计算机科学与技术学院

计算机科学与技术学院下设 5 个研究所：计算科学理论研究所、数据工程研究所、并行分布式计算研究所、数据存储研究所、数字媒体研究所；2 个中心：嵌入式软件与系统工程中心和教学中心。“外存储系统国家专业实验室”、“教育部信息存储系统重点实验室”、“中国教育科研网格主结点”、“国家高性能计算中心（武汉）”、“服务计算技术与系统教育部重点实验室”、“湖北省数据库工程技术研究中心”、“教育部数据存储系统与技术工程研究中心”等设在该院。

学院拥有计算机系统结构国家重点学科和计算机科学与技术一级学科博士学位授予权，拥有计算机系统结构、计算机软件与理论、计算机应用技术、信息安全 4 个博士学位和硕士学位授予权，计算机科学与技术一级学科博士后流动站。

学院有计算机科学与技术、物联网工程 2 个本科专业，其中“计算机科学与技术”是国家特色专业，物联网工程为湖北省战略性新产业相关专业。

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、适应社会经济和我国信息产业发展需求，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 a 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(s) operation who are also refined in humanistic literacy, Engineering with a Big E, 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。逐步与国际本科教学接轨，侧重课程内容的前沿性和授课质量，加强学术氛围，培养学生兴趣，挖掘学生潜力。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, systems 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：155.3

Minimum Credits of Curricular(Comprising course system and intensified internship practical training)：154.8

完成学业最低课外学分要求：5

Minimum Extracurricular Credits：5

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	占课程体系学分比例（%）
素质教育通识课程		必修	516/28	18.0
		选修	160/10	6.4
学科大类基础课程		必修	880/50.3	32.4
专业课	专业核心课	必修	584/31.5	20.3
	专业选修课	选修	320/20	12.9
集中性实践教学环节		必修	31w/15.5	10.0
合计			2460+31w/155.3	100

Course Classified		Course Nature	Hrs/Crs	Percentage (%)
Essential-qualities-oriented Education General Courses		Required	512/28	18.0
		Elective	160/10	6.4
Basic Courses in General Discipline		Required	880/50.3	32.4
Courses in Specialty	Common Core Courses	Required	584/31.5	20.3
	Specialty-Oriented Courses	Elective	320/20	12.9
Practicum Credits		Required	31w/15.5	10.0
Total			2460+31w/155.3	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	占实践教学环节学分比例（%）
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	45.2
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	45.2
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	社会实践活动	思政课社会实践：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	英语及计算机考试	全国大学英语六级考试	考试成绩达到学校要求者	2
		全国计算机软件资格、水平考试	中级证书者	3
			高级证书者	5
		CCF 计算机软件能力认证	200-400 分	2-5
3	竞赛	校级	获一等奖者	3
			获二等奖者	2
			获三等奖者	1
		省级	获一等奖者	4
			获二等奖者	3
			获三等奖者	2
		全国	获一等奖者	6
			获二等奖者	4
			获三等奖者	3

续表

序号	课外活动名称	课外活动和社会实践的要求		课外学分
4	论文	在国际及全国性会议或期刊发表论文	每篇论文	2~3
5	科研	参与科研项目实践(含大创项目)	每项	1~3
6	实验	视创新情况	每项	1~3

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。

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	Examinations in English and Computer	CET-6	Students whose Band-6 exam scores accord our requirements	2
		National Computer Software Qualification	Win certificate of Advanced Programmer	3
			Win certificate of System Analyst	4
		Certified Software Professional	200-400	2-5
3	Competitions	University Level	Win first prize	3
			Win second prize	2
			Win third prize	1
		Provincial Level	Win first prize	4
			Win second prize	3
			Win third prize	2
		National Level	Win first prize	6
			Win second prize	4
			Win third prize	3
4	Thesis	Those whose thesis appears in international conference or national publications	Per piece	2~3
5	Scientific Research	Depending on both the time spent in and ability demonstrated in scientific research project	Each item	1~3
6	Experiments	Depending on innovative extent	Each item	1~3

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、汇编语言程序设计 Assembly Language Programming、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（七）Engineering Training(Ⅶ)、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　　专业：计算机科学与技术

School (Department)：School of Computer Science & Technology　　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	思想道德修养与法律基础 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概论 Introduction to Basic Principles of Marxism	40	2.5			3
	必修 Required	MAX0002	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	72	4.5			4
	必修 Required	MAX0031	形势与政策 Situation and Policy	32	2			5-7
	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	RMWZ0001	军事理论 Military Teory	16	1			2

续表

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	PHE0001	大学体育（一） Physical Education(I)	32	1			1
	必修 Required	PHE0011	大学体育（二） Physical Education(II)	32	1			2
	必修 Required	PHE0021	大学体育（三） Physical Education(III)	32	1			3
	必修 Required	PHE0031	大学体育（四） Physical Education(IV)	32	1			4
			从不同选修课程模块中修读若干课程，总学分不低于 10 分(其中艺术类课程不低于 2 学分，经济管理类不少于 2 学分，创新创业类不少于 1 学分)	160	10			1-8
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	MAT0561	复变函数与积分变换 Complex Function and Integral Transform	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	0.8	24		3
	必修 Required	CST0531	电路理论（五） Circuit Theory (Ⅴ)	64	4			3
	必修 Required	MAT0591	概率论与数理统计 Probability and Mathematics Statistic	40	2.5			3
	必修 Required	EIC0592	模拟电子技术（二） Analogue Electronics (Ⅱ)	48	3			4
	必修 Required	CST0641	数字电路与逻辑设计（一） Digital Circuit and Logic Design (Ⅰ)	48	3			4
	必修 Required	CST0652	数字电路与逻辑设计实验 Digital Circuit and Logic Design Experiments	32	1			4

续表

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	
	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	56	3.5			2
	必修 Required	CST2161	离散数学（二） Discrete Mathematics	24	1.5			3
	必修 Required	CST2261	数据结构 Data Structure	48	3			3
	必修 Required	CST2272	数据结构实验 Data Structure Experiments	32	1		32	3
	必修 Required	CST2081	汇编语言程序设计 Assembly Language Programming	24	1.5			4
	必修 Required	CST2091	汇编语言程序设计实践 Assembly Language Programming	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	CST2141	计算机组成原理 Computer Organization	48	3			5
	必修 Required	CST2151	计算机组成原理实验 Computer Organization Experiments	16	0.5	16		5
	必修 Required	CST2231	软件工程 Software Engineering	32	2			5
	必修 Required	CST2281	数据库系统原理 Database System	48	3			5
	必修 Required	CST2291	数据库系统原理实践 Database System Experiments	32	1		32	5
	必修 Required	CST2261	算法设计与分析 Algorithmic Design & Analysis	32	2			5
	必修 Required	CST2011	编译原理 Compiler Principles	32	2			6
	必修 Required	CST2021	编译原理实验 Compiler Principles Experiments	32	1			6
	必修 Required	CST2131	计算机系统结构 Computer Architecture	32	2			6

