计算机科学与技术专业本科培养计划

Undergraduate Program for Specialty in Computer Science & Technology

一、培养目标
Ⅰ．Program Objectives

本专业培养具有社会主义核心价值观、强烈社会责任感和使命感、适应社会经济和我国信息产业自主可控战略发展需求，扎实的数学、自然科学、工程基础和计算机科学与技术专业知识与能力，创新精神与实践能力强，系统能力突出，具有良好人文素养、大工程观、团队精神、国际视野和可持续竞争力。毕业后能从事计算机领域相关的研究、设计、开发与管理工作，能解决计算机领域复杂工程问题。工作五年左右，可成为单位、领域或行业的技术骨干或业界精英。

In this major, whilst upholding the core socialist values and shouldering the strong sense of social responsibility in line with the demand of economy, society and China's information industry, the students will become the research talents in computer science with an excellent command of mathematics, natural science, engineering foundation, computer science and technology expertise and skills and great qualities of innovation, practical ability, and computer system design ability who are also refined in humanistic literacy, the idea of large-scale engineering, team spirit, global vision and sustainable competitive edge. It is expected that the graduates of the program are competent in the works related to research, design, development and management and capable to solve the complex engineering project challenges in the field of computer science, which will enable them to become the backbone of their organizations and the best of the brightest in the industry after about five-year's work experience.

二、基本规格要求
Ⅱ．Learning Outcomes

1. 工程知识：具备数学、自然科学、工程基础和计算机专业知识，并能用于解决计算机复杂工程问题;

2. 问题分析：能够应用数学、自然科学、工程科学以及计算机科学的基本原理，识别、表达、并通过文献研究分析计算机复杂工程问题，以获得有效结论;

3. 设计/开发解决方案：能设计针对计算机复杂工程问题的解决方案，设计满足特定需求的系统、模块或算法流程，并能够在设计环节中体现创新意识，考虑社会、健康、安全、法律、文化以及环境等因素;

4. 研究：能基于计算机科学原理并采用科学方法对计算机复杂工程问题进行研究，通过实验设计、建模仿真、数据分析与解释、模型验证与改进方式，对计算机复杂工程问题进行研究并得到合理理有效结论;

5. 使用现代工具：能够针对计算机复杂工程问题设计、预测、模拟与实现的需要，开发、选择与使用恰当的技术、软硬件及系统资源、现代化开发工具，并能够理解所使用工具和资源的局限性;

6. 工程与社会：能够基于工程领域相关背景知识进行合理分析，评价计算机专业工程实践和复杂工程问题解决方案对社会、健康、安全、法律以及文化的影响，能理解并承担工程师的社会

责任；

7. 环境和可持续发展：能理解和评价针对计算机领域复杂工程问题的专业工程实践对环境、社会可持续发展的影响；

8. 职业规范：具有良好的人文社会科学素养和社会责任感，能够在计算机工程实践中理解并遵守工程职业道德和规范，履行工程师的责任；

9. 个人和团队：具有团队意识和团队能力，能够在多学科背景下的团队中协同工作，并承担个体、团队成员以及负责人的角色；

10. 沟通：能够就计算机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、清晰表达或回应指令，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：理解并掌握工程管理原理与经济决策方法，熟悉计算机工程项目管理的基本方法和技术，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，具有通过不断学习掌握新技术、适应信息技术新发展的能力。

Students are expected to gain：

1. Engineering Knowledge: Apply knowledge of mathematics, natural science, engineering fundamentals and an engineering specialization respectively to the solution of complex engineering problems.

2. Complex Problem Analysis: Identify, formulate, research literature and analyze complex engineering problems reaching substantiated conclusions using first principles of mathematics, natural sciences and engineering sciences.

3. Design/ development of solutions: Design solutions for complex engineering problems and design systems, components or processes that meet specified needs with appropriate consideration for public health and safety, cultural, societal, and environmental considerations.

4. Investigation: Conduct investigations of complex problems using research-based knowledge and research methods including design of experiments, analysis and interpretation of data, and synthesis of information to provide valid conclusions.

5. Modern Tool Usage: Create, select and apply appropriate techniques, resources, and modern engineering and IT tools, including prediction and modelling, to complex engineering problems, with an understanding of the limitations.

