elective Courses	9	\	15.5	10	\	10	

一、培养目标与毕业要求

I Educational Objectives & Requirements

(一) 培养目标

- (1) 具有良好的品德与人文素养，了解当代全球的社会问题和道德问题；
- (2) 具有电子科学与技术专业扎实的自然科学基础，能运用数学和科学工具解决工程问题；
- (3) 能胜任微电子或光电子或电路与系统专业领域的研究、开发、制造及管理工作；
- (4) 具备对电子科学与技术学科发展趋势的敏感性，具有创新意识以及跟踪掌握本专业新理论、新知识、新技术的能力。
- (5) 具有口头和书面的沟通技能、良好的团队意识和合作精神，具有自我管理能力和终身学习能力和从事职业能力。

Educational objectives

- (1) Comply with professional ethics, cultural scientific literacy and social responsibility, and the students shall understand the contemporary global social issues and moral issues.
- (2) Know well about mathematics and nature science related to electronic science and technology, research, engineering design and technology service. The students shall be able to solve the engineering problems with mathematical and scientific tools.
- (3) Be able to research, development, manufacture and management in microelectronics or optoelectronics or circuit and system professional
- (4) Has sensitivity to the development trends of electronic science and technology. The students with innovation consciousness shall be able to continuously grasp new theories, and master new

knowledge and new techniques in electronics.

(5) Have the capacity of verbal and written communication, teamwork and cooperative. Own the abilities of self-management, lifelong learning, and Engaged in the professional enterprise.

(二) 毕业要求

- (1) 具有数学、物理学和自然科学知识，具有较强的数学计算能力；
- (2) 具有电子学、信息技术、微电子学、光电子学和电路与系统的基础知识；
- (3) 具有微电子器件、光电子器件和电路与系统的设计能力、分析和应用能力；
- (4) 具有微电子技术、光电子技术、电路与系统和信息处理技术等方面的基本实验能力；设计专业相关实验，并能归纳、整理、分析实验数据和结果；
- (5) 掌握计算机辅助设计方法，能用计算机对微电子器件及系统或光电子器件及系统或电路与系统进行计算、设计、仿真及分析；
- (6) 具有较好的身体素质、心理素质、人文社会科学素养、较强的社会责任感和良好的职业道德；
- (7) 至少熟练掌握一门外国语，并能进行有效的技术沟通和交流；
- (8) 具有团队合作与协作能力；具有一定组织管理能力；
- (9) 学生具备良好的口头表达、书面表达和学术交流的基本能力，具有初步的科学研究能力和一定的批判性思维能力；
- (10) 了解电子科学与技术领域的科技发展动态及产业发展方向；
- (11) 具备软硬件知识，能够完成 FPGA、微处理器和集成系统的设计；
- (12) 具有运用现代信息技术手段进行文献检索及资料查询的能力；
- (13) 了解国家对微电子、光电子、电路与系统和电子信息产业政策及国内外有关知识产权的法律法规。了解当代全球问题和社会问题，在工程设计中综合考虑经济、环境、法律、安全和伦理等制约因素。
- (14) 学生能够胜任本专业入门级的职业岗位；
- (15) 具有进行终身学习的愿望和能力，具有较强的自我管理和控制能力，具有适应电子科学与技术不断发展的能力。

Requirements for Graduation

- (1) Master the knowledge of mathematics, physics, and natural sciences, shall have good skills of mathematical calculation.
- (2) Mater basic knowledge of microelectronics, optoelectronics, and circuits and systems.
- (3) Have the capacity of design, analysis and application in microelectronics devices or optoelectronic devices or circuits and systems fields;
- (4) Have basic experimental skills of microelectronic techniques, optoelectronic techniques, circuits and systems, and information precessing techniques. The students, who can design professional experiments according to the need of performance, shall be able to sum up, manage, analyze the experimental data and results.
- (5) Grasp the method of computer aided design, be able to use the computer to calculate, design, simulate and analyze for microelectronic devices/systems or optoelectronic devices/systems or circuits and systems.
- (6) Have good physical quality, psychological quality, be well-educated with social sciences, a sense of social responsibility, and professional morality.
- (7) Master at least one foreign language proficiently, and be able to make effective verbal and written communication about technology.

- (8) Have the capacity of cooperative, teamwork and organization management.
- (9) Have the capacity of oral expression, written expression and academic communication. Have the abilities of critical thinking and doing scientific research.
- (10) Be acquainted with the development trends of electronic science and technology.
- (11) Have the knowledge of hardware and software, be able to design the FPGA system, the microprocessor system and integrated system;
- (12) Have the abilities of literature retrieval and information query using modern information technology.
- (13) Be aware of the domestic industrial policy of microelectronics, optoelectronics, and circuits and systems. The students shall also understand the domestic and foreign laws and regulations of intellectual property rights. Understand the contemporary global issues and social issues. During the engineering design, the students shall consider the restrictive factors of economy, environment, law, security, and ethics..
- (14) A students shall be qualified for entry level positions.
- (15) Have the abilities of lifelong learning, self-management, self-control, and adapting to the continuous development of electronic science and technology.

附：培养目标实现矩阵

	培养目标 1	培养目标 2	培养目标 3	培养目标 4	培养目标 5
毕业要求 1		√			
毕业要求 2		√	√		
毕业要求 3		√	√	√	
毕业要求 4		√	√		
毕业要求 5		√	√		
毕业要求 6	√				
毕业要求 7					√
毕业要求 8					√
毕业要求 9					√
毕业要求 10			√	√	
毕业要求 11			√		
毕业要求 12		√		√	
毕业要求 13	√		√	√	
毕业要求 14			√		√
毕业要求 15			√	√	√

二、专业核心课程与专业特色课程

II Core Courses and Characteristic Courses

(一) 专业核心课程：

电路分析基础、模拟电子技术基础、数字电子技术基础、信号与系统、电磁场与电磁波、量子力学、固体物理、硬件描述语言与数字系统设计、光电子技术、单片机原理与应用。

Core Courses: Fundamentals of Circuit Analysis, Fundamentals of Analog Electronic Circuit, Fundamentals of Digital Electronic Circuit, Signal and System, Electromagnetic Fields and Waves, Quantum Mechanics, Solid State Physics, Hardware Description Language

and Digital System Design and Application, Photo-electronics Technology, Principles and Application of Single Chip Microcomputer.

(二) 专业特色课程:

量子力学、电磁场与电磁波、固体物理、半导体物理基础、物理光学、光电子技术、硬件描述语言与数字系统设计、单片机原理及应用、微电子器件与集成电路设计、光电测试技术。

Characteristic Courses: Quantum Mechanics, Electromagnetic Fields and Waves, Solid State Physics, Semiconductor Physics, Physical Optics, Photo-electronics Technology, Hardware Description Language and Digital System Design and Application, Principles and Application of Single Chip Microcomputer, Microelectronic Devices and IC Design, Photoelectric Testing Technology.

附：毕业要求实现矩阵：

专业 核心 课程	专业 特色 课程	课程名称	电子科学与技术专业毕业要求															
			(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	
		思想道德修养与法律基础						√										
		中国近现代史纲要						√										
		毛泽东思想和中国特色社 会主义理论体系概论						√								√		
		马克思主义基本原理						√										
		军事理论						√										
		体育 1						√										
		体育 2						√										
		体育 3						√										
		体育 4						√										
		大学英语 A1							√		√				√			
		大学英语 A2							√		√				√			
		大学英语 A3							√		√				√			
		大学英语 A4							√		√				√			
		大学计算机基础						√										
		计算机程序设计基础(C 语 言)	√					√										
		心理健康教育							√									
		专业导论												√				

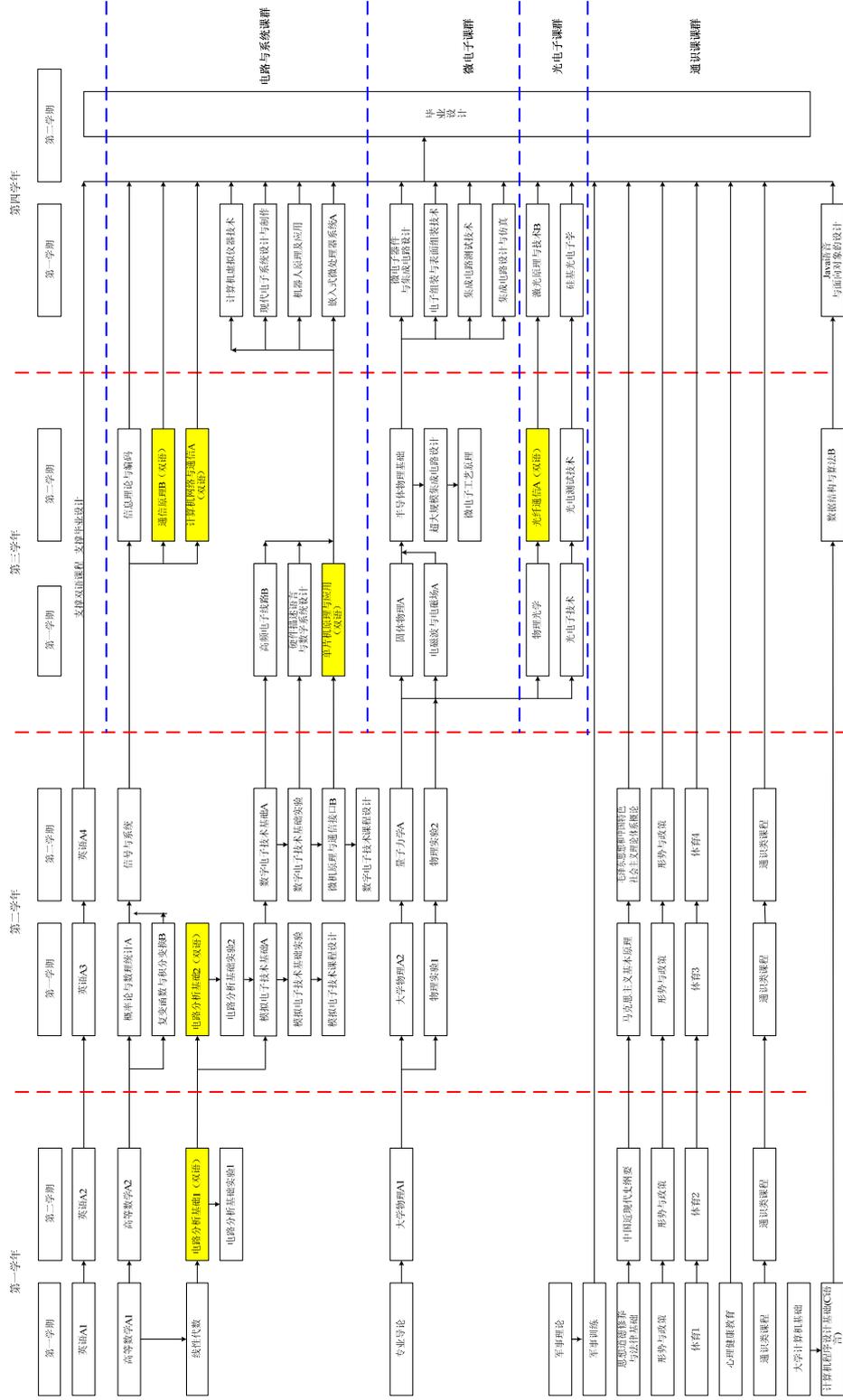
专业 核心 课程	专业 特色 课程	课程名称	电子科学与技术专业毕业要求														
			(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)
		高等数学 A1	√				√										√
		高等数学 A2	√				√										√
		线性代数	√				√										√
		概率论与数理统计 B	√				√										√
		大学物理 A1	√														√
		大学物理 A2	√														√
		物理实验 A1	√	√		√											√
		物理实验 A1	√	√		√											√
√		电路分析基础 B1		√													√
√		电路分析基础 B2		√													√
√		电路分析基础实验 1		√		√											√
√		电路分析基础实验 2		√		√											√
√		模拟电子技术基础 A		√	√	√	√				√			√			√
√		模拟电子技术基础实验		√	√	√											√
√		数字电子技术基础 A		√	√	√	√				√			√			√
√		数字电子技术基础实验		√	√	√											√
√		信号与系统 A		√	√	√	√										√
		复变函数与积分变换 B	√														√
√	√	量子力学 A	√	√	√												√
		微机原理与通信接口 B		√			√						√				
√	√	电磁场与电磁波 A	√	√													√
√	√	光电子技术		√	√	√	√										√
√	√	固体物理 A		√													√
	√	物理光学		√		√											√
√	√	硬件描述语言与数字系统设计		√	√	√	√						√			√	√
√	√	单片机原理与应用		√	√	√	√						√			√	√
		高频电子线路 B		√	√	√	√										
	√	半导体物理基础		√		√											

专业 核心 课程	专业 特色 课程	课程名称	电子科学与技术专业毕业要求														
			(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)
		微电子工艺原理		√		√											
	√	光电测试技术		√		√											
		计算机网络与通信 A		√		√	√										
		信息理论与编码		√		√											
		通信原理 B		√		√											
		光纤通信 A		√	√	√											
		数据结构与算法 B	√	√			√										
		激光原理与技术 B		√	√	√											
		嵌入式微处理器系统 A		√	√	√	√						√				
	√	微电子器件与集成电路设计		√	√	√	√						√				
		电子封装与表面组装技术		√		√											
		集成电路测试技术		√		√											
		现代电子系统设计与制作		√	√	√	√						√				
		机器人原理及应用		√	√	√	√						√				
		计算机虚拟仪器技术		√	√	√	√										
		Java 语言与面向对象程序设计		√	√	√	√										
		集成电路设计与仿真		√	√	√	√						√				
		军事训练						√		√							
		电工电子实习 A					√	√									√
	√	模拟电子技术基础课程设计			√	√	√				√		√	√	√		√
	√	数字电子技术基础课程设计			√	√	√				√		√	√	√		√
		MATLAB 应用专项实践			√	√	√				√		√	√			√
	√	硬件描述语言与数字系统课程设计			√	√	√				√		√	√	√		√
	√	单片机应用课程设计			√	√	√				√		√	√	√		√
	√	专业方向课程设计（光电子、集成电路、电路与系			√	√	√				√		√	√			√
		专业实习						√				√	√	√		√	√
		毕业设计（论文）			√	√	√			√	√	√	√	√	√	√	√

三、课程教学进程图

III Teaching Process Map

电子科学与技术专业课程进程图



四、理论教学建议进程表
IV Theory Course Schedule

课程类别 Course Classification	课程性质 Course Nature	课程编号 Course Number	课程名称 Course Title	学分 Crts	学时分配 Including					建议修读学期 Suggested Term	先修课程 Prerequisite Course	第二专业 Second Major	
					总学时 Tot hrs.	实验 Exp.	上机 Operation	实践 Practice	课外 Extra-cur				
通识课程 Public Basic Courses	必修课 Required Courses	4220001110	思想道德修养与法律基础 Morals, Ethics and Fundamentals of Law	3	48			8		1-6			
		4220002110	中国近现代史纲要 Outline of Contemporary and Modern Chinese History	2	32					1-6			
		4220003110	毛泽东思想和中国特色社会主义理论体系概论 Introduction to Mao Zedong Thought and Socialism with Chinese Characteristics	4	96				32		1-6		
		4220005110	马克思主义基本原理 Marxism Philosophy	3	48				8		1-6		
		1060003130	军事理论 Military Theory	1	32				16		2-4		
		4210001110	体育 1 Physical Education I	1	32						1		
		4210002110	体育 2 Physical Education II	1	32						2	体育 1	
		4210003110	体育 3 Physical Education III	1	32						3	体育 2	
		4210004110	体育 4 Physical Education IV	1	32						4	体育 3	
		4030002110	大学英语 A1 College English A 1	3	64					16	1		
		4030003110	大学英语 A2 College English A II	3	64					16	2	大学英语 A1	
		4030004110	大学英语 A3 College English A III	3	64					16	3	大学英语 A2	
		4030005110	大学英语 A4 College English A IV	3	64					16	4	大学英语 A3	
		4120017110	大学计算机基础 Foundation of Computer	2	32			12			1		
		4120023110	计算机程序设计基础(C语言) Fundamentals of Computer Program Design (C Language)	3	48			12			1		
		1050001110	心理健康教育 Mental Health Education	1	16						1-2		
				小 计 Subtotal		35	736		24	64	64		
选修课 Elective Courses	创新创业类 Innovation and Entrepreneurship Courses			<p>全校学生要求至少取得 9 个学分,且必须选修艺术体育类课程中的艺术类相关课程,取得至少 2 个学分。理工科专业学生至少选修一门人文社科类或经济管理类课程,其他专业学生至少选修一门科学技术类课程。</p> <p>All students are required to obtain at least 9 credits, and must select art courses from <i>Art and Physical Education Courses</i> to obtain at least 2 credits. Science and engineering students should select at least one course from <i>Arts and Social Science Courses</i> or <i>Economy and Management Courses</i>, and other students should select at least one course from <i>Science and Technology Courses</i>.</p>									
	人文社科类 Arts and Social Science Courses												
	经济管理类 Economy and Management Courses												
	科学技术类 Science and Technology Courses												
	艺术体育类 Art and Physical Education Courses												