续表

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	A组选修课							
	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			3
	选修 Elective	CST5121	函数式编程原理 Principles of Functional Programming	32	2			3
	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			4
	选修 Elective	CST5041	Verilog 语言 Verilog language	32	1	32		4
	选修 Elective	CST5161	计算机系统基础 Foundation of Computer System	40	2.5			4
	选修 Elective	CST5451	游戏设计与开发概论 Introduction to Game Design and Development	32	2			4
	选修 Elective	CST2421	算法设计与分析实践 Algorithmic Design & Analysis	32	1			5
	选修 Elective	CST5281	数值分析 Numerical Analysis	32	2			5
	选修 Elective	CST5051	并行编程原理与实践 Parallel Programming Principle and Practice	32	2			6
	选修 Elective	CST5191	接口技术 Interface Techniques	48	3			6
	选修 Elective	CST5231	嵌入式系统 Embedded System	32	2	24		6
	选修 Elective	CST5211	命令式计算原理 Principles of imperative Computation	32	2			6
	选修 Elective	CST5461	云计算与虚拟化 Cloud ComputingVirtualization	24	1.5			6
	选修 Elective	CST5131	基于平台的编程 Platform based programming	24	1.5			7
	选修 Elective	CST5151	计算机图形学 Computer Graphics	32	2			7

续表

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	CST5261	社会网络与计算 Social networking and Computing	24	1.5			7
	选修 Elective	CST5291	数字图像处理 Digital Image Processing	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	CST5371	信息安全概论 Introduction to information Security	32	2			7
	选修 Elective	CST5381	信息存储技术 Information Storage Techniques	24	1.5			7
	选修 Elective	CST5431	移动终端软件开发 Mobile Phone Development	24	1.5			7
	选修 Elective	CST5251	虚拟现实技术及其应用 Virtual Reality Technology and Application	32	2			7
	B组选修课（B组、C组必须任选一组）							
	选修 Elective	CST5481	人工智能导论 Artificial Intelligence	24	1.5			2
	选修 Elective	CST5143	机器学习 Machine Learning	48	3			5
	选修 Elective	CST5551	自然语言处理 Natural Language Processing	40	2.5			6
	选修 Elective	CST5521	计算机视觉 Computer Vision	40	2.5			6
	选修 Elective	CST5531	神经网络 Neural Network	40	2.5			7
	选修 Elective	CST5541	数据科学基础理论 Foundations of Data Science	32	2			7
	C组选修课（B组、C组必须任选一组）							
	选修 Elective	CST5491	大数据导论 Big Data Introduction	24	1.5			2
	选修 Elective	CST5511	大数据管理 Big Data Management	40	2.5			6
	选修 Elective	CST5241	大数据处理 Big Data Processing	40	2.5			5
	选修 Elective	CST5261	社会网络与计算 Social networking and Computing	32	2			6
	选修 Elective	CST5611	大数据分析 Big Data Analysis	40	2.5			5

续表

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	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			2
	必修 Required	CST3531	程序设计综合课程设计 Course Project of Programming	2w	1			4
	必修 Required	CST3521	操作系统课程设计 Course Project of Operating System	2w	1			6
	必修 Required	CST3661	硬件综合训练 Projectof Hardware 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			2
	选修 Elective	CST3691	科技创新活动（二） Extracurricular Science and Technology innovation (Ⅱ)	4w	2			3
	选修 Elective	CST3701	科技创新活动（三） Extracurricular Science and Technology innovation (Ⅲ)	4w	2			4
	选修 Elective	CST3711	科技创新活动（四） Extracurricular Science and Technology innovation (Ⅳ)	4w	2			5
	选修 Elective	CST3721	科技创新活动（五） Extracurricular Science and Technology innovation (Ⅴ)	4w	2			6
	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。

计算机科学与技术第二主修专业、辅修专业培养计划

Undergraduate Program for the Second and Auxiliary Specialty in Computer Science and Technology

一、培养目标

Ⅰ. Educational Objectives

培养具有信息学科和计算机学科有关的基础理论知识和应用能力，能在信息技术产业，科研部门，高等院校及其相关领域从事信息科学与技术的研究、设计、开发及管理等方面的工作，具有一定的专业知识和实践动手能力的研究型、复合型人才。

This program provides a grounding theoretical principle and practical skills in the field of information and computer discipline. Graduates can be prepared for any professional role they might choose——research, design, integration, practice in information industries, research institutes, universities, and professions and other community groups. It remains committed to systematic education for high level researchers and doers.

二、学位

Ⅱ. Degree Conferred

工学学士

Bachelor of Engineering

三、学分

Ⅲ. Credits

完成学业最低学分要求：50

Minimum Course Credits：50

其中：

Including：

学科基础课程：12 学分

Basic Courses in General Discipline：12

专业课程：31 学分

Basic Courses in Discipline：31

毕业设计：7 学分

Undergraduate Thesis：7

四、教学进程计划表

Ⅳ. Table of Teaching Schedule

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	
学科基础课程 Basic Courses in Discipline	必修 Required	CST0641	数字电路与逻辑设计 Digital Circuit and Logic Design	80	5			3
	必修 Required	CST2141	计算机组成原理 Principle of Computer Orgaization	64	4			4
	必修 Required	CST0531	计算机网络 Computer Network	48	3			5
专业课程 Courses in Specialty	必修 Required	CST2161	离散数学 Discrete Mathematics	80	5			3
	必修 Required	CST2261	数据结构 Data Structure	56	3.5			4
	必修 Required	CST2081	汇编语言程序设计 Assembly Language Programming	48	3			4
	必修 Required	CST2032	操作系统原理 Principle of Operating System	64	4			4
	必修 Required	CST2281	数据库系统原理 Principle of Database System	56	3.5			4
	必修 Required	CST0711	面向对象程序设计 Object oriented Programming	56	3.5			5
	必修 Required	CST5311	算法分析与设计 Algorithmic Design & Analysis	56	3.5			6
	必修 Required	CST2131	计算机系统结构 Computer System Architecture	40	2.5			6
	必修 Required	CST2231	软件工程 Software Engineering	40	2.5			6
实践环节 Internship and Practical Training	必修 Required	CST3511	毕业设计（论文） Undergraduate Thesis	14w	7			6

注：修满 25 学分而不足 50 学分者，可发给辅修证。

If one's credits are more than 25 but less than 50, he can only obtain a certificate of auxiliary specialty.

