

## 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：人工智能与优化研究所、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；“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。

学院开设有计算机科学与技术、数据科学与大数据技术、智能科学与技术 3 个本科专业，其中“计算机科学与技术”是国家特色专业。

## 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、强烈的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的卓越人才。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。

本培养目标包含如下四个方面的要求：

1) 职业素养与职业精神：具有社会主义核心价值观，团队协作精神，恪守职业道德，坚守社会责任，弘扬科学精神与工匠精神。

2) 专业基础与视野：具有扎实的数理基础、工程基础、计算机专业知识和系统能力，自主学习意识与能力强，能适应技术的发展，专业视野开阔。

3) 解决复杂工程问题能力：能将计算机科学与技术等相关理论、方法与技术运用于解决计算机复杂工程问题，具有创新精神与创新能力。

4) 沟通与管理能力：具有良好的沟通交流能力、项目管理能力与经济决策能力。

In this major, students are expected to uphold the core socialist values and demonstrate a strong sense of social responsibility, aligning with the demands of the economy, society, and China's information industry. They will develop into research talents in computer science, equipped with a strong foundation in mathematics, natural science, engineering, as well as expertise and skills in computer science and technology. Additionally, they will possess qualities such as innovation, practical ability, computer system design ability, humanistic literacy, the concept of large-scale engineering, team spirit, a global vision, and a sustainable competitive edge. The program aims to produce graduates who are capable of undertaking research, design, development, and management work, and who can effectively solve complex engineering problems in the field of computer science. With approximately five years of work experience, these graduates are expected to become the backbone of their organizations and stand out as top talents in the industry.

1) Professional demeanor and professional spirit: Possessing the socialist core values, a spirit of teamwork, adherence to professional ethics, a commitment to social responsibility, and the promotion of scientific spirit and craftsmanship.

2) Professional foundation and perspective: Having a solid foundation in mathematics, engineering, and computer knowledge, as well as strong autonomous learning awareness and capability to adapt to technological advancements. Having a broad professional perspective is also important.

3) Ability to solve complex engineering problems: Being able to apply theories, methods, and technologies related to computer science and technology to solve complex computer engineering problems, while demonstrating innovative spirit and capabilities.

4) Communication and management skills: Possessing good communication and interpersonal skills,

project management abilities, and economic decision-making skills.

## 二、毕业要求

### 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，设计满足特定需求模块或算法流程和系统，并能够在设计环节中体现软硬协同的系统思维和创新意识，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，通过设计实验、建模仿真、分析与解释数据、信息综合得到合理有效结论；

5. 使用现代工具：能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：能基于计算机领域工程相关背景知识进行合理分析，评价计算机软硬件开发、系统设计等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，能理解应承担的责任；

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，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专业人才。

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 professionals 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：4 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：153.5 学分

Minimum Credits of Curricular (Comprising course system and intensified internship practical training): 153.5 credits

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	占课程体系比例 (%)
素质教育通识课程	必修	588/30	19.8/19.5
	选修	160/10	5.4/6.5
学科大类基础课程	必修	768/43.75	25.8/28.5
专业核心课	必修	640/34.25	21.5/22.3
专业选修课	选修	320/20	10.8/13
集中性实践教学环节	必修	31w/15.5	16.7/10.2
其中，总实验（实践）	必修	320+31w/25.5	27.5
合计		2972/153.5	100/100

Course Classified	Course Nature	Hrs/Crs	Hrs/Crs Percentage (%)
Essential-qualities-oriented Education General Courses	Required	588/30	19.8/19.5
	Elective	160/10	5.4/6.5
Basic Courses in General Discipline	Required	768/43.75	25.8/28.5
Common Core Courses	Required	640/34.25	21.5/22.3
Specialty-Oriented Courses	Elective	320/20	10.8/13
Internship and Practical Training	Required	31w/15.5	16.7/10.2
Practical Teaching Total	Required	320+31w/25.5	27.5/16.6
Total		2972/153.5	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
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)	劳动教育 (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、算法设计与分析 Algorithmic Design & Analysis、计算机系统基础 Introduction to Computer System、数字电路与逻辑设计 Digital Circuit and Logic Design、计算机组成原理 Computer Organization、操作系统原理 Operating System、数据库系统原理 Database System、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

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

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

##### 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

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	
Essential- qualities-oriented General Courses 素质教育通识课程	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

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	
Essential-qualities-oriented Education General Courses 素质教育通识课程	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	PHE0021	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》限选)	160	10			2-8
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	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	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



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	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	CST2172	离散数学（一） Discrete Mathematics	40	2.5			2
	必修 Required	CST2262	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	CST2162	离散数学（二） Discrete Mathematics	40	2.5			3
	必修 Required	CST2261	算法设计与分析 Algorithmic Design & Analysis	32	2			3
	必修 Required	CST2421	算法设计与分析实践 Algorithmic Design & Analysis Practice	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

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	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 Experiments (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
	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 Experiments (JAVA)	24	0.75		24	4
	选修 Elective	CST5041	Verilog 语言 Verilog Language	32	2			4
	选修 Elective	CST5641	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	CST0241	大数据与推荐算法 (IT 生态课程) Big Data and Recommendation Algorithm	32	2			4
	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	CST0221	可信软件开发 (IT 生态课程) Trusted Software 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

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	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	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	CST0261	深度学习 Deep Learning	32	2			5
	选修 Elective	CST0171	WEB 前端开发 (IT 生态课程) Web Front-end Development	32	2			6
	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			6
	选修 Elective	CST5551	自然语言处理 Natural Language Processing	40	2.5			6
	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	CST0271	强化学习 Reinforcement Learning	32	2			6
	选修 Elective	CST0281	智能机器人概论 Introduction to Intelligent Robots	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	CST5431	移动客户端开发 (IT 生态课程) Mobile Client Development	24	1.5			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	
Specialty-oriented Courses 专业选修课程	选修 Elective	CST0021	网络空间安全概论 An Introduction to Cyberspace Security	32	2			7
	选修 Elective	CST5301	搜索引擎技术基础 Fundamentals of Search Engine	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			1
	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	CST3641	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			3
	选修 Elective	CST3691	科技创新活动（二） Extracurricular Science and Technology Innovation (II)	4w	2			4
	选修 Elective	CST3701	科技创新活动（三） Extracurricular Science and Technology Innovation (III)	4w	2			5
	选修 Elective	CST3711	科技创新活动（四） Extracurricular Science and Technology Innovation (IV)	4w	2			6
	选修 Elective	CST3721	科技创新活动（五） Extracurricular Science and Technology Innovation (V)	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。

## 计算机科学与技术专业辅修（学位）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和技术的研究、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 Organization	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	CST5161	计算机系统基础 Introduction to Computer System	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.

