

物联网工程专业本科培养方案

Undergraduate Education Program for Specialty in Internet of Things Engineering

一、专业简介

I Program Introduction

专业名称：物联网工程

专业代码：080905

学科门类：工学

Specialty Name: Internet of Things Engineering

Specialty Code: 080905

Discipline Category: Engineering

物联网工程专业 2011 年开始招收本科生。经近年来快速发展，本专业形成了一定的产学研合作与人才队伍优势，物联网工程专业所依托的信息技术教学团队于 2013 年入选河南省教学团队、计算机实验教学中心入选河南省实验教学示范中心，已成为中原地区物联网领域高级专门技术人才的培养基地。本专业是一个强化基础、面向应用、加强实践，以应用为主的宽口径专业，培养能从事物联网领域开发和研究的高级工程技术人才。课程体系贯彻理论与实践并重、知识与能力并重的原则，强化物联网工程实践能力的多方面训练，注重创新性思维的开发，培养学生既具有扎实的理论和专业知识，又具有开拓性、创造性解决工程实际问题的能力。

The specialty in internet of things engineering began to enroll undergraduates in 2011. With rapid development in recent years, this specialty has formed a certain industry and research cooperation and talent team advantage. In 2013, the information technology teaching team which Internet of Things Engineering specialty depends on was selected as the teaching team of Henan Province and the computer experimental teaching center was selected as the experimental teaching demonstration center of Henan Province. This specialty has become a training base for senior technical personnel in the Internet of Things field in central China. The specialty is a wide borne specialty which is strengthening basis, facing application and intensifying practice. The training goal is to educate senior engineering technology persons who can develop and investigate internet of things. The class system carries out the rules of laying equal stress on theory and practice, knowledge and capability. It strengthens training of internet of things engineering practice and emphasizes development of innovating thinking. It educates students who have steady theory, professional knowledge and trailblazing and can solve practical problems innovatively.

二、培养目标

II Program Objective

本专业按照“厚基础、宽口径、重实践、求创新、强素质”的人才培养指导思想，培养德、智、体全面发展，具有数学和自然科学基础知识，掌握物联网工程所需的技术知识、基本技能和工程应用能力，具备分析、研究、设计和解决问题的能力，具有一定的工程组织、交流沟通、团队合作能力和国际视角，能够恪守职业操守，承担社会责任，通过终身学习适应当今社会和物联网技术快速发展的需要，能够从事物联网软、硬件分析、设计、开发与应用，具有扎实基础理论和专门知识的应用研究型高级专门人才。

学生毕业后五年左右达到的具体目标如下：

目标1: 适应创新型人才发展需要, 德才兼备、身体强健、全面发展, 具有人文素养、职业道德和社会责任感;

目标2: 拥有数理基础和自然科学基础;

目标3: 掌握物联网工程知识和技能, 能够分析、研究和设计方案, 解决物联网应用问题, 具有工程实践能力;

目标4: 具有一定的工程组织能力、沟通能力和国际化视野, 富有团队精神;

目标5: 具备终身学习能力, 能够通过适当途径更新、拓展自己的知识和能力。

Based on the guiding ideology of "thick foundation, wide caliber, practice, innovation and strong quality", the training goal of internet of things engineering specialty is to educate the advanced engineered and applied specialty persons who develop comprehensively in virtue, wisdom and body with innovative spirit and practical ability, and can have a solid foundation of mathematical and natural sciences, and can tightly grasp the basic theory of internet of things and the basic skill of engineering applications, thus can have the ability to analyze, research, design and solve problems. The students can have a certain degree of engineering organization, communication, teamwork and international perspective, and abide by professional ethics and social responsibility. They should meet the needs of today's society and the rapid development of internet of things through lifelong learning. The graduated students will obtain internet of things engineers' professional knowledge and professionalism and to be senior applied talent with the abilities of internet of thing's hardware or software analysis, design, development and application.

The specific goals reached by the students after five years of graduation are as follows:

Goal 1: Meeting the needs of the development of innovative talents, both ability and political integrity, physical strength, comprehensive development, having humanistic accomplishment, professional ethics and social responsibility.

Goal 2: Having a foundation of mathematical and natural sciences.

Goal 3: Mastering internet of things knowledge and skills, analyzing, researching and designing programs to solve the problem of internet of things engineering applications.