计算机科学与技术卓越工程师本科培养计划

Undergraduate Experimental Program in Computer Science and Technology for Exemplary Engineer Education

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、适应社会经济和我国信息产业发展需求，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，系统能力与工程实践能力突出，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 a 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(s) operation who are also refined in humanistic literacy, Engineering with a Big E, 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和理有效结论;

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。逐步与国际本科教学接轨，侧重课程内容的前沿性和授课质量，加强学术氛围，培养学生兴趣，挖掘学生潜力。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, systems 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

Duration：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：153.8 学分

Minimum Credits of Curricular(Comprising course system and intensified internship practical training)：153.8 credits

完成学业最低课外学分要求：5 学分

Minimum Extracurricular Credits：5 credits

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	占课程体系学分比例（%）
素质教育通识课程	必修	516/28	18.2
	选修	160/10	6.5
学科基础课程	必修	848/48.3	31.4
专业核心课	必修	616/32.5	21.1

续表

课程类别	课程性质	学时/学分	占课程体系学分比例（%）
专业选修课程	选修	288/18	11.7
集中性实践教学环节	必修	34w/17	11.1
合计		2428+34w/153.8	100.0

Course Classified		Course Nature	Hrs/Crs	Percentage (%)
Essential-qualities-oriented Education General Courses		Required	516/28	18.2
		Elective	160/10	6.5
Basic Courses in General Discipline		Required	848/48.3	31.4
Courses in Specialty	Common Core Courses	Required	616/32.5	21.1
	Specialty-Oriented Courses	Elective	288/18	11.7
Practicum Credits		Required	34w/17	11.1
Total			2428+34w/153.8	100.0

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	占实践教学环节学分比例（%）
军事训练	必修	2/1	5.9
工程训练	必修	2/1	5.9
企业实训/综合+生产实习	必修	10/5	29.4
课程设计	必修	6/3	17.6
毕业设计（论文）	必修	14/7	41.2
合计		34/17	100

Course Credits	Required/elective	Weeks/Credits	Percentage (%)
Military Training	Required	2/1	5.9
Electrical Engineering Practice	Required	2/1	5.9
Engineering Internship/comprehensive Training Professional Practice	Required	10/5	29.4
Course Project	Required	6/3	17.6
Undergraduate Thesis	Required	14/7	41.2
Total		34/17	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	社会实践活动	思政课社会实践：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	英语及计算机考试	全国大学英语六级考试	考试成绩达到学校要求者	2
		全国计算机软件资格、水平考试	中级证书者	3
			高级证书者	5
		CCF 计算机软件能力认证	200-400 分	2-5

续表

序号	课外活动名称	课外活动和社会实践的要求		课外学分
3	竞赛	校级	获一等奖者	3
			获二等奖者	2
			获三等奖者	1
		省级	获一等奖者	4
			获二等奖者	3
			获三等奖者	2
		全国	获一等奖者	6
			获二等奖者	4
			获三等奖者	3
4	论文	在国际及全国性会议或期刊发表论文	每篇论文	2~3
5	科研	参与科研项目实践(含大创项目)	每项	1~3
6	实验	视创新情况	每项	1~3

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。

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	Examinations in English and Computer	CET-6	Students whose Band-6 exam scores accord our requirements	2
		National Computer Software Qualification	Win certificate of Advanced Programmer	3
			Win certificate of System Analyst	4
		Certified Software Professional	200-400	2-5
3	Competitions	University Level	Win first prize	3
			Win second prize	2
			Win third prize	1
		Provincial Level	Win first prize	4
			Win second prize	3
			Win third prize	2

continue

No.	Extracurricular Activities and Social Practice	Requirements		Extracurricular Credits
3	Competitions	National Level	Win first prize	6
			Win second prize	4
			Win third prize	3
4	Thesis	Those whose thesis appears in international conference or national publications	Per piece	2~3
5	Scientific Research	Depending on both the time spent in and ability demonstrated in scientific research project	Each item	1~3
6	Experiments	Depending on innovative extent	Each item	1~3

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、汇编语言程序设计 Assembly Language Programming、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

硬件综合训练 Projectof Hardware System、企业实训工程实践 I Enterprise Project

八、主要实践教学环节（含专业实验）

Ⅷ. Practical Module (experiments Included)

工程训练（七） Engineering Training（Ⅶ）、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 Projectof Hardware System、企业实训工程实践 I Enterprise Project ，企业工程实践/毕业设计（论文） Enterprise Project/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　　专业：计算机科学与技术

School (Department)：School of Computer Science & Technology　　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	思想道德修养与法律基础 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概论 Introduction to Basic Principles of Marxism	40	2.5			3
	必修 Required	MAX0002	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	72	4.5			4
	必修 Required	MAX0031	形势与政策 Situation and Policy	32	2			5-7
	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	PHE0001	大学体育（一） Physical Education(I)	32	1			1
	必修 Required	PHE0011	大学体育（二） Physical Education(II)	32	1			2
	必修 Required	PHE0021	大学体育（三） Physical Education(III)	32	1			3
	必修 Required	PHE0031	大学体育（四） Physical Education(IV)	32	1			4
	必修 Required	RMWZ0001	军事理论 Military Theory	16	1			2
			从不同选修课程模块中修读若干课程，总学分不低于 10 分（其中艺术类课程不低于 2 学分，经济管理类不少于 2 学分，创新创业类不少于 1 学分）	160	10			1-8
学科基础课程 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