## 数据科学与大数据技术专业本科培养计划

### Undergraduate Program for Data Science & Big Data 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、强烈的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、工程基础和数据科学与大数据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，能从事数据科学与大数据领域相关的研究、设计、开发与管理工作，能解决数据科学与大数据领域复杂工程问题的卓越人才。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。

本培养目标包含如下四个方面的要求：

- 1) 职业素养与职业精神：具有社会主义核心价值观，团队协作精神，恪守职业道德，坚守社会责任，弘扬科学精神与工匠精神。
- 2) 专业基础与视野：具有扎实的数理基础、工程基础、大数据专业知识和系统能力，自主学习意识与能力强，能适应技术的发展，专业视野开阔。
- 3) 解决复杂工程问题能力：能将计算机科学、大数据等相关理论、方法与技术运用于解决大数据复杂工程问题，具有创新精神与创新能力。
- 4) 沟通与管理能力：具有良好的沟通交流能力、项目管理能力与经济决策能力。

In this major, students are expected to uphold the core socialist values and demonstrate a strong sense of social responsibility, aligning with the demands of the economy, society, and China's information industry. They will develop into research talents in data science and big data technology, equipped with a strong foundation in mathematics, natural science, engineering, as well as expertise and skills in computer science and technology. Additionally, they will possess qualities such as innovation, practical ability, computer system design ability, humanistic literacy, the concept of large-scale engineering, team spirit, a global vision, and a sustainable competitive edge. The program aims to produce graduates who are capable of undertaking research, design, development, and management work, and who can effectively solve complex engineering problems in the field of data science. With approximately five years of work experience, these graduates are expected to become the backbone of their organizations and stand out as top talents in the industry.

1) Professional demeanor and professional spirit: Possessing the socialist core values, a spirit of teamwork, adherence to professional ethics, a commitment to social responsibility, and the promotion of scientific spirit and craftsmanship.

2) Professional foundation and perspective: Having a solid foundation in mathematics, engineering, and data science knowledge, as well as strong autonomous learning awareness and capability to adapt to technological advancements. Having a broad professional perspective is also important.

3) Ability to solve complex engineering problems: Being able to apply theories, methods, and technologies related to computer and data science to solve complex big data engineering problems, while demonstrating innovative spirit and capabilities.

4) Communication and management skills: Possessing good communication and interpersonal skills, project management abilities, and economic decision-making skills.

## 二、毕业要求

### II. Learning Outcomes

1.工程知识：具备数学、自然科学、工程基础和数据科学与大数据技术专业基础知识，并能用于解决数据科学与大数据技术领域复杂工程问题；

2.问题分析：能够应用数学、自然科学、工程科学以及数据科学与大数据技术专业的基本原理，识别、表达、并通过文献研究分析数据科学与大数据技术领域复杂工程问题，以获得有效结论；

3.设计/开发解决方案：能设计针对数据科学与大数据技术领域复杂工程问题的解决方案，设计满足特定需求的模块、算法流程或系统，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.研究：能基于科学原理并采用科学方法对数据科学与大数据技术领域复杂工程问题进行研究，通过设计实验、建模仿真、分析与解释数据，并通过信息综合得到合理有效结论；

5.使用现代工具：能针对数据科学与大数据技术领域复杂工程问题设计、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：能基于数据科学与大数据技术工程相关背景知识进行合理分析，评价数据科学与大数据技术领域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，能理解应承担的责任；

7.环境和可持续发展：能理解和评价针对数据科学与大数据技术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：具有人文社会科学素养和社会责任感，能在数据科学与大数据技术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：能够就数据科学与大数据技术领域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，熟悉数据科学与大数据技术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，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，数据科学与大数据工程并重。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，培养在数据科学与大数据技术的研究、设计、开发和工程组织等方面具有综合能力的专业人才。

Based on the basis of mathematics and background of information science, directed towards Data Science and Big Data 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 Data Science and Big Data Technology.

### 四、主干学科

#### IV. Main Disciplines

数据科学与大数据技术 Data Science and Big Data Technology

### 五、学制与学位

#### V. Program Length and Degree

学制：4 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：149 学分

Minimum Credits of Curricular(Comprising course system and intensified internship practical training): 149 credits

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	占课程体系比例 (%)
素质教育通识课程	必修	588/30	20.2/20.1
	选修	160/10	5.5/6.7
学科大类基础课程	必修	608/34.25	20.9/23
专业核心课	必修	776/41.25	26.6/27.7
专业选修课	选修	288/18	9.9/12.1
集中性实践教学环节	必修	31w/15.5	16.9/10.4
其中，总实验（实践）	必修	352+31w/26.5	29.1
合计		2916/149	100/100

Course Classified	Course Nature	Hrs/Crs	Hrs/Crs Percentage (%)
Essential-qualities-oriented Education General Courses	Required	588/30	20.2/20.1
	Elective	160/10	5.5/6.7
Basic Courses in General Discipline	Required	608/34.25	20.9/23
Common Core Courses	Required	776/41.25	26.6/27.7
Specialty-Oriented Courses	Elective	288/18	9.9/12.1
Internship and Practical Training	Required	31w/15.5	16.9/10.4
Practical Teaching Total	Required	352+31w/26.5	29.1/17.8
Total		2916/149	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
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)	劳动教育 (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、计算机系统基础 Introduction to Computer Systems、逻辑与计算机系统设计基础 Logic and computer design Fundamentals、操作系统原理 Operating System、数据库系统原理 Database System、大数据分析 Big Data Analysis、大数据管理 Big Data Management、数据可视化技术 Data Visualization Technology、大数据处理 Big Data Processing 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。

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、大数据分析 Big Data Analytic

3. 创新(创业)实践培养课程 Innovation Practice Training Courses  
大数据系统综合实践 Comprehensive Training of Big Data System、数据可视化技术 Data Visualization Technology

## 八、主要实践教学环节（含专业实验）

### VIII. Practicum Module (experiments included)

工程训练 Electrical Engineering Practice、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、生产实习 Engineering Internship、大数据算法综合实践 Comprehensive Training of Big Data Algorithmic、大数据系统综合实践 Comprehensive Training of Big Data System、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：数据科学与大数据技术

School (Department): School of Computer Science & Technology

Major: Data Science & Big Data 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	
Essential- qualities-oriented General Courses 素质教育通识课程	必修 Required	MAX0022	思想道德与法治 Morals & Ethics & Fundamentals of Law	40	2.5			
	必修 Required	MAX0042	中国近现代史纲要 Survey of Modern Chinese History	40	2.5			
	必修 Required	MAX0013	马克思主义基本原理 Introduction to Basic Principles of Marxism	40	2.5			
	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			
	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			
	必修 Required	MAX0032	形势与政策 Situation and Policy	48	1.5			

