计算机科学与技术专业培养方案

Undergraduate Program of Computer Science and Technology Major

I.专业介绍 Introduction

我校计算机科学与技术专业在全国大学本科教育专业排行 A+级。自 1960 年创办了"计算技术"专业以来，1981 年专业在国内首批获得"计算机应用"学科硕士学位授予权。1987 年该学科成为铁道部的重点学科。2012 年通过全国工程教育专业认证。2016 年 5 月，计算机科学学科进入 ESI 全球排名前 1%。本专业具有"计算机科学与技术"一级学科博士学位授权点和博士后流动站，是国家级特色专业建设点，四川省重点学科。

计算机科学与技术专业旨在培养德、智、体、美全面发展，具备基本的科学素养，系统掌握计算机科学与技术基本理论和专业知识，掌握铁路信息技术基础知识与方法，拥有较好的实践动手能力、系统分析与开发能力，适应社会经济发展需要的专门人才。毕业后，可从事应用研究、技术开发或管理等工作，并有在工作中继续学习、不断更新知识的能力。毕业生就业率保持在 98%以上，就业单位主要包括知名 IT 企业、国有大中型企业、事业单位和科研院所等。

The computer science and technology major of our university ranks A+ in the national undergraduate education major ranking. Since the founding of "Computational Technology"major in 1960, the major was approved to award the first master's degree in "Computer Application"discipline in 1981. In 1987, this discipline became a key discipline of the Ministry of Railways. In 2012, this major passed the professional certification of engineering education. In May 2016, the computer science discipline entered the top 1% of ESI's global ranking.The major has the first-level doctoral degree authorization point and post-doctoral mobile station of "Computer Science and Technology". It is a national-level specialty construction point and a key discipline of Sichuan Province.

The Computer Science and Technology program aims to cultivate students so that they will become professional talents meeting the demand of social and economic development with comprehensive development in personality, fundamental research abilities, systematical master of the fundamental theories and professional knowledge in the field of computer science and technology, and appropriate capability in practice, analysis and development. The employment rate for graduates is beyond 98%, where graduates are primarily working for well-known IT enterprises, large- and medium-sized state-owned companies, public institutions, and scientific research institutions.

专业代码：　080901
Program Code: 080901
专业名称：计算机科学与技术
Program Name:Computer Science and Technology

Ⅱ.培养目标　　**Objectives**

我校计算机科学与技术专业旨在培养适应国民经济与科技发展需求，具备较好的科学素养，扎实的专业基础知识，较强的工程实践能力和创新能力，良好的职业道德和人文素养，能够在计算机科学与技术及其相关应用领域从事科研教学、产品研发、系统设计及应用管理的高级专业人才。

Thecomputer science and technology major of our university aims to cultivate highly qualifiedtalents who are able to adopt the requirements of the national economy and technology developments. They are expected tohave good scientific literacy, solid professional knowledge, strong engineering practice ability and innovative ability, good professional ethics and humanistic quality, ability toconduct scientific research and teaching, product development, system design and application management in computer science and technology and its related fields.

毕业生经过实践锻炼，能够达到以下目标：

After practicing, the graduates can achieve the following goals:

（1）熟悉职业相关的国家法律法规，具有社会和职业道德修养，适应团队工作环境。

Be familiar with professional laws and regulations related to occupations, have social and professional ethics, and adapt to the working environment of the team.

（2）针对实际需求，能运用自然科学、工程基础和计算机专业知识，对复杂计算机系统工程问题进行分析，研究解决方案，承担计算机系统的设计、开发和应用管理任务。

According to practical needs, be able to apply natural science, engineering fundamentals and computer science expertise to analyze and solve complex engineering problems, be able to undertake the design, development and application management tasks of computer systems.

（3）有组织协调能力，能与业界同行、专业客户和公众进行有效沟通。

Have organizational and coordination skills, be able to communicate effectively with industry peers, professional customers and the public.

（4）具有继续学习能力，能适应技术和职业发展需求。

Have the ability to continuouslearning and adapt to technical and professional development needs.

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：

The graduates are required to meet the following 12 essential requirements:

（1）工程知识：掌握从事计算机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计算机系统工程问题。

（1）Engineering knowledge:Master the knowledge of mathematics, natural science, and engineering fundamentals required for work in the area of computer science and technology, and apply these knowledges to solve complex computer system engineering problems.

（2）问题分析：能够应用数学、自然科学和计算机工程科学的基本原理，识别、表达复杂计算机系统工程问题，并能通过文献研究分析，获得有效结论。

（2）Problem analysis: Capable of applying the fundamental principles of math, natural science and computer engineering science to identify, formulate, and analyze complicated computer system engineering problems, and draw a valid conclusion through literature research.