续表

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	
学科基础课程 Basic Courses in General Discipline	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	MAT0561	复变函数与积分变换 Complex Function and Integral Transform	40	2.5			2
	必修 Required	PHY0521	大学物理（二） Physics (Ⅱ)	64	4			3
	必修 Required	CST0531	电路理论（五） Circuit Theory (Ⅴ)	64	4			3
	必修 Required	MAT0591	概率论与数理统计 Probability and Mathematics Statistic	40	2.5			3
	必修 Required	PHY0561	物理实验（二） Physical Experiments (Ⅱ)	24	0.8	24		3
	必修 Required	EIC0592	模拟电子技术（二） Analogue Electronics (Ⅱ)	48	3			4
	必修 Required	CST0641	数字电路与逻辑设计（一） Digital Circuit and Logic Design (Ⅰ)	48	3			4
	必修 Required	CST0652	数字电路与逻辑设计实验 Digital Circuit and Logic Design Experiments	32	1			4
	必修 Required	CST0661	计算机通信与网络 Computer Telecommunications & Network	40	2.5			5
	必修 Required	CST0541	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	56	3.5			2
	必修 Required	CST2161	离散数学（二） Discrete Mathematics	24	1.5			3
	必修 Required	CST2261	数据结构 Data Structure	48	3			3
	必修 Required	CST2272	数据结构实验 Data Structure Experiments	32	1		32	3
	必修 Required	CST2081	汇编语言程序设计 Assembly Language Programming	24	1.5			4
	必修 Required	CST2091	汇编语言程序设计实践 Assembly Language Programming	32	1		32	4
	必修 Required	CST2032	操作系统原理 Operating System	48	3			5

续表

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	CST2041	操作系统原理实验 Operating System Experiments	16	0.5	16		5
	必修 Required	CST2141	计算机组成原理 Computer Organization	48	3			5
	必修 Required	CST2151	计算机组成原理实验 Computer Organization Experiments	16	0.5	16		5
	必修 Required	CST2231	软件工程 Software Engineering	32	2			5
	必修 Required	CST2261	算法设计与分析 Algorithmic Design & Analysis	32	2			5
	必修 Required	CST2421	算法设计与分析实践 Algorithmic Design & Analysis	32	1			5
	必修 Required	CST2281	数据库系统原理 Database System	48	3			5
	必修 Required	CST2291	数据库系统原理实践 Database System Experiments	32	1		32	5
	必修 Required	CST2011	编译原理 Compiler Principles	32	2			6
	必修 Required	CST2021	编译原理实验 Compiler Principles Experiments	32	1			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 Computer Skills Practice for Freshman	32	1		32	1
	选修 Elective	CST5481	人工智能导论 Artificial Intelligence	24	1.5			2
	选修 Elective	CST5491	大数据导论 Big Data Introduction	24	1.5			2
	选修 Elective	CST5121	函数式编程原理 Principles of Functional Programming	32	2			3
	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			3
	选修 Elective	CST5041	Verilog 语言 Verilog language	32	1	32		4
	选修 Elective	CST5161	计算机系统基础 Foundation of Computer System	40	2.5			4
	选修 Elective	CST5451	游戏设计与开发概论 Introduction to Game Design and Development	32	2			4

续表

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			4
	选修 Elective	CST5281	数值分析 Numerical Analysis	32	2			5
	选修 Elective	CST5143	机器学习 Machine Learning	48	3			5
	选修 Elective	CST5431	移动终端软件开发 Mobile Phone Development	24	1.5			5
	选修 Elective	CST5511	大数据管理 Big Data Management	40	2.5			6
	选修 Elective	CST5241	大数据处理 Big Data Processing	40	2.5			5
	选修 Elective	CST5261	社会网络与计算 Social networking and Computing	32	2			6
	选修 Elective	CST5551	自然语言处理 Natural Language Processing	40	2.5			6
	选修 Elective	CST5521	计算机视觉 Computer Vision	40	2.5			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	CST5143	机器学习 Machine Learning	48	3			5
	选修 Elective	CST5191	接口技术 Interface Techniques	48	3			6
	选修 Elective	CST5211	命令式计算原理 Principles of imperative Computation	32	2			6
	选修 Elective	CST5231	嵌入式系统 Embedded System	32	2	24		6
	选修 Elective	CST5611	大数据分析 Big Data Analysis	40	2.5			5
	选修 Elective	CST5461	云计算与虚拟化 Cloud Computing Virtualization	24	1.5			6
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 Training（Ⅶ）	2w	1			2
	必修 Required	CST3531	程序设计综合课程设计 Course Project of Programming	2w	1			4
	必修 Required	CST3521	操作系统课程设计 Course Project of Operating System	2w	1			6
	必修 Required	CST3661	硬件综合训练 Project of Hardware System	2w	1			6

续表

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	必修 Required	CST3571	企业实训工程实践 I Enterprise Project	15w	5			7
	选修 Elective	CST3681	科技创新活动（一） Extracurricular Science and Technology innovation (Ⅰ)	4w	2			2
	选修 Elective	CST3691	科技创新活动（二） Extracurricular Science and Technology innovation (Ⅱ)	4w	2			3
	选修 Elective	CST3701	科技创新活动（三） Extracurricular Science and Technology innovation (Ⅲ)	4w	2			4
	选修 Elective	CST3711	科技创新活动（四） Extracurricular Science and Technology innovation (Ⅳ)	4w	2			5
	选修 Elective	CST3721	科技创新活动（五） Extracurricular Science and Technology innovation (Ⅴ)	4w	2			6
	必修 Required	CST3561	企业工程实践 II/毕业设计（论文） Enterprise Project/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。

计算机科学与技术专业本硕博实验班培养计划（本科阶段）

Undergraduate Progam of Experimental Class for Computer Science and 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、适应社会经济和我国信息产业发展需求，数理基础、信息学科基础和计算机科学与技术专业理论扎实，创新精神与实践能力强，系统能力突出，具有家国情怀、世界胸怀、国际视野、追求学术理想、勇攀科学高峰，能适应我国信息产业自主可控发展战略的计算机领军人才。

Our major aims to cultivate leading talents on computer field with the core value of socialism and strong social responsibility and the ability to adapt the development needs of social economy and information industry of our country. We also teach the students to establish solid bases of mathematics, information subject and professional theory of computer science and technology, and they will be excellent on spirit of innovation, practical ability and systematical ability. In the future, our students will chase their academic ideal and climb the peak of science with patriotism spirit, global mind and international vision and catch the step of autonomous-controlled development strategy of the information industry in our country.

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和理有效结论;

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

强数理基础、信息学科基础和计算机系统基础，以学术能力培养为中心，以创新能力培养为重点。培养模式上，促进科教融合，实行导师制、小班化、个性化、国际化。

We will intensify students' bases of mathematics, information subject and computer system. Our training will focus on academic ability training and innovative ability training. In the training mode, we will accelerate the integration of science and education Tutorial system, smaller classes, individuality and internationalization will also be put into the practice of our training process.

