软件工程专业本科培养方案（Java）

Undergraduate Program for Specialty in Software Engineering（Java）

一、培养目标

Ⅰ **Educational Objectives**

本专业按照"加强基础，拓宽专业，强化能力，提高素质，突出特色"的人才培养指导思想，培养德、智、体全面发展，牢固掌握计算机软硬件基本理论和计算机应用的基本技能，工程实践与应用能力强，能适应社会发展需要和软件工程技术快速发展需要，具有分析问题和解决问题的能力、知识自我更新能力和创新思维，可在科研机构、高等院校、企事业单位从事计算机硬件的设计、安装、调试与维修，计算机系统软件的研制及计算机应用软件的分析、开发和维护以及从事计算机网络的开发、管理与维护，也可以从事计算机教学、研究工作的工程/应用型高级专门人才。

Based on reinforcing foundation, expanding specialty, strengthening capability, improving quality and outstanding features guidelines, the training goal of the computer specialty is to educate the advanced engineered and applied specialty persons who develop comprehensively in virtue, wisdom and body and can tightly grasp the basic theory of computer hardware and software and the basic skill of computer application. The persons should have high engineering practice and applied capability and can adapt to the developing requirement of society and software engineering technology. They have the abilities of analyzing and dealing with problem, updating knowledge and innovating idea. They can do such jobs such as designing, installing and maintaining computer hardware, developing computer system software, analyzing, developing and maintaining computer application software, designing, managing and maintaining computer network, teaching and studying computer in scientific research institutes, colleges and enterprises.

二、培养要求

Ⅱ **Skills Profile**

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，具有在软件工程技术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。具体体现在以下几个方面。

1. 具有良好的思想政治素质，热爱祖国，拥护中国共产党的领导，有为国家富强民族昌盛而奋斗的强烈事业心和责任感。

2. 具备较好的人文、艺术和社会科学基础，初步树立正确的世界观、人生观和价值观，具有良好的道德修养、文化素养和健康的身体心理素质。

3. 系统地掌握本专业领域的基本理论、基本知识，以及计算机系统的分析和设计的基本方法。

4. 具有从事工程开发的坚实的专业基础知识，初步掌握本学科工程技术项目的思想、方法、技术路线；具有规范的工程素质，动手能力强，掌握多种专业技能。

5. 具有一定的计算思维能力、算法设计与分析能力、程序设计能力、计算机系统的认知、分析、设计和应用的能力。

6. 具有主动学习、概括总结和信息获取能力，良好的文字和口头表达能力，创新意识和创新思维。

7. 了解与软件工程行业相关的法规和软件工程技术的发展动态，具有学习跟踪新技术的能力。

8. 较好掌握一门外语，熟悉文献检索、资料查询的基本方法，具有获取信息的能力。

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 software engineering technology fields. The following represents these concretely.

1. The graduates have good ideological and political quality. They love motherland and support the leading of Chinese Communist, and they have high enterprise and responsibility of striving for the country and nation flourishes.

2. The graduates have fine basis of division of humanities, art and social science and a preliminary correct world view, philosophy and sense of worth. They have nice moral cultivation, culture literacy and healthy body and mentality.

3. The graduates can systematically grasp basic theory and knowledge and basic method of analyzing and designing computer system.

4. The graduates have firm and professional basic knowledge for developing engineering, and they can initiatively grasp the idea, method and technology route of the engineering technology items. And, they also posses normative engineering quality, high practice performance and several professional skills.

5. The graduates have some abilities of computational thinking, designing and analyzing algorithm, developing program, learning, designing and applying computer system.

6. The graduates have abilities of learning on their own initiative, summarizing, obtaining information, nice writing and oral expressing, and they should hold innovative consciousness and idea.

7. The graduates should understand the rules of software engineering industry and the development of software engineering technology, and they should have the ability of learning and tracing new technology.

8. The graduates can grasp a foreign language and know basic method of document indexing and data query, and they have obtaining information ability.

三、专业特点
Ⅲ Characteristic Specialty

本专业是一个强化基础、面向应用、加强实践、分类培养，以应用为主的宽口径专业，培养能从事计算机软件、嵌入式系统及网络系统设计、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，强化计算机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 is a wide borne specialty which is strengthening basis, facing application, intensifying practice and classified training. The training goal is to educate senior engineering technology persons who can develop and investigate computer software system, embedded system and network system. The class system carries out the rules of laying equal stress on theory and practice, knowledge and capability. It strengthens several trainings of computer 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.