（3）设计/开发解决方案：能够设计针对复杂计算机系统工程问题的解决方案，开发满

足特定需求的计算机系统、单元（模块），具有一定的创新意识，并在设计中考虑社会、健康、安全、法律、文化及环境等因素。

（3）Design/development of solutions: Ability to design solutions for complex computer system engineering, and to develop computer systems, units (modules) that meet specified needs with sense of innovation and with appropriate considerations for society, health, safety, law, culture, environment, etc.

（4）研究：具有基于科学原理并采用科学方法对复杂计算机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。

（4）Research: can use science methods to carry on research on complicated computer system engineering problems based on scientific principles, including designing experiments, analyzing and interpreting data as well as drawing reasonable conclusions from their achieved information.

（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，对复杂计算机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。

（5）Modern Tool Usage: Ability to select and apply appropriate techniques, resources, development environment and related development tools to predict and simulate complicated computer system engineering problems, with an understanding of the limitations.

（6）工程与社会：在复杂计算机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。

（6）Engineering and society: In the design and implementation of complex computer system engineering problem solutions,be able to carry out rationality analysis based on relevant engineering background knowledge and evaluate the impacts on the society, health, security, law, culture and environment; have a clear understanding of their responsibilities.

（7）环境和可持续发展：在复杂计算机系统工程问题解决方案的设计、实现过程及系统运行中，能够理解和评价其对环境、社会可持续发展的影响。

（7）Environment and sustainable development: In the design, implementation process and system operation of complex computer system engineering problem solution, can understand and evaluate some complicated engineering practices' influence on environment and its sustainable development.

（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。

（8）Occupational norms: have humanistic and social science literacy as well as social responsibility, understand and comply with engineering professional ethics and norms in engineering practice and fulfill responsibilities.

（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。

（9）Individual and Team work: Have certain organizational management ability, team cooperation ability, and can work as individuals, team members as well as team leaders in the teams with multidisciplinary backgrounds.

（10）沟通：能够就复杂计算机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。

（10）Communication: can communicate effectively over complicated computer system

engineering problems with both industry peers and the general public, including writing reports, designing documents, giving presentations, clearly presenting or responding to instructions; can see into problems in an international perspective and communicate with people of different cultural backgrounds.

（11）项目管理：理解并掌握计算机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。

（11）Project management: Understand and master computer system engineering management principles and economic decision-making methods, and be able to apply them in a multidisciplinary environment.

（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。

（12）Lifelong learning: have the consciousness of independent learning and lifelong learning and the ability of continuous learning and adapting 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 Training Objectives			
	目标 1 Objective 1	目标 2 Objective 2	目标 3 Objective 3	目标 4 Objective 4
毕业要求 1：工程知识 Graduation Requirements 1: Engineering Knowledge		√		√
毕业要求 2：问题分析 Graduation Requirements 2: Problem Analysis		√		
毕业要求 3：设计/开发解决方案 Graduation Requirements 3: Design/development of solutions		√		
毕业要求 4：研究 Graduation Requirements 4: Investigation		√		√
毕业要求 5：使用现代工具 Graduation Requirements 5: Modern Tool Usage		√		√
毕业要求 6：工程与社会 Graduation Requirements 6: The Engineer and Society	√			
毕业要求 7：环境和可持续发展 Graduation Requirements 7: Environment and Sustainability	√			
毕业要求 8：职业规范 Graduation Requirements 8: Ethics	√			
毕业要求 9：个人和团队 Graduation Requirements 9: Individual and Team work	√		√	
毕业要求 10：沟通 Graduation Requirements 10: Communication	√		√	
毕业要求 11：项目管理 Graduation Requirements 11: Project Management and Finance		√	√	
毕业要求 12：终身学习 Graduation Requirements 12: Lifelong learning				√

IV.学制与学位 Duration and Degree

学制：四年

Duration: Four 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 Course

主干学科：计算机科学与技术

Main Subject：computer science and technology

主干课程：离散数学，高级语言程序设计，数字电子技术，数据结构，算法分析与设计，计算机组成原理，操作系统，数据库原理与设计，微机与接口技术，计算机网络，软件系统设计与应用

Main Course： Discrete Mathematics, Advanced Programming Language, Digital Electronic Technique, Data Structure, Analysis and design of algorithms, Principles of Computer Composition, Operating System, Principle and design of database, Microcomputer and interface technology, Computer Networks, Design and application of software system