四、主干学科

Ⅳ. Main Discipline

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：158.3 学分

Minimum Credits of Curricular(Comprising course system and intensified internship practical training)：158.3 credits

完成学业最低课外学分要求：5 学分

Minimum Extracurricular Credits：5 credits

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	占课程体系学分比例（%）
素质教育通识课程	必修	544/30	18.9
	选修	160/10	6.3
学科基础课程	必修	960/55.3	35
专业核心课	必修	472/25	15.8
专业选修课程	选修	288/18	11.4
集中性实践教学环节	必修	47w/20	12.6
合计		2424+ 47w/158.3	100.0

Course Classified		Course Nature	Hrs/Crs	Percentage (%)
Essential-qualities-oriented Education General Courses		Required	544/30	18.9
		Elective	160/10	6.3
Basic Courses in General Discipline		Required	960/55.3	35
Courses in Specialty	Common Core Courses	Required	472/25	15.8
	Specialty-Oriented Courses	Elective	288/18	11.4
Practicum Credits		Required	47w/20	12.6
Total			2424+47w/158.3	100.0

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	占实践教学环节学分比例（%）
军事训练	必修	2/1	5
工程训练	必修	2/1	5
课程设计及综合实践	必修	8/4	20
科研实践与创新训练	必修	21/7	35
毕业设计（论文）	必修	14/7	35
合计		47/20	100

Course Title	Required/Elective	Weeks/Credits	Percentage (%)
Military Training	Required	2/1	5
Electrical Engineering Practice	Required	2/1	5
Course Project and Comprehensive training	Required	8/4	20
Research Practice	Required	21/7	35
Undergraduate Thesis	Required	14/7	35
Total		47/20	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	社会实践活动	思政课社会实践：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	英语及计算机考试	全国大学英语六级考试	考试成绩达到学校要求者	2
		全国计算机软件资格、水平考试	中级证书者	3
			高级证书者	5
		CCF 计算机软件能力认证	200-400 分	2-5
3	竞赛	全国	获一等奖者	5
			获二等奖者	4
			获三等奖者	3
		省级	获一等奖者	3
			获二等奖者	2
			获三等奖者	1
4	论文	在国际及全国性会议或期刊发表论文	每篇论文	2~5
5	科研	参与科研项目实践(含大创项目)	每项	1~3
6	实验	视创新情况	每项	1~3

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。

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

continue

No.	Extracurricular Activities and Social Practice	Requirements		Extracurricular Credits
2	Examinations in English and Computer	CET-6	Students whose Band-6 exam scores accord our requirements	2
		National Computer Software Qualification	Win certificate of Advanced Programmer	3
			Win certificate of System Analyst	4
		Certified Software Professional	200-400	2-5
3	Competitions	Provincial Level	Win first prize	3
			Win second prize	2
			Win third prize	1
		National Level	Win first prize	5
			Win second prize	4
			Win third prize	3
4	Thesis	Those whose thesis appears in international conference or national publications	Per piece	2~5
5	Scientific Research	Depending on both the time spent in and ability demonstrated in scientific research project	Each item	1~3
6	Experiments	Depending on innovative extent	Each item	1~3

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、并行与串行数据结构及算法 Parallel and Sequential Data Structure and Algorithms、逻辑与计算机系统设计基础 Foundation of Logic and computer System Design、操作系统原理 Operating System、数据库系统原理 Database System、计算机通信与网络 Computer Telecommunications & Network、算法分析 Algorithmic Design & Analysis、编译原理 Compiler Principles。

（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)Introduction to Information Technology，科学思维与训练方法 Scientific Thoughts and Research Methods

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、逻辑与计算机系统设计基础 Foundation of Logic and computer system Design

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

科研实践 Science Research Training、硬件综合训练 Project of Harware System、操作系统课程设计 Course Project of Operating System。

八、主要实践教学环节（含专业实验）

Ⅷ. Practicum Module (experiments Included)

工程训练（七） Engineering Training（Ⅶ）、程序设计综合课程设计 Course Project of Programming、算法实践 Algorithm Practices、操作系统课程设计 Course Project of Operating System、硬件系统综合训练 Project of Hardware System、科研实践 Science Research Training、毕业设计（论文）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　　专业：计算机科学与技术

School (Department)：School of Computer Science & Technology　　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	思想道德修养与法律基础 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概论 Introduction to Basic Principles of Marxism	40	2.5			3
	必修 Required	MAX0071	习近平新时代中国特色社会主义思想概论 XiJinping Thought on Socialism with Chinese Characteristics	32	2			3
	必修 Required	MAX0002	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	72	4.5			4
	必修 Required	MAX0031	形势与政策 Situation and Policy	32	2			5-7
	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	PHE0001	大学体育（一） Physical Education(I)	32	1			1
	必修 Required	PHE0011	大学体育（二） Physical Education(II)	32	1			2
	必修 Required	PHE0021	大学体育（三） Physical Education(III)	32	1			3
	必修 Required	PHE0031	大学体育（四） Physical Education(IV)	32	1			4
	必修 Required	RMWZ0001	军事理论 Military Theory	16	1			2
		人文选修	从不同选修课程模块中修读若干课程，总学分不低于 10 分(其中艺术类课程不低于 2 学分，经济管理类不少于 2 学分，创新创业类不少于 1 学分)	160	10			1-8

续表

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	CST0731	科学思维与训练方法 Scientific Thoughts and Research Methods	16	1			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	MAT0552	微积分（A）上 Calculus (Ⅰ)	96	6			1
	必修 Required	PHY0511	大学物理（一） Physics (Ⅰ)	64	4			2
	必修 Required	MAT0532	微积分（A）下 Calculus (Ⅰ)	96	6			2
	必修 Required	PHY0551	物理实验（一） Physical Experiments (Ⅰ)	32	1	32		2
	必修 Required	MAT0722	线性代数（A） Linear Algebra (Ⅰ)	48	3			2
	必修 Required	PHY0521	大学物理（二） Physics (Ⅱ)	64	4			3
	必修 Required	CST0531	电路理论（五） Circuit Theory (Ⅴ)	64	4			3
	必修 Required	MAT0561	复变函数与积分变换 Complex Function and Integral Transform	40	2.5			2
	必修 Required	MAT0592	概率论与数理统计（A） Probability Theory and Mathematical Statistic (A)	48	3			3
	必修 Required	PHY0561	物理实验（二） Physical Experiments (Ⅱ)	24	0.8	24		3
	必修 Required	EIC0592	模拟电子技术（二） Analogue Electronics (Ⅱ)	48	3			4
	必修 Required	CST0652	逻辑与计算机系统设计基础 Foundation of Logic and Computer System Design	72	4.5			4
	必修 Required	CST0652	逻辑与计算机系统设计基础实践 Experiments of Foundation of Logic and Computer System Design	32	1			4
	必修 Required	CST0741	信息论基础 Elementary Information Theory	40	2.5			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

