

# 软件工程专业培养方案

## Undergraduate Program of Software Engineering

### I. 专业介绍 Introduction

软件工程专业是 2002 年国家首批设立的软件工程专业之一，2010 年首批入选教育部卓越工程师教育培养计划。拥有包括国家万人计划等在内的一支专业素质好、教学能力强、团结协作、朝气蓬勃的科研和教学团队。本专业突出对学生的软件开发能力培养和软件工程素质培养，注重软件工程过程方法训练，使学生具有扎实的基础、合理的知识结构、较强的软件设计与开发能力、较高的工程组织与管理能力。近年来，本专业培养的学生获得了第七届中国青少年科技创新奖（四川省唯一一名本科生）和 ACM 国际（亚洲区）大学生程序设计竞赛金奖等奖项。学生就业形势好，供不应求，学生质量深受用人单位好评，20%左右的本科毕业生被推荐免试攻读硕士或博士学位。

The discipline of software engineering is one of the first software engineering disciplines established by the country in 2002. In 2010, it was selected as the first batch of outstanding engineers' education and training program of the Ministry of Education. It has a scientific research and teaching team with good professional quality, strong teaching ability, unity and cooperation, and vigorous vitality, including National Ten-Thousand Talents. Our discipline focuses on the training of students' software development ability and quality of software engineering. It pays attention to the training of software engineering process methods, so that students have solid foundation, reasonable knowledge structure, strong ability of software design and development, and high ability of engineering organization and management. In recent years, the students have won the 7th China Youth Science and Technology Innovation Award (the only undergraduate in Sichuan Province) and the ACM International (Asian) University Programming Competition Gold Award. The employment situation is good, and the supply is short of demand. The quality of students is highly praised by employers. About 20% of undergraduate graduates are recommended to study for master's or doctor's degree without examination.

专业代码：080902

Program Code: 080902

专业名称：软件工程

Program Name: Software Engineering

### II. 培养目标 Objectives

本专业旨在培养德智体美劳全面发展，适应国民经济与科技发展需求，具备较好的科学素养，扎实的数理基础、计算机科学基础、软件工程基本理论和基本知识，受到软件工程的基本训练，可在软件工程及相关学科领域从事软件系统研发、软件技术支持及软件项目管理的高级专业人才，使其成为社会主义事业的建设者和接班人。

毕业生经过实践锻炼，能够达到以下子目标：

（1）熟悉职业相关的国家法律法规，具有一定的社会和职业道德修养，适应环境变化和团队工作，理解和承担责任，并履行责任的能力。

（2）针对实际需求，具有能运用自然科学、工程基础和软件工程专业知识、信息资源和工具，对复杂软件系统工程问题进行分析、研究论证，并得到有效结论的能力，能独立完成软件系统的方案设计、系统实现、项目管理和综合应用的能力。

（3）有良好的国际视野，且具有与业界同行、专业客户和公众沟通交流的能力，以及组织协调和团队合作的能力。

（4）具有在工作中继续学习、不断更新知识以适应技术和职业发展需求的终身学习的能力。

This major aims to cultivate the builders and successors of socialism who will meet the needs of the development of national economy and science and technology. They will develop morally, intellectually, physically and aesthetically in an all-round way, possess solid mathematical and physical foundations, computer science foundations, basic theories and basic knowledge of software engineering. They will also receive basic training in software engineering and be able to engage in software system development, software testing and quality assurance, software technology support, software project management and other work in the fields of software engineering and related disciplines.

Graduates will be able to achieve the following sub-goals after practical exercises:

(1) Familiarity with national laws and regulations related to the profession, having a certain level of social and professional ethics, being adapt to environmental changes and team work, understanding and taking responsibility, and fulfilling accountability.

(2) According to the actual needs, be able to use natural science, engineering foundation and software engineering knowledge to analyze and research complex software system engineering problems and get effective conclusion, and independently complete the design, implementation, testing and project management of software system.

(3) Have good international vision and communication skills with industry peers, professional customers and the public, as well as organizational coordination and teamwork capabilities.

(4) Be able to continue to learn and update knowledge in order to meet the needs of technical and vocational development for lifelong learning.