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
学科与专业基础课程（含实验） Discipline and Specialty Foundational Courses (Including Experiments)	数学与自然科学基础课 Foundational Courses on Mathematics and Natural Science	26	2					28
	专业基础课 Professional Foundational Courses	22	5					27
专业课程（含实验） Specialized Courses (Including Experiments)	专业核心课程 Specialized Core Course	25	7					32
	专业限修课程 Specialized Restricted Courses			8	2			10

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
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 Ideological and Moral Education and the 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	
思想政治类 Ideological Politics Courses	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	
	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概论 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		
	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	6，7，8	
	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 Semester1	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 languages	10	

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
外语类 Foreign Language Courses	职场英语 Workplace English 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	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
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 软件学科前沿导论 Introduction to the frontier of software science	限修 Distributional Elective（选 1 门） Select one）	2		第 1 学期 1St Semester	计算机与人工智能学院 School of Computing and Artificial Intelligence	8.3，9.1，9.2，10.1，10.2，12.1	

学科与专业基础课程（含实验）
Discipline and Specialty foundational Courses (Including Experiments)
共 55 学分，其中必修 55 学分，限修 0 学分，选修 0 学分
A total credits of 55 ，including 55 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

	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	1.1	
数学与自然科学基础课 **Foundational Courses on Mathematics and Natural Science**	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	1.1	
	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	1.1	
	离散数学 Discrete mathematics	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	1.1，1.4	
	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	1.1	
	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 Physical Science and Technology	1.1	
	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 Physical Science and Technology	4.1，4.2	
	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 Physical Science and Technology	1.1	
	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 Physical Science and Technology	4.1，4.2	
专业基础课 **Professional Foundational Courses**	高级语言程序设计 Advanced 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	1.2，2.1，3.1	
	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	1.2，3.1，5.1	
	电路与电子技术 Circuit and electronic technology	必修 Compulsory	3	0.5	第 3 学期 3Nd Semester	信息科学与技术学院 School of Information Science and Technology	1.2，4.2	
	数字电子技术 B Digital Electronic Technique 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	1.2，2.1	
	数字电子技术实验 B Experiments for Digital Electronic Technology B	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	4.1，4.2，5.1	

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
专业基础课 Professional Foundational Courses	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	1.2，2.1，3.1	
	数据结构实验 Experiments for Data Structure	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	2.1, 4.1	
	计算机组成原理 A Principles of Computer Composition A	必修 Compulsory	4		第 4 学期 4Th Semester	计算机与人工智能学院 School of Computing and Artificial Intelligence	1.2，2.1，3.2	
	计算机组成实验 Experiments for Principles of Computer Composition	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	2.1，3.2，5.2	
	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	1.3，2.2，10.3	
	操作系统实验 Experiments for Operating System	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	4.1，5.2	

专业课程（含实验）
Specialized Courses (Including Experiments)
共 42 学分，其中必修 32 学分，限修 10 学分，选修 0 学分
A total credits of 42，including 32 for compulsory courses，10 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 Course	数据库原理与设计 Principle and design 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	1.3，2.2，2.4	
	数据库原理与设计实验 Experiments for Principle and design of database	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	1.4，3.3，5.1	
	算法分析与设计 B Analysis and design of algorithms 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	2.1，3.1	

专业核心课程 Specialized Core Course	算法分析与设计实验 Experiments for analysis and design of algorithms	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	4.3	
	微机与接口技术 A Microcomputer and interface technology A	必修 Compulsory	4		第 5 学期 5Th Semester	计算机与人工智能学院 School of Computing and Artificial Intelligence	1.3，2.2，3.2，10.2	
	微机与接口技术实验 Experiments for microcomputer and interface technology	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	2.4，3.2，5.2	
	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	1.3，2.2，2.3	
	计算机网络工程实验 Experiments for Computer Network Engineering	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	2.4，3.4，10.2	
	计算机图形学 Computer Graphics	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	1.4，3.3	
	计算机图形学实验 Experiments for Computer Graphics	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	5.2，5.3	
	智能嵌入式系统设计 Intelligent Embedded System Design	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	1.4，2.4，11.2	必须包含课程设计，完成有一定规模的系统设计与开发。 Course projects must be included, in which the student must complete the design and development of systems of a certain scale.
	智能嵌入式系统设计实验 Intelligent Embedded System Design Experiment	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 Artificial Intelligence	2.4，3.3	
	软件系统设计与应用 Design and application of software system	必修 Compulsory	4	1	第 6 学期 6Th Semester	计算机与人工智能学院 School of Computing and Artificial Intelligence	1.3，3.4，9.2，11.1，11.2	
	人工智能 Artificial Intelligence	必修 Compulsory	2		第 7 学期 7Th Semester	计算机与人工智能学院 School of Computing and Artificial Intelligence	4.2，4.3，5.3，12.1	