Goal 4: Having a certain degree of engineering organization, communication skills and international vision, and team work.

Goal 5: Having the ability of lifelong learning, updating and expanding their knowledge and ability by through appropriate approaches.

三、毕业要求

III Graduation Requirements

本专业毕业生应系统地掌握坚实的理论和专业知识, 具有较强的分析问题和解决问题的能力, 能够适应社会发展的需要, 具有在物联网相关领域从事技术开发、管理、维护、教学和科学研究工作的能力。毕业要求具体体现在以下几个方面。

1. 工程知识: 能够将数学、自然科学、工程基础和物联网专业知识, 用于解决物联网工程应用领域的复杂工程问题。

2. 问题分析: 能够应用数学、自然科学和工程科学的基本原理, 识别、表达, 并通过文献研究分析物联网工程应用领域的复杂工程问题, 以获得有效结论。

3. 设计/开发解决方案: 能够针对物联网工程应用领域的复杂工程问题设计解决方案, 设计开发满足特定需求的软硬件和网络系统、组件和产品, 并能够在设计开发环节中体现创新意识, 考虑经济、健康、安全、法律、伦理、环境及文化等因素。

4. 研究: 能够基于物联网科学原理并采用科学方法, 对物联网工程应用领域的复杂工程问题进行研究, 包括设计实验、分析与解释数据, 并通过信息综合得到合理有效的结论。

5. 使用现代工具：能够针对物联网工程应用领域的复杂问题，开发、选择与使用恰当的平台、技术、资源、现代工程工具和信息技术工具，包括对复杂工程问题的预测与模拟，并能够理解其局限性。

6. 工程与社会：能够基于工程相关背景知识进行合理分析，评价物联网工程专业工程实践和复杂工程问题解决方案对社会、健康、安全、法律及文化的影响，并理解应承担的责任。

7. 环境和可持续发展：能够理解和评价针对复杂物联网工程问题的实践活动，对环境、社会可持续发展的影响。

8. 职业规范：具有人文社会科学素养、公民道德水平和社会责任感，能够在物联网工程实践中理解并遵守工程职业道德和规范，履行责任。

9. 个人和团队：具有强健的体格和良好的综合素质，能够在多学科背景下的团队中承担个体、团队成员及负责人的角色。

10. 沟通：具有沟通的能力、方法和技巧，能够就物联网工程应用领域的复杂工程问题与业界同行及社会公众进行有效沟通和交流，包括撰写报告和设计文稿、陈述发言、清晰表达和答辩能力，并具备一定的国际视野，能够在跨文化背景下进行沟通和交流。

11. 项目管理：具有一定的项目管理知识和能力，理解并掌握物联网工程管理原理与经济决策方法，并能在多学科环境中应用。

12. 终身学习：具有自主学习和终身学习的意识，有不断学习和适应发展的能力，能够通过自主学习适应经济社会创新发展的需要。

The specialty graduates can systematically grasp firm theory and professional knowledge, and they must have the abilities of analyzing and dealing with problems to fit in with the needs of the society. They can be engaged in developing, managing, maintaining, teaching and investigating work in internet of things engineering fields. The following represents these concretely.

1. Engineering knowledge: Be able to apply mathematics, natural sciences, engineering and internet of things expertise to solve the computer applications in the field of complex engineering problems.

2. Problem analysis: Be able to apply the basic principles of mathematics, natural sciences and engineering science to identify and express, and analysis of complex engineering problems in internet of things engineering applications through the literature research in order to obtain effective conclusions.

3. Design / development solutions: Design solutions for complex engineering problems in internet of things engineering applications, design and develop hardware/software and network systems, components and products that meet specific needs, and reflect innovation in design and development taking into account economic, security, legal, ethical, environmental and cultural factors.

4. Research: Based on the principles of internet of things, be able to use scientific methods to study the complex engineering problems in internet of things engineering applications, including design experiments, analysis and interpretation of data. and acquire reasonable and effective conclusions through information synthesis.

5. Use modern tools: Be able to develop, select and use appropriate platforms, technologies, resources, modern engineering tools and information technology tools for complex problems in internet of things engineering applications, including predictions and simulations of complex engineering problems and the ability to understand its limitations

6. Engineering and Society: Be able to conduct rational analysis based on engineering-related background knowledge, evaluate the impact of internet of things engineering practice and complex engineering problem solutions on society, health, safety, law and culture, and understand the responsibilities that should be borne.