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	
Essential-qualities-oriented Education General Courses 素质教育通识课程	必修 Required	CH0001	中国语文 College Chinese	32	2			
	必修 Required	SFL0001	综合英语（一） Comprehensive English（I）	56	3.5			
	必修 Required	SFL0011	综合英语（二） Comprehensive English（II）	56	3.5			
	必修 Required	RMWZ0002	军事理论 Military Theory	36	2			
	必修 Required	PHE0002	大学体育（一） Physical Education（I）	60	1.5			
	必修 Required	PHE0012	大学体育（二） Physical Education（II）	60	1.5			
	必修 Required	PHE0021	大学体育（三） Physical Education（III）	24	1			
			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，《大学生心理健康限选》)	160	10			
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	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	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	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	CST2172	离散数学（一） Discrete Mathematics（I）	40	2.5			2
	必修 Required	CST2262	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	CST2162	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
	必修 Required	CST2421	算法设计与分析实践 Algorithmic Design & Analysis Practice	24	0.75		24	3
	必修 Required	CST5161	计算机系统基础 Introduction of Computer System	40	2.5			3
	必修 Required	CST0041	计算机系统基础实验 Introduction of Computer System Experiments	32	1		32	3
	必修 Required	CST0051	逻辑与计算机设计 Logic and Computer System Design	64	4			4
	必修 Required	CST0061	逻辑与计算机设计实践 Experiments of Logic and Computer Design	32	1		32	4
	必修 Required	CST2281	数据库系统原理 Database System	48	3			4
	必修 Required	CST2291	数据库系统原理实验 Database System Experiments	32	1		32	4
	必修 Required	CST5611	大数据分析 Big Data Analysis	40	2.5			4
	必修 Required	CST0071	大数据分析实验 Big Data Analysis Experiments	16	0.5		16	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	CST0081	数据可视化技术 Data Visualization Technology	32	2			5
	必修 Required	CST0091	数据可视化技术实验 Data Visualization Technology Experiments	16	0.5		16	5
	必修 Required	CST5511	大数据管理 Big Data Management	40	2.5			5
	必修 Required	CST0101	大数据管理实验 Big Data Management Experiments	16	0.5		16	5
	必修 Required	CST0111	大数据处理系统 Big Data Processing System	40	2.5			6
	必修 Required	CST0121	大数据处理系统实验 Big Data Processing System Experiments	16	0.5		16	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	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 Experiments (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
	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 Experiments (JAVA)	24	0.75		24	4
	选修 Elective	CST5041	Verilog 语言 Verilog Language	32	2			4
	选修 Elective	CST5641	游戏设计与开发概论 Introduction to Game Design and Development	32	2			4
	选修 Elective	CST5144	机器学习 Machine Learning	40	2.5			4
	选修 Elective	CST0241	大数据与推荐算法 (IT 生态课程) Big Data and Recommendation Algorithm	32	2			4
	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	CST0221	可信软件开发 (IT 生态课程) Trusted Software Development	32	2			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

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	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	CST0261	深度学习 Deep Learning	32	2			5
	选修 Elective	CST0171	WEB 前端开发 (IT 生态课程) Web Front-end Development	32	2			6
	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			6
	选修 Elective	CST5551	自然语言处理 Natural Language Processing	40	2.5			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	CST0271	强化学习 Reinforcement Learning	32	2			6
	选修 Elective	CST0281	智能机器人概论 Introduction to Intelligent Robots	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	CST5431	移动客户端开发 (IT 生态课程) Mobile Client Development	24	1.5			7
	选修 Elective	CST0021	网络空间安全概论 An Introduction to Cyberspace Security	32	2			7
	选修 Elective	CST5301	搜索引擎技术基础 Fundamentals of Search Engine	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			1
	必修 Required	CST3531	程序设计综合课程设计 Course Project of Programming	2w	1			3



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	CST3521	操作系统课程设计 Course Project of Operating System	2w	1			6
	必修 Required	CST0131	大数据算法综合实践 Comprehensive Training of Big Data Algorithmic	2w	1			6
	必修 Required	CST3601	生产实习 Engineering Internship	3w	1.5			7
	必修 Required	CST0141	大数据系统综合实践 Comprehensive Training of Big Data System	4w	2			7
	选修 Elective	CST3681	科技创新活动（一） Extracurricular Science and Technology Innovation (I)	4w	2			3
	选修 Elective	CST3691	科技创新活动（二） Extracurricular Science and Technology Innovation (II)	4w	2			4
	选修 Elective	CST3701	科技创新活动（三） Extracurricular Science and Technology Innovation (III)	4w	2			5
	选修 Elective	CST3711	科技创新活动（四） Extracurricular Science and Technology Innovation (IV)	4w	2			6
	选修 Elective	CST3721	科技创新活动（五） Extracurricular Science and Technology Innovation (V)	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。

## 智能科学与技术专业本科培养计划

### Undergraduate Program for Specialty in Intelligence 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，扎实的数学、自然科学、工程基础和智能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，能从事智能科学与技术领域相关的研究、设计、开发与管理工作，能解决智能科学与技术领域复杂工程问题的卓越人才。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。

本培养目标包含如下四个方面的要求：

1) 职业素养与职业精神：具有社会主义核心价值观，团队协作精神，恪守职业道德，坚守社会责任，弘扬科学精神与工匠精神。

2) 专业基础与视野：具有扎实的数理基础、工程基础、智能科学与技术专业知识和系统能力，自主学习意识与能力强，能适应技术的发展，专业视野开阔。

3) 解决复杂工程问题能力：能将智能科学与技术相关理论、方法与技术运用于解决智能领域复杂工程问题，具有创新精神与创新能力。

4) 沟通与管理能力：具有良好的沟通交流能力、项目管理能力与经济决策能力。

本培养目标包含如下四个方面的要求：

In this major, students are expected to uphold the core socialist values and demonstrate a strong sense of social responsibility, aligning with the demands of the economy, society, and China's information industry. They will develop into research talents in intelligence science, equipped with a strong foundation in mathematics, natural science, engineering, as well as expertise and skills in intelligence science and technology. Additionally, they will possess qualities such as innovation, practical ability, computer system design ability, humanistic literacy, the concept of large-scale engineering, team spirit, a global vision, and a sustainable competitive edge. The program aims to produce graduates who are capable of undertaking research, design, development, and management work, and who can effectively solve complex engineering problems in the field of intelligence science. With approximately five years of work experience, these graduates are expected to become the backbone of their organizations and stand out as top talents in the industry.

1) Professional demeanor and professional spirit: Possessing the socialist core values, a spirit of teamwork, adherence to professional ethics, a commitment to social responsibility, and the promotion of scientific spirit and craftsmanship.

2) Professional foundation and perspective: Having a solid foundation in mathematics, engineering, and intelligence science knowledge, as well as strong autonomous learning awareness and capability to adapt to technological advancements. Having a broad professional perspective is also important.

3) Ability to solve complex engineering problems: Being able to apply theories, methods, and technologies related to computer science and technology to solve complex engineering problems in

intelligence science, while demonstrating innovative spirit and capabilities.

4) Communication and management skills: Possessing good communication and interpersonal skills, project management abilities, and economic decision-making skills.