课程类别 Course Classification	课程性质 Course Nature	课程编号 Course Number	课程名称 Course Title	学分 Crts	学时分配 Including					建议修读学期 Suggested Term	先修课程 Prerequisite Course	第二专业 Second Major
					总学时 Tot hrs.	实验 Exp.	上机 Operation	实践 Practice	课外 Extra-cur			
专业课程 Specialized Courses	必修课 Required Courses	4110047110	量子力学 A Quantum Mechanics A	4	64					4	复变函数与积分变换	
		4110184120	微机原理与通信接口 Principles of Microcomputer and Communication Interface	2.5	40					4	模拟电子技术基础 A	
		4110011110	电磁场与电磁波 A Electromagnetic Fields and Waves A	3	48					5	复变函数与积分变换	
		4110034110	光电子技术 Photo-electronics Technology	3.5	56	12				5	大学物理 A 下	
		4110032110	固体物理 A Solid State Physics A	4	64					5	量子力学 A	
		4110086110	物理光学 Physical Optics	4	64	16				5	大学物理 A 下	
		4110193120	硬件描述语言与数字系统设计 Hardware Description Language and Digital System Design	2.5	40	16				5	数字电子技术基础 A	
		4110010110	单片机原理与应用 Principles and Application of Single Chip Microcomputer	3	48	8				5	数字电子技术基础 A	
		4110030110	高频电子线路 B High Frequency Electronic Circuits B	3.5	56	8				5	模拟电子技术基础 A	
		4110008110	半导体物理基础 Fundamentals of Semiconductor Physics	3	48	8				6	固体物理 A	
		4110264140	微电子器件与集成电路设计 Microelectronic Devices and IC Design	2.5	40	16				6	半导体物理基础	
		4110083110	微电子工艺原理 Theory of Microelectronic Manufacturing	2.5	40					6	半导体物理基础	
		小 计 Subtotal				38	608	84				
	选修课 Elective Courses	4110033110	光电测试技术 Photoelectric Testing Technology	2.5	40	10				6	光电子技术	
		4110042110	计算机网络与通信 A Computer Networks and Communication A	2.5	40	8				6	通信原理 B	
		4110096110	信息理论与编码 Information Theory and Coding	3	48	8				6		
		4110079110	通信原理 B Communication Principles B	3.5	56	8				6	数字电子技术基础实验	
		4110035110	光纤通信 A Optical Fiber Communications A	3.5	56	12				6	通信原理 B	
		4110220130	集成电路设计与仿真 Design and Simulation of Integrated circuits	2	32	16				7	半导体物理基础	
		4110039110	激光原理与技术 B Principle and Technology of Laser B	2.5	40	8				7	大学物理 A 下	
4110053110		嵌入式微处理器系统 A Embedded Microprocessor System A	3	48	12				7	单片机原理与应用		
4110007110		半导体器件 Semiconductor Devices	2.5	40	6				7	半导体物理基础		
4110020110		电子封装与表面组装技术 Electronic Packaging and Surface Assembling	2	32					7	微电子工艺原理		

课程类别 Course Classification	课程性质 Course Nature	课程编号 Course Number	课程名称 Course Title	学分 Crs	学时分配 Including					建议修读学期 Suggested Term	先修课程 Prerequisite Course	第二专业 Second Major	
					总学时 Tot hrs.	实验 Exp.	上机 Operation	实践 Practice	课外 Extra-cur				
		4110040110	集成电路测试技术 Measurement Techniques for IC	2.5	40	8				7	微电子器件与集成电路		
		4110248130	现代电子系统设计与制作 Modern Electronic System Design and Practice	2	32	32				7	数字电子技术基础 A		
		小 计 Subtotal		31.5	504	128							
修读说明：要求至少选修 15.5 学分。 Note: Minimum subtotal credits 15.5.													
个性课程 Personalized Course	选修课 Elective Courses	4110062110	数据结构与算法 C Data Structure and Algorithm B	2.5	40	6				4	计算机程序设计基础(C)		
		4110265140	机器人原理及应用 Robot Principle and Application	2	32	16				5	数字电子技术基础 A		
		4110172120	计算机虚拟仪器技术 Computer Virtual Instrument Technology	2	32	16				5	数字电子技术基础 A		
		4110266140	安卓应用程序设计 Android application programming	2.5	40	8				5			
		4110212130	Java 语言与面向对象程序设计 Java language and object oriented programming	2	32	8				6	计算机程序设计基础(C)		
		4110185120	无线传感网技术 Technology of Wireless Sensor Network	2.5	40	8				6			
		4120239130	数据库应用 Database Application	2.5	40					6			
		4120092110	网页设计 A Webpage Design A	2.5	40		12			7			
				小 计 Subtotal		18.5	296	62	12				
修读说明：学生可跨专业自主选择修读全校其他专业的课程，建议修读以上课程。要求至少选修 10 学分。 NOTE: Students can choose any courses from the other specialties, and are especially suggested to choose the courses above. Minimum subtotal credits: 10.													

五、集中性实践教学环节

V Practice Schedule

课程编号 Course Number	实践环节名称 Practice Courses Name	周数 Weeks	学分 Crs	建议修读学期 Suggested Term	第二专业 Second Major
1060002110	军事训练 Military Training	3	1.5	1	
4100068110	电工电子实习 A Practice in Electrical Engineering & Electronics A	2	2	3	
4110128110	模拟电子技术基础课程设计 Course Design on Analogous Electronic Circuit	1	1	3	
4110129110	数字电子技术基础课程设计 Course Design on Digital Electronic Circuit	1	1	4	

课程编号 Course Number	实践环节名称 Practice Courses Name	周数 Weeks	学分 Crts	建议修读学期 Suggested Term	第二专业 Second Major
4110243130	MATLAB 应用专项实践 MATLAB Application and Practice	1	1	5 (分散)	
4110239130	硬件描述语言与数字系统课程设计 Course Design of Hardware Description Language and Digital System	1	1	5	
4110213130	单片机应用课程设计 Course Design of Microcomputer Application	1	1	6 (分散)	
4110269140	专业方向课程设计 (期末) (光电子、集成电路、 电路与系统三选二) Course Design on speciality (Opto-electric 、 micro-electric、circuit and system, three choose two)	2	2	7	
4110140110	专业实习 Practice of Specialty	3	3	7	
4110199120	毕业设计 (论文) Graduation Thesis	17	11	8	
小 计 Subtotal		32	24.5		

六、其它要求

VI Other Demands

《形势与政策》课程，平均每学期 16 学时，一般按专题进行，在第七学期末考核，计 2 个课外学分，具体由学校学生发展指导中心负责组织落实。

Situation & Policy, a 16 hours/term with 2 credits course, is taught according to topics and tested at the end of the 7th term . The course will be arranged by the University Students' Affairs' Department in each school.

学院教学责任人：艾青松
专业培养方案责任人：吴友宇

【通信工程专业】2015 版本本科培养方案

Undergraduate Education Plan for Specialty in Communication Engineering (2015)

专业名称	通信工程	主干学科	信息与通信工程
Major	Communication Engineering	Major Disciplines	Information and Communication Engineering
计划学制	四年	授予学位	工学学士
Duration	4 Years	Degree Granted	Bachelor of Engineering
所属大类	电子信息类（工学）	大类培养年限	1 年
Disciplinary	Electronic information (Engineering)	Duration	1 years

最低毕业学分规定

Graduation Credit Criteria

课程类 Course Classification 课程性质 Course Nature	通识课程 Public Basic Courses	学科大类课程 Basic Disciplinary Courses	专业课程 Specialized Courses	个性课程 Personalized Course	集中性实践 Practice Courses	课外学分 Study Credit after Class	总学分 Total Credits
必修课 Required Courses	35	48	37.5	\	26.5	\	190
选修课 Elective Courses	9	\	14	10	\	10	

一、培养目标与毕业要求

I Educational Objectives & Requirement

(一) 培养目标

Educational Objectives

- 1、掌握电子技术、通信系统、通信网、信息处理和计算机应用等方面的专业知识；
 - 2、了解国际、国内的社会问题，了解科学技术的发展与伦理道德问题以及信息与通信行业的相关政策、法律和法规；
 - 3、具有在通信领域从事研究、设计、制造、运营的能力；
 - 4、具有运用科学知识和科学工具解决工程问题的能力；
 - 5、具有从事职业和终身学习的能力。
1. To grasp the professional knowledge such as electronic technology, communication system, communication network, information processing and computer application.
 2. To understand the international and domestic social problems, the development of scientific technology and ethical problems, and the relevant laws and regulations about information and communication industry.
 3. To have the ability to research, design, produce and operate in communication field.
 4. To have the ability to apply scientific knowledge and scientific tools to solve the engineering problems in practice.
 5. To have the ability to lifelong learning and qualify for the professional career.

(二) 毕业要求

Requirement for graduation

1. 具备良好的职业道德和操守，理解科技伦理和个人价值取向。
 - ①德、智、体、美均衡发展，具有较高的道德文化修养；
 - ②具备一定的社会关系、信息交流、法律、环境等人文与社会学的知识；
 - ③了解科技伦理，遵守所属职业体系的行为准则，具备良好的职业道德；
 - ④具有解析自身发展需求，明确个人价值取向，制定并实施继续职业发展计划的能力。
2. 具有责任担当、贡献社会、保护环境意识，了解相关的地域文化、商务保证和法律法规。
 - ①具有良好的质量、安全、服务和环保意识，掌握一定的职业健康安全、保护环境的法律法规方面的知识；
 - ②了解相关的地域文化，能与社会和谐相处；

- ③具有诚信对待商务保证，遵守相关法律法规，对职业、社会、环境承担责任的素质；
3. 具有技术经济分析、经济效益及社会效益分析能力和一定的经济管理知识。
- ① 具备一定的工程经济知识，了解技术经济分析方法；
- ② 了解经济效益分析方法，具备经济效益及社会效益分析能力；
- ③ 具备一定的经济管理和企业管理的知识；
- ④ 对工程项目的需求分析与项目管理有一定了解。
4. 具有良好的沟通和交流能力。
- ① 能够使用技术语言，在跨文化环境下进行沟通与表达；
- ② 能够进行工程文件的编纂，如：可行性分析报告、项目任务书、投标书等，并可进行说明、阐释；
- ③ 具备较强的人际交往能力，能够控制自我并了解、理解他人需求和意愿；
- ④ 具备较强的适应能力，自信、灵活地处理新的和不断变化的人际环境和工作环境；
- ⑤具备团队合作精神，并具备一定的协调、管理、竞争与合作的初步能力。
5. 具备从事通信工程专业领域相关职业的基本素养。
- ①了解本专业的发展现状和趋势，能够跟踪本领域最新技术发展趋势，具备收集、分析、判断、归纳和选择国内外相关技术信息的能力；
- ②具有国际视野，具备良好的专业外语能力和跨文化的交流、竞争与合作能力，以适应技术进步和社会需求；
- ③掌握与通信工程专业理论与技术相关的数学、物理基础知识与工程学基础知识；
- ④掌握通信工程专业所必须具备的电子信息基础知识、通信系统基本理论与技术、通信网基本理论与技术和计算机基础及应用技术；
- ⑤适应现代技术发展，培养终身学习能力，具有适应通信工程新技术发展的能力。
6. 具备从事通信工程专业技术研究与开发的职业能力。
- ①掌握电子电路的相关知识与技术，了解常用元器件、IC 等部件的种类、性能，能够针对电路性能指标要求以及元器件、IC 等部件的性能指标进行器件的合理选型；能用EDA工具进行电路的辅助设计，了解实用设计方法和现代设计方法。
- ②掌握信息与通信系统的基本知识、相关理论以及信号与系统的基本分析方法，包括无线通信系统、光纤通信系统、程控交换系统等。
- ③掌握数字通信网络的基本原理与技术，了解现代交换网络以及计算机通信网络的相关知识与技术，了解信息安全的相关知识与技术，具备初步的数字通信系统与网络的分析与设计能力。
- ④掌握数字信号与信息处理的基本理论、算法及其实现技术与方法，了解模式识别技术和图像与语音信号传输技术，熟悉现代多媒体信息通信的基本原理和相关技术。
- ⑤掌握计算机及其应用的相关知识和相关技术。掌握高级语言程序设计基础和相关应用技术，了解信号采集技术，掌握单片机和嵌入式系统原理与设计方法，初步具备使用嵌入式系统设计与开发信号处理、信息通信和信息控制等方面的通信系统的能力，以及系统调试、测试与维护的能力。
- ⑥掌握通信领域常用的计算机仿真软件的应用，了解虚拟系统环境的原理和应用。
1. To have the good professional ethics and integrity, understand ethics of science and technology and personal values.
 - 1) Balancing development of the moral, intellectual, physical and beauty, having the high moral culture.
 - 2) Having a certain social relations, information communication, laws, environment and humanities and sociology knowledge.
 - 3) Understanding science and technology ethics, abiding by the professional system's code of conduct, having good professional ethics.
 - 4) Having an ability to analyze its own development needs, identify personal value orientation, formulate and implement the plan of continuing professional development.
 2. To have the responsibility and consciousness of contributing to society, protecting the environment; to understand the relevant regional culture, commercial laws and regulations.
 - 1) Having good consciousness of quality, safety, service and environment protection. Mastering certain aspects knowledge of occupational health and safety, environment protection laws and regulations.
 - 2) Understanding the relevant region culture, having harmonious relationships with society.
 - 3) Having the quality of treating business assurance with integrity, abiding by the relevant laws and regulations, bearing responsibility of professions, social and environment.
 3. To have the ability to analyze technical economics, economic benefit and social benefit; to master the knowledge of economic management.

- 1) Having the economic knowledge of engineering in certain, and understanding the technical and economic analysis methods.
- 2) Understanding the economic analysis method, having the ability to analyze the economic benefit and social benefit.
- 3) Having the knowledge of economic management and enterprise management in certain.
- 4) Understanding the engineering project demand analysis and project management.
4. To have a good ability to communication
 - 1) Being able to communicate and express using technical language under the cross-culture environment.
 - 2) Being able to compiling engineering document, such as: feasibility analysis report, project brief, tender, etc., and can be illustrated and interpretation.
 - 3) Having strong interpersonal skills, being able to control myself, understanding and realizing other demands and willingness.
 - 4) Having strong ability to adapt, confidently and flexibly handle the new and changing human environment and working condition.
 - 5) Having team work spirit, and processing preliminary ability to coordination, management, competition and cooperation.
5. To have the qualification for to a career in communication engineering professional fields related.
 - 1) Understanding this professional development status and trends, tracking the latest technology development trends, processing ability to collect, analyze, judge, conclude and select domestic and foreign relevant technical information.
 - 2) Acquiring international vision, professional foreign language skills and ability of cross-culture communication, competition and cooperation, to adapt to the technology progress and social needs.
 - 3) Mastering theory and technology of communication engineering and related basic knowledge of mathematics, physics and engineering.
 - 4) Mastering the basic theory and knowledge in communication engineering major: Basic Theory and Technology of Communication System, Basic Theory and Technology of Communication Network, Fundamentals and Applications of Computer Technology.
 - 5) Adapting to the development of modern technology, cultivating a lifelong learning ability, processing ability to adapt to the development of the new technology in communication engineering.
6. To have the career skills of research and development in communication engineering technology
 - 1) Mastering the knowledge and technology of electronic circuits, understanding the types and properties of components, IC and other components, reasonable selecting devices based on the performance indicators of circuit, IC and other components, being able to design circuits with EDA tools, learning about practical design methods and modern design methods.
 - 2) Mastering the basic knowledge of information and communication systems, theories and fundamental analysis of signals and systems, including wireless communications systems, fiber optic communication systems, program-controlled switching systems, and so on.
 - 3) Grasping the basic principles of digital communication networks and technologies, understanding the relevant knowledge and technology of modern switched networks and computer communication networks for information security knowledge and technology, being initial with analysis and design capabilities of digital communication systems and network .
 - 4) Mastering the basic theory, algorithms and implementation techniques and methods of digital signal and information processing, understanding pattern recognition technology and images and voice signal transmission technology, being familiar with the basic principles and related technology of modern multimedia information communication.
 - 5) Acquiring the relevant knowledge and related technologies of computers and their applications. Mastering the high-level language programming foundation and related application technology, learning about signal acquisition technology, mastering microcontroller and embedded systems theory and design methods, having the ability to use embedded system design and development, signal processing, information and communication, information control and other aspects of communication system, and possessing the capacity of commissioning, testing and maintaining system.
 - 6) Mastering the commonly used software for computer simulation in the field of communication, understanding the principles and applications of virtual system environment.