7. Environment and sustainable development: Be able to understand and evaluate the practical

activities of complex internet of things engineering problems, and the impact on the environment, social sustainable development.

8. Professional norms: Process humanities and social sciences, civic moral standards and social responsibility. And fulfill their responsibilities in internet of things engineering practice to understand and comply with engineering ethics and norms.

9. Individuals and teams: Process a strong physique and good overall quality, be able to assume the individual, team members and the role of the person in charge in a multidisciplinary background of the team.

10. Communication: Process the ability, method and skill to communicate, to communicate with the industry peers and the public on complex engineering issues in internet of things engineering, including writing reports and designing manuscripts, statements, clarity and defense. And have a certain international perspective, to communicate and exchange under cross cultural background.

11. Project management: Process a certain degree of project management knowledge and ability to understand and master the principles of internet of things engineering management and economic decision-making methods, and can be applied in a multidisciplinary environment.

12. Lifelong learning: Process a certain degree of independent learning and lifelong learning awareness, have the ability to continue and independent learning to adapt the development of economic and social innovation

四、主干学科及核心课程

IV Main Discipline & Core Courses

主干学科：计算机科学与技术

核心课程：C 语言程序设计 A、离散数学、数据结构、微机原理与接口技术 B、计算机网络 A、数据库原理、计算机组成原理、传感器与自动检测技术、操作系统、计算机控制技术 A、传感器网络、物联网工程规划与设计

Main Discipline: Computer Science and Technology

Core Courses: C Language Programming A, Discrete Mathematics, Data Structure, Computer Principles and Interface Techniques B, Computer Network, Database Principles, Principles of Computer Composition, Sensor & Automatic Detection Technology, Operating System, Computer Control Technology, Sensor Network, Engineering Planning and Design of Internet of Things

五、学制及学位

V Program Duration and Academic Degrees

学制：4 年

学习年限：3-6 年

授予学位：工学学士

Program Duration: Four years

Period of schooling: 3-6 years

Degree Granted: Bachelor of Engineering

六、最低毕业学分要求

VI Minimum Required Credits

课程平台、模块及类型 Education courses、Module and Category		学分 Credit	占总学分比例(%) Percentage of Total Credit(%)	
通识教育课程平台 General education courses		课堂教学 coursework	41	22.8
		实验和课程实践 Experiments & practicum	6	3.3
基础教育 课程平台 Basic education courses	学科基础课程 Basic disciplinary courses	课堂教学 coursework	27.5	15.3
		实验和课程实践 Experiments & practicum	2	1.1
	专业基础课程 Basic academic courses	课堂教学 coursework	34	18.9
		实验和课程实践 Experiments & practicum	4.5	2.5
专业教育 课程平台 Specialized courses	工程应用能力培养 模块 Engineering application capacity training module	课堂教学 coursework	10	5.6
		实验和课程实践 Experiments & practicum	2	1.1
	应用类/学术类选修 模块 Application/academi c elective module	课堂教学 coursework	9.5	5.3
		实验和课程实践 Experiments & practicum	2.5	1.4
实践教育 环节平台 practicum	专业基础实践 Basic practicum		10	5.6
	专业综合实践 Professional practicum		22	12.2
	素质教育实践 Quality education practicum		9	5.0
合 计 Total		180		