### III. 专业毕业要求 Graduation Requirements

对于本专业的学生，毕业要求包括如下 12 项基本要求：

(1) **工程知识：**掌握从事软件工程专业领域工作所需要的数学、自然科学、工程基础和专业知识，并能够运用这些知识解决复杂软件系统工程问题。

(2) **问题分析：**能够应用数学、自然科学和软件工程科学的基本原理，识别、表达复杂软件系统工程问题，并能通过文献研究分析，获得有效结论。

(3) **设计/开发解决方案：**能够设计针对复杂软件系统工程问题的解决方案，开发满足特定需求的软件系统、模块，在设计中具有一定的创新意识，并考虑社会、健康、安全、法律、文化及环境等因素。

(4) **研究：**具有基于科学原理并采用科学方法对复杂软件系统工程问题进行研究的能力，包括设计与实施实验、分析与解释数据、并通过信息综合得到合理有效结论。

(5) **使用现代工具：**能够选择与使用恰当的技术、资源、开发环境或开发相关工具，对复杂软件系统工程问题进行模拟和预测，并能够分析和理解其局限性。

(6) **工程与社会：**在复杂软件系统工程问题解决方案的设计和实现中，能够根据具体的工程背景合理分析和评价其对社会、健康、安全、法律以及文化的影响，并理解应承担的责任。

(7) **环境和可持续发展：**在复杂软件系统工程问题解决方案的设计、实现过程及软件运行中，能够理解和评价其对环境、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和社会责任感，能够在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：**具有一定的组织管理能力、团队合作能力，能够在多学科背景下的团队中承担个体、团队成员以及负责人的角色。

(10) **沟通：**能够就复杂软件系统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、清晰表达或回应指令，并具有一定的国际视野和跨文化沟通交流能力。

(11) **项目管理：**理解并掌握软件系统工程管理原理与经济决策方法，具有在多学科环境中应用的能力。

(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。

**For students of this major, the graduation requirements include the following 12 basic items:**

(1) Engineering Knowledge: be able to master the mathematics, natural science, engineering foundation and professional knowledge needed to work in the field of software engineering, and can use the knowledge to solve complex software system engineering problems.

(2) Problem Analysis: be able to apply the basic principles of mathematics, natural science and software engineering science to identify and express complex software system engineering problems, and can obtain effective conclusions through literature research and analysis.

(3) Design/Development Solutions: be able to design solutions to complex software system engineering problems and develop software systems to meet specific needs. Have a certain sense of innovation and consider social, health, safety, legal, cultural and environmental factors in the design.

(4) Investigation: be able to study complex software system engineering problems based on scientific principles and scientific methods, including designing and implementing experiments, analyzing and interpreting data, and obtaining reasonable and effective conclusions through information synthesis.

(5) Modern Tool Usage: be able to select and use appropriate technologies, resources, development environments or tools to simulate and predict complex software system engineering problems, and to analyze and understand their limitations.

(6) The Engineer and Society: for the design and implementation of complex software system engineering problem solutions, can reasonably analyze and evaluate its impact on society, health, safety, law and culture according to the specific engineering background, and understand the responsibilities that should be undertaken.

(7) Environment and Sustainability: for the design, implementation process and operation of complex software system engineering problem solution, can understand and evaluate its impact on the sustainable development of environment and society.

(8) Professional Ethics: have humanities and social sciences literacy and social responsibility, and can understand and abide by engineering professional ethics and norms in engineering practice, and fulfill their responsibilities.

(9) Individual and Team Work: have a certain organizational management ability, team cooperation ability, can take on the role of individuals, team members and leaders in a multidisciplinary team.

(10) Communication: be able to effectively communicate and communicate with industry peers and the public on complex software systems engineering issues, including writing reports and designing manuscripts, presenting statements, clearly expressing or responding to instructions, and with a certain international vision and intercultural communication and communication skills.

(11) Project Management: understand and master the principles of software system engineering management and economic decision-making methods, with the ability to apply in a multidisciplinary environment.

(12) Lifelong Learning: be with the awareness of self-learning and lifelong learning, and the ability to constantly learn and adapt to development.