附：培养目标实现矩阵

The Matrix for Educational Objectives

	培养目标 1	培养目标 2	培养目标 3	培养目标 4	培养目标 5
毕业要求 1		√			√
毕业要求 2		√		√	
毕业要求 3	√		√	√	√
毕业要求 4	√		√	√	√
毕业要求 5	√		√	√	√
毕业要求 6	√		√	√	√

二、专业核心课程与专业特色课程

II Core Courses and Characteristic Courses

(一) 专业核心课程:

信号与系统、电路分析基础、数字电子技术基础、模拟电子技术基础、单片计算机原理与通信接口、通信原理、数字信号处理、信息理论与编码、高频电子线路。

Core Courses: Signal and System, Fundamentals of Circuit Analysis, Fundamentals of digital electronic technique , Fundamentals of Analog Electronic Technology, Single chip computer principle and Communication Interface, Communication Principles, Digital signal processing, Information Theory and Coding , High-Frequency Electronic Circuit.

(二) 专业特色课程:

信号与系统、电路分析基础、数字电子技术基础、单片计算机原理与通信接口、嵌入式系统及其应用。

Characteristic Courses: Signal and System, Fundamentals of Circuit Analysis, Fundamentals of Digital Electronic Technique, Single Chip Computer Principle and Communication Interface, Embedded System and Application.

附：通信工程专业课程与毕业要求对应关系表

专业 核心 课程	专业 特色 课程	课程名称	通信工程专业毕业要求																										
			1 ①	1 ②	1 ③	1 ④	2 ①	2 ②	2 ③	3 ①	3 ②	3 ③	3 ④	4 ①	4 ②	4 ③	4 ④	4 ⑤	5 ①	5 ②	5 ③	5 ④	5 ⑤	6 ①	6 ②	6 ③	6 ④	6 ⑤	6 ⑥
		思想道德修养与法律基础	√	√			√																						
		中国近现代史纲要	√	√			√																						
		毛泽东思想和中国特色社会主义理论体系概论	√	√		√																							
		马克思主义基本原理	√	√			√																						
		军事理论		√									√																
		体育	√																										
		心理健康教育	√	√									√																
		军事训练	√										√																
		大学英语											√																
		大学计算机基础											√																
		大学计算机基础											√																
		计算机程序设计基础 (C语言)											√																
		专业导论	√																										
		高等数学	√																										
		线性代数																											
		复变函数与积分变换																											
		概率论与数理统计																											
		大学物理																											

通信工程专业毕业要求

课程名称	通信工程专业毕业要求																											
	1 ①	1 ②	1 ③	1 ④	2 ①	2 ②	2 ③	3 ①	3 ②	3 ③	3 ④	4 ①	4 ②	4 ③	4 ④	4 ⑤	5 ①	5 ②	5 ③	5 ④	5 ⑤	6 ①	6 ②	6 ③	6 ④	6 ⑤	6 ⑥	
物理实验																			√			√						
电路分析基础	√																		√	√	√	√	√					
电路分析基础实验																			√	√	√	√	√					
模拟电子技术基础	√																		√	√	√	√	√					
模拟电子技术基础实验																			√	√	√	√	√					
数字电子技术基础	√																		√	√	√	√	√					
数字电子技术基础实验																			√	√	√	√	√					
信号与系统	√																		√	√	√	√	√					
数据结构与算法																				√	√	√	√	√	√	√	√	√
高频电子线路	√																		√				√	√				
高频电子线路实验																			√	√	√	√	√	√	√	√	√	√
单片计算机原理与通信接口	√																		√									√
电磁场与电磁波																			√	√	√	√	√	√	√	√	√	√
通信原理	√																			√	√	√	√	√	√	√	√	√
通信原理实验																				√	√	√	√	√	√	√	√	√
现代交换技术																			√	√	√	√	√	√	√	√	√	√
嵌入式系统及其应用	√																		√	√	√	√	√	√	√	√	√	√

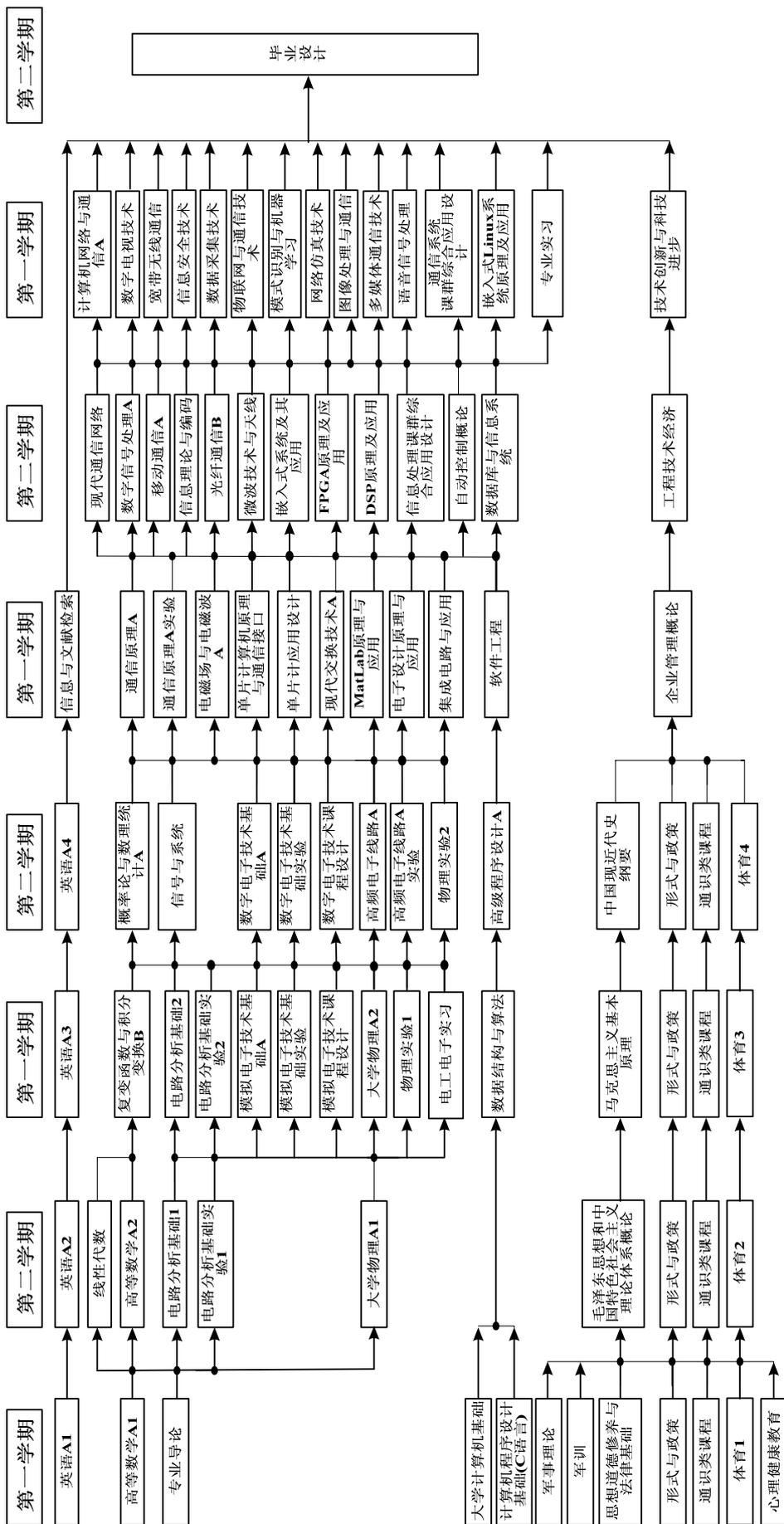
通信工程专业毕业要求

课程名称	通信工程专业毕业要求																												
	1 ①	1 ②	1 ③	1 ④	2 ①	2 ②	2 ③	3 ①	3 ②	3 ③	3 ④	4 ①	4 ②	4 ③	4 ④	4 ⑤	5 ①	5 ②	5 ③	5 ④	5 ⑤	6 ①	6 ②	6 ③	6 ④	6 ⑤	6 ⑥		
数字电视技术																								√					
物联网与通信技术																				√					√				
网络仿真技术																				√					√				
模式识别与机器学习																									√				
数据采集技术																							√						
嵌入式 Linux 系统原理及应用																					√								
语音信号处理																									√				
集成电路与应用																							√						
自动控制概论																								√					
信息与文献检索	√												√																
企业管理概论	√							√	√	√			√																
工程技术经济	√							√	√				√																
技术创新与科技进步				√																									
电工电子实习																					√								
模拟电子技术基础课程设计																					√								
数字电子技术基础课程设计																					√								
Matlab 原理与应用																					√								
PROTEL 应用实践																							√						

		通信工程专业毕业要求																											
专业 核心 课程	专业 特色 课程	课程名称	1	1	1	2	2	2	3	3	3	3	3	4	4	4	4	4	4	5	5	5	5	6	6	6	6	6	
			①	②	③	④	①	②	③	①	②	③	④	①	②	③	④	⑤	①	②	③	④	⑤	①	②	③	④	⑤	⑥
		学科基础课群综合应用设计												√							√			√				√	
		信息处理课群综合应用设计												√												√			√
		通信系统课群综合应用设计												√									√					√	
		单片机应用设计												√										√				√	
		专业实习												√									√				√	√	
		毕业设计（论文）																						√			√	√	

三、课程教学进程图
III Teaching Process Map

第四学年 第三学年 第二学年 第一学年



四、理论教学建议进程表

IV Theory Course Schedule

课程类别 Course Classification	课程性质 Course Nature	课程编号 Course Number	课程名称 Course Title	学分 Crts	学时分配 Including					建议修读学期 Suggested Term	先修课程 Prerequisite Course	第二专业 Second Major		
					总学时 Tot hrs.	实验 Exp.	上机 Operation	实践 Practice	课外 Extra-cur					
通 识 课 程 Public Basic Courses	必 修 课 Required Courses	4220001110	思想道德修养与法律基础 Morals, Ethics and Fundamentals of Law	3	48			8		1-6				
		4220003110	毛泽东思想和中国特色社会主义理论体系概论 Introduction to Mao Zedong Thought and Socialism with Chinese Characteristics	4	96			32		1-6				
		4220005110	马克思主义基本原理 Marxism Philosophy	3	48			8		1-6				
		4220002110	中国近现代史纲要 Outline of Contemporary and Modern Chinese History	2	32					1-6				
		1060001110	军事理论 Military Theory	1	32			16		1-4				
		4210001110	体育 1 Physical Education I	1	32					1				
		4210002110	体育 2 Physical Education II	1	32					2	体育 1			
		4210003110	体育 3 Physical Education III	1	32					3	体育 2			
		4210004110	体育 4 Physical Education IV	1	32					4	体育 3			
		1050001110	心理健康教育 Mental Health Education	1	16					1-2				
		4030002110	大学英语 A1 College English A 1	3	64				16	1				
		4030003110	大学英语 A2 College English A II	3	64				16	2	大学英语 A1			
		4030004110	大学英语 A3 College English A III	3	64				16	3	大学英语 A2			
		4030005110	大学英语 A4 College English A IV	3	64				16	4	大学英语 A3			
		4120017110	大学计算机基础 Foundation of Computer	2	32		12			1				
		4120023110	计算机程序设计基础(C语言) Fundamentals of Computer Program Design(C)	3	48		12			1				
					小 计 Subtotal	35	736		24	64	64			
		选修课 Elective Courses	创新创业类 Innovation and Entrepreneurship Courses	<p>全校学生要求至少取得 9 个学分,且必须选修艺术体育类课程中的艺术类相关课程,取得至少 2 个学分。理工科专业学生至少选修一门人文社科类或经济管理类课程,其他专业学生至少选修一门科学技术类课程。</p> <p>All students are required to obtain at least 9 credits, and must select art courses from <i>Art and Physical Education Courses</i> to obtain at least 2 credits. Science and engineering students should select at least one course from <i>Arts and Social Science Courses</i> or <i>Economy and Management Courses</i>, and other students should select at least one course from <i>Science and Technology Courses</i>.</p>										
			人文社科类 Arts and Social Science Courses											
经济管理类 Economy and Management Courses														
科学技术类 Science and Technology Courses														
艺术体育类 Art and Physical Education Courses														

课程类别 Course Classification	课程性质 Course Nature	课程编号 Course Number	课程名称 Course Title	学分 CrS	学时分配 Including					建议修读学期 Suggested Term	先修课程 Prerequisite Course	第二专业 Second Major
					总学时 Tot hrs.	实验 Exp.	上机 Operation	实践 Practice	课外 Extra-cur			
专 业 课 程 Specialized Courses	必 修 课 Required Courses	4110270140	数据结构与算法 Data Structure and Algorithm	2.5	40		8			3		
		4110028110	高频电子线路 A High- frequency Electronic Circuit A	3.5	56					4		
		4110029110	高频电子线路 A 实验 Experiments of High- frequency Electronic	0.5	16	16				4		
		4110163120	单片计算机原理与通信接口 Single Chip Computer Principle and Communication Interface	4	64	8				5		
		4110011110	电磁场与电磁波 A Electromagnet Field and Electromagnetic	3	48					5		
		4110077110	通信原理 A Communication Principles A	3.5	56					5		
		4110078110	通信原理 A 实验 Experiments of Communication Principles A	0.5	16	16				5		
		4110089110	现代交换技术 A Modern Switching Technology A	2.5	40	12				5		
		4110223130	嵌入式系统及其应用 Embedded system and Application	3	48	8				6		
		4110071110	数字信号处理 A Digital Signal Processing A	4	64	10				6		
		4110036110	光纤通信 B Optic Fiber Communication B	2.5	40	12				6		
		4110096110	信息理论与编码 Information Theory and Coding	3	48	8				6		
		4110098110	移动通信 A Mobile Communication A	2.5	40	8				6		
		4110042110	计算机网络与通信 A Computer Network and Communication A	2.5	40	8				7		
	小 计 Subtotal				37.5	616	106	8				
	选 修 课 Elective Courses	4110027110	高级程序设计 A Advanced Computer Program Design A	3	48	8				4		
		4110218130	电子设计原理与应用 Principle and Application of Electronic	2	32					5		
		4110267140	集成电路与应用 Integrated Circuit and Application	1.5	24					5		
		4110224130	软件工程 Software Engineering	2	32					5		
		4110004110	FPGA 原理及应用 Principal and Application of FPGA	3	48	16				6		
4110063110		数据库与信息系统 Database and Information System	2	32	8				6			
4110231130		微波技术与天线 Microwave Technology and Antenna Theory	3	48	8				6			
4110092110		现代通信网络 Modern Communication Network	2.5	40					6			
4110157120		DSP 原理及应用 Principle and Application of DSP	2.5	40	8				6			
4100146140		自动控制概论 Introduction to Automatic Control	2	32					6			

课程类别 Course Classification	课程性质 Course Nature	课程编号 Course Number	课程名称 Course Title	学分 CrS	学时分配 Including					建议修读学期 Suggested Term	先修课程 Prerequisite Course	第二专业 Second Major	
					总学时 Tot hrs.	实验 Exp.	上机 Operation	实践 Practice	课外 Extra-cur				
		4010220140	工程技术经济 Engineering Economic	2	32					6			
		4110080110	图像处理与通信 Image Processing and Communication	3	48	8				7			
		4110095110	信息安全技术 Information Security Technology	2	32	0				7			
		4110025110	多媒体通信技术 Multimedia Communication Technology	2	32	8				7			
		4110046110	宽带无线通信 Wide-band Wireless Communications	2.5	40					7			
		4110064110	数字电视技术 Digital Television Technology	2	32					7			
		4110187120	物联网与通信技术 The Internet of Things and Communication	2.5	40	8				7			
		4110182120	网络仿真技术 Network Simulation Technology	2	32					7			
		4110221130	模式识别与机器学习 Pattern Recognition & Machine Learning	2	32					7			
		4110245130	数据采集技术 Data Collection Technology	2	32	8				7			
		4110222130	嵌入式 Linux 系统原理及应用 The Principle and Application of Embedded Linux system	3	48		16			7			
		4110240130	语音信号处理 Speech Signal Processing	2.5	40	8				7			
		小 计 Subtotal		51	816	88	16						
修读说明：要求至少选修 14 学分。 NOTE: Minimum subtotal credits: 14													
个性化课程 Personalized Course	选修课 Elective Courses	4110245130	移动设备应用开发技术 Mobile Device Application Development	2	32	8				6	C 语言程序设计		
		4110185120	无线传感网技术 Technology of Wireless Sensor Network	2.5	40	8				6			
		4110166120	多核多线程技术 Multi-core and Multi Thread Technology	2	32	8				7			
		4110268140	技术创新与科技进步 Technology Innovation and Scientific and	1	16					7			
		小 计 Subtotal		7.5	120	24							
		修读说明：学生可跨专业自主选择修读全校其他专业的课程，建议修读以上课程。要求至少选修 10 学分。 NOTE: Students can choose any courses from the other specialties, and are especially suggested to choose the courses above. Minimum subtotal credits: 10.											