七、课程设置及教学

VII Curriculum

(一) 通识教育课程平台 (一) General education courses

课程模块 Classification	模块性质 Category	课程名称 Course name	学分 credit	学时分配 Time distribution				考试 Exam type	建议 Suggested term	开课 course-offering faculty	
				总学 Totalhs	理 Class hours	论 experiments	实 实验				课 practicum
思想 政治 Ideology and Politics	必修	思想道德修养与法律基础 Morals, Ethics and Fundamentals of Law	3	48	40		8	考查	1	马院	
		马克思主义基本原理 Marxism Philosophy	3	48	40		8	考试	1	马院	
		中国近现代史纲要 Outline of Contemporary and Modern Chinese History	2	32	24		8	考查	3	马院	
		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	6	96	64		32	考试	5	马院	
		形势与政策 (1) Situation and Policy(1)	0.5	32	16		16	考查	1和2	马院	
		形势与政策 (2) Situation and Policy(2)	0.5	32	16		16	考查	3和4	马院	
		形势与政策 (3) Situation and Policy(3)	0.5	32	16		16	考查	5和6	马院	
		形势与政策 (4) Situation and Policy(4)	0.5	32	16		16	考查	7和8	马院	
		外 语 Foreign Language	大学英语 B (1) College English B(1)	3	48	48			考试	1	外语
			大学英语 B (2) College English B(2)	4	64	48		16	考查	2	外语
大学英语 B (3) College English B(3)	3		48	40		8	考查	3	外语		
大学英语 B (4) College English B(4)	2		32	32			考试	4	外语		
体 育 Physical Education	体育 (1) Physical Education(1)	1	36	32		4	考查	1	体育		
	体育 (2) Physical Education(2)	1	36	32		4	考查	2	体育		
	体育 (3) Physical Education(3)	1	36	32		4	考查	3	体育		
	体育 (4) Physical Education(4)	1	36	32		4	考查	4	体育		
信 息 技 术 Information Technology		大学计算机基础 A Foundation of Computer A	1	32	16	16		考查	1	信工	
国 防 教 育 National Defense Education		军事理论 Military Theory	2	32	32			考查	3	体育	

课程模块 Classification	模块性质 Category	课程名称 Course name	学分 credit	学时分配 Time distribution				考试/考查 Exam type	建议修读学期 Suggested term	开课单位 course-offering faculty
				总学时 Totals	理论 Class hours	实验 experiments	课程实践 practicum			
素质教育 Quality education	选修 elective courses	人文社科类 Humanity and social science	4	所有学生必修心理健康类、创新创业类、就业指导类、艺术教育类课程每类必须至少 2 学分，必修人文社科类或自然科学类课程必须至少 4 学分。 All the students are required to achieve at least two credits of mental health, innovation, career guidance or art courses. The minimum of four credits are required in the courses of arts or natural science.						
		自然科学类 Nature Science Courses								
		艺术教育类 Arts Courses	2							
		就业指导类 Career Guidance Courses	2							
		创新创业类 Innovation Courses	2							
		心理健康类 Mental Health Course	2							
小 计 Subtotal			47							

(二) 基础教育课程平台
(二) Basic education courses

课程模块 Classification	模块性质 Category	课程名称 Course Name	学分 credit	学时分配 Time distribution				考试考查 Exam type	建议修读学期 Suggested term	开课单位 course-offering faculty
				总学时 Total hrs	理论 Class hours	实验 experiments	课程实践 practicum			
学科基础课程 Basic disciplinary courses	必修 Compulsory courses	高等数学 A(1) Higher Mathematics A(1)	5	80	80			考试	1	数统
		高等数学 A(2) Higher Mathematics A(2)	5.5	88	88			考试	2	数统
		大学物理 B College Physics B	4.5	72	72			考试	2	物理
		电路与模拟电子技术 Circuit and Analog Electronic Technology	3.5	64	48	16		考查	2	信工
		数字逻辑电路 Digital Logic Circuit	3.5	64	48	16		考试	3	信工
		实验物理 B Experimental Physics B	1	32		32		考查	3	物理
		线性代数 A Linear Algebra A	3	48	48			考试	3	数统
		概率论与数理统计 B Probability and Statistics B	3.5	56	56			考试	4	数统
		小计 Subtotal	29.5	504	440	64				
		专业基础课程 Basic academic courses	必修 Compulsory courses	C 语言程序设计 A C Language Programming A	3.5	64	48	16		考试
离散数学 Discrete Mathematics	4.5			72	72			考试	1	信工
数据结构 Data Structure	4.5			80	64	16		考试	2	信工
数据库原理 Database Principle	4			64	54	10		考试	3	信工
计算机网络 A Computer Network A	4			64	54	10		考试	4	信工
计算机组成原理 Principle of Computer Organization	4			64	56	8		考试	4	信工
微机原理与接口技术 B Principles and Interface of Microcomputer B	4			64	56	8		考试	5	信工
操作系统 Operating System	4			64	56	8		考试	5	信工
传感器与自动检测技术 Sensor & Automatic Detection Technology	3			48	40	8		考查	5	信工
计算机控制技术 A Computer Control Technology A	3			48	40	8		考查	6	信工
小计 Subtotal	38.5	632	540	92						