**毕业要求对培养目标的支撑关系**

**The Support Relationship of Graduation Requirements for Cultivation Objectives**

毕业要求 Graduation Requirements	培养目标 Cultivating Objectives			
	目标 1 Object 1	目标 2 Object 2	目标 3 Object 3	目标 4 Object 4
毕业要求 1: 工程知识 Graduation requirement 1: Engineering Knowledge		✓		✓
毕业要求 2: 问题分析 Graduation requirement 2: Problem Analysis		✓		
毕业要求 3: 设计/开发解决方案 Graduation requirement 3: Design/development of solutions		✓		
毕业要求 4: 研究 Graduation requirement 4: Investigation		✓		✓
毕业要求 5: 使用现代工具 Graduation requirement 5: Modern Tool Usage		✓		✓
毕业要求 6: 工程与社会 Graduation requirement 6: The Engineer and Society	✓		✓	
毕业要求 7: 环境和可持续发展 Graduation requirement 7: Environment and Sustainability	✓		✓	

毕业要求 8: 职业规范 Graduation requirement 8: Ethics	✓			
毕业要求 9: 个人和团队 Graduation requirement 9: Individual and Team Work	✓		✓	
毕业要求 10: 沟通 Graduation requirement 10: Communication			✓	
毕业要求 11: 项目管理 Graduation requirement 11: Project Management and Finance		✓		
毕业要求 12: 终身学习 Graduation requirement 12: Lifelong Learning				✓

#### IV. 学制与学位 Duration and Degree

学制：四年

Duration: 4 years

学位：工学学士

Degree: Bachelor of Engineering

#### V. 主干学科与主干课程 Main Subject and Main Courses

主干学科：软件工程。

**Main Subject:** Computing Subject.

**主干课程：**高级语言程序设计、面向对象程序设计、离散数学、数据结构、计算机组成原理、数据库原理、软件工程、计算机网络、算法分析与设计、软件系统分析与设计、软件项目管理、软件质量保证与测试。

**Main Courses:** Advanced programming language, Object-oriented programming, Discrete mathematics, Data structure, Computer composition principle, Database principle, Software engineering, Computer network, Algorithm analysis and design, Software system analysis and design, Software project management, Software quality assurance and testing.

#### VI. 毕业学分基本要求 Basic Requirements of Credits for Graduation

课程体系 Curriculum System		学分要求 Credits Requirements						小计 Subtotal
		必修 Compulsory		限修 Distributional Electives		选修 Free Electives		
理论 Theory	实践 Practice	理论 Theory	实践 Practice	理论 Theory	实践 Practice			
公共基础课程 Public Basic Courses	思想政治类 Ideological Politics Courses	15	2					17
	军事类 Military Courses	2	2					4
	外语类 Foreign Language Courses	6		2				8
	体育类 Physical Education Courses		4					4
通识教育课程 General Education Courses	核心通识课 Core General Education Courses			4				4
	新生研讨课 Freshman Seminar			2				2
数学自然科学、工程基础与专业基础课程（含实验） Mathematics and Natural Science, Engineering and Specialty	数学与自然科学基础课 Foundational Courses on Mathematics and Natural Science	26	2					28
	工程基础课 Engineering Foundational Courses	6.5	1.5					8

Foundational Courses (Including Experiments)	专业基础课 Professional Foundational Courses	29	6					35
专业课程（含实验） Specialized Courses (Including Experiments)	专业核心课程 Specialized Core Courses	9	5					14
	专业限修课程 Specialized Restricted Courses			10	2			12
实习实践教学 Practice Courses	基本技能训练、实习实训、综合课程设计、社会与文化素质实践、毕业实习与毕业设计 Basic Skills Training, Practical Training, Integrated Curriculum Design, Social and Cultural Quality Practice, Graduation Internship and Graduation Design		19					19
多元化课程 Diversified Courses	跨学科课程、美育专业类课程、学科竞赛类课程、其它个性化选修课程等 Interdisciplinary Courses, Aesthetic Education Courses, Subject Competition Courses, other Personalized Elective Courses, etc			4				4
创新创业实践 Innovation and Entrepreneurship Practice	创新创业训练计划项目、个性化实验、学科竞赛、创新讲座等 Innovation and Entrepreneurship Training Program, Personalized Experiments, Subject Competition, Innovation Lectures, etc		2					2
必修环节 A Compulsory Part	大学生综合素质提升、学生体质达标测评 Comprehensive Quality Improvement Courses for College Students, Assessment of Students' Physical Fitness							0
总 计 Total								161