五、集中性实践教学环节

V Practice Schedule

课程编号 Course Number	实践环节名称 Practice Courses Name	周数 Weeks	学分 CrS	建议修读学期 Suggested Term	第二专业 Second Major
1060002110	军事训练 Military Training	3	1.5	1	

课程编号 Course Number	实践环节名称 Practice Courses Name	周数 Weeks	学分 Crts	建议修读学期 Suggested Term	第二专业 Second Major
4100068110	电工电子实习 A Practice in Electrical Engineering & Electronics A	2	2	3	
4110128110	模拟电子技术基础课程设计 Course Design on Fundamentals of Analog Electronics Circuit	1	1	3 (分散)	
4110129110	数字电子技术基础课程设计 Course Design on Fundamentals of Digital Electronic Circuit	1	1	4 (分散)	
4050242130	Matlab 原理与应用 Matlab Application and Practice	1	1	5 (分散)	
4110214130	单片机应用设计 Microcomputer application practice	2	2	5 (分散)	
4110236130	信息处理课群综合应用设计 Course Design on Comprehensive Specialty	2	2	6 (分散)	
4110229130	通信系统课群综合应用设计 Comprehensive Training and Design on Communication System	2	2	7 (分散)	
4110131110	专业实习 Specialty practice	3	3	7	
4110197120	毕业论文 Graduation Thesis	17	11	8	
小 计 Subtotal		34	26.5		

六、修读指导

VI Recommendations on Course Studies

本专业课程中涉及电系列课程、计算机系列课程、信息处理系列课程和通信系统及其应用技术系列课程等，学生在选修课程时应注意所选课程的衔接性和系列性。

There are electric series course, computer series courses, Information processing series courses, communications system series course and Application technology series courses in the professional courses. When you choice the elective courses, Please attention to the Cohesion sex and seriation about them.

《形势与政策》课程，平均每学期 16 学时，一般按专题进行，在第七学期末考核，计 2 个课外学分，具体由学校学生发展指导中心负责组织落实。

Situation & Policy, a 16 hours/term with 2 credits course, is taught according to topics and tested at the end of the 7th term . The course will be arranged by the University Students' Affairs' Department in each school.

学院教学责任人：艾青松
专业培养方案责任人：刘 岚

【信息工程专业】2015 版本本科培养方案

Undergraduate Education Plan for Specialty in Information Engineering

专业名称	信息工程	主干学科	信息与通信工程、电子科学与技术
Major	Information Engineering	Major	Information and Communication Engineering, Electronics Science and Technology
Disciplines			
计划学制	四年	授予学位	工学学士
Duration	4 Years	Degree Granted	Bachelor of Engineering
所属大类	电子信息类（工学）	大类培养年限	1 年
Disciplinary	Electronic information (Engineering)	Duration	1 years

最低毕业学分规定

Graduation Credit Criteria

课程类 Course Classification 课程性质 Course Nature	通识课程 Public Basic Courses	学科大类课程 Basic Disciplinary Courses	专业课程 Specialized Courses	个性课程 Personalized Course	集中性实践 Practice Courses	课外学分 Study Credit after Class	总学分 Total Credits
必修课 Required Courses	35	48	40.5	\	22.5	\	190
选修课 Elective Courses	9	\	15	10	\	10	

一、培养目标与毕业要求

I Educational Objectives & Requirement

(一) 培养目标

- (1) 具备一定的人文素养、较强的社会责任感和工程职业道德。
 - (2) 具备较扎实的自然科学和工程科学基础，较好地掌握信息工程专业的核心知识。
 - (3) 具备在专业相关技术领域从事软硬件开发的专业技能，具有一定的工程素养。
 - (4) 了解信息工程专业的技术发展趋势，具有终身学习的愿望和能力。
 - (5) 具备基本的沟通能力和较好的团队协作精神。
- (1) Helps students develop their humanity accomplishment as well as their social responsibility and professional ethics of engineering.
 - (2) Helps students improve their foundations of natural science and engineering with a well planned core curriculum of this discipline.
 - (3) Prepares students for careers and research fields where an understanding of both hardware and software systems is essential.
 - (4) Makes students rich in both desire and ability to further study for a life time by giving them a holistic view of this field and its big trends.
 - (5) Equips students with good communication skills and teamwork spirits.

(二) 毕业要求

- (1) 具备较强的社会责任感、职业道德以及良好的思想素质、心理素质、身体素质和相关人文素养。
 - (2) 掌握本专业的基本理论及工程知识，能够胜任本专业领域的初级职业要求。
 - (3) 具备进行终身学习的愿望和能力，具有相应的自我管理能力和适应信息工程技术不断发展的能力。
 - (4) 具备基本的英语文献阅读能力，能够运用英语进行有效的技术沟通和交流。
 - (5) 掌握运用现代信息技术进行文献检索和获取专业信息的能力。
 - (6) 具备良好的团队合作及协作能力，具有相应的口头和书面沟通能力，能够使用工程技术语言有效地进行交流。
 - (7) 具备有效完成试验和模拟仿真设计的能力，并能够运用所学知识对实验数据和结果进行分析和解释。
 - (8) 具备基本的高级语言知识体系及程序设计能力。
 - (9) 能够理解和使用基本的数据结构和数据库，并进行相应的数据库开发。
 - (10) 具备初步的网络体系结构知识，了解网络的常用建立方法和过程，并具备相应的网络工程应用能力。
 - (11) 掌握电子电路的基础体系结构，能有效运用数字电子技术基础、模拟电子技术基础、电路分析基础、高频电子线路等相关知识，对电子电路进行分析。
 - (12) 能够理解电路系统结构，具备基本的电路设计与调试能力。
 - (13) 能够理解微处理器体系结构，能有效运用单片机及嵌入式系统原理、单片机系统设计与调试、电子线路 EDA、微机原理与通信接口、FPGA 系统设计与调试等相关知识，开发微处理器应用系统。
 - (14) 掌握信号与系统的基础理论及信号处理的基本方法。
 - (15) 能够理解信息处理系统的结构，能有效运用信号与系统、数字信号处理、数字图像处理、随机信号分析、数字语音处理等相关知识，开发信息处理系统。
- (1) Having strong social responsibility, professional ethics and good ideological quality, psychological quality, physical quality and relative humanity accomplishment.
 - (2) Mastering the basic theory and engineering knowledge. Being well qualified for the entry-level jobs of the relative fields.
 - (3) Being rich in both desire and ability of further study for a life time. Having suitable abilities of self-management, and abilities of adapting to the continuous development of information engineering and technology.
 - (4) Being able to read and understand the English literatures in a superficial level, and to communicate with other person about technology effectively.
 - (5) Being able to retrieve literatures for specialized knowledge and information with the help of modern information technology.
 - (6) Having the capacity of cooperation, teamwork. Feeling free in both oral and written communicating especially with engineering expression in technical language.
 - (7) Being able to finish experiments and simulation designs effectively, then analyze and interpret the experiment data and result based on what the students have learned.
 - (8) Being equipped with the basic knowledge structure on high-level programming language, and the coding capability.
 - (9) Being able to understand and apply basic data structures and databases in a flexible way, and

can develop some simple databases.

- (10) Having the elementary knowledge on network system structure, and grasping the usually used methods and processes on establishing a network system, then mastering the basic ability on network engineering application.
- (11) Being well equipped with the basic knowledge on electronics and circuits in order to conduct a basic analyzing.
- (12) Having the basic knowledge structure on circuit, and Possessing the basic ability of circuit design and debugging based on the understanding on fundamentals of analog electronic circuit, fundamentals of digital electronic circuit, circuit analysis, high-frequency electronic circuits, principle of MCU and embedded system, etc.
- (13) Having the basic knowledge structure on micro-processor, and Possessing the basic ability of micro-processor application system developing based on the understanding on principle of MCU and embedded system, design and debug of MCU based system, electronic design automation of electronic circuit, principles of microcomputer and communication interface, design and debug of FPGA based system, etc.
- (14) Mastering the fundamentals of signal and system as well as the basic methods of signal processing.
- (15) Having the basic knowledge structure on information processing system, and Possessing the basic ability of information processing system developing based on the understanding on Signal and System, Digital Signal Processing, Digital Image Processing, Random Signal Analysis, Digital Speech Processing, etc.

附：培养目标实现矩阵

	培养目标 1	培养目标 2	培养目标 3	培养目标 4	培养目标 5
毕业要求 1	√				√
毕业要求 2	√			√	√
毕业要求 3	√			√	
毕业要求 4	√	√			√
毕业要求 5		√	√	√	√
毕业要求 6	√				√
毕业要求 7		√	√		
毕业要求 8		√			
毕业要求 9		√		√	
毕业要求 10			√		
毕业要求 11		√			
毕业要求 12			√		
毕业要求 13		√	√		
毕业要求 14		√			
毕业要求 15			√		

二、专业核心课程与专业特色课程

II Core Courses and Characteristic Courses

(一) 专业核心课程：

电路分析基础、信号与系统 A、模拟电子技术基础、数字电子技术基础、微机原理

与通信接口、信息理论与编码、感测技术、通信原理 A、数字信号处理 A、数字图像处理、计算机网络与通信。

Fundamentals of Circuit Analysis, Signal and System A, Fundamentals of Analog Electronic Circuit A, Fundamentals of Digital Technology, Principles of Microcomputer and Communication Interface, Information Theory and Coding, Sensor and Detection Technology, Communication Principles A, Digital Signal Processing A, Digital Image Processing, Computer Networks and Communication.

(二) 专业特色课程:

单片机及嵌入式系统原理、虚拟仪器、电子线路设计与制作、无线传感网技术、数字图像处理。

Characteristic Courses: Principle of MCU and Embedded System, Virtual instrument, Electronic Circuit Design and Practice, Computer Networks and Communication, Wireless Sensing Network Technology, Digital image processing.

附：毕业要求实现矩阵：

专业 核心 课程	专业 特色 课程	课程名称	信息工程专业毕业要求														
			(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)
		思想道德修养与法律基础	√		√												
		中国近现代史纲要	√		√												
		毛泽东思想和中国特色社会主义理论体系概论	√		√												
		马克思主义基本原理	√		√												
		军事理论	√														
		体育 1		√													
		体育 2		√													
		体育 3		√													
		体育 4		√													
		心理健康教育		√													
		大学英语 A1		√	√	√											
		大学英语 A2		√	√	√											
		大学英语 A3		√	√	√											
		大学英语 A4		√	√	√											
		大学计算机基础		√													
		计算机程序设计基础(C 语言)		√						√							

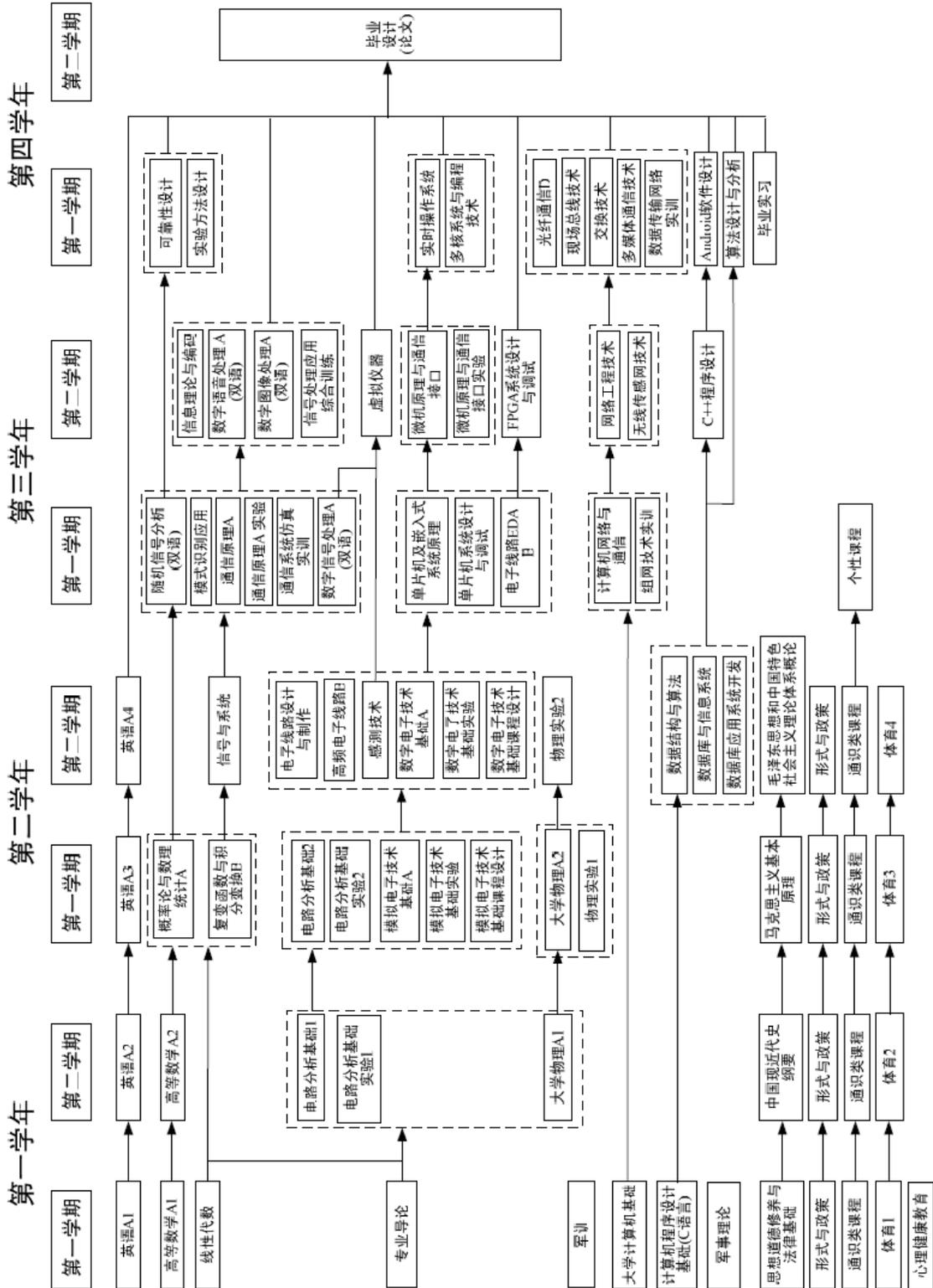
专业 核心 课程	专业 特色 课程	课程名称	信息工程专业毕业要求														
			(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)
		专业导论		√													
		高等数学 A1		√	√												
		高等数学 A1		√	√												
		线性代数		√	√												
		概率论与数理统计 B		√	√												
		大学物理 A1		√	√												
		大学物理 A2		√	√												
		物理实验 A1		√													
		物理实验 A2		√													
√		电路分析基础 B 上		√									√				
√		电路分析基础 B 下		√									√				
		电路分析基础实验 1		√									√				
		电路分析基础实验 2		√									√				
√		模拟电子技术基础 A		√									√				
		模拟电子技术基础实验		√			√	√	√				√				
√		数字电子技术基础 A		√									√				
		数字电子技术基础实验		√			√	√	√				√				
√		信号与系统 A		√							√					√	
		复变函数与积分变换 B		√	√												
		数据结构与算法		√							√	√					
		数据库与信息系统		√							√	√					
		高频电子线路 B			√								√	√			
√		感测技术			√									√			
	√	电子线路设计与制作			√								√				
	√	单片机及嵌入式系统原理			√						√			√	√		