(三) 专业教育课程平台

(三) Specialized courses

课程模块 Classification	模块性质 Category	课程名称 Course Name	学分 credit	学时分配 Time distribution				考试/考查 Exam type	建议修读学期 Suggested term	开课单位 course-offering faculty	
				总学时 Total hrs	理论 Class hours	实验 experiments	课程实践 practicum				
工程应用 能力培养 模块 engineering application capacity training module	选修 elective course	面向对象程序设计 A Object-oriented Programming A	2.5	48	32	16		考查	3	信工	
		Java 程序设计 Java Programming	2.5	56	32	24		考查	4	信工	
		算法设计与分析 Algorithm Design and Analysis	2.5	48	32	16		考试	4	信工	
		传感器网络 Sensor Network	2	40	24	16		考查	6	企业	
		物联网工程规划与设计 Engineering Planning and Design of Internet of Things	2.5	40	40			考查	6	信工	
		小 计 Subtotal	12	232	160	72					
应用类 选修 模块 application elective module	选修 elective course	数据库开发技术 Database Development Technology	2.5	40	32	8		考查	3	信工	
		Web 开发技术 Web Development Technology	2	40	24	16		考查	4	企业	
		单片机原理及应用 B Principles and Applications of Single Chip Microcomputer B	2	40	24	16		考查	5	信工	
		移动互联网开发技术 Mobile Internet Development Technology	2	40	24	16		考查	5	信工	
		物联网应用程序设计 IOT Application Programming	2	40	24	16		考查	5	信工	
		嵌入式系统 Embedded System	2.5	48	32	16		考查	6	信工	
		Socket 编程与应用开发 Socket Programming & Application Development	2	40	24	16		考查	6	信工	
		互联网创新 Internet Innovation	2	32	32			考查	6	信工	
		科技应用英语 Scientific and Technological Application English	2	32	32			考查	5	信工	
		小 计 Subtotal	19	352	248	104					

学术类选修模块 academic elective module	选修 elective course	数字图像处理 Digital Image Processing	2	32	24	8		考查	5	信工	
		人工智能技术 Artificial Intelligence Technology	2	32	24	8		考查	6	信工	
		云计算技术 Cloud Computing Technology	2	32	24	8		考查	6	信工	
		大数据分析技术 Big Data Analysis Technology	2	32	24	8		考查	7	信工	
		专业前沿技术 Specialty Frontier Technology	2	32	32			考查	7	信工	
		高级专门英语 Advanced Special English	2	32	32			考查	5	信工	
		小计 Subtotal	12	192	160	32					

备注：学生必须修完工程应用能力培养模块全部课程；学术类和应用类选修模块不要求修完某一模块，也可跨学科或专业修读课程，总和不少于12学分，科技应用英语和高级专门英语不能同时选。

Note: All courses in the education module of engineering application ability must be studied. The optional modules of academic courses or application' s are not required to study completely. Students could select courses cross-disciplinary or cross-specialty and the total credit is no less than 12. Scientific and technological application English and advanced special English can' t be selected synchronously.

(四) 实践教育环节平台

(四) Practicum

实践模块 Classification	模块性质 Category	实践环节名称 Practicum Name	实践环节性质 Type	学 分 Credit	周 数 Weeks	建议 学期 Suggested Term	开课单位 Course-offering Faculty
专 业 基 础 实 践 Basic Practicum	compulsory 必修	认识实习 Cognition Practice	实习	1	1	2	信工
		数据结构课程设计 Course Design of Data Structure	课程设计	2	2	2	信工
		数据库课程设计 Course Design of Database principle	课程设计	2	2	3	信工
		Java 课程设计 Course Design of Java Application Development	课程设计	1	1	4	信工
		计算机组成原理课程设计 Course Design of Principle of Computer Organization	课程设计	2	2	4	信工
		嵌入式系统课程设计 Course Design of Embedded System	课程设计	2	2	6	信工
		专 业 综 合 实 践 Professional Practicum	compulsory 必修	专业综合课程设计 Specialty Comprehensive Course Design	课程设计	3	3
生产实习 Production Practice	实习			4	4	7	企业
毕业设计 Graduation Design	毕业设计			15	15	8	企业
素 质 教 育 实 践 Quality Education Practicum	compulsory 必修	新生入学教育（含安全教育） New Students Enrolment Education (Include Safety Education)	素质教育	1	1	1	学生处
		军事技能训练 Military Skills Training	素质教育	2	2	1	学生处
		创新创业实践 Innovation and Entrepreneurship Practice	素质教育	2			信工
		其它课外素质培养实践 Other Extra-curriculum Quality Training Practice	素质教育	4			学生处、团委
小 计 Subtotal				41			