## VII. 课程设置细化表 Course Programs Table

公共基础课程 Public Basic Courses 共 33 学分，其中必修 31 学分，限修 2 学分，选修 0 学分 A total credits of 33, including 31 for compulsory courses, 2 for distributional electives and 0 for free electives								
课程类型 Course Type	课程名称 Course Name	课程性质 Nature of Course	总学分 Credits	课内实践学分 In-class Practice Credits	开课学期 Semester	开课学院 School	支撑毕业要求指标点 Indicators which Support Graduation Requirements	备注 Notes

思想政治类 Ideological Politics Courses	思想道德与法治 Ideology and Morality and Rule of Law	必修 Compulsory	3	0.4	第 1 学期 1St Semester	马克思主义 学院 School of Marxism	6, 7, 8	
	中国近现代史纲要 Conspectus of Chinese Modern History	必修 Compulsory	3	0.4	第 2 学期 2Nd Semester	马克思主义 学院 School of Marxism	7, 8	
	马克思主义基本原理 The Basic Principles of Marxism	必修 Compulsory	3	0.4	第 3 学期 3Rd Semester	马克思主义 学院 School of Marxism	8	
思想政治类 Ideological Politics Courses	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 Theoretical System of Socialism with Chinese Characteristics	必修 Compulsory	3	0.4	第 5 学期 5Th Semester	马克思主义 学院 School of Marxism	6, 7, 8	
	习近平新时代中国特色社会主义思想 Outline of Xi Jinping Thought on Socialism with Chinese Characteristics for a New Era	必修 Compulsory	3	0.4	第 6 学期 6Th Semester	马克思主义 学院 School of Marxism	6, 7, 8	
	形势与政策 I Situation and Policy I	必修 Compulsory	0	0	第 1 学期 1St Semester	马克思主义 学院 School of Marxism	6, 7, 8	
	形势与政策 II Situation and Policy II	必修 Compulsory	0	0	第 2 学期 2Nd Semester	马克思主义 学院 School of Marxism		
	形势与政策 III Situation and Policy III	必修 Compulsory	0	0	第 3 学期 3Rd Semester	马克思主义 学院 School of Marxism		
	形势与政策 IV Situation and Policy IV	必修 Compulsory	0	0	第 4 学期 4Th Semester	马克思主义 学院 School of Marxism		
	形势与政策 V Situation and Policy V	必修 Compulsory	0	0	第 5 学期 5Th Semester	马克思主义 学院 School of Marxism		
	形势与政策 VI Situation and Policy VI	必修 Compulsory	0	0	第 6 学期 6Th Semester	马克思主义 学院 School of Marxism		
	形势与政策 VII Situation and Policy VII	必修 Compulsory	0	0	第 7 学期 7Th Semester	马克思主义 学院 School of Marxism		
	形势与政策 VIII Situation and Policy VIII	必修 Compulsory	2	0	第 8 学期 8Th Semester	马克思主义 学院 School of Marxism		
军事类 Military Courses	军事理论 Military Theories	必修 Compulsory	2	0	第 1 学期 1St Semester	武装部 Security Office	9	
	军事技能 Military Skills	必修 Compulsory	2	2	短 1 学期 Short Semester 1	武装部 Security Office	9	
外语类 Foreign Language Courses	英语 I College English I	必修 Compulsory	2	0	第 1 学期 1St Semester	外国语学院 School of Foreign languages	10	
	英语 II College English II	必修 Compulsory	2	0	第 2 学期 2Nd Semester	外国语学院 School of Foreign languages	10	
	通用学术英语 English for General Academic Purposes	必修 Compulsory	2	0	第 3 学期 3Rd Semester	外国语学院 School of Foreign	10	