专业 核心 课程	专业 特色 课程	课程名称	信息工程专业毕业要求														
			(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)
		单片机系统设计与调试			√		√	√	√					√	√		
√		通信原理			√					√							√
		通信原理 A 实验			√		√	√	√								
√		数字信号处理 A			√					√						√	√
√		计算机网络与通信			√						√						
		组网技术实训			√		√	√	√		√						
√		微机原理与通信接口			√									√			
		微机原理与通信接口实验			√		√	√	√					√			
√	√	数字图像处理 A			√					√						√	√
√		信息理论与编码			√											√	
		信号处理应用综合训练			√		√	√	√								
		可靠性设计			√												√
		电子线路 EDA B			√		√	√	√	√			√				
		通信系统仿真实训			√		√	√	√								
		随机信号分析			√											√	
		模式识别应用			√												√
		FPGA 系统设计与调试			√		√	√	√	√							
		网络工程技术			√						√						
		数字语音处理 A			√												√
		C++程序设计			√					√	√						
	√	无线传感网技术			√						√						
	√	虚拟仪器			√				√								
		交换技术			√						√						
		现场总线技术			√						√						
		实时操作系统			√					√				√			

专业 核心 课程	专业 特色 课程	课程名称	信息工程专业毕业要求														
			(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)
		光纤通信 D			√							√					
		多媒体通信技术			√						√						
		多核系统与编程技术			√										√		
		算法设计与分析			√											√	
		实验方法设计			√					√							
		Android 软件设计			√						√						
		军事训练	√	√													
		电工电子实习 A							√	√							
		模拟电子技术基础课程设计 (期末)							√	√							
		数字电子技术基础课程设计 (期末)							√	√							
		数据库应用系统开发						√	√	√						√	
		数据传输网络实训						√	√	√						√	
		毕业实习	√					√	√							√	
		毕业设计(论文)				√	√	√	√	√	√	√	√	√	√	√	

三、课程教学进程图

III Teaching Process Map



四、理论教学建议进程表

IV Theory Course Schedule

课程类别 Course Classification	课程性质 Course Nature	课程编号 Course Number	课程名称 Course Title	学分 Crs	学时分配 Including					建议修读学期 Suggested Term	先修课程 Prerequisite Course	第二专业 Second Major		
					总学时 Tot hrs.	实验 Exp.	上机 Operation	实践 Practice	课外 Extra-cur					
通 识 课 程 Public Basic Courses	必 修 课 程 Required Courses	4220001110	思想道德修养与法律基础 Morals, Ethics and Fundamentals of Law	3	48			8		1-6				
		4220002110	中国近现代史纲要 Outline of Contemporary and Modern Chinese History	2	32					1-6				
		4220003110	毛泽东思想和中国特色社会主义理论体系概论 Introduction to Mao Zedong Thought and Socialism with Chinese Characteristics	4	96			32		1-6				
		4220005110	马克思主义基本原理 Marxism Philosophy	3	48			8		1-6				
		1060001110	军事理论 Military Theory	1	32			16		1-4				
		4210001110	体育 1 Physical Education I	1	32					1				
		4210002110	体育 2 Physical Education II	1	32					2	体育 1			
		4210003110	体育 3 Physical Education III	1	32					3	体育 2			
		4210004110	体育 4 Physical Education IV	1	32					4	体育 3			
		1050001110	心理健康教育 Mental Health Education	1	16					1-2				
		4030002110	大学英语 A1 College English A 1	3	64				16	1				
		4030003110	大学英语 A2 College English A II	3	64				16	2	大学英语 A1			
		4030004110	大学英语 A3 College English A III	3	64				16	3	大学英语 A2			
		4030005110	大学英语 A4 College English A IV	3	64				16	4	大学英语 A3			
		4120017110	大学计算机基础 Foundation of Computer	2	32			12		1				
		4120023110	计算机程序设计基础(C语言) Fundamentals of Computer Program Design(C)	3	48			12		1				
		小 计 Subtotal				35	736		24	64	64			
		选 修 课 程 Elective Courses	创新创业类 Innovation and Entrepreneurship Courses	<p>全校学生要求至少取得 9 个学分，且必须选修艺术体育类课程中的艺术类相关课程，取得至少 2 个学分。理工科专业学生至少选修一门人文社科类或经济管理类课程，其他专业学生至少选修一门科学技术类课程。</p> <p>All students are required to obtain at least 9 credits, and must select art courses from <i>Art and Physical Education Courses</i> to obtain at least 2 credits. Science and engineering students should select at least one course from <i>Arts and Social Science Courses</i> or <i>Economy and Management Courses</i>, and other students should select at least one course from <i>Science and Technology Courses</i>.</p>										
			人文社科类 Arts and Social Science Courses											
			经济管理类 Economy and Management Courses											
科学技术类 Science and Technology Courses														
艺术体育类 Art and Physical Education Courses														

课程类别 Course Classification	课程性质 Course Nature	课程编号 Course Number	课程名称 Course Title	学分 Crts	学时分配 Including					建议修读学期 Suggested Term	先修课程 Prerequisite Course	第二专业 Second Major
					总学时 Tot hrs.	实验 Exp.	上机 Operation	实践 Practice	课外 Extra-cur			
专 业 课 程	必 修 课 Required Courses	4110061110	数据结构与算法 C Data Structure and Algorithm C	2.5	40		8			4		
		4110063110	数据库与信息系统 Database and Information Systems	2	32	8				4	数据结构与算法 C	
		4110030110	高频电子线路 B High-frequency Electronic Circuits B	3.5	56	8				4	模拟电子技术基础 A	
		4110026110	感测技术 Sensor and Detection Technology	3	48	8				4	模拟电子技术基础 A	
		4110024110	电子线路设计与制作 Electronic Circuit Design and Practice	1	32	32				4	高频电子线路 B, 感测技术	
		4110161120	单片机及嵌入式系统原理 Principle of MCU and Embedded System	4	64	12				5	数字电子技术基础 A	
		4110162120	单片机系统设计与调试 Design and Debug of MCU based System	1	32	32				5	单片机及嵌入式系统原理	
		4110077110	通信原理 A Communication Principles A	3.5	56					5	信号与系统 A	
		4110078110	通信原理 A 实验 Experiments of Communication Principles	0.5	16	16				5		
		4110071110	数字信号处理 A Digital Signal Processing	4	64	10				5	信号与系统 A	
		4110170120	计算机网络与通信 Computer Networks and Communication	2.5	40					5	电路分析基础 B 下	
		4110243130	组网技术实训 Training of Networking Technology	1	32					5		
		4110247130	微机原理与通信接口 Principles of Microcomputer and Communication Interface	3	48					6	单片机及嵌入式系统原理	
		4110232130	微机原理与通信接口实验 Experiments of Microcomputer and Communication Interface	0.5	16	16				6		
		4110069110	数字图像处理 A Digital Image Processing	2.5	40	8				6	信号与系统 A	
		4110096110	信息理论与编码 Information Theory and Coding	3	48	8				6	通信原理 A	
		4110190120	信号处理应用综合训练 Signal Processing Integrated Application Training	1	32	32				6		
		4110173120	可靠性设计 Reliability Design	2	32					7		
		小 计 Subtotal				40.5	728	190	8			
	选 修 课 Elective Courses	4110023110	电子线路 EDA B Electronic Design Automation of Electronic Circuit	2	32	10				5	数字电子技术基础 A	
4110228130		通信系统仿真实训 Communication Systems Simulation Training	1	32	32				5			
4110075110		随机信号分析 Random Signal Analysis	2	32					5	概率论与数理统计 B		

课程类别 Course Classification	课程性质 Course Nature	课程编号 Course Number	课程名称 Course Title	学分 Crts	学时分配 Including					建议修读学期 Suggested Term	先修课程 Prerequisite Course	第二专业 Second Major
					总学时 Tot hrs.	实验 Exp.	上机 Operation	实践 Practice	课外 Extra-cur			
		4110175120	模式识别应用 Application of Pattern Recognition	2	32					5		
		4110158120	FPGA 系统设计与调试 Design and Debug of FPGA based System	1	32	32				6		
		4110081110	网络工程技术 Technology of Network Engineering	2.5	40	8				6	计算机网络与通信	
		4110073110	数字语音处理 A Digital Speech Processing A	2.5	40	8				6	数字信号处理 A	
		4110156120	C++程序设计 The C++ Programming	2.5	40		8			6	数据结构与算法 C	
		4110185120	无线传感网技术 Wireless Sensing Network Technology	2.5	40	8				6	通信原理 A	
		4110097110	虚拟仪器 Virtual Instruments	2.5	40	8				6	数据结构与算法 C	
		4110045110	交换技术 Switching Technology	2.5	40	8				7	通信原理 A	
		4110087110	现场总线技术 Field Bus Technology	2	32					7	计算机网络与通信	
		4110059110	实时操作系统 Real-time Operating System	2	32					7		
		4110038110	光纤通信 D Optical Fiber Communications	2	32					7	通信原理 A	
		4110025110	多媒体通信技术 Multimedia Communications Technology	2	32	8				7	数字信号处理 A	
		4110167120	多核系统与编程技术 Multicore System and Programming Technologies	2	32		4			7	C++程序设计	
		4110227130	算法设计与分析 Design and Analysis of Algorithms	2	32					7		
		4110225130	实验方法设计 Experimental Design Methodology	2	32					7		
		4110211130	Android 软件设计 Android Software Design	2	32					7		
		小 计 Subtotal		39	656	122	12					
		修读说明：要求至少选修 15 学分。 NOTE: Minimum subtotal credits: 15										
个性化课程 Personalized Course	选修课 Elective Courses	4110159120	Java 语言程序设计 B Java Language Program Design	3	48		10			4		
		4110034110	光电子技术 Optoelectronic Technology	3.5	56	12				5		
		4110185120	无线传感网技术 Technology of Wireless Sensor Network	2.5	40	8				6		
		小 计 Subtotal		9	144	20	10					

课程类别 Course Classification	课程性质 Course Nature	课程编号 Course Number	课程名称 Course Title	学分 Crs	学时分配 Including					建议修读学期 Suggested Term	先修课程 Prerequisite Course	第二专业 Second Major
					总学时 Tot hrs.	实验 Exp.	上机 Operation	实践 Practice	课外 Extra-cur			
修读说明：学生可跨专业自主选择修读全校其他专业的课程，建议修读以上课程。要求至少选修 10 学分。 NOTE: Students can choose any courses from the other specialties, and are especially suggested to choose the courses above. Minimum subtotal credits: 10.												

五、集中性实践教学环节

V Practice Schedule

课程编号 Course Number	实践环节名称 Practice Courses Name	周数 Weeks	学分 Crs	建议修读学期 Suggested Term
1060002110	军事训练 Military Training	3	1.5	1
4100068110	电工电子实习 A Practice in Electrical Engineering & Electronics A	2	2	3
4110128110	模拟电子技术基础课程设计 Course Design on Fundamentals of Analog	1	1	3
4110129110	数字电子技术基础课程设计 Course Design on Fundamentals of Digital	1	1	4
4110246130	数据库应用系统开发 Development of Database Application System	1	1	4
4110205120	数据传输网络实训 Practical Training of Network Data Transmission	2	2	7
4110114110	毕业实习 Practice of Specialty	3	3	7
4110196120	毕业设计（论文） Graduation Thesis	17	11	8
小 计 Subtotal		30	22.5	

六、修读指导

VI Recommendations on Course Studies

《形势与政策》课程，平均每学期 16 学时，一般按专题进行，在第七学期末考核，计 2 个课外学分，具体由学校学生发展指导中心负责组织落实。

Situation & Policy, a 16 hours/term with 2 credits course, is taught according to topics and tested at the end of the 7th term. The course will be arranged by the University Students' Affairs' Department in each school.

学院教学责任人：艾青松
专业培养方案责任人：郑 林

【通信工程专业（试点班）】2015 版本本科培养方案

Undergraduate Education Plan for Specialty in Communication Engineering (2015)

专业名称	通信工程	主干学科	信息与通信工程
Major	Communication Engineering	Major Disciplines	Information and Communication Engineering
计划学制	四年	授予学位	工学学士
Duration	4 Years	Degree Granted	Bachelor of Engineering

最低毕业学分规定

Graduation Credit Criteria

课程类 Course Classification 课程性质 Course Nature	通识课程 Public Basic Courses	学科大类课程 Basic Disciplinary Courses	专业课程 Specialized Courses	个性课程 Personalized Course	集中性实践 Practice Courses	课外学分 Study Credit after Class	总学分 Total Credits
必修课 Required Courses	35	50.5	35	\	28.5	\	190
选修课 Elective Courses	9	\	22	\	\	10	

一、培养目标与毕业要求

I Educational Objectives & Requirement

(一) 培养目标

Educational Objectives

- 1、掌握电子技术、通信系统、通信网、信息处理和计算机应用等方面的专业知识；
 - 2、了解国际、国内的社会问题，了解科学技术的发展与伦理道德问题以及信息与通信行业的相关政策、法律和法规；
 - 3、具有在通信领域从事研究、设计、制造、运营的能力；
 - 4、具有运用科学知识和科学工具解决工程问题的能力；
 - 5、具有从事职业和终身学习的能力。
1. To grasp the professional knowledge such as electronic technology, communication system, communication network, information processing and computer application.
 2. To understand the international and domestic social problems, the development of scientific technology and ethical problems, and the relevant laws and regulations about information and communication industry.
 3. To have the ability to research, design, produce and operate in communication field.
 4. To have the ability to apply scientific knowledge and scientific tools to solve the engineering problems in practice.
 5. To have the ability to lifelong learning and qualify for the professional career.

(二) 毕业要求

Requirement for graduation

1. 具备良好的职业道德和操守，理解科技伦理和个人价值取向。
 - ①德、智、体、美均衡发展，具有较高的道德文化修养；
 - ②具备一定的社会关系、信息交流、法律、环境等人文与社会学的知识；
 - ③了解科技伦理，遵守所属职业体系的行为准则，具备良好的职业道德；
 - ④具有解析自身发展需求，明确个人价值取向，制定并实施继续职业发展计划的能力。

2. 具有责任担当、贡献社会、保护环境意识，了解相关的地域文化、商务保证和法律法规。

① 具有良好的质量、安全、服务和环保意识，掌握一定的职业健康安全、保护环境的法律法规方面的知识；

② 了解相关的地域文化，能与社会和谐相处；

③ 具有诚信对待商务保证，遵守相关法律法规，对职业、社会、环境承担责任的素质；

3. 具有技术经济分析、经济效益及社会效益分析能力和一定的经济管理知识。

① 具备一定的工程经济知识，了解技术经济分析方法；

② 了解经济效益分析方法，具备经济效益及社会效益分析能力；

③ 具备一定的经济管理和企业管理的知识；

④ 对工程项目的需求分析与项目管理有一定了解。

4. 具有良好的沟通和交流能力。

① 能够使用技术语言，在跨文化环境下进行沟通与表达；

② 能够进行工程文件的编纂，如：可行性分析报告、项目任务书、投标书等，并可进行说明、阐释；

③ 具备较强的人际交往能力，能够控制自我并了解、理解他人需求和意愿；

④ 具备较强的适应能力，自信、灵活地处理新的和不断变化的人际环境和工作环境；

⑤ 具备团队合作精神，并具备一定的协调、管理、竞争与合作的初步能力。

5. 具备从事通信工程专业领域相关职业的基本素养。

① 了解本专业的发展现状和趋势，能够跟踪本领域最新技术发展趋势，具备收集、分析、判断、归纳和选择国内外相关技术信息的能力；

② 具有国际视野，具备良好的专业外语能力和跨文化的交流、竞争与合作能力，以适应技术进步和社会需求；

③ 掌握与通信工程专业理论与技术相关的数学、物理基础知识与工程学基础知识；

④ 掌握通信工程专业所必须具备的电子信息基础知识、通信系统基本理论与技术、通信网基本理论与技术和计算机基础及应用技术；

⑤ 适应现代技术发展，培养终身学习能力，具有适应通信工程新技术发展的能力。

6. 具备从事通信工程专业技术研究与开发的职业能力。

① 掌握电子电路的相关知识与技术，了解常用元器件、IC 等部件的种类、性能，能够针对电路性能指标要求以及元器件、IC 等部件的性能指标进行器件的合理选型；能用EDA工具进行电路的辅助设计，了解实用设计方法和现代设计方法。

② 掌握信息与通信系统的基本知识、相关理论以及信号与系统的基本分析方法，包括无线通信系统、光纤通信系统、程控交换系统等。

③ 掌握数字通信网络的基本原理与技术，了解现代交换网络以及计算机通信网络的相关知识与技术，了解信息安全的相关知识与技术，具备初步的数字通信系统与网络的分析与设计能力。