6. The Engineer and Society: Apply reasoning informed by contextual knowledge to assess societal, health, safety, legal and cultural issues and the consequent responsibilities relevant to professional engineering practice and solutions to complex engineering problems.

7. Environment and Sustainability: Understand and evaluate the sustainability and impact of professional engineering work in the solution of complex engineering problems in societal and environmental contexts.

8. Ethics: Apply ethical principles and commit to professional ethics and responsibilities and norms of engineering practice

9. Individual and Teamwork: Function effectively as an individual, and as a member or leader in diverse teams and in multi-disciplinary settings.

10. Communication: Communicate effectively on complex engineering activities with the engineering community and with society at large, such as being able to comprehend and write effective reports and design documentation, make effective presentations, and give and receive clear instructions.

11. Project Management and Finance: Demonstrate knowledge and understanding of engineering management principles and economic decision-making and apply these to one's own work, as a member and leader in a team, to manage projects and in multidisciplinary environments.

12. Lifelong learning: Recognize the need for, and have the preparation and ability to engage in independent and life-long learning in the broadest context of technological change.

三、培养特色
Ⅲ．Program Highlights

以数理为基础，以信息学科为背景，以计算机科学与技术为培养方向，以学术能力培养为中心，以创新能力培养为重点，理论与应用相兼顾，软件与系统相结合，计算机科学与计算机工程并重。加强学术氛围，培养学术兴趣，挖掘学术潜力。采用基于问题/项目的教学方法，培养在计算机软件与理论、系统结构、人工智能的研究、设计、开发和工程组织等方面具有综合能力的学术型人才。

Based on the basis of mathematics and background of information science, directed towards computer science and technology, centered in academic ability training, this program emphasizes on innovation spirit, bears theory and application in mind, combines software and hardware education, and balances on computer science and computer engineering. Based on the method of problem-based or project-based learning, this program aims to cultivate academic talents with comprehensive abilities on research, design, development and engineering in the area of computer theory and software, architecture and artificial intelligence.

四、主干学科
Ⅳ．Main Disciplines

计算机科学与技术 Computer Science & Technology

五、学制与学位
Ⅴ．Program Length and Degree

学制：四年

Program Length：4 years

授予学位：工学学士

Degrees Conferred：Bachelor of Engineering

六、学时与学分
Ⅵ．Credits Hours and Units

完成学业最低课内学分（含课程体系与集中性实践教学环节）要求：154

Minimum Credits of Curricular(Comprising course system and intensified internship practical training)：154

完成学业最低课外学分要求：8

Minimum Extracurricular Credits：8

1．课程体系学时与学分

Course Credits Hours and Units

课程类别	课程性质	学时/学分	学时/学分占比（%）
素质教育通识课程	必修	588/30	19.7/19.5
	选修	160/10	5.4/6.5
学科大类基础课程	必修	776/44.25	26/28.7
专业核心课	必修	640/34.25	21.5/22.2
专业选修课	选修	320/20	10.7/13

课程类别	课程性质	学时/学分	学时/学分占比（%）
集中性实践教学环节	必修	31w/15.5	16.7/10.1
实践教学合计	必修	320+31w/25.5	27.4/16.6
合计		2980/154	100/100

Course Classified	Course Nature	Hrs/Crs	Hrs/Crs Percentage (%)
Essential-qualities-oriented Education General Courses	Required	588/30	19.7/19.5
	Elective	160/10	5.4/6.5
Basic Courses in General Discipline	Required	776/44.25	26/28.7
Common Core Courses	Required	640/34.25	21.5/22.2
Specialty-Oriented Courses	Elective	320/20	10.7/13
Internship and Practical Training	Required	31w/15.5	16.7/10.1
Practical Teaching Total	Required	320+31w/25.5	27.4/16.6
Total		2980/154	100/100

2．集中性实践教学环节周数与学分

Practicum Credits

实践教学环节名称	课程性质	周数/学分	占实践教学环节学时比例（%）
军事训练	必修	2/1	6.5
工程训练	必修	2/1	6.5
生产实习（社会实践）	必修	3/1.5	9.7
课程设计及综合实践	必修	10/5	32.3
毕业设计（论文）	必修	14/7	45
合计		31/15.5	100

Course Title	Required/Elective	Weeks/Credits	Percentage (%)
Military Training	Required	2/1	6.5
Electrical Engineering Practice	Required	2/1	6.5
Engineering Internship (Social Practice)	Required	3/1.5	9.7
Course Project	Required	10/5	32.3
Undergraduate Thesis	Required	14/7	45
Total		31/15.5	100