## 二、毕业要求

### II. Learning Outcomes

1.工程知识：具备数学、自然科学、工程基础和智能科学与技术专业知识，并能用于解决智能科学与技术领域复杂工程问题；

2.问题分析：能够应用数学、自然科学、工程科学以及智能科学与技术专业的基本原理，识别、表达、并通过文献研究分析智能科学与技术领域复杂工程问题，以获得有效结论；

3.设计/开发解决方案：能设计针对智能科学与技术领域复杂工程问题的解决方案，设计满足特定需求的模块、算法流程或系统，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.研究：能基于科学原理并采用科学方法对智能科学与技术领域复杂工程问题进行研究，通过设计实验、建模仿真、分析与解释数据，并通过信息综合得到合理有效结论；

5.使用现代工具：能针对智能科学与技术领域复杂工程问题设计、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：能基于智能科学与技术工程相关背景知识进行合理分析，评价智能科学与技术领域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，能理解应承担的责任；

7.环境和可持续发展：能理解和评价针对智能科学与技术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：具有人文社会科学素养和社会责任感，能在智能科学与技术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：能够就智能科学与技术领域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，熟悉智能科学与技术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，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，以智能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，智能科学与智能工程并重。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，培养在智能科学与技术的研究、设计、开发和工程组织等方面具有综合能力的专业人才。

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 system education, and balances on intelligence science and intelligence engineering. Based on the method of problem-based or project-based learning, this program aims to cultivate professionals with comprehensive abilities in the research, design, development, and engineering organization of intelligent science and technology.

### 四、主干学科

#### IV. Main Disciplines

智能科学与技术 Intelligence Science & Technology

### 五、学制与学位

#### V. Program Length and Degree

学制：4 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：148 学分

Minimum Credits of Curricular (Comprising course system and intensified internship practical training): 148 credits

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	占课程体系比例 (%)
素质教育通识课程	必修	588/30	20.3/20.3
	选修	160/10	5.5/6.8
学科大类基础课程	必修	608/34.25	21/23.1
专业核心课	必修	720/38.25	24.9/25.8
专业选修课	选修	320/20	11.1/13.5
集中性实践教学环节	必修	31w/15.5	17.2/10.5
总实验（实践）	必修	320+31w/25.5	28.2
合计		2892/148	100/100

Course Classified	Course Nature	Hrs/Crs	Hrs/Crs Percentage (%)
Essential-qualities-oriented Education General Courses	Required	588/30	20.3/20.3
	Elective	160/10	5.5/6.8
Basic Courses in General Discipline	Required	608/34.25	21/23.1
Common Core Courses	Required	720/38.25	24.9/25.8
Specialty-Oriented Courses	Elective	320/20	11.1/13.5
Internship and Practical Training	Required	31w/15.5	17.2/10.5
Practical Teaching Total	Required	320+31w/25.5	28.2/17.2
Total		2892/148	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
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)	劳动教育 (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、数值分析 Numerical Analysis、数据结构 Data Structure、算法设计与分析 Algorithmic Design & Analysis、计算机系统基础 Introduction to Computer Systems、逻辑与计算机系统设计基础 Logic and Computer Design Fundamentals、操作系统原理 Operating System、数据库系统原理 Database System、机器学习 Machine Learning、计算机视觉 Computer Vision、自然语言处理 Natural Language Processing 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。

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

逻辑与计算机系统设计基础 Logic and Computer Design Fundamentals、操作系统原理 Operating System、数据库系统原理 Database System、自然语言处理 Natural Language Processing

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

智能科学综合实践 Comprehensive Training of Intelligence Science

## 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、机器学习课程设计 Course Project of Machine Learning、生产实习 Engineering Internship、智能科学综合实践 Comprehensive Training of Intelligence Science、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：智能科学与技术

School (Department): School of Computer Science & Technology

Major: Intelligence 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	
Essential- qualities-oriented General Courses 素质教育通识课程	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

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	
Essential-qualities-oriented Education General Courses 素质教育通识课程	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（I）	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	PHE0021	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》限选)	160	10			2-8
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	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	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	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	CST2172	离散数学（一） Discrete Mathematics	40	2.5			2
	必修 Required	CST2262	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	CST2162	离散数学（二） Discrete Mathematics	40	2.5			3
	必修 Required	CST2261	算法设计与分析 Algorithmic Design & Analysis	32	2			3
	必修 Required	CST2421	算法设计与分析实践 Algorithmic Design & Analysis Practice	24	0.75		24	3
	必修 Required	CST5161	计算机系统基础 Introduction of Computer System	40	2.5			3
	必修 Required	CST0041	计算机系统基础实验 Introduction of Computer System Experiments	32	1		32	3
	必修 Required	CST5281	数值分析 Numerical Analysis	32	2			3
	必修 Required	CST0051	逻辑与计算机设计 Logic and Computer System Design	64	4			4
	必修 Required	CST0061	逻辑与计算机设计实践 Experiments of Logic and Computer Design	32	1		32	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	CST5144	机器学习 Machine Learning	40	2.5			4
	必修 Required	CST0321	机器学习实验 Machine Learning Experiments	16	0.5		16	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	CST5522	计算机视觉 Computer Vision	32	2			5
	必修 Required	CST0311	计算机视觉实验 Computer Vision Experiments	16	0.5		16	5
	必修 Required	CST5551	自然语言处理 Natural Language Processing	40	2.5			6
	必修 Required	CST0331	自然语言处理实验 Natural Language Processing Experiments	16	0.5		16	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	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 Experiments (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
	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 Experiments (JAVA)	24	0.75		24	4
	选修 Elective	CST5041	Verilog 语言 Verilog Language	32	2			4
	选修 Elective	CST5641	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	CST0241	大数据与推荐算法 (IT 生态课程) Big Data and Recommendation Algorithm	32	2			4
	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	CST0221	可信软件开发 (IT 生态课程) Trusted Software 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	CST5171	计算理论 Computing Theory	32	2			5
	选修 Elective	CST5191	接口技术 Computer Interface Techniques	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	
专业选修课程 Specialty-oriented Courses	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	CST0261	深度学习 Deep Learning	32	2			5
	选修 Elective	CST0171	WEB 前端开发 (IT 生态课程) Web Front-end Development	32	2			6
	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			6
	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	CST0271	强化学习 Reinforcement Learning	32	2			6
	选修 Elective	CST0281	智能机器人概论 Introduction to Intelligent Robots	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	CST5431	移动客户端开发 (IT 生态课程) Mobile Client Development	24	1.5			7
	选修 Elective	CST0021	网络空间安全概论 An Introduction to Cyberspace Security	32	2			7
	选修 Elective	CST5301	搜索引擎技术基础 Fundamentals of Search Engine	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

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			1
	必修 Required	CST3531	程序设计综合课程设计 Course Project of Programming	2w	1			3
	必修 Required	CST0291	机器学习课程设计 Course Project of Machine Learning	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	CST0301	智能科学综合实践 Comprehensive Training of Intelligence Science	4w	2			7
	选修 Elective	CST3681	科技创新活动（一） Extracurricular Science and Technology innovation (I)	4w	2			3
	选修 Elective	CST3691	科技创新活动（二） Extracurricular Science and Technology innovation (II)	4w	2			4
	选修 Elective	CST3701	科技创新活动（三） Extracurricular Science and Technology innovation (III)	4w	2			5
	选修 Elective	CST3711	科技创新活动（四） Extracurricular Science and Technology innovation (IV)	4w	2			6
	选修 Elective	CST3721	科技创新活动（五） Extracurricular Science and Technology innovation (V)	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。

## 计算机科学与技术专业图灵实验班培养计划

### Undergraduate Program of Turning 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、强烈的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，能适应我国信息产业自主可控发展战略的计算机学术研究创新人才，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。