④ 掌握数字信号与信息处理的基本理论、算法及其实现技术与方法，了解模式识别技术和图像与语音信号传输技术，熟悉现代多媒体信息通信的基本原理和相关技术。

⑤ 掌握计算机及其应用的相关知识和相关技术。掌握高级语言程序设计基础和相关应用技术，了解信号采集技术，掌握单片机和嵌入式系统原理与设计方法，初步具备使用嵌入式系统设计与开发信号处理、信息通信和信息控制等方面的通信系统的能力，以及系统调试、测试与维护的能力。

⑥ 掌握通信领域常用的计算机仿真软件的应用，了解虚拟系统环境的原理和应用。

1. To have the good professional ethics and integrity, understand ethics of science and technology and personal values.

- 1) Balancing development of the moral, intellectual, physical and beauty, having the high moral culture.
- 2) Having a certain social relations, information communication, laws, environment and humanities and sociology knowledge.
- 3) Understanding science and technology ethics, abiding by the professional system's code of conduct, having good professional ethics.
- 4) Having an ability to analyze its own development needs, identify personal value orientation, formulate and implement the plan of continuing professional development.
2. To have the responsibility and consciousness of contributing to society, protecting the environment; to understand the relevant regional culture, commercial laws and regulations.
 - 1) Having good consciousness of quality, safety, service and environment protection. Mastering certain aspects knowledge of occupational health and safety, environment protection laws and regulations.
 - 2) Understanding the relevant region culture, having harmonious relationships with society.
 - 3) Having the quality of treating business assurance with integrity, abiding by the relevant laws and regulations, bearing responsibility of professions, social and environment.
3. To have the ability to analyze technical economics, economic benefit and social benefit; to master the knowledge of economic management.
 - 1) Having the economic knowledge of engineering in certain, and understanding the technical and economic analysis methods.
 - 2) Understanding the economic analysis method, having the ability to analyze the economic benefit and social benefit.
 - 3) Having the knowledge of economic management and enterprise management in certain.
 - 4) Understanding the engineering project demand analysis and project management.
4. To have a good ability to communication
 - 1) Being able to communicate and express using technical language under the cross-culture environment.
 - 2) Being able to compiling engineering document, such as: feasibility analysis report, project brief, tender, etc., and can be illustrated and interpretation.
 - 3) Having strong interpersonal skills, being able to control myself, understanding and realizing other demands and willingness.
 - 4) Having strong ability to adapt, confidently and flexibly handle the new and changing human environment and working condition.
 - 5) Having team work spirit, and processing preliminary ability to coordination, management, competition and cooperation.
5. To have the qualification for to a career in communication engineering professional fields related.
 - 1) Understanding this professional development status and trends, tracking the latest technology development trends, processing ability to collect, analyze, judge, conclude and select domestic and foreign relevant technical information.
 - 2) Acquiring international vision, professional foreign language skills and ability of cross-culture communication, competition and cooperation, to adapt to the technology progress and social needs.
 - 3) Mastering theory and technology of communication engineering and related basic knowledge of mathematics, physics and engineering.
 - 4) Mastering the basic theory and knowledge in communication engineering major: Basic Theory and Technology of Communication System, Basic Theory and Technology of Communication Network, Fundamentals and Applications of Computer Technology.
 - 5) Adapting to the development of modern technology, cultivating a lifelong learning ability, processing ability to adapt to the development of the new technology in communication engineering.
6. To have the career skills of research and development in communication engineering technology
 - 1) Mastering the knowledge and technology of electronic circuits, understanding the types and properties of components, IC and other components, reasonable selecting devices based on the performance indicators of circuit, IC and other components, being able to

design circuits with EDA tools, learning about practical design methods and modern design methods.

- 2) Mastering the basic knowledge of information and communication systems, theories and fundamental analysis of signals and systems, including wireless communications systems, fiber optic communication systems, program-controlled switching systems, and so on.
- 3) Grasping the basic principles of digital communication networks and technologies, understanding the relevant knowledge and technology of modern switched networks and computer communication networks for information security knowledge and technology, being initial with analysis and design capabilities of digital communication systems and network .
- 4) Mastering the basic theory, algorithms and implementation techniques and methods of digital signal and information processing, understanding pattern recognition technology and images and voice signal transmission technology, being familiar with the basic principles and related technology of modern multimedia information communication.
- 5) Acquiring the relevant knowledge and related technologies of computers and their applications. Mastering the high-level language programming foundation and related application technology, learning about signal acquisition technology, mastering microcontroller and embedded systems theory and design methods, having the ability to use embedded system design and development, signal processing, information and communication, information control and other aspects of communication system, and possessing the capacity of commissioning, testing and maintaining system.
- 6) Mastering the commonly used software for computer simulation in the field of communication, understanding the principles and applications of virtual system environment.

附：培养目标实现矩阵

	培养目标 1	培养目标 2	培养目标 3	培养目标 4	培养目标 5
毕业要求 1		√			√
毕业要求 2		√		√	
毕业要求 3	√		√	√	√
毕业要求 4	√		√	√	√
毕业要求 5	√		√	√	√
毕业要求 6	√		√	√	√

二、专业核心课程与专业特色课程

II Core Courses and Characteristic Courses

(一) 专业核心课程:

信号与系统、电路分析基础、数字电子技术基础、模拟电子技术基础、单片计算机原理与通信接口、通信原理、数字信号处理、信息理论与编码、高频电子线路。

Core Courses: Signal and System, Fundamentals of Circuit Analysis, Fundamentals of digital electronic technique, Fundamentals of Analog Electronic Technology, Single chip computer principle and Communication Interface, Communication Principles, Digital signal processing, Information Theory and Coding , High-Frequency Electronic Circuit.

(二) 专业特色课程:

信号与系统、电路分析基础、数字电子技术基础、单片计算机原理与通信接口、嵌入式系统及其应用。

Characteristic Courses: Signal and System, Fundamentals of Circuit Analysis, Fundamentals of digital electronic technique, Single chip computer principle and Communication Interface, Embedded system and application .

附：通信工程专业（试点班）课程与毕业要求对应关系表

专业 核心 课程	专业 特色 课程	课程名称	通信工程专业（试点班）毕业要求																													
			1 ①	1 ②	1 ③	1 ④	2 ①	2 ②	2 ③	3 ①	3 ②	3 ③	3 ④	4 ①	4 ②	4 ③	4 ④	4 ⑤	5 ①	5 ②	5 ③	5 ④	5 ⑤	6 ①	6 ②	6 ③	6 ④	6 ⑤	6 ⑥			
		思想道德修养与法律基础	√	√	√		√																									
		中国近现代史纲要	√	√			√																									
		毛泽东思想和中国特色社会主义理论体系概论	√	√		√	√																									
		马克思主义基本原理	√	√		√	√																									
		军事理论		√			√										√															
		体育	√															√														
		心理健康教育	√	√													√	√														
		军事训练	√														√	√														
√		大学英语											√										√									
		大学计算机基础										√	√										√	√								
		计算机程序设计基础(C语言)										√										√	√									
		专业导论		√			√												√													
		高等数学	√																				√	√								
		线性代数																														
		复变函数与积分变换																														

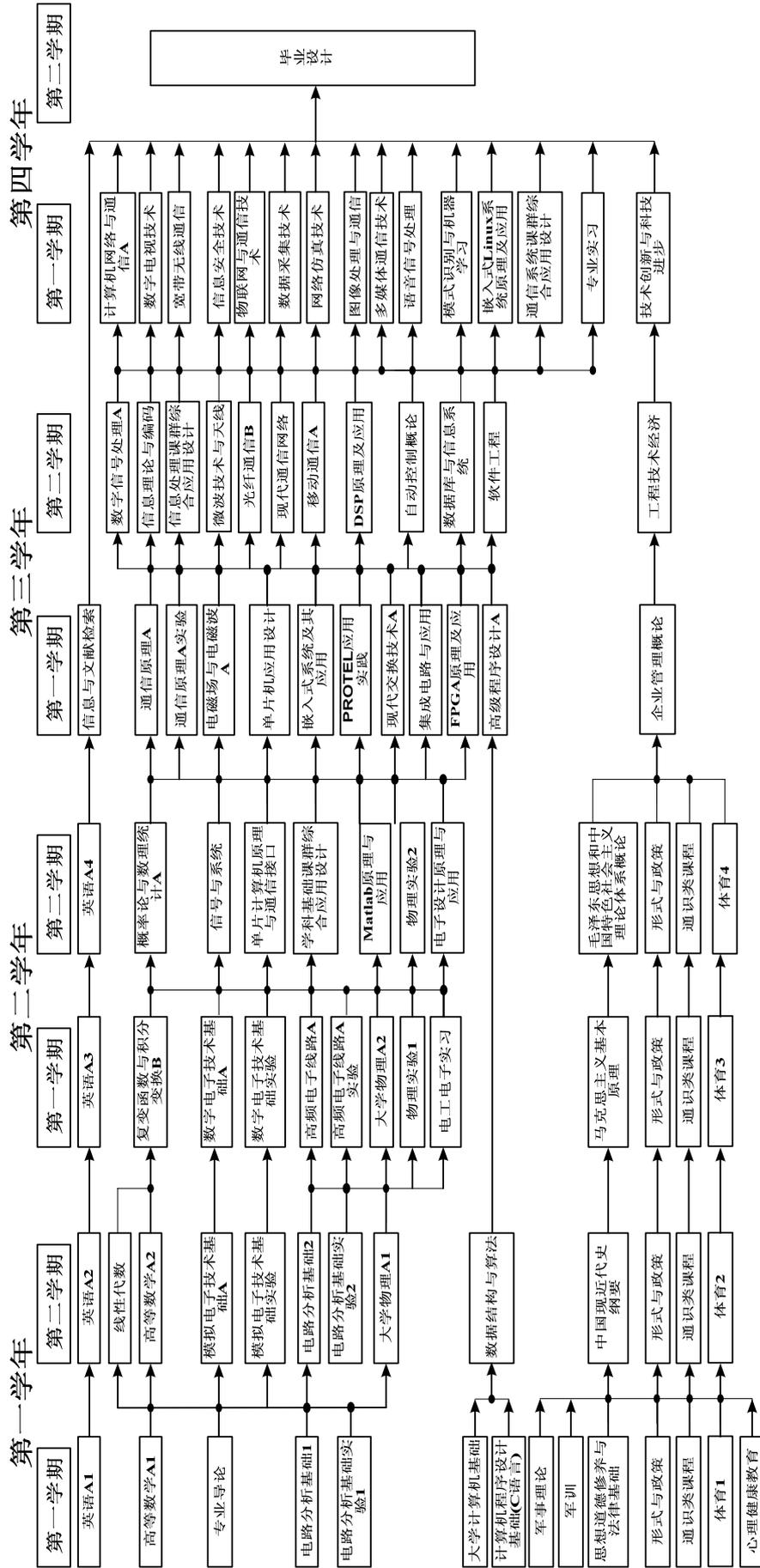
		通信工程专业（试点班）毕业要求																							
		1	1	1	2	2	3	3	3	3	4	4	4	4	5	5	5	5	6	6	6	6	6	6	
专业 核心 课程	专业 特色 课程	课程名称	1	1	1	2	2	3	3	3	3	4	4	4	4	5	5	5	5	6	6	6	6	6	
		图像处理与通信																							
		信息安全技术																							
		多媒体通信技术																							
		宽带无线通信																							
		数字电视技术																							
		物联网与通信技术																							
		网络仿真技术																							
		模式识别与机器学习																							
		数据采集技术																							
		嵌入式 Linux 系统原理及应用																							
		语音信号处理																							
		集成电路与应用																							
		自动控制概论																							
		信息与文献检索																							
		企业管理概论																							
		工程技术经济																							

		通信工程专业（试点班）毕业要求																										
专业 核心 课程	专业 特色 课程	课程名称	1	1	1	2	2	2	3	3	3	3	3	4	4	4	4	4	4	5	5	5	5	6	6	6	6	6
			①	②	③	④	①	②	③	①	②	③	④	①	②	③	④	⑤	①	②	③	④	⑤	①	②	③	④	⑤
√		技术创新与科技进步			√															√								
		电工电子实习																		√								√
		模拟电子技术基础课程 设计																		√								√
		数字电子技术基础课程 设计																		√								√
		Matlab 原理与应用																									√	√
		PROTEL 应用实践																									√	√
√		学科基础课程综合应用 设计																		√								√
		信息处理课程综合应用 设计																		√							√	√
		通信系统课程综合应用 设计																		√						√		√
		单片机应用设计																		√							√	√
		专业实习																		√						√		√
		毕业设计（论文）																		√						√		√

三、课程教学进程图

III Teaching Process Map

通信工程专业（试点班）课程进程图



四、理论教学建议进程表

IV Theory Course Schedule

课程类别 Course Classification	课程性质 Course Nature	课程编号 Course Number	课程名称 Course Title	学分 Crts	学时分配 Including					建议修读学期 Suggested Term	先修课程 Prerequisite Course	第二专业 Second Major		
					总学时 Tot hrs.	实验 Exp.	上机 Ope-ration	实践 Prac-tice	课外 Extra-cur					
通 识 课 程 Public Basic Courses	必 修 课 Required Courses	4220001110	思想道德修养与法律基础 Morals, Ethics and Fundamentals of Law	3	48			8		1-6				
		4220002110	中国近现代史纲要 Outline of Contemporary and Modern Chinese History	2	32					1-6				
		4220005110	马克思主义基本原理 Marxism Philosophy	3	48			8		1-6				
		4220003110	毛泽东思想和中国特色社会主义理论体系概论 Introduction to Mao Zedong Thought and Socialism with Chinese Characteristics	4	96				32		1-6			
		1060003130	军事理论 Military Theory	1	32				16		1-4			
		4210001110	体育 1 Physical Education I	1	32						1			
		4210002110	体育 2 Physical Education II	1	32						2	体育 1		
		4210003110	体育 3 Physical Education III	1	32						3	体育 2		
		4210004110	体育 4 Physical Education IV	1	32						4	体育 3		
		1050001110	心理健康教育 Mental Health Education	1	16						1-2			
		4030002110	大学英语 A1 College English A 1	3	64					16	1			
		4030003110	大学英语 A2 College English A II	3	64					16	2	大学英语 A1		
		4030004110	大学英语 A3 College English A III	3	64					16	3	大学英语 A2		
		4030005110	大学英语 A4 College English A IV	3	64					16	4	大学英语 A3		
		4120017110	大学计算机基础 Foundation of Computer	2	32			12			1			
		4120023110	计算机程序设计基础(C语言) Fundamentals of Computer Program Design(C)	3	48			12			1			
		小 计 Subtotal				35	736		24	64	64			
		选 修 课 Elective Courses	创新创业类 Innovation and Entrepreneurship Courses			<p>全校学生要求至少取得 9 个学分,且必须选修艺术体育类课程中的艺术类相关课程,取得至少 2 个学分。理工科专业学生至少选修一门人文社科类或经济管理类课程,其他专业学生至少选修一门科学技术类课程。</p> <p>All students are required to obtain at least 9 credits, and must select art courses from <i>Art and Physical Education Courses</i> to obtain at least 2 credits. Science and engineering students should select at least one course from <i>Arts and Social Science Courses</i> or <i>Economy and Management Courses</i>, and other students should select at least one course from <i>Science and Technology Courses</i>.</p>								
人文社科类 Arts and Social Science Courses														
经济管理类 Economy and Management Courses														
科学技术类 Science and Technology Courses														
艺术体育类 Art and Physical Education Courses														