续表

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	CST2171	离散数学（一） Discrete Mathematics	56	3.5			2
	必修 Required	CST2161	离散数学（二） Discrete Mathematics	24	1.5			3
	必修 Required	CST2072	串行与并行数据结构及算法 Parallel and Sequential Data Structure and Algorithms	56	3.5			3
	必修 Required	CST2071	串行与并行数据结构及算法实验 Parallel and Sequential Data Structure and Algorithms Experiments	32	1		32	3
	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			5
	必修 Required	CST5311	算法设计与分析 Algorithmic Design & Analysis	48	3			5
	必修 Required	CST2011	编译原理 Compiler Principles	32	2			6
	必修 Required	CST2021	编译原理实验 Compiler Principles Experiments	32	1			6
	必修 Required	CST2131	计算机系统结构 Computer Architecture	32	2			6
	必修 Required	CST2281	数据库系统原理 Database System	48	3			5
	必修 Required	CST2291	数据库系统原理实践 Database System Experiments	32	1		32	5
专业选修课 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	CST5161	计算机系统基础 Foundation of Computer System	40	2.5			4
	选修 Elective	CST5481	人工智能导论 Artificial Intelligence	24	1.5			2
	选修 Elective	CST5171	计算理论 Computing Theory	32	2			5
	选修 Elective	CST5541	数据科学基础理论 Foundations of Data Science	32	2			3
	选修 Elective	CST5051	并行编程原理与实践 Parallel Programming Principle and Practice	32	2			6
	选修 Elective	CST5471	运筹学 Operations Research	32	2			6
	选修 Elective	CST5143	机器学习 Machine Learning	48	3			5

续表

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	
	选修 Elective	CST5041	Verilog 语言 Verilog language	32	1	32		4
	学生也可从研究生课程中选择课程学习，作为专业选修学分							7-8
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 Training（Ⅶ）	2w	1			2
	必修 Required	CST3531	程序设计综合课程设计 Course Project of Programming	2w	1			4
	必修 Required	CST3611	算法实践 Algorithm Practices	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	CST3661	硬件综合训练 Project of Hardware System	2w	1			5
	必修 Required	CST3671	创新训练 Innovation training (internationalization)	12w	4			2-6
	必修 Required	CST3542	科研实践 Science Research Training	9w	3			3-6
	必修 Required	CST3511	毕业设计（论文）(硕士阶段研究环节) Undergraduate Thesis	14w	7			8

物联网工程专业本科培养计划

Undergraduate Program for Internet of Things Engineering

一、培养目标

Ⅰ. Educational Objectives

培养德、智、体全面发展，具有系统、扎实的信息学科理论基础，在物联网信息的获取、传输、处理及应用等方面，具有较宽广的专业知识和实践动手能力的研究型、复合型人才。毕业生具有良好的人文素质、创新精神和较强的英语能力，能在物联网技术产业、科研部门、高等院校及其相关领域从事研究、设计、开发及管理等方面的工作，并可继续攻读计算机科学与技术以及相关学科的硕士博士学位。

This program is designed to provide students all round development of morality, intelligence and physique, make them possess a systemic and solid theory foundation, and foster research-oriented, inter-disciplinary talents in the field of Internet of Things. After that, they will have good human qualities, innovative spirit and strong English ability. They can not only qualify for research, design, development and management in the technology industries of Internet of Things, research institutes, universities and other related fields, but also further pursue their advanced degrees in the Internet of Things engineering, the computer science and technology and other related subjects.

二、基本规格要求

Ⅱ. Learning Outcomes

1. 具有解决本学科复杂工程问题所需的扎实数理基础、自然科学及工程知识，掌握计算机科学与技术学科基本理论和专业知识。

2. 具有分析本学科复杂工程问题的能力。能发现、阐明计算机科学与技术复杂工程问题，并能利用所学数理知识、自然科学知识、工程知识、专业知识，通过文献研究对复杂工程问题进行抽象表示、分析、建模并得出结论。

3. 具有为本学科复杂工程问题设计/开发解决方案的能力。设计针对本学科复杂工程问题的解决方案，包括设计满足特定需求的系统、单元（模块）或设计开发流程，并能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. 具有调查研究能力。掌握基本的科学研究与创新方法，能够基于科学原理、科学方法和专业知识对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有效的结论。

5. 具有灵活使用现代工具的能力。能够在实际复杂工程活动中选择合适的开发工具、开发模式、和测试技术，并灵活运用各种现代工具对复杂工程问题进行设计、模拟与实现，且能够理解不同工具的局限性。

6. 能够基于本专业相关背景知识进行合理分析，评价本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，并理解应承担的责任。

7. 能够理解和评价针对复杂工程问题的专业工程实践对环境保护、社会可持续发展的影响。

8. 具有良好的人文素质和社会责任感，掌握马列主义、毛泽东思想与中国特色社会主义基本理论；具有良好的工程素质与职业道德，了解并遵守与本专业相关的行业生产、设计、研究与开发政策、法津、法规。

9. 具有组织管理能力与团队协作精神。具有一定的组织管理能力、表达能力、独立工作能力、

人际交往能力，能在不同团队或多学科环境中有效发挥作用。

10. 具有较强的交流与沟通能力。具有一定的外语应用能力，能阅读本专业的外文资料。具备一定的国际视野，能够在跨文化背景下进行沟通与交流，能够就复杂工程问题与业界同行及社会公众进行有效沟通与交流，包括撰写报告和设计文稿、陈述发言、清晰表达。

11. 具有一定的计算机工程项目管理能力，能理解并掌握工程管理原理，与经济决策方法，能选择合适的计算机工程项目开发管理模式，并能在多学科环境中应用。

12. 具有终身学习意识与能力。对终身学习有正确认识，具有自主学习和终身学习的意识，能运用现代信息技术获取相关信息和新技术、新知识。

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，以信息学科为平台，以物联网工程为方向，培养具有良好科学素养，系统地掌握物联网基础理论、系统知识和基本技能，从事物联网领域的科学研究、系统分析、系统设计、技术开发、管理等方面的高级专门技术人才。

Based on math and science, built on information science, directed towards Internet of Things, this program is committed to train students to become talented professionals with a sound theoretic foundation, systematical knowledge and skills, of the capability to carry out the scientific research, system analysis, system design, technical development, and management in the field of the Internet of Things.