本培养目标包含如下四个方面的要求：

1) 职业素养与职业精神：具有社会主义核心价值观，团队协作精神，恪守职业道德，坚守社会责任，弘扬科学精神与工匠精神。

2) 专业基础与视野：具有扎实的数理基础、工程基础、计算机专业知识和系统能力，自主学习意识与能力强，能适应技术的发展，专业视野开阔。

3) 解决复杂工程问题能力：能将计算机科学与技术等相关理论、方法与技术运用于解决计算机复杂工程问题，具有创新精神与创新能力。

4) 沟通与管理能力：具有良好的沟通交流能力、项目管理能力与经济决策能力。

In this major, students are expected to uphold the core socialist values and demonstrate a strong sense of social responsibility, aligning with the demands of the economy, society, and China's information industry. They will develop into research talents in computer science, equipped with a strong foundation in mathematics, natural science, engineering, as well as expertise and skills in computer science and technology. Additionally, they will possess qualities such as innovation, practical ability, computer system design ability, humanistic literacy, the concept of large-scale engineering, team spirit, a global vision, and a sustainable competitive edge. The program aims to produce computer academic research and innovative talents who are capable of undertaking research, design, development, and management work, and who can effectively solve complex engineering problems in the field of computer science. With approximately five years of work experience, these graduates are expected to become the backbone of their organizations and stand out as top talents in the industry.

1) Professional demeanor and professional spirit: Possessing the socialist core values, a spirit of teamwork, adherence to professional ethics, a commitment to social responsibility, and the promotion of scientific spirit and craftsmanship.

2) Professional foundation and perspective: Having a solid foundation in mathematics, engineering, and computer knowledge, as well as strong autonomous learning awareness and capability to adapt to technological advancements. Having a broad professional perspective is also important.

3) Ability to solve complex engineering problems: Being able to apply theories, methods, and technologies related to computer science and technology to solve complex computer engineering

problems, while demonstrating innovative spirit and capabilities.

4) Communication and management skills: Possessing good communication and interpersonal skills, project management abilities, and economic decision-making skills.

## 二、毕业要求

### II. Learning Outcomes

1.工程知识：具备数学、自然科学、工程基础和计算机科学与技术专业知识，并能用于解决计算机科学与技术领域复杂工程问题；

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与技术专业的基本原理，识别、表达、并通过文献研究分析计算机科学与技术领域复杂工程问题，以获得有效结论；

3.设计/开发解决方案：能设计针对计算机科学与技术领域复杂工程问题的解决方案，设计满足特定需求的模块、算法流程或系统，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.研究：能基于科学原理并采用科学方法对计算机科学与技术领域复杂工程问题进行研究，通过设计实验、建模仿真、分析与解释数据，并通过信息综合得到合理有效结论；

5.使用现代工具：能针对计算机科学与技术领域复杂工程问题设计、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：能基于计算机科学与技术工程相关背景知识进行合理分析，评价计算机科学与技术领域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，能理解应承担的责任；

7.环境和可持续发展：能理解和评价针对计算机科学与技术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：具有人文社会科学素养和社会责任感，能在计算机科学与技术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：能够就计算机科学与技术领域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，熟悉计算机科学与技术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，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专业人才。

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 professionals 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：148 学分

Minimum Credits of Curricular(Comprising course system and intensified internship practical training): 148 credits

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	占课程体系比例 (%)
素质教育通识课程	必修	588/30	20/20.3
	选修	160/10	5.4/6.8
学科大类基础课程	必修	608/34.25	20.7/23.1
专业核心课	必修	768/40.75	26.1/27.5
专业选修课	选修	288/18	9.8/12.2
集中性实践教学环节	必修	33w/15	18/10.1
总实验（实践）	必修	344+33w/25.75	29.7
合计		2940/148	100/100

Course Classified	Course Nature	Hrs/Crs	Hrs/Crs Percentage (%)
Essential-qualities-oriented Education General Courses	Required	588/30	20/20.3
	Elective	160/10	5.4/6.8
Basic Courses in General Discipline	Required	608/34.25	20.7/23.1
Common Core Courses	Required	768/40.75	26.1/27.5
Specialty-Oriented Courses	Elective	288/18	9.8/12.2
Internship and Practical Training	Required	33w/15	18/10.1
Practical Teaching Total	Required	344+33w/25.75	29.7/17.4
Total		2940/148	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	占实践教学环节学分比例 (%)
军事训练	必修	2/1	6.7
工程训练	必修	2/1	6.7
课程设计及综合实践	必修	6/3	20
科研实践	必修	9/3	20
毕业设计（论文）	必修	14/7	46.6
合计		33/15	100

Course Title	Required/Elective	Weeks/Credits	Percentage (%)
Military Training	Required	2/1	6.7
Electrical Engineering Practice	Required	2/1	6.7
Course Project and Comprehensive training	Required	6/3	20
Research Practice	Required	9/3	20
Undergraduate Thesis	Required	14/7	46.6
Total		33/15	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)	劳动教育 (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、算法设计与分析 Algorithmic Design & Analysis、逻辑与计算机系统设计基础 Foundation of Logic and computer System Design、机器学习 Machine Learning、计算理论 Computing Theory、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

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

##### 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 Hardware 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 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、科研实践 Science Research Training、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	
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

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	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	PHE0021	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, 《大学生心理健康》必修, 思维与方法类不少于 1 学分)	160	10			2-8
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	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	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	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（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	CST5281	数值分析 Numerical Analysis	32	2			3
	必修 Required	CST2261	算法设计与分析 Algorithmic Design & Analysis	32	2			3
	必修 Required	CST2421	算法设计与分析实践 Algorithmic Design & Analysis Practice	24	0.75		24	3
	必修 Required	CST5161	计算机系统基础 Introduction of Computer System	40	2.5			3
	必修 Required	CST0041	计算机系统基础实验 Introduction of Computer System Experiments	32	1		32	3
	必修 Required	CST0051	逻辑与计算机设计 Logic and Computer System Design	64	4			4
	必修 Required	CST0061	逻辑与计算机设计实践 Experiments of Logic and Computer Design	32	1		32	4
	必修 Required	CST2281	数据库系统原理 Database System	48	3			4
	必修 Required	CST2291	数据库系统原理实验 Database System Experiments	32	1		32	4
	必修 Required	CST5144	机器学习 Machine Learning	40	2.5			4
	必修 Required	CST0321	机器学习实验 Machine Learning Experiments	16	0.5		16	4
	必修 Required	CST5171	计算理论 Computing Theory	32	2			5
	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	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

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	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 Experiments (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
	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 Experiments (JAVA)	24	0.75		24	4
	选修 Elective	CST5041	Verilog 语言 Verilog Language	32	2			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	CST0241	大数据推荐算法 (IT 生态课程) Big Data Recommendation Algorithm	32	2			4
	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	CST0221	可信软件开发 (IT 生态课程) Trusted Software 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