四、主干学科
Ⅳ Major Disciplines

主干学科：软件工程

Major Disciplines: Software engineering

五、主要课程

Ⅴ Major Courses

主要课程：高级语言程序设计（C 语言）、离散数学、数据结构、计算机网络、数据库原理、计算机组成原理、C++面向对象程序设计、软件工程、操作系统、数据库开发技术、网页设计与制作、Java 程序设计基础、Java Web 编程基础、Java Web 高级编程、Java 移动应用开发、企业级应用开发等。

Major Courses: High-level Language Programming (C language), Discrete Mathematics, Data Structure, Computer Network, Database Principles, Principles of Computer Composition, Object-oriented Programming of C++，Software Engineering, Operating System, Database Development Technology, Webpage Development Practices, Foundation of Java Programming, Java Web Development Technology, High-level Programming of Java Web, Foundation of Java Mobile Technology , Application and development of enterprise etc.

六、学制与学位

Ⅵ Length of Program and Degree

学制：四年

Length of Program: 4 years

学位：符合《河南科技大学普通本科生学士学位授予办法》规定的毕业生授予工学学士。

Degree Granted: Engineering bachelor degree can be granted to graduates according to the guideline of bachelor degree granting approach for undergraduates in Henan University of Scinece and Technology.

七、最低毕业学分要求

Ⅶ Graduation Credit Criteria

通识教育学分 General Education Courses		学科平台课程学分 Basic Disciplinary Courses		专业方向课程学分 Specialized Courses		实践教学学分 Practice Training Schedule		总学分 Total
必修学分 Required Credit	课内素质教育学分 Taught Quality Education Credit	学科基础必修课学分 Required Basic Disciplinary Courses Credit	学科基础选修课学分 Elective Basic Disciplinary Courses Credit	专业方向必修课学分 Required Specialized Courses Credit	专业方向选修课学分 Elective Specialized Courses Credit	必修学分 Required Credit	课外素质教育学分 Extra-curriculum Credit	
38	10	68	13	9	4	38	4	184

八、教学进程计划表
VIII Taught Course Schedule

课程类别 Course Classification	课程性质 Course Nature	课程名称 Course Title	学分 Credit	学时分配 Hours Distribution				考试/考查 Graded Course / Pass-Fail Course	建议修读学期 Suggested Term	开课单位 Course-Offering Department
				总学时 Tot hrs.	理论 Taught	实验 Exp.	实践 Practice			
通识课课程 General Education Courses	必修课 Required Courses	大学英语(1) College English(1)	3.5	56	56			考试	1	外语
		大学英语(2) College English(2)	4	64	64			考查	2	外语
		大学英语(3) College English(3)	4	64	64			考查	3	外语
		大学英语(4) College English(4)	4	64	64			考试	4	外语
		体育(1) Physical Education(1)	1	30	30			考查	1	体育
		体育(2) Physical Education(2)	1	30	30			考查	2	体育
		体育(3) Physical Education(3)	1	32	32			考查	3	体育
		体育(4) Physical Education(4)	1	32	32			考查	4	体育
		思想道德修养与法律基础 Morals, Ethics and Fundamentals of Law	2.5	40	40			考查	1	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	4.5	72	72			考试	5	马院
		军事理论 Military Theory	2	32	32			考查	3	体育
		马克思主义基本原理 Marxism Philosophy	3	48	48			考试	1	马院
		中国近现代史纲要 Outline of Contemporary and Modern Chinese	2	32	32			考查	3	马院
		专业导论 Introduction to professional	1	16	16			考查	1	电信
		计算机文化基础 Foundation of Computer	1.5	24	10		14	考查	1	电信
		形势与政策 Situation and Policy	2	128	64		64	考查	1-8	马院
		小 计 Subtotal	38	764	686		78			
	课内素质教育（全校公选课）General Education Courses (Public Elective Courses)	人文社科类 Humanities and Social Sciences Courses	2	要求全体学生至少取得 10 学分，每类课程至少选修 2 学分。 All students are required to achieve at least ten credits, and at least two credits are required in each category. 课程设置见附件 (See appendix)						
		管理经济类 Economics and Management Courses	2							
		艺术教育类 Arts Education Courses	2							
		自然科学类 Natural Sciences Courses	2							
		就业指导类 Career Guidance Courses	2							
		小 计 Subtotal	10							