四、主干学科

Ⅳ. Main Discipline

物联网工程 the Internet of Things Engineering

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：154.3 学分

Minimum Credits of Curricular(Comprising the course system and the intensive practical training)：159.3 credits

完成学业最低课外学分要求：5 学分

Minimum Extracurricular Credits：5 credits

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	占课程体系学分比例（%）
素质教育通识课程		必修	516/28	18.1
		选修	160/10	6.5
学科大类基础课程		必修	1200/67.8	43.9
专业课	专业核心课	必修	264/13	8.4
	专业选修课	选修	320/20	13.0
集中性实践教学环节		必修	31w/15.5	10.0
合计			2460+31w/154.3	100

Course Classified		Course Nature	Hrs/Crs	Percentage (%)
Essential-qualities-oriented Education General Courses		Required	516/28	18.1
		Elective	160/10	6.5
Basic Courses in General Discipline		Required	1200/67.8	43.9
Courses in Specialty	Common Core Courses	Required	320/16.5	8.4
	Specialty-Oriented Courses	Elective	320/20	13.0
Practicum Credits		Required	31w/15.5	10.0
Total			2460+31w/154.3	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	占实践教学环节学分比例（%）
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	必修	10/5	32.3
毕业设计（论文）	必修	14/7	45.2
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	45.2
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	社会实践活动	思政课社会实践：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	英语及计算机考试	全国大学英语六级考试	考试成绩达到学校要求者	2
		全国计算机软件资格、水平考试	中级证书者	3
			高级证书者	5
		CCF 计算机软件能力认证	200-400 分	2-5
3	竞赛	校级	获一等奖者	3
			获二等奖者	2
			获三等奖者	1
		省级	获一等奖者	4
			获二等奖者	3
			获三等奖者	2
		全国	获一等奖者	6
			获二等奖者	4
			获三等奖者	3
4	论文	在国际及全国性会议或期刊发表论文	每篇论文	2~3
5	科研	参与科研项目实践(含大创项目)	每项	1~3
6	实验	视创新情况	每项	1~3

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。

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	Examinations in English and Computer	CET-6	Students whose Band-6 exam scores accord our requirements	2
		National Computer Software Qualification	Win certificate of Advanced Programmer	3
			Win certificate of System Analyst	4
		Certified Software Professional	200-400	2-5
3	Competitions	University Level	Win first prize	3
			Win second prize	2
			Win third prize	1
		Provincial Level	Win first prize	4
			Win second prize	3
			Win third prize	2
		National Level	Win first prize	6
			Win second prize	4
			Win third prize	3
4	Thesis	Those whose thesis appears in international conference or national publications	Per piece	2~3
5	Scientific Research	Depending on both the time spent in and ability demonstrated in scientific research project	Each item	1~3
6	Experiments	Depending on innovative extent	Each item	1~3

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）主要课程 Main Courses

C 语言程序设计 C Programming Language、数据结构 Data Structure、数字电路与逻辑设计 Digital Circuit and Logic Design、计算机组成原理 Computer Organization、嵌入式操作系统原理 Embedded Operating System、数据库系统原理及应用 Database System Principle and Application、射频识别技术与应用 RFID Technology and Application 、传感器原理及应用 Sensor Principle and Application、物联网通信技术 Communication Technology of IOT、物联网中间件 Middleware Technology of IOT、物联网安全概论 Introduction to IOT Security。

（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

射频识别技术与应用 RFID Technology and Application 、传感器原理及应用 Sensor Principle and Application

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

物联网应用系统综合设计 Project of Application system design of IOT

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

物联网应用系统综合设计 Project of Application system design of IOT

八、主要实践教学环节（含专业实验）

Ⅷ. Practicum Module (experiments Included)

C 语言课程设计 Course Project of C Programming Language、数据结构课程设计 Course Project of Data Structure、硬件综合课程设计 Project of Hardware System、嵌入式操作系统课程设计 Course Project in Operating System、射频识别技术与应用课程实验 RFID and Application Experiments、传感器技术原理及应用课程实验 Sensor principle and application Experiments、物联网应用系统综合设计 Project of Application system design of IOT、生产实习 Engineering Internship、毕业设计 Undergraduate Thesis 等。

九、教学进程计划表

Ⅸ. Course Schedule

院（系）：计算机科学与技术学院　　专业：物联网工程

School (Department)：School of Computer Science & Technology　　Major：Internet of Things Engineering

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	思想道德修养与法律基础 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概论 Introduction to Basic Principles of Marxism	40	2.5			3
	必修 Required	MAX0002	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	72	4.5			4
	必修 Required	MAX0031	形势与政策 Situation and Policy	32	2			5-7
	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	RMWZ0001	军事理论 Military Teory	16	1			2
	必修 Required	PHE0001	大学体育（一） Physical Education(I)	32	1			1
	必修 Required	PHE0011	大学体育（二） Physical Education(II)	32	1			2
	必修 Required	PHE0021	大学体育（三） Physical Education(III)	32	1			3
	必修 Required	PHE0031	大学体育（四） Physical Education(IV)	32	1			4
			从不同选修课程模块中修读若干课程，总学分不低于 10 分(其中艺术类课程不低于 2 学分，经济管理类不少于 2 学分，创新创业类不少于 1 学分)	160	10			1-8