课程类别 Course Classification	课程性质 Course Nature	课程编号 Course Number	课程名称 Course Title	学分 CrS	学时分配 Including					建议修读学期 Suggested Term	先修课程 Prerequisite Course	第二专业 Second Major	
					总学时 Tot hrs.	实验 Exp.	上机 Ope- ration	实践 Prac- tice	课外 Extra- cur				
专 业 课 程	必 修 课	4110028110	高频电子线路 A High- frequency Electronic Circuit A	3.5	56					3			
		4110029110	高频电子线路 A 实验 Experiments of High- frequency Electronic	0.5	16	16				3			
		4110163120	单片计算机原理与通信接口 Single Chip Computer Principle and Communication Interface	4	64	8				4			
		4110011110	电磁场与电磁波 A Electromagnet Field and Electromagnetic	3	48					5			
		4110077110	通信原理 A Communication Principles A	3.5	56					5			
		4110078110	通信原理 A 实验 Experiments of Communication Principles A	0.5	16	16				5			
		4110089110	现代交换技术 A Modern Switching Technology A	2.5	40	12				5			
		4110223130	嵌入式系统及其应用 Embedded system and Application	3	48	8				5			
		4110071110	数字信号处理 A Digital Signal Processing A	4	64	10				6			
		4110036110	光纤通信 B Optic Fiber Communication B	2.5	40	12				6			
		4110096110	信息理论与编码 Information Theory and Coding	3	48	8				6			
		4110098110	移动通信 A Mobile Communication A	2.5	40	8				6			
		4110042110	计算机网络与通信 A Computer network and communication A	2.5	40	8				7			
		小 计 Subtotal				35	576	106					
		专 业 课 程	选 修 课	4110218130	电子设计原理与应用 Principle and application of electronic	2	32					4	
4110027110	高级程序设计 A Advanced Computer Program Design A			3	48	8				5			
4110004110	FPGA 原理及应用 Principal and Application of FPGA			3	48	16				5			
4110267140	集成电路与应用 Integrated Circuit and Application			1.5	24					5			
4110063110	数据库与信息系统 Database and Information System			2	32	8				6			
4110231130	微波技术与天线 Microwave Technology and Antenna Theory			3	48	8				6			
4110092110	现代通信网络 Modern Communication Network			2.5	40					6			
4110157120	DSP 原理及应用 Principle and Application of DSP			2.5	40	8				6			
4110224130	软件工程 Software Engineering			2	32					6			
4100146140	自动控制概论 Introduction to Automatic Control			2	32					6			

课程类别 Course Classification	课程性质 Course Nature	课程编号 Course Number	课程名称 Course Title	学分 CrS	学时分配 Including					建议修读学期 Suggested Term	先修课程 Prerequisite Course	第二专业 Second Major
					总学时 Tot hrs.	实验 Exp.	上机 Ope- ration	实践 Prac- tice	课外 Extra- cur			
		4010220140	工程技术经济 Engineering Economic	2	32					6		
		4110080110	图像处理与通信 Image Processing and Communication	3	48	8				7		
		4110095110	信息安全技术 Information Security Technology	2	32					7		
		4110025110	多媒体通信技术 Multimedia Communication Technology	2	32	8				7		
		4110046110	宽带无线通信 Wide-band Wireless Communications	2.5	40					7		
		4110064110	数字电视技术 Digital Television Technology	2	32					7		
		4110187120	物联网与通信技术 The Internet of Things and Communication	2.5	40	8				7		
		4110182120	网络仿真技术 Network Simulation Technology	2	32					7		
		4110221130	模式识别与机器学习 Pattern Recognition & Machine Learning	2	32					7		
		4110245130	数据采集技术 Data collection technology	2	32	8				7		
		4110222130	嵌入式 Linux 系统原理及应用 The principle and Application of Embedded	3	48		16			7		
		4110240130	语音信号处理 Speech signal processing	2.5	40	8				7		
		4110268140	技术创新与科技进步 Technology Innovation and Scientific and Technological progress	1	16					7		
		小 计 Subtotal		52	832	88	16					
修读说明：要求至少选修 22 学分。 NOTE: Minimum subtotal credits: 22												

五、集中性实践教学环节

V Practice Schedule

课程编号 Course Number	实践环节名称 Practice Courses Name	周数 Weeks	学分 CrS	建议修读学期 Suggested Term	第二专业 Second Major
1060002110	军事训练 Military Training	3	1.5	1	
4100068110	电工电子实习 A Practice in Electrical Engineering & Electronics A	2	2	3	
4050242130	Matlab 原理与应用 Matlab Application and Practice	1	1	4 (分散)	
4110238130	学科基础课群综合应用设计 Courses Design on Basic Courses of Disciplines	2	2	4 (分散)	
4110214130	单片机应用设计 Microcomputer Application Practice	2	2	5 (分散)	
4110195120	PROTEL 应用实践 Courses Design on Protel Application	2	2	5 (分散)	

课程编号 Course Number	实践环节名称 Practice Courses Name	周数 Weeks	学分 Crts	建议修读学期 Suggested Term	第二专业 Second Major
4110236130	信息处理课群综合应用设计 Course Design on Comprehensive Specialty	2	2	6 (分散)	
4110229130	通信系统课群综合应用设计 Comprehensive Training and Design on Communication System	2	2	7 (分散)	
4110139110	专业实习 Specialty practice	3	3	7	
4110197120	毕业论文 Graduation Thesis	17	11	8	
小 计 Subtotal		36	28.5		

六、修读指导

VI Recommendations on Course Studies

本专业课程中涉及电系列课程、计算机系列课程、信息处理系列课程和通信系统及其应用技术系列课程等，学生在选修课程时应注意所选课程的衔接性和系列性。

There are electric series course, computer series courses, Information processing series courses, communications system series course and Application technology series courses in the professional courses. When you choice the elective courses, Please attention to the Cohesion sex and seriation about them.

《形势与政策》课程，平均每学期 16 学时，一般按专题进行，在第七学期末考核，计 2 个课外学分，具体由学校学生发展指导中心负责组织落实。

Situation & Policy, a 16 hours/term with 2 credits course, is taught according to topics and tested at the end of the 7th term . The course will be arranged by the University Students' Affairs' Department in each school.

学院教学责任人：艾青松
专业培养方案责任人：刘 岚

【通信工程专业（卓越班）】2015 版本本科培养方案

Undergraduate Education Plan for Specialty in Communication Engineering (Excellent Engineer Class) (2015)

专业名称	通信工程	主干学科	信息与通信工程
Major	Communication Engineering	Major Disciplines	Information and Communication Engineering
计划学制	四年	授予学位	工学学士
Duration	4 Years	Degree Granted	Bachelor of Engineering

最低毕业学分规定

Graduation Credit Criteria

课程类 Course Classification 课程性质 Course Nature	通识课程 Public Basic Courses	学科大类课程 Basic Disciplinary Courses	专业课程 Specialized Courses	个性课程 Personalized Course	集中性实践 Practice Courses	课外学分 Study Credit after Class	总学分 Total Credits
必修课 Required Courses	35	50.5	35	\	33.5	\	190
选修课 Elective Courses	9	\	17	\	\	10	

一、培养目标与毕业要求

I Educational Objectives & Requirement

(一) 培养目标

Educational Objectives

- 1、掌握电子技术、通信系统、通信网、信息处理和计算机应用等方面的专业知识；
 - 2、了解国际、国内的社会问题，了解科学技术的发展与伦理道德问题以及信息与通信行业的相关政策、法律和法规；
 - 3、具有在通信领域从事研究、设计、制造、运营的能力；
 - 4、具有运用科学知识和科学工具解决工程问题的能力；
 - 5、具有从事职业和终身学习的能力。
1. To grasp the professional knowledge such as electronic technology, communication system, communication network, information processing and computer application.
 2. To understand the international and domestic social problems, the development of scientific technology and ethical problems, and the relevant laws and regulations about information and communication industry.
 3. To have the ability to research, design, produce and operate in communication field.
 4. To have the ability to apply scientific knowledge and scientific tools to solve the engineering problems in practice.
 5. To have the ability to lifelong learning and qualify for the professional career.

(二) 毕业要求

Requirement for graduation

1. 具备良好的职业道德和操守，理解科技伦理和个人价值取向。
 - ①德、智、体、美均衡发展，具有较高的道德文化修养；

- ②具备一定的社会关系、信息交流、法律、环境等人文与社会学的知识;
 - ③了解科技伦理, 遵守所属职业体系的行为准则, 具备良好的职业道德;
 - ④具有解析自身发展需求, 明确个人价值取向, 制定并实施继续职业发展计划的能力。
2. 具有责任担当、贡献社会、保护环境意识, 了解相关的地域文化、商务保证和法律法规。
- ① 具有良好的质量、安全、服务和环保意识, 掌握一定的职业健康安全、保护环境的法律法规方面的知识;
 - ②了解相关的地域文化, 能与社会和谐相处;
 - ③具有诚信对待商务保证, 遵守相关法律法规, 对职业、社会、环境承担责任的素质;
3. 具有技术经济分析、经济效益及社会效益分析能力和一定的经济管理知识。
- ① 具备一定的工程经济知识, 了解技术经济分析方法;
 - ② 了解经济效益分析方法, 具备经济效益及社会效益分析能力;
 - ③ 具备一定的经济管理和企业管理的知识;
 - ④ 对工程项目的需求分析与项目管理有一定了解。
4. 具有良好的沟通和交流能力。
- ① 能够使用技术语言, 在跨文化环境下进行沟通与表达;
 - ② 能够进行工程文件的编纂, 如: 可行性分析报告、项目任务书、投标书等, 并可进行说明、阐释;
 - ③ 具备较强的人际交往能力, 能够控制自我并了解、理解他人需求和意愿;
 - ④ 具备较强的适应能力, 自信、灵活地处理新的和不断变化的人际环境和工作环境;
 - ⑤具备团队合作精神, 并具备一定的协调、管理、竞争与合作的初步能力。
5. 具备从事通信工程专业领域相关职业的基本素养。
- ①了解本专业的发展现状和趋势, 能够跟踪本领域最新技术发展趋势, 具备收集、分析、判断、归纳和选择国内外相关技术信息的能力;
 - ②具有国际视野, 具备良好的专业外语能力和跨文化的交流、竞争与合作能力, 以适应技术进步和社会需求;
 - ③掌握与通信工程专业理论与技术相关的数学、物理基础知识与工程学基础知识;
 - ④掌握通信工程专业所必须具备的电子信息基础知识、通信系统基本理论与技术、通信网基本理论与技术和计算机基础及应用技术;
 - ⑤适应现代技术发展, 培养终身学习能力, 具有适应通信工程新技术发展的能力。
6. 具备从事通信工程专业技术研究与开发的职业能力。
- ①掌握电子电路的相关知识与技术, 了解常用元器件、IC 等部件的种类、性能, 能够针对电路性能指标要求以及元器件、IC 等部件的性能指标进行器件的合理选型; 能用EDA工具进行电路的辅助设计, 了解实用设计方法和现代设计方法。
 - ②掌握信息与通信系统的基本知识、相关理论以及信号与系统的基本分析方法, 包括无线通信系统、光纤通信系统、程控交换系统等。
 - ③掌握数字通信网络的基本原理与技术, 了解现代交换网络以及计算机通信网络的相关知识与技术, 了解信息安全的相关知识与技术, 具备初步的数字通信系统与网络的分析与设计能力。
 - ④掌握数字信号与信息处理的基本理论、算法及其实现技术与方法, 了解模式识别技术和图像与语音信号传输技术, 熟悉现代多媒体信息通信的基本原理和相关技术。
 - ⑤掌握计算机及其应用的相关知识和相关技术。掌握高级语言程序设计基础和相关应用技术, 了解信号采集技术, 掌握单片机和嵌入式系统原理与设计方法, 初步具备使用嵌入式系统设计与开发信号处理、信息通信和信息控制等方面的通信系统的能力, 以及

系统调试、测试与维护的能力。

⑥掌握通信领域常用的计算机仿真软件的应用，了解虚拟系统环境的原理和应用。

1. To have the good professional ethics and integrity, understand ethics of science and technology and personal values.
 - 1) Balancing development of the moral, intellectual, physical and beauty, having the high moral culture.
 - 2) Having a certain social relations, information communication, laws, environment and humanities and sociology knowledge.
 - 3) Understanding science and technology ethics, abiding by the professional system's code of conduct, having good professional ethics.
 - 4) Having an ability to analyze its own development needs, identify personal value orientation, formulate and implement the plan of continuing professional development.
2. To have the responsibility and consciousness of contributing to society, protecting the environment; to understand the relevant regional culture, commercial laws and regulations.
 - 1) Having good consciousness of quality, safety, service and environment protection. Mastering certain aspects knowledge of occupational health and safety, environment protection laws and regulations.
 - 2) Understanding the relevant region culture, having harmonious relationships with society.
 - 3) Having the quality of treating business assurance with integrity, abiding by the relevant laws and regulations, bearing responsibility of professions, social and environment.
3. To have the ability to analyze technical economics, economic benefit and social benefit; to master the knowledge of economic management.
 - 1) Having the economic knowledge of engineering in certain, and understanding the technical and economic analysis methods.
 - 2) Understanding the economic analysis method, having the ability to analyze the economic benefit and social benefit.
 - 3) Having the knowledge of economic management and enterprise management in certain.
 - 4) Understanding the engineering project demand analysis and project management.
4. To have a good ability to communication
 - 1) Being able to communicate and express using technical language under the cross-culture environment.
 - 2) Being able to compiling engineering document, such as: feasibility analysis report, project brief, tender, etc., and can be illustrated and interpretation.
 - 3) Having strong interpersonal skills, being able to control myself, understanding and realizing other demands and willingness.
 - 4) Having strong ability to adapt, confidently and flexibly handle the new and changing human environment and working condition.
 - 5) Having team work spirit, and processing preliminary ability to coordination, management, competition and cooperation.
5. To have the qualification for to a career in communication engineering professional fields related.
 - 1) Understanding this professional development status and trends, tracking the latest technology development trends, processing ability to collect, analyze, judge, conclude and select domestic and foreign relevant technical information.
 - 2) Acquiring international vision, professional foreign language skills and ability of cross-culture communication, competition and cooperation, to adapt to the technology progress and social needs.
 - 3) Mastering theory and technology of communication engineering and related basic knowledge of mathematics, physics and engineering.
 - 4) Mastering the basic theory and knowledge in communication engineering major: Basic Theory and Technology of Communication System, Basic Theory and Technology of Communication Network, Fundamentals and Applications of Computer Technology.
 - 5) Adapting to the development of modern technology, cultivating a lifelong learning ability, processing ability to adapt to the development of the new technology in communication engineering.
6. To have the career skills of research and development in communication engineering technology

- 1) Mastering the knowledge and technology of electronic circuits, understanding the types and properties of components, IC and other components, reasonable selecting devices based on the performance indicators of circuit, IC and other components, being able to design circuits with EDA tools, learning about practical design methods and modern design methods.
- 2) Mastering the basic knowledge of information and communication systems, theories and fundamental analysis of signals and systems, including wireless communications systems, fiber optic communication systems, program-controlled switching systems, and so on.
- 3) Grasping the basic principles of digital communication networks and technologies, understanding the relevant knowledge and technology of modern switched networks and computer communication networks for information security knowledge and technology, being initial with analysis and design capabilities of digital communication systems and network .
- 4) Mastering the basic theory, algorithms and implementation techniques and methods of digital signal and information processing, understanding pattern recognition technology and images and voice signal transmission technology, being familiar with the basic principles and related technology of modern multimedia information communication.
- 5) Acquiring the relevant knowledge and related technologies of computers and their applications. Mastering the high-level language programming foundation and related application technology, learning about signal acquisition technology, mastering microcontroller and embedded systems theory and design methods, having the ability to use embedded system design and development, signal processing, information and communication, information control and other aspects of communication system, and possessing the capacity of commissioning, testing and maintaining system.
- 6) Mastering the commonly used software for computer simulation in the field of communication, understanding the principles and applications of virtual system environment.
- 7)

附：培养目标实现矩阵

The Matrix for Educational Objectives

	培养目标 1	培养目标 2	培养目标 3	培养目标 4	培养目标 5
毕业要求 1		√			√
毕业要求 2		√		√	
毕业要求 3	√		√	√	√
毕业要求 4	√		√	√	√
毕业要求 5	√		√	√	√
毕业要求 6	√		√	√	√

二、专业核心课程与专业特色课程

II Core Courses and Characteristic Courses

(一) 专业核心课程：

信号与系统、电路分析基础、数字电子技术基础、模拟电子技术基础、单片计算机原理与通信接口、通信原理、数字信号处理、信息理论与编码、高频电子线路。

Core Courses: Signal and System, Fundamentals of Circuit Analysis, Fundamentals of digital electronic technique, Fundamentals of Analog Electronic Technology, Single chip computer

principle and Communication Interface, Communication Principles, Digital signal processing, Information Theory and Coding , High-Frequency Electronic Circuit.

(二) **专业特色课程:**

信号与系统、电路分析基础、数字电子技术基础、单片计算机原理与通信接口、嵌入式系统及其应用。

Characteristic Courses: Signal and System, Fundamentals of Circuit Analysis, Fundamentals of digital electronic technique, Single chip computer principle and Communication Interface, Embedded system and application .