八、指导性修读建议计划表

VIII Instructional Course Schedule

第一学期 First Term			第二学期 Second Term		
课程编码 Course Code	课程名称 Course Name	学分 Credit	课程编码 Course Code	课程名称 Course Name	学分 Credit
2611004	形势与政策(1) Situation and Policy(1)	0.5	2611004	形势与政策(1) Situation and Policy(1)	0.5
2611003	思想道德修养与法律基础 Morals, Ethics and Fundamentals of Law	3	0711005	大学英语 B(2) College English B(2)	4
2611001	马克思主义基本原理 Marxism Philosophy	3	1111002	体育(2) Physical Education(2)	1
0711002	大学英语 B(1) College English B(1)	3	1012012	高等数学 A(2) Higher Mathematics A(2)	5.5
1111001	体育(1) Physical Education(1)	1	2812011	大学物理 B College Physics B	4.5
0411001	大学计算机基础 A Foundation of Computer A	1	0412009	电路与模拟电子技术 Circuit and Analog Electronic Technology	3.5
1012002	高等数学 A(1) Higher Mathematics A(1)	5	0412010	数据结构 Data Structure	4.5
0412002	C 语言程序设计 A C Language Programming A	3.5	0414005	认识实习 Cognition Practice	1
0412003	离散数学 Discrete Mathematics	4.5	0414003	数据结构课程设计 Course Design of Data Structure	2
2114002	新生入学教育(含安全教育) New Students Enrolment Education (Include Safety Education)	1			
2114001	军事技能训练 Military Skills Training	2			
合计 Total	必修 27 学分 Credits of required courses: 27		合计 Total	必修 26.5 学分 Credits of required courses: 26.5	
* 本学期选课具体要求 Specific requirements of choosing courses for the term * 本学期总学分 27 学分 Total credits: 27			* 本学期选课具体要求 Specific requirements of choosing courses for the term * 本学期总学分 26.5 学分 Total credits: 26.5		

第三学期 Third Terms			第四学期 Fourth Term		
课程编码 Course Code	课程名称 Course Name	学分 Credit	课程编码 Course Code	课程名称 Course Name	学分 Credit
2611006	形势与政策(2) Situation and Policy(2)	0.5	2611006	形势与政策(2) Situation and Policy(2)	0.5
1111003	军事理论 Military Theory	2	0711007	大学英语 B(4) College English B(4)	2
2611005	中国近现代史纲要 Outline of Contemporary and Modern Chinese History	2	1111005	体育(4) Physical Education(4)	1
0711006	大学英语 B(3) College English B(3)	3	1012027	概率论与数理统计 B Probability and Statistics B	3.5

1111004	体育 (3) Physical Education(3)	1	0412021	计算机组成原理 Principle of Computer Organization	4
1012017	线性代数 A Linear Algebra A	3	0412019	计算机网络 A Computer Network A	4
0412038	数字逻辑电路 Digital Logic Circuit	3.5	0413052	算法设计与分析 Algorithm Design and Analysis	2.5
0413035	面向对象程序设计 A Object-oriented Programming A	2.5	0413004	Java 程序设计 Java Programming	2.5
0412025	数据库原理 Database Principle	4	0413082	Web 开发技术 Web Development Technology	2
0413047	数据库开发技术 Database Development Technology	2.5	0414036	计算机组成原理课程设计 Course Design of Principle of Computer Organization	2
2812041	实验物理 B Experimental Physics B	1	0414012	Java 课程设计 Course Design of Java Application Development	1
0414019	数据库课程设计 Course Design of Database	2			
合计 Total	必修 21.5 学分 Credits of required courses: 21.5		合计 Total	必修 18 学分 Credits of required courses: 18	
* 本学期选课具体要求 Specific requirements of choosing courses for the term * 本学期总学分 26.5 学分 Total credits: 26.5			* 本学期选课具体要求 Specific requirements of choosing courses for the term * 本学期总学分 25 学分 Total credits: 25		