续表

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（一） Linear Algebra (Ⅰ)	40	2.5			1
	必修 Required	PHY0511	大学物理（一） Physics (Ⅰ)	64	4			2
	必修 Required	CST2171	离散数学（一） Discrete Mathematics	56	3.5			2
	必修 Required	MAT0531	微积分（一）下 Calculus (Ⅰ)	88	5.5			2
	必修 Required	PHY0551	物理实验（一） Physical Experiments (Ⅰ)	32	1	32		2
	必修 Required	PHY0521	大学物理（二） Physics (Ⅱ)	64	4			3
	必修 Required	CST0531	电路理论（五） Circuit Theory (Ⅴ)	64	4			3
	必修 Required	MAT0561	复变函数与积分变换 Complex Function and Integral Transform	40	2.5			3
	必修 Required	MAT0591	概率论与数理统计 Probability and Mathematics Statistic	40	2.5			3
	必修 Required	CST2261	数据结构 Data Structure	48	3			3
	必修 Required	CST2272	数据结构实验 Data Structure Experiments	32	1		32	3
	必修 Required	PHY0561	物理实验（二） Physical Experiments (Ⅱ)	24	0.8	24		3
	必修 Required	EIC0592	模拟电子技术（二） Analogue Electronics (Ⅱ)	48	3			4
	必修 Required	CST0621	嵌入式操作系统原理 Embedded Operating System	48	3			4
	必修 Required	CST0631	嵌入式操作系统原理实验 Embedded Operating System Experiments	16	0.5			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

续表

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	CST0641	数字电路与逻辑设计（一） Digital Circuit and Logic Design (Ⅰ)	48	3			4
	必修 Required	CST0651	数字电路与逻辑设计实验 Digital Circuit and Logic Design Experiments	16	0.5	16		4
	必修 Required	CST2141	计算机组成原理 Computer Organization	48	3			5
	必修 Required	CST2151	计算机组成原理实验 Computer Organization Experiments	16	0.5			5
	必修 Required	CST0591	接口技术与汇编语言 Interface Techniques and Assembly Language	32	2			5
	必修 Required	CST0601	接口技术与汇编语言实验 Interface Techniques and Assembly Language Experiments	32	1			5
	必修 Required	CST2231	软件工程 Software Engineering	32	2			5
专业核心课程 Specialty Required Courses	必修 Required	CST2051	传感器原理及应用 Sensor Principle and Application	32	2			5
	必修 Required	CST2061	传感器原理及应用实验 Sensor Principle and Application Experiments	32	1			5
	必修 Required	CST2321	物联网通信技术 Communication Technology of IOT	64	4			5
	必修 Required	CST2331	物联网通信技术实验 Communication Technology Experiments of IOT	48	1.5			5
	必修 Required	CST2241	射频识别技术与应用 RFID and Application	32	2			6
	必修 Required	CST2251	射频识别技术与应用实验 RFID and Application Experiments	32	1			6
	必修 Required	CST2341	物联网中间件技术 Middleware Technology of IOT	24	1.5			6
专业选修课程 Specialty-oriented Courses			本专业专业选修课可从 A、B、C 组中选择					
			A 组选修课					
	选修 Elective	CST5181	计算思维 Computational Thinking	32	2			1
	选修 Elective	CST5011	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			3
	选修 Elective	CST5041	Verilog 语言 Verilog language	32	1			4

续表

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	CST5031	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			4
	选修 Elective	CST2261	算法设计与分析 Algorithmic Design & Analysis	32	2			5
	选修 Elective	CST2421	算法设计与分析实践 Algorithmic Design & Analysis Experiments	32	1			5
	选修 Elective	CST5121	函数式编程原理 Principles of Functional Programming	32	2			3
	选修 Elective	CST5211	命令式计算原理 Principles of imperative Computation	32	2			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	CST5231	嵌入式系统 Embedded System	32	2			6
	选修 Elective	CST5351	物联网安全概论 Introduction to IOT Security	32	2			6
	选修 Elective	CST5461	云计算与虚拟化 Cloud ComputingVirtualization	24	1.5			6
	选修 Elective	CST5401	信息隐藏（含数字水印） Information Concealment	32	2			6
	选修 Elective	CST5361	物联网数据存储与管理 Data Storage and Management of IOT	32	2			6
	选修 Elective	CST5341	无线网络安全 Wireless Network Security	32	2			7
	选修 Elective	CST5321	网络安全程序设计 Network Security Programming	32	2			7
	选修 Elective	CST5131	基于平台的编程 Platform based programming	24	1.5			7
	选修 Elective	CST5291	数字图像处理 Digital Image Processing	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	移动终端软件开发 mobile phone development	24	1.5			7
			B 组选修课					
	选修 Elective	CST5481	人工智能导论 Artificial Intelligence	24	1.5			2

续表

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	CST5143	机器学习 Machine Learning	48	3			5
	选修 Elective	CST5551	自然语言处理 Natural Language Processing	40	2.5			6
	选修 Elective	CST5521	计算机视觉 Computer Vision	40	2.5			6
	选修 Elective	CST5531	神经网络 Neural Network	40	2.5			7
			C 组选修课					
	选修 Elective	CST5491	大数据导论 Big Data Introduction	24	1.5			2
	选修 Elective	CST5511	大数据管理 Big Data Management	40	2.5			6
	选修 Elective	CST5241	大数据处理 Big Data Processing	40	2.5			5
	选修 Elective	CST5262	社会网络与计算 Social networking and Computing	32	2			6
	选修 Elective	CST5611	大数据分析 Big Data Analysis	40	2.5			5
实践环节 Internship and Practical Training	必修 Required	CST3661	硬件综合训练 Projectof Hardware System	2w	1			6
	必修 Required	RMWZ3511	军事训练 Military Training	2w	1			1
	必修 Required	ENG3551	工程训练（七） Engineering Training（Ⅶ）	2w	1			2
	必修 Required	CST3531	程序设计综合课程设计 Course Project of Programming	2w	1			4
	必修 Required	CST3581	嵌入式操作系统课程设计 Course Project of Embedded System	2w	1			5
	必修 Required	CST3601	生产实习 Engineering Internship	3w	1.5			7
	必修 Required	CST3631	物联网应用系统综合设计 Course Project of IOT Application system	4w	2			7
	选修 Elective	CST3681	科技创新活动（一） Extracurricular Science and Technology innovation (Ⅰ)	4w	2			2
	选修 Elective	CST3691	科技创新活动（二） Extracurricular Science and Technology innovation (Ⅱ)	4w	2			3
	选修 Elective	CST3701	科技创新活动（三） Extracurricular Science and Technology innovation (Ⅲ)	4w	2			4

续表

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	CST3711	科技创新活动（四） Extracurricular Science and Technology innovation (Ⅳ)	4w	2			5
	选修 Elective	CST3721	科技创新活动（五） Extracurricular Science and Technology innovation (Ⅴ)	4w	2			6
	必修 Required	CST3511	毕业设计 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。