附：通信工程专业（卓越班）课程与毕业要求对应关系表

专业 核心 课程	专业 特色 课程	课程名称	通信工程专业（卓越工程师班）毕业要求																										
			1 ①	1 ②	1 ③	1 ④	2 ①	2 ②	2 ③	3 ①	3 ②	3 ③	3 ④	4 ①	4 ②	4 ③	4 ④	4 ⑤	5 ①	5 ②	5 ③	5 ④	5 ⑤	6 ①	6 ②	6 ③	6 ④	6 ⑤	6 ⑥
		思想道德修养与法律基础	√	√	√			√																					
		中国近现代史纲要	√	√				√																					
		毛泽东思想和中国特色社会主义理论体系概论	√	√		√																							
		马克思主义基本原理	√	√		√			√																				
		军事理论		√									√																
		体育	√														√												
		心理健康教育	√	√									√					√											
		军事训练	√										√					√											
		大学英语												√				√			√								
		大学计算机基础											√	√				√			√						√		√
		计算机程序设计基础(C语言)											√	√				√			√						√		√
		专业导论		√														√											
		高等数学	√																									√	

通信工程专业（卓越工程师班）毕业要求

课程名称	毕业要求																												
	1 ①	1 ②	1 ③	1 ④	2 ①	2 ②	2 ③	3 ①	3 ②	3 ③	3 ④	4 ①	4 ②	4 ③	4 ④	4 ⑤	5 ①	5 ②	5 ③	5 ④	5 ⑤	6 ①	6 ②	6 ③	6 ④	6 ⑤	6 ⑥		
专业核心课程	√																												
专业特色课程																													
高频电子线路实验																					√								
单片计算机原理与通信接口	√																					√					√		
电磁场与电磁波																					√								
通信原理	√																									√			
通信原理实验																										√			
现代交换技术																													
嵌入式系统及其应用																													
数字信号处理	√																										√		
光纤通信																													
信息理论与编码	√																										√		
移动通信																											√		
计算机网络与通信																												√	
电子设计原理与应用																												√	
高级程序设计																													

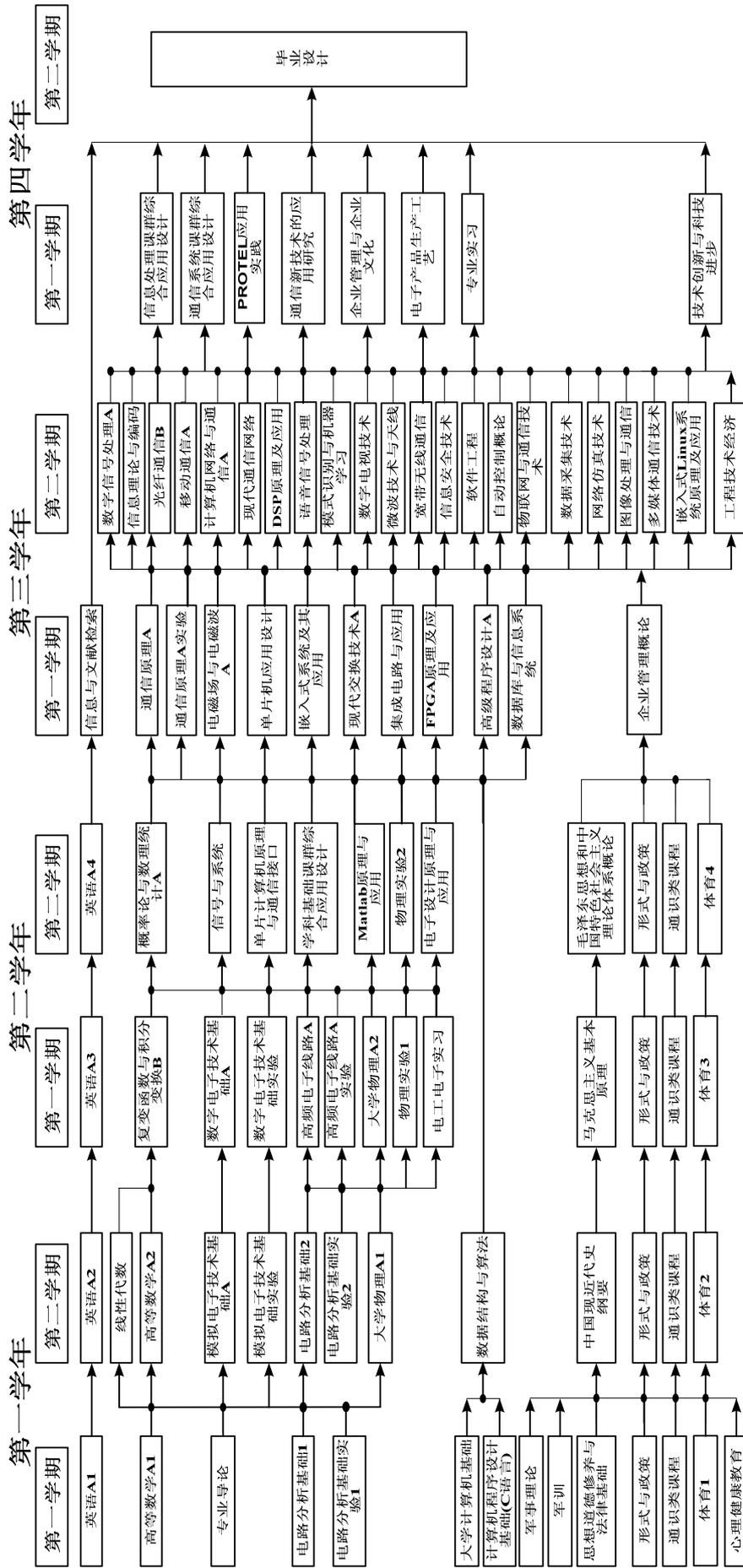
通信工程专业（卓越工程师班）毕业要求

课程名称	通信工程专业（卓越工程师班）毕业要求																												
	1 ①	1 ②	1 ③	1 ④	2 ①	2 ②	2 ③	3 ①	3 ②	3 ③	3 ④	4 ①	4 ②	4 ③	4 ④	4 ⑤	5 ①	5 ②	5 ③	5 ④	5 ⑤	6 ①	6 ②	6 ③	6 ④	6 ⑤	6 ⑥		
数据采集技术																	√										√		
嵌入式 Linux 系统原理及应用																					√							√	√
语音信号处理																									√				
集成电路与应用																		√										√	
电工电子实习																		√										√	
模拟电子技术基础课程设计																		√										√	
数字电子技术基础课程设计																		√										√	
Matlab 原理与应用																											√	√	√
PROTEL 应用实践																											√	√	√
学科基础课群综合应用设计																					√								√
信息处理课群综合应用设计																											√		√
通信系统课群综合应用设计																									√				√
单片机应用实习																												√	
专业实习																											√	√	√

		通信工程专业（卓越工程师班）毕业要求																												
专业 核心 课程	专业 特色 课程	课程名称	1	1	1	2	2	2	3	3	3	3	3	3	4	4	4	4	4	4	5	5	5	5	6	6	6	6	6	
			①	②	③	①	②	③	①	②	③	①	②	③	④	①	②	③	④	⑤	①	②	③	④	⑤	①	②	③	④	⑤
		毕业设计（论文）															√					√				√				√
		自动控制概论																												√
		信息与文献检索	√														√													
		企业管理概论	√							√	√	√	√					√												
		工程技术经济	√							√	√		√																	
		技术创新与科技进步																												
		通信新技术的应用研究			√																									
		企业管理与企业文化																												
		电子产品生产工艺（在企业进行）																	√											

三、课程教学进程图
III Teaching Process Map

通信工程专业（卓越班）课程进程图



四、理论教学建议进程表

IV Theory Course Schedule

课程类别 Course Classification	课程性质 Course Nature	课程编号 Course Number	课程名称 Course Title	学分 Crts	学时分配 Including					建议修读学期 Suggested Term	先修课程 Prerequisite Course	第二专业 Second Major	
					总学时 Tot hrs.	实验 Exp.	上机 Ope-ration	实践 Prac-tice	课外 Extra-cur				
通 识 课 程 Public Basic Courses	必 修 课 Required Courses	4220001110	思想道德修养与法律基础 Morals, Ethics and Fundamentals of Law	3	48			8		1-6			
		4220002110	中国近现代史纲要 Outline of Contemporary and Modern Chinese History	2	32					1-6			
		4220005110	马克思主义基本原理 Marxism Philosophy	3	48			8		1-6			
		4220003110	毛泽东思想和中国特色社会主义理论体系概论 Introduction to Mao Zedong Thought and Socialism with Chinese Characteristics	4	96				32		1-6		
		1060003130	军事理论 Military Theory	1	32				16		1-4		
		4210001110	体育 1 Physical Education I	1	32						1		
		4210002110	体育 2 Physical Education II	1	32						2	体育 1	
		4210003110	体育 3 Physical Education III	1	32						3	体育 2	
		4210004110	体育 4 Physical Education IV	1	32						4	体育 3	
		1050001110	心理健康教育 Mental Health Education	1	16						1-2		
		4030002110	大学英语 A1 College English A 1	3	64					16	1		
		4030003110	大学英语 A2 College English A II	3	64					16	2	大学英语 A1	
		4030004110	大学英语 A3 College English A III	3	64					16	3	大学英语 A2	
		4030005110	大学英语 A4 College English A IV	3	64					16	4	大学英语 A3	
		4120017110	大学计算机基础 Foundation of Computer	2	32			12			1		
		4120023110	计算机程序设计基础(C语言) Fundamentals of Computer Program Design(C)	3	48			12			1		
		小 计 Subtotal				35	736		24	64	64		
选 修 课 Elective Courses	创新创业类 Innovation and Entrepreneurship Courses			<p>全校学生要求至少取得 9 个学分,且必须选修艺术体育类课程中的艺术类相关课程,取得至少 2 个学分。理工科专业学生至少选修一门人文社科类或经济管理类课程,其他专业学生至少选修一门科学技术类课程。</p> <p>All students are required to obtain at least 9 credits, and must select art courses from <i>Art and Physical Education Courses</i> to obtain at least 2 credits. Science and engineering students should select at least one course from <i>Arts and Social Science Courses</i> or <i>Economy and Management Courses</i>, and other students should select at least one course from <i>Science and Technology Courses</i>.</p>									
	人文社科类 Arts and Social Science Courses												
	经济管理类 Economy and Management Courses												
	科学技术类 Science and Technology Courses												
	艺术体育类 Art and Physical Education Courses												

课程类别 Course Classification	课程性质 Course Nature	课程编号 Course Number	课程名称 Course Title	学分 CrS	学时分配 Including					建议修读学期 Suggested Term	先修课程 Prerequisite Course	第二专业 Second Major	
					总学时 Tot hrs.	实验 Exp.	上机 Ope- ration	实践 Prac- tice	课外 Extra- cur				
专 业 课 程	必 修 课	4110028110	高频电子线路 A High- frequency Electronic Circuit A	3.5	56					3			
		4110029110	高频电子线路 A 实验 Experiments of High- frequency Electronic	0.5	16	16				3			
		4110163120	单片计算机原理与通信接口 Single Chip Computer Principle and Communication Interface	4	64	8				4			
		4110011110	电磁场与电磁波 A Electromagnet Field and Electromagnetic	3	48					5			
		4110077110	通信原理 A Communication Principles A	3.5	56					5			
		4110078110	通信原理 A 实验 Experiments of Communication Principles A	0.5	16	16				5			
		4110089110	现代交换技术 A Modern Switching Technology A	2.5	40	12				5			
		4110223130	嵌入式系统及其应用 Embedded system and Application	3	48	8				5			
		4110071110	数字信号处理 A Digital Signal Processing A	4	64	10				6			
		4110036110	光纤通信 B Optic Fiber Communication B	2.5	40	12				6			
		4110096110	信息理论与编码 Information Theory and Coding	3	48	8				6			
		4110098110	移动通信 A Mobile Communication A	2.5	40	8				6			
		4110042110	计算机网络与通信 A Computer network and communication A	2.5	40	8				6			
		小 计 Subtotal				35	576	106					
		专 业 课 程	选 修 课	4110218130	电子设计原理与应用 Principle and Application of Electronic Design	2	32					4	
4110027110	高级程序设计 A Advanced Computer Program Design A			3	48	8				5			
4110004110	FPGA 原理及应用 Principal and Application of FPGA			3	48	16				5			
4110063110	数据库与信息系统 Database and Information System			2	32	8				5			
4110267140	集成电路与应用 Integrated Circuit and Application			1.5	24					5			
4110231110	微波技术与天线 Microwave Technology and Antenna Theory			3	48	8				6			
4110092110	现代通信网络 Modern Communication Network			2.5	40					6			
4110157120	DSP 原理及应用 Principle and Application of DSP			2.5	40	8				6			
4110080110	图像处理与通信 Image Processing and Communication			3	48	8				6			
4110095110	信息安全技术 Information Security Technology			2	32					6			

课程类别 Course Classification	课程性质 Course Nature	课程编号 Course Number	课程名称 Course Title	学分 Crts	学时分配 Including					建议修读学期 Suggested Term	先修课程 Prerequisite Course	第二专业 Second Major
					总学时 Tot hrs.	实验 Exp.	上机 Operation	实践 Practice	课外 Extra-cur			
		4110025110	多媒体通信技术 Multimedia Communication Technology	2	32	8				6		
		4110046110	宽带无线通信 Wide-band Wireless Communications	2.5	40					6		
		4110064110	数字电视技术 Digital Television Technology	2	32					6		
		4110187120	物联网与通信技术 The Internet of Things and Communication	2.5	40	8				6		
		411018210	网络仿真技术 Network Simulation Technology	2	32					6		
		4110221130	模式识别与机器学习 Pattern Recognition & Machine Learning	2	32					6		
		4100146140	自动控制概论 Introduction to Automatic Control	2	32					6		
		4010220140	工程技术经济 Engineering Economic	2	32					6		
		4110245130	数据采集技术 Data collection technology	2	32	8				6		
		4110222130	嵌入式 Linux 系统原理及应用 The Principle and Application of Embedded	3	48		16			6		
		4110224130	软件工程 Software Engineering	2	32					6		
		4110240130	语音信号处理 Speech Signal Processing	2.5	40	8				6		
		4110268140	技术创新与科技进步 Technology innovation and scientific and	1	16					7 (企业)		
		小 计 Subtotal		52	832	88	16					
修读说明：要求至少选修 17 学分。 NOTE: Minimum subtotal credits: 17												

五、集中性实践教学环节

V Practice Schedule

课程编号 Course Number	实践环节名称 Practice Courses Name	周数 Weeks	学分 Crts	建议修读学期 Suggested Term	第二专业 Second Major
1060002110	军事训练 Military Training	3	1.5	1	
4100068110	电工电子实习 A Practice in Electrical Engineering & Electronics A	2	2	3	
4050242130	Matlab 原理与应用 Matlab Application and Practice	1	1	4 (分散)	
4110238130	学科基础课群综合应用设计 Courses Design on Basic Courses of Disciplines	2	2	4 (分散)	
4110214130	单片机应用设计 Microcomputer application practice	2	2	5 (分散)	
4110229130	通信系统课群综合应用 Comprehensive Training and Design on Communication System	2	2	7 (企业)	

课程编号 Course Number	实践环节名称 Practice Courses Name	周数 Weeks	学分 CrS	建议修读学期 Suggested Term	第二专业 Second Major
4110236130	信息处理课群综合应用 Course Design on Comprehensive Specialty	2	2	7 (企业)	
4110195120	PROTEL 应用实践 Courses Design on Protel Application	2	2	7 (企业)	
4110230130	通信新技术的应用研究 Applied research of the Communication new technology	2	2	7 (企业)	
4110245130	企业管理与企业文化 Corporate Management and Corporate Culture	1	1	7 (企业)	
4110237130	电子产品生产工艺 Electronic product manufacturing process	2	2	7 (企业)	
4110139110	专业实习 Specialty practice	3	3	7 (企业)	
4110197120	毕业论文 Graduation Thesis	17	11	8 (企业)	
小 计 Subtotal		41	33.5		

六、修读指导

VI Recommendations on Course Studies

本专业课程中涉及电系列课程、计算机系列课程、信息处理系列课程和通信系统及其应用技术系列课程等，学生在选修课程时应注意所选课程的衔接性和系列性。

There are electric series course, computer series courses, Information processing series courses, communications system series course and Application technology series courses in the professional courses. When you choice the elective courses, Please attention to the Cohesion sex and seriation about them.

《形势与政策》课程，平均每学期 16 学时，一般按专题进行，在第七学期末考核，计 2 个课外学分，具体由学校学生发展指导中心负责组织落实。

Situation & Policy, a 16 hours/term with 2 credits course, is taught according to topics and tested at the end of the 7th term . The course will be arranged by the University Students' Affairs' Department in each school.

学院教学责任人：艾青松
专业培养方案责任人：刘 岚