3．课外学分

Extracurricular Credits

序号	课外活动名称	课外活动和社会实践的要求		课外学分
1	社会实践	提交社会调查报告，通过答辩者		2
		个人被校团委或团省委评为社会实践活动积极分子者，集体被校团委或团省委评为优秀社会实践队者		2
2	思政课社会实践（必修）	提交调查报告，取得成绩		2
3	劳动教育（必修）	32 学时		2
4	计算机考试（必修）	CCF 计算机软件能力认证 CSP 成绩 200~500 分		2~5
5	英语考试	CET6	考试成绩达到学校要求者	2
		托福考试	达 90 分以上者	4
		雅思考试	达 6.5 分以上者	4
		GRE 考试	达 325 分以上者	4
6	学科竞赛	校级	获 1/2/3 等奖者	2/1/1
		省级	获 1/2/3 等奖者	4/3/3
		全国	获 1/2/3 等奖者	6/5/5
7	讲座	Time 系列讲座	参加 4 次以上	2
8	论文	在国际及全国性会议或期刊发表论文	每篇论文	2~4
9	科研	参与科研项目(含大创项目)	每项	2~4

注：参加校体育运动会获第一名、第二名者与校级一等奖等同，获第三名至第五名者与校级二等奖等同，获第六至第八名者与校级三等奖等同；完成洛谷规定编程任务可认定 CSP 成绩 200 分。

No.	Extracurricular Activities and Social Practice	Requirements		Extracurricular Credits
1	Activities of Social Practice	Submit report and pass oral defense		2
		Entitled as Activist by the Communist Youth League of HUST or Hubei Province; Membership of the group which is entitled as Excellent Social Practice Group by the Communist Youth League of HUST or Hubei Province		2
2	Ideological and political course Social Practice（Required）	Submit a report and obtain a passing score		2
3	Labor Education（Required）	Public Service (32 hours)		2
4	Computer Examinations（Required）	Certified Software Professional 200-500		2~5
5	English Examinations	CET-6	PASS	2
		TOFEL	90 Points or Higher	4
		IELTS	6.5 Points or Higher	4
		GRE	1350 Points or Higher	4
6	Competitions	University Level	Win 1st/2nd/3rd prize	2/1/1
		Provincial Level	Win 1st/2nd/3rd prize	4/3/3
		National Level	Win 1st/2nd/3rd prize	6/5/5
7	Lectures	TIME Lecture series	A minimum of 4 times	2
8	Academic papers	International conference or national publications	Per piece	2~4
9	Scientific Research	Depending on both the time spent in and ability demonstrated in scientific research project	Each item	2~4

Note: In HUST Sports Meeting, the first and the second prize, the third to the fifth prize, and the sixth prize to the eighth prize are deemed respectively the first prize, the second prize and the third prize of university level.

七、主要课程及创新（创业）课程
Ⅶ. Main Courses and Innovation（Entrepreneurship）Courses

（一）专业主干课 Main Courses in Specialty

C 语言程序设计 Advanced Programming Language (C)，离散数学 Discrete Mathematics、数据结构 Data Structure、数字电路与逻辑设计 Digital Circuit and Logic Design、计算机系统基础 Introduction to Computer System、操作系统原理 Operating System、数据库系统原理 Database System、计算机组成原理 Computer Organization、软件工程 Software Engineering 计算机通信与网络 Computer Telecommunications & Network、编译原理 Compiler Principles、计算机系统结构 Computer Architecture 等。

（二）创新创业课程 Innovation (Entrepreneurship) Courses

1. 创新（创业）意识启迪课程 Innovation （Entrepreneurship） Awareness Enlightenment Courses

信息技术导论（IT 中国）（必修） Introduction to Information Technology，素质教育通识课程中选修至少 1 学分的创业类课程、人工智能导论（选修） Artificial Intelligence、大数据导论（选修） Big Data Introduction

2. 创新（创业）能力培养课程 Innovation （Entrepreneurship） Ability Training Courses

操作系统原理 Operating System、数据库系统原理 Database System、计算机组成原理 Computer Organization

3. 创新（创业）实践培养课程 Innovation Practice Training Courses

系统能力培养综合实践 Comprehensive Training of System Ability

八、主要实践教学环节（含专业实验）

Ⅷ．Practicum Module （experiments included）

工程训练 Engineering Training、程序设计综合课程设计 Course Project of Programming、操作系统课程设计 Course Project of Operating System、硬件综合训练 Project of Hardware System、生产实习 Engineering Internship、系统能力培养综合实践 Comprehensive Training of System Ability、毕业设计 Undergraduate Thesis.