	职场英语 Workplace English	限修 Distributional Elective	2	0	第 4 学期 4Th Semester	外国语学院 School of Foreign languages	10	限选 1 门, 2 学分 Limited to 1 course, 2 credits
	交际与文化视听说 Viewing, Listening & Speaking in English -- Communication & Culture							
	语言、文化与翻译 Language, Culture and Translation							
	英语公共演讲 Public Speaking in English							
体育类 Physical Education Courses	体育 I Physical Education I	必修 Compulsory	1	1	第 1 学期 1St Semester	体育部 Dept. of Physical Education	9	
	体育 II Physical Education II	必修 Compulsory	1	1	第 2 学期 2Nd Semester	体育部 Dept. of Physical Education		
	体育III Physical Education III	必修 Compulsory	0.5	0.5	第 3 学期 3Rd Semester	体育部 Dept. of Physical Education		
	体育IV Physical Education IV	必修 Compulsory	0.5	0.5	第 4 学期 4Th Semester	体育部 Dept. of Physical Education		
	体育健康课程 I Diversified Physical Education Courses I	必修 Compulsory	0.5	0.5	第 5 学期 5Th Semester	体育部 Dept. of Physical Education	6	
	体育健康课程 II Diversified Physical Education Courses II	必修 Compulsory	0.5	0.5	第 6 学期 6Th Semester	体育部 Dept. of Physical Education		
通识教育课程 General Education Courses 共 6 学分, 其中必修 0 学分, 限修 6 学分, 选修 0 学分 A total credits of 6, including 0 for compulsory courses, 6 for distributional electives and 0 for free electives								
课程类型 Course Type	课程名称 Course Name	课程性质 Nature of Course	总学分 Credits	课内实 践学分 In-class practice credits	开课学期 Semester	开课学院 School	支撑毕业要 求指标点 Indicators which Support Graduation Requirements	备注 Notes
核心通识课 Core General Education	“交通天下” 通识课程 General Studies on Transportation	限修 Distributional Elective	4		2-8 学期 2-8 Semester	全校 The whole school	6	
新生研讨课 Freshman Seminar	计算机学科前沿导论 Introduction to the Frontier of Computer Science	限修 Distributional Elective	2		第 1 学期 1St Semester	计算机与人 工智能学院 School of Computing and Artificial Intelligence	8, 9, 10, 12	限选 1 门, 2 学分 Limited to 1 course, 2 credits
	软件学科前沿导论 Introduction to the Frontier of Software Discipline							
数学自然科学、工程基础与专业基础课程 (含实验) Mathematics and Natural Science, Engineering and Specialty Foundational Courses (Including Experiments) 共 71 学分, 其中必修 71 学分, 限修 0 学分, 选修 0 学分 A total credits of 71, including 71 for compulsory courses, 0 for distributional electives and 0 for free electives								
课程类型 Course Type	课程名称 Course Name	课程性质 Nature of Course	总学分 Credits	课内实 践学分 In-class practice credits	开课学期 Semester	开课学院 School	支撑毕业要 求指标点 Indicators which Support Graduation Requirements	备注 Notes
数学与自然科学 基础课 Foundational	高等数学 I Advanced Mathematics I	必修 Compulsory	5		第 1 学期 1St Semester	数学学院 School of Mathematics	1	

<b>Courses on Mathematics and Natural Science</b>	线性代数 B Linear Algebra B	必修 Compulsory	3		第 1 学期 1St Semester	数学学院 School of Mathematics	1	
	高等数学 II Advanced Mathematics II	必修 Compulsory	5		第 2 学期 2Nd Semester	数学学院 School of Mathematics	1	
	离散数学 A ※ Discrete Mathematics A	必修 Compulsory	4		第 2 学期 2Nd Semester	计算机与人工智能学院 School of Computing and Artificial Intelligence	1	
	大学物理 BI College Physics BI	必修 Compulsory	3		第 2 学期 2Nd Semester	物理科学与技术学院 School of Physics	1	
	大学物理实验 I Experiments in College Physics I	必修 Compulsory	1	1	第 2 学期 2Nd Semester	物理科学与技术学院 School of Physics	4	
	概率论与数理统计 Probability and Mathematical Statistics	必修 Compulsory	3		第 3 学期 3Rd Semester	数学学院 School of Mathematics	1	
	大学物理 BII College Physics BII	必修 Compulsory	3		第 3 学期 3Rd Semester	物理科学与技术学院 School of Physics	1	
	大学物理实验 II Experiments in College Physics II	必修 Compulsory	1	1	第 3 学期 3Rd Semester	物理科学与技术学院 School of Physics	4	
<b>工程基础课 Engineering Foundational Courses</b>	高级语言程序设计 ※ High-level Programming Language	必修 Compulsory	4	0.5	第 1 学期 1St Semester	计算机与人工智能学院 School of Computing and Artificial Intelligence	1, 2, 3	
	数字电子技术 B Digital Electronic Technology B	必修 Compulsory	3		第 3 学期 3Rd Semester	信息科学与技术学院 School of Information Science and Technology	1, 2	
	数字电子技术实验 Digital Electronic Technology Experiments	必修 Compulsory	1	1	第 3 学期 3Rd Semester	信息科学与技术学院 School of Information Science and Technology	4, 5	
<b>专业基础课 Professional Foundational Courses</b>	面向对象程序设计 ※ Object Oriented Programming	必修 Compulsory	2		第 2 学期 2Nd Semester	计算机与人工智能学院 School of Computing and Artificial Intelligence	1, 3, 5	
	数据结构 A ※ Data Structure A	必修 Compulsory	4		第 3 学期 3Rd Semester	计算机与人工智能学院 School of Computing and Artificial Intelligence	1, 2, 3	
	数据结构实验 ※ Data Structure Experiments	必修 Compulsory	1	1	第 3 学期 3Rd Semester	计算机与人工智能学院 School of Computing and Artificial Intelligence	2, 4	