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	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	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	CST0261	深度学习 Deep Learning	32	2			5
	选修 Elective	CST0171	WEB 前端开发 (IT 生态课程) Web Front-end Development	32	2			6
	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			6
	选修 Elective	CST5551	自然语言处理 Natural Language Processing	40	2.5			6
	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	CST0271	强化学习 Reinforcement Learning	32	2			6
	选修 Elective	CST0281	智能机器人概论 Introduction to Intelligent Robots	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	CST5431	移动客户端开发 (IT 生态课程) Mobile Client Development	24	1.5			7
	选修 Elective	CST0021	网络空间安全概论 An Introduction to Cyberspace Security	32	2			7
	选修 Elective	CST5301	搜索引擎技术基础 Fundamentals of Search Engine	24	1.5			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	
	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	CST3542	科研实践 Science Research Training	9w	3			7
	选修 Elective	CST3681	科技创新活动（一） Extracurricular Science and Technology Innovation（I）	4w	2			3
	选修 Elective	CST3691	科技创新活动（二） Extracurricular Science and Technology Innovation（II）	4w	2			4
	选修 Elective	CST3701	科技创新活动（三） Extracurricular Science and Technology Innovation（III）	4w	2			5
	选修 Elective	CST3711	科技创新活动（四） Extracurricular Science and Technology Innovation（IV）	4w	2			6
	选修 Elective	CST3721	科技创新活动（五） Extracurricular Science and Technology Innovation（V）	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。

## 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的卓越人才。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。

本培养目标包含如下四个方面的要求：

1) 职业素养与职业精神：具有社会主义核心价值观，团队协作精神，恪守职业道德，坚守社会责任，弘扬科学精神与工匠精神。

2) 专业基础与视野：具有扎实的数理基础、工程基础、计算机专业知识和系统能力，自主学习意识与能力强，能适应技术的发展，专业视野开阔。

3) 解决复杂工程问题能力：能将计算机科学与技术等相关理论、方法与技术运用于解决计算机复杂工程问题，具有创新精神与创新能力。

4) 沟通与管理能力：具有良好的沟通交流能力、项目管理能力与经济决策能力。

In this major, students are expected to uphold the core socialist values and demonstrate a strong sense of social responsibility, aligning with the demands of the economy, society, and China's information industry. They will develop into research talents in computer science, equipped with a strong foundation in mathematics, natural science, engineering, as well as expertise and skills in computer science and technology. Additionally, they will possess qualities such as innovation, practical ability, Prominent computer system design ability and engineering practice ability, humanistic literacy, the concept of large-scale engineering, team spirit, a global vision, and a sustainable competitive edge. The program aims to produce graduates who are capable of undertaking research, design, development, and management work, and who can effectively solve complex engineering problems in the field of computer science. With approximately five years of work experience, these graduates are expected to become the backbone of their organizations and stand out as top talents in the industry.

1) Professional demeanor and professional spirit: Possessing the socialist core values, a spirit of teamwork, adherence to professional ethics, a commitment to social responsibility, and the promotion of scientific spirit and craftsmanship.

2) Professional foundation and perspective: Having a solid foundation in mathematics, engineering, and computer knowledge, as well as strong autonomous learning awareness and capability to adapt to technological advancements. Having a broad professional perspective is also important.

3) Ability to solve complex engineering problems: Being able to apply theories, methods, and technologies related to computer science and technology to solve complex computer engineering problems, while demonstrating innovative spirit and capabilities.

4) Communication and management skills: Possessing good communication and interpersonal skills, project management abilities, and economic decision-making skills.



## 二、毕业要求

### II. Learning Outcomes

1.工程知识：具备数学、自然科学、工程基础和计算机科学与技术专业知识，并能用于解决计算机科学与技术领域复杂工程问题；

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与技术专业的基本原理，识别、表达、并通过文献研究分析计算机科学与技术领域复杂工程问题，以获得有效结论；

3.设计/开发解决方案：能设计针对计算机科学与技术领域复杂工程问题的解决方案，设计满足特定需求的模块、算法流程或系统，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.研究：能基于科学原理并采用科学方法对计算机科学与技术领域复杂工程问题进行研究，通过设计实验、建模仿真、分析与解释数据，并通过信息综合得到合理有效结论；

5.使用现代工具：能针对计算机科学与技术领域复杂工程问题设计、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：能基于计算机科学与技术工程相关背景知识进行合理分析，评价计算机科学与技术领域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，能理解应承担的责任；

7.环境和可持续发展：能理解和评价针对计算机科学与技术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：具有人文社会科学素养和社会责任感，能在计算机科学与技术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：能够就计算机科学与技术领域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，熟悉计算机科学与技术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，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、人工智能等的研究、设计、开发和工程组织等方面具有综合能力的卓越工程师。

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：4 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 学分

Minimum Credits of Curricular(Comprising course system and intensified internship practical training): 153 credits

完成学业最低课外学分要求: 8 学分

Minimum Extracurricular Credits: 8 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	占课程体系比例 (%)
素质教育通识课程	必修	588/30	19.2/19.6
	选修	160/10	5.2/6.5
学科大类基础课程	必修	736/41.75	24/27.3
专业核心课	必修	640/34.25	20.9/22.4
专业选修课	选修	320/20	10.4/13.1
集中性实践教学环节	必修	34w/17	20.3/11.1
总实验（实践）	必修	320+34w/27	30.8
合计		2988/153	100/100

Course Classified	Course Nature	Hrs/Crs	Hrs/Crs Percentage (%)
Essential-qualities-oriented Education General Courses	Required	588/30	19.2/19.6
	Elective	160/10	5.2/6.5
Basic Courses in General Discipline	Required	736/41.75	24/27.3
Common Core Courses	Required	640/34.25	20.9/22.4
Specialty-Oriented Courses	Elective	320/20	10.4/13.1
Internship and Practical Training	Required	34w/17	20.3/11.1
Practical Teaching Total	Required	320+34w/27	30.8/17.6
Total		2988/153	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	15/5	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	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)	劳动教育 (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、计算机系统基础 Introduction of Computer System、数字电路与逻辑设计 Digital Circuit and Logic Design、计算机组成原理 Computer Organization、操作系统原理 Operating System、数据库系统原理 Database System、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

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

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

硬件综合训练 Project of 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 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、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	
Essential- qualities-oriented General Courses 素质 教育 通识 课程	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

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	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	PHE0021	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》限选)	160	10			2-8
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	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	MAT0001	高等数学(A)上 Calculus (A)	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	MAT0011	高等数学(A)下 Calculus (A)	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

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	
Basic 学科大类基础课程 Discipline	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	CST0651	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	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	CST2172	离散数学（一） Discrete Mathematics（I）	40	2.5			2
	必修 Required	CST2262	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	CST2162	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
	必修 Required	CST2421	算法设计与分析实践 Algorithmic Design & Analysis Practice	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

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	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 Experiments (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
	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 Experiments (JAVA)	24	0.75		24	4
	选修 Elective	CST5041	Verilog 语言 Verilog Language	32	2			4
	选修 Elective	CST5641	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	CST0241	大数据与推荐算法 (IT 生态课程) Big Data and Recommendation Algorithm	32	2			4
	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	CST0221	可信软件开发 (IT 生态课程) Trusted Software 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