九、教学进程计划表

Ⅸ．Course schedule

院（系）：计算机科学与技术学院
School （Department）：School of Computer Science & Technology

专业：计算机科学与技术
Major：Computer Science & Technology

课程类别 course type	课程性质 required/ elective	课程代码 course code	课程名称 course name	学时 hrs	学分 crs	其中 Including		设置学期 semester
						实验 exp.	上机 operation	
素质教育通识课程 Essential-qualities-oriented Education General Courses	必修 Required	MAX0022	思想道德与法治 Morals & Ethics & Fundamentals of Law	40	2.5			1
	必修 Required	MAX0042	中国近现代史纲要 Survey of Modern Chinese History	40	2.5			2
	必修 Required	MAX0013	马克思主义基本原理 Introduction to Basic Principles of Marxism	40	2.5			3
	必修 Required	MAX0072	习近平新时代中国特色社会主义思想概论 Xi Jinping Thought on Socialism with Chinese Characteristics	48	3			3
	必修 Required	MAX0063	毛泽东思想和中国特色社会主义理论体系概论 General Introduction to Mao Zedong Thought and Socialist Theory with Chinese Characteristics	48	3			4
	必修 Required	MAX0032	形势与政策 Situation and Policy	48	1.5			4-6
	必修 Required	CH0001	中国语文 College Chinese	32	2			1
	必修 Required	SFL0001	综合英语（一） Comprehensive English（Ⅰ）	56	3.5			1
	必修 Required	SFL0011	综合英语（二） Comprehensive English（Ⅱ）	56	3.5			2
	必修 Required	RMWZ0002	军事理论 Military Theory	36	2			2
	必修 Required	PHE0002	大学体育（一） Physical Education（Ⅰ）	60	1.5			1-2
	必修 Required	PHE0012	大学体育（二） Physical Education（Ⅱ）	60	1.5			3-4
	必修 Required	PHE0022	大学体育（三） Physical Education（Ⅲ）	24	1			5-6
			从不同公选模块中选修不低于 10 学分的课程（其中美育类不低于 2 学分，经济与管理类不少于 2 学分，思维与方法类不少于 1 学分，《大学生心理健康》必修） General Education Courses (elective)	160	10			2-8

课程类别 course type	课程性质 required/elective	课程代码 course code	课程名称 course name	学时 hrs	学分 crs	其中 Including		设置学期 semester
						实验 exp.	上机 operation	
学科大类基础课程 Basic Courses in General Discipline	必修 Required	CST0721	信息技术导论（IT 中国） Introduction to Information Technology	24	1.5			1
	必修 Required	CST0511	C 语言程序设计 Advanced Programming Language （C）	48	3			1
	必修 Required	CST0521	C 语言程序设计实验 Advanced Programming Language Experiments	32	1		32	1
	必修 Required	MAT0551	微积分（一）上 Calculus （Ⅰ）	88	5.5			1
	必修 Required	MAT0721	线性代数 Linear Algebra	40	2.5			1
	必修 Required	PHY0511	大学物理（一） Physics （Ⅰ）	64	4			2
	必修 Required	PHY0551	物理实验（一） Physical Experiments （Ⅰ）	32	1	32		2
	必修 Required	MAT0531	微积分（一）下 Calculus （Ⅰ）	88	5.5			2
	必修 Required	MAT0591	概率论与数理统计 Probability and Mathematics Statistic	40	2.5			2
	必修 Required	PHY0521	大学物理（二） Physics （Ⅱ）	64	4			3
	必修 Required	PHY0561	物理实验（二） Physical Experiments （Ⅱ）	24	0.75	24		3
	必修 Required	EEE0641	电路理论（三） Circuit Theory（Ⅲ）	64	4			3
	必修 Required	CST0641	数字电路与逻辑设计（一） Digital Circuit and Logic Design （Ⅰ）	48	3			3
	必修 Required	CST0652	数字电路与逻辑设计实验 Digital Circuit and Logic Design Experiments	16	0.5		16	3
	必修 Required	CST0661	信号与线性系统 Signal and Linear System	32	2			4
	必修 Required	CST0541	计算机通信与网络 Computer Telecommunications & Network	40	2.5			5
	必修 Required	CST0551	计算机通信与网络实践 Computer Telecommunications & Network Experiments	32	1		32	5
专业核心课程 Specialty Required Courses	必修 Required	CST2171	离散数学（一） Discrete Mathematics （Ⅰ）	40	2.5			2
	必修 Required	CST2261	数据结构 Data Structure	48	3			2
	必修 Required	CST2272	数据结构实验 Data Structure Experiments	32	1		32	2
	必修 Required	CST2161	离散数学（二） Discrete Mathematics （Ⅱ）	40	2.5			3
	必修 Required	CST2261	算法设计与分析 Algorithmic Design & Analysis	32	2			3