	计算机组成原理 B※ Computer Composition Principle B	必修 Compulsory	3		第 4 学期 4Th Semester	计算机与人工智能学院 School of Computing and Artificial Intelligence	1, 2	
	计算机组成实验 ※ Computer Composition Principle Experiments	必修 Compulsory	1	1	第 4 学期 4Th Semester	计算机与人工智能学院 School of Computing and Artificial Intelligence	2, 5	
	算法分析与设计 B※ Algorithm Analysis and Design B	必修 Compulsory	2		第 4 学期 4Th Semester	计算机与人工智能学院 School of Computing and Artificial Intelligence	2, 3	
专业基础课 Professional Foundational Courses	算法分析与设计实验 ※ Algorithm Analysis and Design Experiments	必修 Compulsory	1	1	第 4 学期 4Th Semester	计算机与人工智能学院 School of Computing and Artificial Intelligence	4	
	操作系统* Operating System	必修 Compulsory	3		第 4 学期 4Th Semester	计算机与人工智能学院 School of Computing and Artificial Intelligence	1, 2, 10	
	操作系统实验 Operating System Experiments	必修 Compulsory	1	1	第 4 学期 4Th Semester	计算机与人工智能学院 School of Computing and Artificial Intelligence	4, 5	
	数据库原理 ※ Principle of Database	必修 Compulsory	3		第 4 学期 4Th Semester	计算机与人工智能学院 School of Computing and Artificial Intelligence	1, 2	
	数据库原理实验 ※ Experiments of Database Principle	必修 Compulsory	1	1	第 4 学期 4Th Semester	计算机与人工智能学院 School of Computing and Artificial Intelligence	1, 3, 5	
	软件工程 ※ Software Engineering	必修 Compulsory	3		第 4 学期 4Th Semester	计算机与人工智能学院 School of Computing and Artificial Intelligence	3, 9, 11	
	计算机网络 ※ Computer Networks	必修 Compulsory	3		第 5 学期 5Th Semester	计算机与人工智能学院 School of Computing and Artificial Intelligence	1, 2	