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	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	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	CST0261	深度学习 Deep Learning	32	2			5
	选修 Elective	CST0171	WEB 前端开发 (IT 生态课程) Web Front-end Development	32	2			6
	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			6
	选修 Elective	CST5551	自然语言处理 Natural Language Processing	40	2.5			6
	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	CST0271	强化学习 Reinforcement Learning	32	2			6
	选修 Elective	CST0281	智能机器人概论 Introduction to Intelligent Robots	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

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	CST5431	移动客户端开发 (IT 生态课程) Mobile Client Development	24	1.5			7
	选修 Elective	CST0021	网络空间安全概论 An Introduction to Cyberspace Security	32	2			7
	选修 Elective	CST5301	搜索引擎技术基础 Fundamentals of Search Engine	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			1
	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
	选修 Elective	CST3681	科技创新活动 (一) Extracurricular Science and Technology Innovation (I)	4w	2			3
	选修 Elective	CST3691	科技创新活动 (二) Extracurricular Science and Technology Innovation (II)	4w	2			4
	选修 Elective	CST3701	科技创新活动 (三) Extracurricular Science And Technology Innovation (III)	4w	2			5
	选修 Elective	CST3711	科技创新活动 (四) Extracurricular Science and Technology Innovation (IV)	4w	2			6
	选修 Elective	CST3721	科技创新活动 (五) Extracurricular Science and Technology Innovation (V)	4w	2			7
	必修 Required	CST3571	企业实训工程实践 I Enterprise Project	10w	5			7
	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

### Undergraduate Program 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。

本培养目标包含如下四个方面的要求：

1) 职业素养与职业精神：具有社会主义核心价值观，团队协作精神，恪守职业道德，坚守社会责任，弘扬科学精神与工匠精神。

2) 专业基础与视野：具有扎实的数理基础、工程基础、计算机专业知识和系统能力，自主学习意识与能力强，能适应技术的发展，专业视野开阔。

3) 解决复杂工程问题能力：能将计算机科学与技术等相关理论、方法与技术运用于解决计算机复杂工程问题，具有创新精神与创新能力。

4) 沟通与管理能力：具有良好的沟通交流能力、项目管理能力与经济决策能力。

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 computer system design 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.

1) Professional demeanor and professional spirit: Possessing the socialist core values, a spirit of teamwork, adherence to professional ethics, a commitment to social responsibility, and the promotion of scientific spirit and craftsmanship.

2) Professional foundation and perspective: Having a solid foundation in mathematics, engineering, and computer knowledge, as well as strong autonomous learning awareness and capability to adapt to technological advancements. Having a broad professional perspective is also important.

3) Ability to solve complex engineering problems: Being able to apply theories, methods, and technologies related to computer science and technology to solve complex computer engineering problems, while demonstrating innovative spirit and capabilities.

4) Communication and management skills: Possessing good communication and interpersonal skills, project management abilities, and economic decision-making skills.

#### 二、毕业要求

##### II . Learning Outcomes

1.工程知识：具备数学、自然科学、工程基础和计算机科学与技术专业知识，并能用于解决计算机科学与技术领域复杂工程问题；

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与技术专业的基本原理，识别、表达、并通过文献研究分析计算机科学与技术领域复杂工程问题，以获得有效结论；

3.设计/开发解决方案：能设计针对计算机科学与技术领域复杂工程问题的解决方案，设计满足特定需求的模块、算法流程或系统，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.研究：能基于科学原理并采用科学方法对计算机科学与技术领域复杂工程问题进行研究，通过设计实验、建模仿真、分析与解释数据，并通过信息综合得到合理有效结论；

5.使用现代工具：能针对计算机科学与技术领域复杂工程问题设计、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：能基于计算机科学与技术工程相关背景知识进行合理分析，评价计算机科学与技术领域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，能理解应承担的责任；

7.环境和可持续发展：能理解和评价针对计算机科学与技术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：具有人文社会科学素养和社会责任感，能在计算机科学与技术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：能够就计算机科学与技术领域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，熟悉计算机科学与技术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，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：4 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：151.75 学分

Minimum Credits of Curricular(Comprising course system and intensified internship practical

training): 151.75 credits

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	占课程体系比例 (%)
素质教育通识课程	必修	588/30	19.9/19.8
	选修	160/10	5.4/6.6
学科大类基础课程	必修	736/42.25	25/27.8
专业核心课	必修	696/36.5	23.6/24.1
专业选修课	选修	288/18	9.8/11.9
集中性实践教学环节	必修	30w/15	16.3/9.8
总实验 (实践)	必修	344+30w/25.75	28
合计		2948/151.75	100/100

Course Classified	Course Nature	Hrs/Crs	Hrs/Crs Percentage (%)
Essential-qualities-oriented Education General Courses	Required	588/30	19.9/19.8
	Elective	160/10	5.4/6.6
Basic Courses in General Discipline	Required	736/42.25	25/27.8
Common Core Courses	Required	696/36.5	23.6/24.1
Specialty-Oriented Courses	Elective	288/18	9.8/11.9
Internship and Practical Training	Required	30w/15	16.3/9.8
Practical Teaching Total	Required	344+30w/25.75	28/17
Total		2948/151.75	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	占实践教学环节学分比例 (%)
军事训练	必修	2/1	6.7
工程训练	必修	2/1	6.7
课程设计及综合实践	必修	6/3	20
科研实践	必修	6/3	20
毕业设计 (论文)	必修	14/7	46.6
合计		30/15	100

Course Title	Required/Elective	Weeks/Credits	Percentage (%)
Military Training	Required	2/1	6.7
Electrical Engineering Practice	Required	2/1	6.7
Course Project and Comprehensive training	Required	6/3	20
Research Practice	Required	6/3	20
Undergraduate Thesis	Required	14/7	46.6
Total		30/15	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

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
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）	劳动教育（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	CET 6	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、算法设计与分析 Algorithmic Design & Analysis、并行数据结构与算法 Parallel 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、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

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

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

##### 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 Hardware 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 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

#### （一）本科阶段

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	
Essential-qualities-oriented Education General Courses 素质教育通识课程	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



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	
Essential-qualities-oriented Education General Courses 素质教育通识课程	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	PHE0021	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》限选)	160	10			2-8
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	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	MAT0722	线性代数（A） Linear Algebra（I）	48	3			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	MAT0532	微积分（A）下 Calculus（I）	96	6			2
	必修 Required	MAT0592	概率论与数理统计（A） Probability Theory and Mathematical Statistic (A)	48	3			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	CST0741	信息论基础 Elementary Information Theory	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	
	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	CST2172	离散数学（一） Discrete Mathematics（I）	40	2.5			2
	必修 Required	CST2262	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	CST2162	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
	必修 Required	CST2421	算法设计与分析实践 Algorithmic Design & Analysis Practice	24	0.75		24	3
	必修 Required	CST5161	计算机系统基础 Foundation of Computer System	40	2.5			3
	必修 Required	CST0041	计算机系统基础实验 Foundation of Computer System	32	1		32	3
	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	CST0051	逻辑与计算机设计 Logic and Computer System Design	64	4			4
	必修 Required	CST0061	逻辑与计算机设计实践 Experiments of Logic and Computer Design	32	1		32	4
	必修 Required	CST2072	并行数据结构与算法 Parallel Data Structure and Algorithms	32	2			5
	必修 Required	CST2071	并行数据结构与算法实验 Parallel Data Structure and Algorithms Experiments	24	0.75		24	5
	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	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