课程类别 course type	课程性质 required/ elective	课程代码 course code	课程名称 course name	学时 hrs	学分 crs	其中 Including		设置学期 semester
						实验 exp.	上机 operation	
专业核心课程 Specialty Required Courses	必修 Required	CST2421	算法设计与分析实践 Algorithmic Design & Analysis	24	0.75		24	3
	必修 Required	CST5161	计算机系统基础 Introduction of Computer System	40	2.5			4
	必修 Required	CST0041	计算机系统基础实验 Introduction of Computer System Experiments	32	1		32	4
	必修 Required	CST2141	计算机组成原理 Computer Organization	48	3			4
	必修 Required	CST2151	计算机组成原理实验 Computer Organization Experiments	16	0.5		16	4
	必修 Required	CST2281	数据库系统原理 Database System	48	3			4
	必修 Required	CST2291	数据库系统原理实践 Database System Experiments	32	1		32	4
	必修 Required	CST2032	操作系统原理 Operating System	48	3			5
	必修 Required	CST2041	操作系统原理实验 Operating System Experiments	16	0.5		16	5
	必修 Required	CST2231	软件工程 Software Engineering	32	2			5
	必修 Required	CST2011	编译原理 Compiler Principles	48	3			6
	必修 Required	CST2021	编译原理实验 Compiler Principles Experiments	32	1		32	6
	必修 Required	CST2131	计算机系统结构 Computer Architecture	32	2			6
专业选修课程 Specialty-oriented Courses	选修 Elective	CST5181	计算思维 Computational Thinking	32	2			1
	选修 Elective	CST5581	新生实践课 Computer Skills Practice for Freshman	32	1		32	1
	选修 Elective	CST5012	C++ 程序设计 Advanced Programming Language（C++）	40	2.5			3
	选修 Elective	CST5601	C++ 程序设计实验 Advanced Programming Language Experiment（C++）	24	0.75		24	3
	选修 Elective	CST0201	Python 大数据与人工智能实践 Python Big Data and Artificial Intelligence Practice	32	2		16	3
	选修 Elective	CST5481	人工智能导论 Artificial Intelligence	24	1.5			3
	选修 Elective	CST5491	大数据导论 Big Data Introduction	24	1.5			3
	选修 Elective	CST5211	命令式计算原理 Principles of imperative Computation	32	2			4