课程类别 Course Classification	课程性质 Course Nature	课程名称 Course Title	学分 Credit	学时分配 Hours Distribution				考试/考查 Graded Course / Pass - Fail Course	建议修读学期 Suggested Term	开课单位 Course-Offering Department
				总学时 Tot hrs.	理论 Taught	实验 Exp.	实践 Practice			
学科平台课程 Basic Disciplinary Courses	学科基础必修课 Required Courses	高等数学 A Higher Mathematics A	10.5	168	168	0		考试	1,2	数学
		线性代数 Linear Algebra	2	32	32	0		考试	3	数学
		概率与数理统计 Probability and Statistics	2.5	40	40	0		考试	4	数学
		离散数学 Discrete Mathematics	4	64	64	0		考试	1	软件
		高级语言程序设计（C 语言） High-level Language Programming (C	5	80	60	20		考试	1	软件
		C++面向对象程序设计 Object-oriented Programming of C++	3.5	56	28	28		考试	2	软件
		Java 程序设计基础 Foundation of Java Programming	5	80	40	40		考试	3	软件
		数据结构 Data Structure	4	64	56	8		考试	3	软件
		数据库原理 Database Principle	4	64	34	30		考试	3	软件
		计算机网络 Computer Network	3.5	56	46	10		考试	4	软件
		Java 高级编程 High-level Programming of Java	4	64	32	32		考试	4	软件
		数字电子技术 Digital Electronic Technology	4	64	48	16		考查	5	软件
		操作系统 Operating System	3	48	40	8		考试	5	软件
		Java Web 编程基础 Foundation of Java Web Programming	5	80	40	40		考试	5	软件
		软件工程 Software Engineering	2.5	40	32	8		考试	5	软件
		计算机组成原理 A Principle of Computer Organization	3.5	56	56	0		考试	6	软件
		专业英语 Specialty English	2	32	32	0		考查	6	软件
		小 计 Subtotal	68	1088	848	240				
	学科基础选修课 Elective Courses	网页设计与制作 Webpage Development Practices	3	48	24	24		考试	2	软件
		Photoshop 基础 Foundation of Photoshop	2.5	40	20	20		考查	2	软件
		JavaScript 程序设计 JavaScript	3	48	24	24		考试	3	软件
		Xml 编程 Xml Programming	2	32	16	16		考查	4	软件
		Html5 编程基础 Foundation of Html5 Programming	2.5	40	20	20		考查	4	软件
		小 计 Subtotal	13	208	104	104				

课程类别 Course Classification	课程性质 Course Nature	课 程 名 称 Course Title	学分 Credit	学时分配 Hours Distribution				考试/考查 Graded Course / Pass-Fail Course	建议修读学期 Suggested Term	开课单位 Course-Offering Department
				总学时 Tot hrs.	理论 Taught	实验 Exp.	实践 Practice			
专 业 方 向 课 程 Specialized Courses	专 业 方 向 必 修 课 Required Courses	数据库开发技术 A Database Development Technology A	2	32	16	16		考查	4	软件
		Java 移动技术基础 Foundation of Java Mobile Technology	3	48	24	24		考试	5	软件
		Java Web 高级编程 High-level Programming of Java Web	4	64	32	32		考试	6	软件
		小 计 Subtotal	9	144	72	72				
	专 业 方 向 选 修 课 Elective Courses	LINUX 操作系统基础 Foundations of Linux Operating System	2	32	16	16		考查	6	软件
		专业前沿技术 Specialty Frontier Technologies	2	32	32	0		考查	7	软件
		小 计 Subtotal	4	64	48	16				

备注：专业方向课程模块应依据专业办学基础、办学条件和社会需求，设置专业方向类课程。

Note: The specialized direction course modules should be set according to the specialty teaching foundation, teaching condition and social needs.

九、实践教学进程表
IX Practice Training Schedule (Software Engineering)

实践环节名称 Practice Courses Title	学分 Credits	周数 Weeks	建议学期 Suggested Term	开课单位 Course-offing Department
入学教育与军训 Enrolment Education and Military Training	2	2	1	学生处
认识实习 Cognition Practice	1	1	2	软件
C++面向对象课程设计 Course Design of Object-oriented Programming	2	2	2	软件
数据库课程设计 Course Design of Database	2	2	3	软件
Java 程序设计基础课程设计 Course Design of Foundations of Java Programming	2	2	3	软件
思政课社会实践 Ideological and Political Social Practice	3	3	3,5,7	马院
Java 高级编程课程设计（2+2，校内+校外） Course Design of Foundations of JavaWeb Programming	4	2+2	4	软件
JavaWeb 高级编程课程设计 Course Design of High-level Programming I of JavaWeb	2	2	5	软件
Java 移动技术课程设计 Course Design of Java Mobile Technology	2	2	6	软件
专业综合课程设计 Specialty Comprehensive Course Design	2	2	7	软件
生产实习 Production Practice	3	3	8	软件
毕业设计 Undergraduate Design	13	13	8	软件
课外素质教育 Extra-curriculum Quality Education	4			
小计　Subtotal	38	38		