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	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 Experiments (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
	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 Experiments (JAVA)	24	0.75		24	4
	选修 Elective	CST5041	Verilog 语言 Verilog Language	32	2			4
	选修 Elective	CST5641	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	CST0241	大数据与推荐算法 (IT 生态课程) Big Data and Recommendation Algorithm	32	2			4
	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	CST0221	可信软件开发 (IT 生态课程) Trusted Software 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

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	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	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	CST0261	深度学习 Deep Learning	32	2			5
	选修 Elective	CST0171	WEB 前端开发 (IT 生态课程) Web Front-end Development	32	2			6
	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			6
	选修 Elective	CST5551	自然语言处理 Natural Language Processing	40	2.5			6
	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	CST0271	强化学习 Reinforcement Learning	32	2			6
	选修 Elective	CST0281	智能机器人概论 Introduction to Intelligent Robots	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	CST5431	移动客户端开发 (IT 生态课程) Mobile Client Development	24	1.5			7
	选修 Elective	CST0021	网络空间安全概论 An Introduction to Cyberspace Security	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	CST5301	搜索引擎技术基础 Fundamentals of Search Engine	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			1
	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	CST3542	科研实践 Science Research Training	6w	3			7
	选修 Elective	CST3681	科技创新活动（一） Extracurricular Science and Technology Innovation (I)	4w	2			3
	选修 Elective	CST3691	科技创新活动（二） Extracurricular Science and Technology Innovation (II)	4w	2			4
	选修 Elective	CST3701	科技创新活动（三） Extracurricular Science and Technology Innovation (III)	4w	2			5
	选修 Elective	CST3711	科技创新活动（四） Extracurricular Science and Technology Innovation (IV)	4w	2			6
	选修 Elective	CST3721	科技创新活动（五） Extracurricular Science and Technology Innovation (V)	4w	2			7
	必修 Required	CST3511	毕业设计（论文）（硕士阶段研究环节） Undergraduate Thesis	14w	7			8

说明：1. 选修课可直接选研究生阶段相关课程。

2. 科技创新活动学分可以作为专业选修学分计算。

## (二) 研究生阶段 (硕士及博士阶段)

类别		课程代码	课程名称	学时	学分	季节	开课单位	修读要求 备注
学位课程	公共必修课程	408110001	自然辩证法概论	18	1	春/秋	马克思主义学院	必修 ≥9 学分
		408130001	新时代中国特色社会主义思想理论与实践	36	2	春/秋	马克思主义学院	
		411130003	第一外国语 (英语)	32	2	秋/春	外国语学院	
		408210001	中国马克思主义与当代	36	2	秋	马克思主义学院	
		411210001	英语论文写作	32	2	秋	外国语学院	
	一级学科基础课	011110001	矩阵论	48	3	秋	数学与统计学院	必修 ≥9 学分 (矩阵论、 随机过程 必须 二选一)
		011110005	随机过程	48	3	秋	数学与统计学院	
		210131002	高级计算机系统结构	32	2	秋	计算机学院	
		210131027	高级分布式系统	32	2	秋	计算机学院	
		210131003	现代计算机网络	32	2	秋	计算机学院	
		210131006	多媒体基础	32	2	秋	计算机学院	
		210131035	高级算法设计与分析	32	2	秋	计算机学院	
		210111020	机器学习	32	2	秋	计算机学院	
		210131024	IT 中国 (信息前沿导论)	16	1	秋	计算机学院	
		210131021	学术规范与论文写作	16	1	春	计算机学院	
	二级学科基础课	210131007	信息存储理论与技术	32	2	秋	计算机学院	限定选修 ≥4 学分
		210131015	并行程序设计	32	2	秋	计算机学院	
		210131029	数据科学与工程导论	32	2	秋	计算机学院	
		210131030	数据挖掘	32	2	秋	计算机学院	
		210131033	数字图像处理	32	2	秋	计算机学院	
		210131026	可计算与计算复杂性理论	32	2	秋	计算机学院	
	硕士专业选修课程	210131040	强化学习	32	2	秋	计算机学院	任选 ≥4 学分
		210111001	计算机系统分析与性能评价	32	2	秋	计算机学院	
		210111002	计算机系统设计	32	2	秋	计算机学院	
		210131025	分布式存储系统设计与实践	32	2	秋	计算机学院	
		210131020	区块链技术与应用	32	2	春	计算机学院	
		210131028	普适计算与边缘计算	32	2	秋	计算机学院	
		210111016	知识工程与知识图谱	32	2	秋	计算机学院	
		210121005	大数据处理与 MapReduce 编程模型实践	32	2	秋	计算机学院	
		210131031	智能媒体计算	32	2	秋	计算机学院	
		210131032	数字信号处理	32	2	秋	计算机学院	
		210131022	计算机视觉	32	2	秋	计算机学院	
		210131034	医学图像处理实践	32	2	秋	计算机学院	
		210131023	人工智能	32	2	秋	计算机学院	
		210111019	图神经网络导论	32	2	秋	计算机学院	
		210131036	认知计算导论与应用	32	2	春	计算机学院	
		210131037	自然语言处理	32	2	春	计算机学院	
		210131010	面向对象方法学	32	2	秋	计算机学院	
		210131038	软件过程与项目管理	32	2	秋	计算机学院	
		210131039	数据安全性与隐私保护	32	2	秋	计算机学院	
		210111007	信息隐藏	32	2	秋	计算机学院	

续表

课程类别		课程代码	课程名称	学时	学分	季节	开课单位	修读要求 备注
学位课程	博士 专修 课程	210211003	计算机系统结构专题	32	2	春	计算机学院	≥4 学分
		210231002	信息存储系统专题	16	1	春	计算机学院	
		210231011	高级操作系统专题	32	2	春	计算机学院	
		210231001	求解 NP 难度问题的现代方法	32	2	秋	计算机学院	
		210231013	时空数据管理高级论题	32	2	秋	计算机学院	
		210231014	数据挖掘高级论题	32	2	秋	计算机学院	
		210231009	人工智能高级论题	32	2	春	计算机学院	
		210231016	机器学习高级论题	32	2	春	计算机学院	
		210231015	高级图像处理专题	16	1	秋	计算机学院	
		210231012	云计算高级专题	32	2	春	计算机学院	
		210231010	大数据前沿讲座	16	1	春	计算机学院	
	跨一级 学科 课程	跨一级学科研究生课程			2	春/秋	除计算机学院外的 其他院系	任选 ≥4 学分
非学位课	补修 课程	如有需要，可在导师指导下补修本科阶段课程、任选课程只计成绩，不计学分						
研究 环节		650239001	开题报告（博）		1		计算机学院	
		650239003	参加国内外学术会议并提交 论文（博）		1			
		650239002	论文中期进展报告（博）		1			
		650239004	发表学术论文（博）		1			
		650219001	博士学位论文（学术型）		15			