<div align="right">续表</div>

课程类别 course type	课程性质 required/ elective	课程代码 course code	课程名称 course name	学时 hrs	学分 crs	其中 Including		设置学期 semester
						实验 exp.	上机 operation	
专业选修课程 Specialty-oriented Courses	选修 Elective	CST5021	JAVA 语言程序设计 Advanced Programming Language（JAVA）	40	2.5			4
	选修 Elective	CST5631	JAVA 语言程序设计实验 Advanced Programming Language Experiment（JAVA）	24	0.75		24	4
	选修 Elective	CST5041	Verilog 语言 Verilog Language	32	1			4
	选修 Elective	CST5461	游戏设计与开发概论 Introduction to Game Design and Development	32	2			4
	选修 Elective	CST5611	大数据分析 Big Data Analysis	40	2.5			4
	选修 Elective	CST0071	大数据分析实验 Big Data Analysis Experiments	16	0.5		16	4
	选修 Elective	CST5144	机器学习 Machine Learning	40	2.5			4
	选修 Elective	CST0171	WEB 前端开发（IT 生态课程） Web Front-end Development	32	2			5
	选修 Elective	CST0191	游戏设计与开发腾讯菁英课（IT 生态课程） （Tencent Game Design and Development）	32	2			5
	选修 Elective	CST5511	大数据管理 Big Data Management	40	2.5			5
	选修 Elective	CST0101	大数据管理实验 Big Data Management Experiments	16	0.5		16	5
	选修 Elective	CST5522	计算机视觉 Computer Vision	32	2			5
	选修 Elective	CST5281	数值分析 Numerical Analysis	32	2			5
	选修 Elective	CST5171	计算理论 Computing Theory	32	2			5
	选修 Elective	CST5191	接口技术 Computer Interface Techniques	48	3			5
	选修 Elective	CST0021	网络空间安全概论 An Introduction to Cyberspace Security	32	2			5
	选修 Elective	CST5151	计算机图形学 Computer Graphics	32	2			5
	选修 Elective	CST5121	函数式编程原理 Principles of Functional Programming	32	2			5
	选修 Elective	CST0211	企业级工程设计与实践 （IT 生态课程） Enterprise Engineering Design and Practice	32	2			5
	选修 Elective	CST0221	可信软件开发（IT 生态课程） Trusted Software Development	32	2			6
	选修 Elective	CST5551	自然语言处理 Natural Language Processing	40	2.5			6

课程 类别 course type	课程 性质 required/ elective	课程 代码 course code	课程名称 course name	学时 hrs	学分 crs	其中 Including		设置 学期 semester
						实验 exp.	上机 operation	
专业选修课程 Specialty-oriented Courses	选修 Elective	CST0111	大数据处理系统 Big Data Processing System	40	2.5			6
	选修 Elective	CST0121	大数据处理系统实验 Big Data Processing System Experiments	16	0.5		16	6
	选修 Elective	CST5231	嵌入式系统 Embedded System	32	2		24	6
	选修 Elective	CST5461	云计算与虚拟化 Cloud Computing and Virtualization	32	2			6
	选修 Elective	CST0031	大数据存储与管理 Big Data Storage System and Management	32	2			6
	选修 Elective	CST5291	数字图像处理 Digital Image Processing	24	1.5			6
	选修 Elective	CST5051	并行编程原理与实践 Parallel Programming Principle and Practice	32	2			6
	选修 Elective	CST5381	信息存储技术（IT 生态课程） Information Storage Techniques	24	1.5			7
	选修 Elective	CST5301	搜索引擎技术基础 Fundamentals of Search Engine	24	1.5			7
	选修 Elective	CST5431	移动客户端开发（IT 生态课程） Mobile Client Development	24	1.5			7
	选修 Elective	CST5621	图神经网络导论 Introduction to Graph Neural Networks	32	2			7
	选修 Elective	CST5261	社会网络与计算 Social networking and Computing	32	2			7
实践环节 Internship and Practical Training	必修 Required	RMWZ3511	军事训练 Military Training	2w	1			1
	必修 Required	ENG3551	工程训练（七） Engineering Practice Training（Ⅶ）	2w	1			4
	必修 Required	CST3531	程序设计综合课程设计 Course Project of Programming	2w	1			3
	必修 Required	CST3661	硬件综合训练 Project of Hardware System	2w	1			5
	必修 Required	CST3521	操作系统课程设计 Course Project of Operating System	2w	1			6
	必修 Required	CST3601	生产实习 Engineering Internship	3w	1.5			7
	必修 Required	CST3541	系统能力培养综合实践 Comprehensive Training of System Ability	4w	2			7
	选修 Elective	CST3681	科技创新活动（一） Extracurricular Science and Technology innovation（Ⅰ）	4w	2			5
	选修 Elective	CST3691	科技创新活动（二） Extracurricular Science and Technology innovation（Ⅱ）	4w	2			6

课程 类别 course type	课程 性质 required/ elective	课程 代码 course code	课程名称 course name	学时 hrs	学分 crs	其中 Including		设置 学期 semester
						实验 exp.	上机 operation	
实践环节 Internship and Practical Training	选修 Elective	CST3701	科技创新活动（三） Extracurricular Science and Technology Innovation（III）	4w	2			7
	必修 Required	CST3511	毕业设计（论文） Undergraduate Thesis	14w	7			8

说明：科技创新活动学分可以作为专业选修学分计算。