	计算机网络工程实验 ※ Computer Network Engineering Experiments	必修 Compulsory	1	1	第 5 学期 5Th Semester	计算机与人工智能学院 School of Computing and Artificial Intelligence	2, 3, 10	
	软件系统分析与设计 ※ Analysis and Design of Software System	必修 Compulsory	3		第 6 学期 6Th Semester	计算机与人工智能学院 School of Computing and Artificial Intelligence	1, 2, 9	
	编译原理 Compilation Principle	必修 Compulsory	3		第 6 学期 6Th Semester	计算机与人工智能学院 School of Computing and Artificial Intelligence	1	
专业课程（含实验） <b>Specialized Courses (Including Experiments)</b> 共 26 学分，其中必修 14 学分，限修 12 学分，选修 0 学分 A total credits of 26, including 14 for compulsory courses, 12 for distributional electives and 0 for free electives								
课程类型 Course Type	课程名称 Course Name	课程性质 Nature of Course	总学分 Credits	课内实践学分 In-class practice credits	开课学期 Semester	开课学院 School	支撑毕业要求指标点 Indicators which Support Graduation Requirements	备注 Notes
专业核心课程 Specialized Core Courses	新技术讲座 Lectures on New Technologies	必修 Compulsory	1		第 5 学期 5Th Semester	计算机与人工智能学院 School of Computing and Artificial Intelligence	10	
	软件项目管理 ※ software project management	必修 Compulsory	2		第 6 学期 6Th Semester	计算机与人工智能学院 School of Computing and Artificial Intelligence	11	
	人机交互技术 Human-Computer Interaction Technology	必修 Compulsory	2		第 5 学期 5Th Semester	计算机与人工智能学院 School of Computing and Artificial Intelligence	1, 3	
	人机交互技术实验 Human-Computer Interaction Technology Experiments	必修 Compulsory	1	1	第 5 学期 5Th Semester	计算机与人工智能学院 School of Computing and Artificial Intelligence	4, 5	
	计算机图形学 Computer Graphics	必修 Compulsory	2		第 6 学期 6Th Semester	计算机与人工智能学院 School of Computing and Artificial Intelligence	1, 3	
	计算机图形学实验 Computer Graphics Experiments	必修 Compulsory	1	1	第 6 学期 6Th Semester	计算机与人工智能学院 School of Computing and	5	

						Artificial Intelligence			
	软件质量保证与测试 ※ Software Quality Assurance and Testing	必修 Compulsory	2		第 6 学期 6Th Semester	计算机与人工智能学院 School of Computing and Artificial Intelligence	2, 5		
	软件综合课程设计 Software Comprehensive Course Design	必修 Compulsory	3	3	第 7 学期 7Th Semester	计算机与人工智能学院 School of Computing and Artificial Intelligence	2, 6, 7, 10		
专业限修课程 Specialized Restricted Courses	Linux 内核分析 Linux Kernel Analysis	限修 Distributional electives	2		第 5 学期 5Th Semester	计算机与人工智能学院 School of Computing and Artificial Intelligence	1, 2	限修 12 学分 (其中, 必含实践 2 学分, 软件设计模式及其实验作为一门课来选) Limited to 12 credits (including 2 credits for practice, software design mode and experiment as one course)	
	Java 开发技术 Java Development Technology	限修 Distributional electives	3	1	第 5 学期 5Th Semester	计算机与人工智能学院 School of Computing and Artificial Intelligence	1, 3		
	软件设计模式 Software Design Patterns	限修 Distributional electives	2		第 7 学期 7Th Semester	计算机与人工智能学院 School of Computing and Artificial Intelligence	4, 12		
	软件设计模式实验 Software Design Patterns Experiments	限修 Distributional electives	1	1	第 7 学期 7Th Semester	计算机与人工智能学院 School of Computing and Artificial Intelligence	4, 5		
专业限修课程 Specialized Restricted Courses	数据挖掘* Data Mining	限修 Distributional electives	2		第 7 学期 7Th Semester	计算机与人工智能学院 School of Computing and Artificial Intelligence	4, 5, 12		
	人工智能 Artificial Intelligence	限修 Distributional electives	2		第 7 学期 7Th Semester	计算机与人工智能学院 School of Computing and Artificial Intelligence	4, 5, 12		
	云计算与并行技术 Cloud Computing and Parallel Technology	限修 Distributional electives	2		第 7 学期 7Th Semester	计算机与人工智能学院 School of Computing and Artificial Intelligence	2, 3, 7, 11, 12		
实习实践教学 Practice Course 共 19 学分, 其中必修 19 学分, 限修 0 学分, 选修 0 学分 A total credits of 19, including 19 for compulsory courses, 0 for distributional electives and 0 for free electives									
课程类型 Course Type	课程名称 Course Name	课程性质 Nature of	总学分 Credits	课内实践学分	开课学期 Semester	开课学院 School	支撑毕业要求指标点	备注 Notes	