第五学期 Fifth Term			第六学期 Sixth Term		
课程编码 Course Code	课程名称 Course Name	学分 Credit	课程编码 Course Code	课程名称 Course Name	学分 Credit
2611007	形势与政策 (3) Situation and Policy(3)	0.5	2611007	形势与政策 (3) Situation and Policy(3)	0.5
2611002	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	6	0412018	计算机控制技术 A Computer Control Technology A	3
0412040	微机原理与接口技术 B Principles and Interface of Microcomputer B	4	0413007	传感器网络 Sensor Network	2
0412012	操作系统 Operating System	4	0413039	嵌入式系统 Embedded System	2.5
0412013	传感器与自动检测技术 Sensor & Automatic Detection Technology	3	0413061	物联网工程规划与设计 Engineering Planning and Design of Internet of Things	2.5
0413062	物联网应用程序设计 IOT Application Programming	2	0413041	人工智能技术 Artificial Intelligence Technology	2
0412014	单片机原理及应用 B Principles and Applications of Single Chip Microcomputer B	2	0413073	云计算技术 Cloud Computing Technology	2
0413071	移动互联网开发技术 Mobile Internet Development Technology	2	0413006	Socket 编程与应用开发 Socket Programming & Application Development	2

0413049	数字图像处理 Digital Image Processing	2	0413025	互联网创新 Internet Innovation	2
0713002	科技应用英语 Scientific and Technological Application English	2	0414037	嵌入式系统课程设计 Course Design of Embedded System	2
0713001	高级专门英语 Advanced Special English	2	0414024	专业综合课程设计 Specialty Comprehensive Course Design	3
合 计 Total	必修 17 学分 Credits of required courses:17		合 计 Total	必修 8.5 学分 Credits of required courses:8.5	
* 本学期选课具体要求 Specific requirements of choosing courses for the term * 本学期总学分 29 学分 Total credits:29			* 本学期选课具体要求 Specific requirements of choosing courses for the term * 本学期总学分 23.5 学分 Total credits:23.5		

第七学期 Seventh Term			第八学期 Eighth Term		
课程编码 Course Code	课程名称 Course Name	学分 Credit	课程编码 Course Code	课程名称 Course Name	学分 Credit
2611008	形势与政策 (4) Situation and Policy(4)	0.5	2611008	形势与政策 (4) Situation and Policy(4)	0.5
0413009	大数据分析技术 Big Data Analysis Technology	2	0414017	毕业设计 Graduation Design	15
0413078	专业前沿技术 Specialty Frontier Technology	2			
0414010	生产实习 Production Practice	4			
合 计 Total	必修 4 学分 Credits of required courses:4		合 计 Total	必修 15.5 学分 Credits of required courses:15.5	
* 本学期选课具体要求 Specific requirements of choosing courses for the term * 本学期总学分 8 学分 Total credits:8			* 本学期选课具体要求 Specific requirements of choosing courses for the term * 本学期总学分 15.5 学分 Total credits:15.5		

九、辅修专业或双学位课程设置及教学进程

IX Minor and Double-degree Programs

(一) 物联网工程辅修专业课程

(一) Internet of Things Engineering Minor Programs

课程模块 Classification	模块性质 Category	课程名称 Course Name	学分 credit	学时分配 Time distribution				考试/考查 Exam type	建议修读学期 Suggested term	开课单位 course-offering faculty
				总学时 Total hrs	Class hours	理论 theories	实验 experiments			
基础教育课程 Basic courses	必修 compulsory	数据结构 Data Structure	4.5	80	64	16		考试	2	信工
		计算机组成原理 Principle of Computer Organization	4	64	56	8		考试	4	信工
		操作系统 Operating System	4	64	56	8		考试	5	信工
专业教育课程 Professional Courses	必修 compulsory	面向对象程序设计 A Object-oriented Programming A	2.5	48	32	16		考查	3	信工
		传感器网络 Sensor Network	2	40	24	16		考查	6	信工
		物联网工程规划与设计 Engineering Planning and Design of Internet of Things	2.5	40	32	8		考查	6	信工
实践教育环节 Practicum	必修 compulsory	数据结构课程设计 Course Design of Data Structure	2						2	信工
合 计 Total			21.5	336	264	72				