	数据挖掘 Data Mining	必修 Compulsory	2		第 7 学期 7Th Semester	计算机与人工智能学院 School of Computing and Artificial Intelligence	4.2，4.3，5.3，12.1	
	数字图像处理 Digital image processing	必修 Compulsory	2		第 7 学期 7Th Semester	计算机与人工智能学院 School of Computing and Artificial Intelligence	4.2，4.3，5.3，12.1	
专业限修课程 **Specialized Restricted Courses**	互联网搜索引擎 Internet search engine	限修 Distributional Elective	3	1	第 6 学期 6Th Semester	计算机与人工智能学院 School of Computing and Artificial Intelligence	1.4，3.1，3.3，12.1	
	人机交互与动漫游戏 Human-Computer Interaction and Animation Games	限修 Distributional Elective	3	1	第 6 学期 6Th Semester	计算机与人工智能学院 School of Computing and Artificial Intelligence	1.4，3.1，3.3，12.1	
	机器学习 B machine learning B	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	1.4，3.1，3.3，12.1	限修 6 学分（专业限选 1 组） Limited to 6 credits
	机器学习实验※ Machine Learning Experiment		1	1	第 6 学期 6Th Semester	计算机与人工智能学院 School of Computing and Artificial Intelligence		
	网络编程技术 Network Programming Technology	限修 Distributional Elective	3	1	第 6 学期 6Th Semester	计算机与人工智能学院 School of Computing and Artificial Intelligence	1.4，3.1，3.3，12.1	
	网络工程与设计 Network Engineering and Design	限修 Distributional Elective	2		第 7 学期 7Th Semester	计算机与人工智能学院 School of Computing and Artificial Intelligence	2.3，3.4，7.2，11.2，12.2	
	云计算与并行技术 Cloud computing and parallel technologies	限修 Distributional Elective	2		第 7 学期 7Th Semester	计算机与人工智能学院 School of Computing and Artificial Intelligence	2.3，3.4，7.2，11.2，12.2	限修 4 学分（专业限选 2 组） Limited to 4 credits
	机器人技术 Robot technology	限修 Distributional Elective	2		第 7 学期 7Th Semester	计算机与人工智能学院 School of Computing and Artificial Intelligence	2.3，3.4，7.2，11.2，12.2	

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 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
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 Software design internship	必修 Compulsory	2	2	短 1 学期 Short Semester 1	计算机与人工智能学院 School of Computing and Artificial Intelligence	5.2，7.1，8.3，11.1，11.2	
	电子工艺实习 Practice on Electronic Working Technics	必修 Compulsory	1	1	短 2 学期 Short Semester 2	信息科学与技术学院 School of Information Science and Technology	5.1，8.3	
	电子技术课程设计 Course Project in Electronic Technology	必修 Compulsory	1	1	短 2 学期 Short Semester 2	信息科学与技术学院 School of Information Science and Technology	3.2，8.3，10.2	
	计算机科学与技术专业工程实习 Engineering Internship ofComputer Science and Technology Major	必修 Compulsory	2	2	短 3 学期 Short Semester 3	计算机与人工智能学院 School of Computing and Artificial Intelligence	3.3，6.2，7.2，9.2，11.1	
	毕业设计 A Diploma project 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	2.3，3.3，3.4，4.3，5.3，6.2，7.2，10.1，10.2，11.1，12.1，12.2	

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	电子机械动起来 Play with electronics and machinery	限修 Distributional electives	2	2	第 5 学期 5Th Semester	计算机与人工智能学院 School of Computing and Artificial Intelligence	2.3，6.2，9.2 ，12.2	限修 4 学分 limited to 4 credits
	从代码到实物：造你所想 From code to implementation: make what you want		2	2	第 4 学期 4Th Semester	计算机与人工智能学院 School of Computing and Artificial Intelligence	2.3，6.2，9.2 ，12.2	
	区块链技术及应用 BlockChain Technology and Application		2		第 6 学期 6Th Semester	计算机与人工智能学院 School of Computing and Artificial Intelligence	2.3，6.2，9.2 ，12.2	

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
	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	2.3，6.2，9.2，12.2	

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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
A total credits of 2，including 2 for compulsory courses，0 for distributional electives and 0 for free electives

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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
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 innovative practice	必修 Compulsory	2	2	3-8 学期 3-8 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

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必修环节
A compulsory part
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

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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	6.1，8.2	
	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**	**161**							