		Course		In-class practice credits			Indicators which Support Graduation Requirements	
基本技能训练、 实习实训、综合 课程设计、社会 与文化素质实 践、毕业实习与 毕业设计 Basic Skills Training, Practical Training, Integrated Curriculum Design, Social and Cultural Quality Practice, Graduation Internship and Graduation Design	软件设计实习 Practice of Software Design	必修 Compulsory	2	2	短 1 Short Semester 1	计算机与人工 智能学院 School of Computing and Artificial Intelligence	5, 7, 8, 11	
	软件工程/程序综合设计实 习 Practice of Software Engineering/Programming Integrated Design	必修 Compulsory	2	2	短 2 Short Semester 2	计算机与人工 智能学院 School of Computing and Artificial Intelligence	2, 8, 9, 10	
	软件工程/网络软件开发实 习 Software Engineering/Network Software Development Practice	必修 Compulsory	2	2	短 3 Short Semester 3	计算机与人工 智能学院 School of Computing and Artificial Intelligence	3, 6, 7, 9, 11	
	毕业设计 A Graduation Design A	必修 Compulsory	13	13	第 8 学期 8Th Semester	计算机与人工 智能学院 School of Computing and Artificial Intelligence	2, 3, 4, 5, 6, 7, 10, 11, 12	
多元化课程 Diversified course 共 4 学分，其中必修 0 学分，限修 4 学分，选修 0 学分 A total credits of 4, including 0 for compulsory courses, 4 for distributional electives and 0 for free electives								
课程类型 Course Type	课程名称 Course Name	课程性质 Nature of Course	总学分 Credits	课内实 践学分 In-class practice credits	开课学期 Semester	开课学院 School	支撑毕业要 求指标点 Indicators which Support Graduation Requirements	备注 Notes
跨学科课程 Interdisciplinary Courses	区块链技术及应用 Technology and Application of Blockchain	限修 Distributional Elective	2		第 6 学期 6Th Semester	计算机与人工 智能学院 School of Computing and Artificial Intelligence	2, 6, 9, 12	限修 4 学分 Distributional Elective 4 Credits
	智能+交通 Intelligence+Transportation		2		第 6 学期 6Th Semester	计算机与人工 智能学院 School of Computing and Artificial Intelligence		
	现代铁路信息技术 Information Technology for Modern Railway		2		第 6 学期 6Th Semester	计算机与人工 智能学院 School of Computing and Artificial Intelligence		
创新创业实践 Innovation and Entrepreneurship Practice 共 2 学分，其中必修 2 学分，限修 0 学分，选修 0 学分 (理论 0 学分，实践 2 学分) A total credits of 2, including 2 for compulsory courses, 0 for distributional electives and 0 for free electives								
课程类型 Course Type	课程名称 Course Name	课程性质 Nature of Course	总学分 Credits	课内实 践学分 In-class	开课学期 Semester	开课学院 School	支撑毕业要 求指标点 Indicators	备注 Notes

				practice credits			which Support Graduation Requirements	
创新创业训练计划项目、个性化实验、学科竞赛、创新讲座等 Innovation and Entrepreneurship Training Program, Personalized Experiments, Subject Competition, Innovation Lectures, etc	课外创新实践 Extracurricular Innovation Practice	必修 Compulsory	2	2	3-7 学期 3-7 Semester	计算机与人工智能学院 School of Computing and Artificial Intelligence		按照《西南交通大学创新实践学分认定与管理办法》规定修习 Study in accordance with the Regulations on Credit Recognition and Management of Innovation Practice in Southwest Jiaotong University
<b>必修环节</b> <b>A compulsory part</b> 共 0 学分，其中必修 0 学分，限修 0 学分，选修 0 学分 A total credits of 0, including 0 for compulsory courses, 0 for distributional electives and 0 for free electives								
课程类型 Course Type	课程名称 Course Name	课程性质 Nature of Course	总学分 Credits	课内实践学分 In-class practice credits	开课学期 Semester	开课学院 School	支撑毕业要求指标点 Indicators which Support Graduation Requirements	备注 Notes
大学生综合素质提升、学生体质达标测评 Comprehensive Quality Improvement Courses for College Students, Assessment of Students' Physical Fitness	大学生综合素质提升（第二、第三课堂） Comprehensive Quality Improvement Courses for College Students (The Second and Third Classroom)	必修 Compulsory	0	0	1-8 学期 1-8 Semester	校团委 Communist Youth League Committee		
	学生体质达标测评 Assessment of Students' Physical Fitness	必修 Compulsory	0	0	秋季学期 fall Semester	体育部 Dept. of Physical Education		
学分总计 Total Credits			160					

【注】①未通过四级必须选英语Ⅲ  
②※为主干课程，\*为双语课程