

Hangzhou Normal University Undergraduate Program in

Computer Science and Technology

(For International Students)

I. Training Goals

Guided by the needs of the computer and Internet industry and focusing on computer science and technology, the Computer Science Department strives for fostering professionals qualified for jobs related to computer science research, system design and software development, cyberspace security, and other related application fields. Through a comprehensive educational program, the objectives can be achieved as follows:

Goal 1: Good Chinese language skills and fully understanding the Chinese culture, policies, and regulations;

Goal 2: Solid foundation of mathematics and natural science knowledge;

Goal 3: Mastering basic computer theory, basic skills, and technology;

Goal 4: Social responsibility and innovative entrepreneurship;

Goal 5: All-round development of morality, intelligence, and physique; Strong professional skills and comprehensive quality;

Goal 6: Be competent for professionals in computer science research, system and software development, Cyberspace Security, and other related application fields.

Undergraduate graduates are capable of engaging in computer system research and development, maintenance, information security, cloud computing and big data, artificial intelligence, etc. in computer science related industries and fields, or pursuing further study for a master's degree in computer science or related disciplines, or engaging in teaching and researching in related disciplines.

II. Graduate Outcomes

After the professional study, graduates should acquire the following knowledge, abilities, and qualities:

1. Engineering Knowledge: Have solid knowledge foundation on natural science,

computer science and technology, and engineering knowledge, and be able to apply this knowledge comprehensively to solve complex engineering problems in the field of computer science and technology.

2. Problem Analysis: Able to apply the basic principles of natural science and computer science to identify, express, and analyze complex engineering problems in the field of computer science and technology by literature research to obtain effective conclusions.

3. Design/Development Solutions: able to comprehensively use theory and technical means to design solutions to complex engineering problems in the field of computer science and technology, and design systems and units (components) that meet the needs of information acquisition, transmission, processing or use, etc. And be able to reflect the sense of innovation in the design process, considering social, health, safety, legal, cultural and environmental factors.

4. Investigation: Able to study complex engineering problems in the field of computer science and technology based on scientific principles and adopting scientific methods, including designing experiments, analyzing and interpreting data, and obtaining reasonable and effective conclusions through information synthesis.

5. Modern tools Usage: be able to select, use and develop appropriate resources, modern engineering tools, and information technology tools for complex engineering problems in the field of computer science and technology, including the prediction and simulation of complex computer engineering problems, and be able to understand the limitation.

6. The Engineer and Society: Apply reasoning informed by contextual knowledge of computer science and technology to assess societal, health, safety, legal and cultural issues and the consequent responsibilities relevant to professional engineering practice and solutions to complex computer 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. Professional ethics: Have humanities and social science literacy, a sense of social responsibility, be able to understand and abide by engineering ethics and norms in computer science engineering practice, and perform responsibilities.

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

10. Communication: Communicate effectively on complex computer 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. Have a certain international perspective, communicate and exchange in the cross-cultural context.

11. Project Management: Have project management capabilities, understand the principles of computer engineering practice project management and economic decision-making methods, and be able to apply in a multidisciplinary environment.

12. Lifelong Learning: have the consciousness of independent learning and lifelong learning, and have the ability to continuously learn and adapt to development.

III Relation matrix related to training goals, graduate outcomes, and curriculum system

1. Relation matrix between training objectives and graduate outcomes

| Graduate Outcomes | Goal 1 | Goal 2 | Goal 3 | Goal 4 | Goal 5 | Goal 6 |
|-------------------|--------|--------|--------|--------|--------|--------|
| 1 | | • | • | | | • |
| 2 | | • | • | | | • |
| 3 | | • | • | | | • |
| 4 | | | • | | | • |
| 5 | | | • | | | • |
| 6 | | | • | | | • |
| 7 | • | | • | • | | • |
| 8 | • | | | • | | • |
| 9 | | | | • | • | |
| 10 | • | | | • | • | |
| 11 | | | • | • | • | • |
| 12 | • | | | • | • | |

| Course Type | Course Name | Graduate Outcomes | | | | | | | | | | | |
|--------------------------------|--|-------------------|---|---|---|---|---|---|---|---|----|----|----|
| | | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 |
| Core Major Courses | Discrete Mathematics | H | | M | M | | | | | | | | |
| | ▲Database Principles | H | | H | M | | M | | | | | | |
| | Object-Oriented Programming | | | | H | | | | H | H | | M | |
| | Digital Logic | | M | M | H | | | | | | | | |
| | ▲Operating System | H | H | H | | | H | | | | | | |
| | ▲Data Structure | | M | | H | | | | | | | | |
| | ▲Data Structure Projects | | M | | H | | | | | | | | |
| | ▲Algorithm Analysis and Design | | H | | H | | | | | | | | |
| | ▲Computer Principles | H | | H | | | | | | | | | |
| | ▲Computer Networks | H | H | | M | | | | M | | | | |
| | Web Programming | M | | M | | H | M | | | M | M | | |
| | Introduction to Internet of Things | | | M | M | | | | | | | | H |
| | Mobile Application Development | M | | | | H | | | M | M | | M | |
| | Software Engineering | | | M | | | H | | | H | H | H | |
| | Applied Cryptography | M | | | H | | | H | | | | | |
| | Introduction to Cloud Computing | | | M | | | H | M | | | | | M |
| | Computer Graphics | M | H | | | H | | | | | | | |
| | Network and Information Security | M | | H | | | | H | | | | | |
| | Human-Computer Interaction and Virtual Reality | | | M | M | H | | | | | | | |
| | C++ Programming | | | H | | | | | | | | | |
| Artificial Intelligence | M | | M | | H | | H | | | | | H | |
| Practice Programs and Graduate | Information Technology Practice | | | | | | | | H | | H | | |
| | Professional Practice | | | M | | | | | H | | H | | H |
| | Internship I | | | M | M | | H | | H | H | | | |

| Course Type | Course Name | Graduate Outcomes | | | | | | | | | | | |
|-----------------|---------------|-------------------|---|---|---|---|---|---|---|---|----|----|----|
| | | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 |
| Design (Thesis) | ▲ Internship2 | | | M | M | H | H | H | | | | H | |
| | ▲ Thesis 1 | | | H | M | M | | | | H | H | H | |
| | ▲ Thesis 1 | | | M | H | M | | | | H | H | | H |

IV Disciplinary basic courses and professional core courses

1. Disciplinary basic courses

Advanced Mathematics, Linear Algebra, Introduction to Computer Science, Programming Fundamentals

2. Professional core courses

Discrete Mathematics, Database Principles, Object-Oriented Programming, Digital Logic, Operating System, Data Structure, Data Structure Projects, Algorithm Analysis and Design, Computer Principles, Computer Networks, Web Programming, Introduction to Internet of Things, Mobile Application Development, Software Engineering, Applied Cryptography, Introduction to Cloud Computing, Computer Graphics, Network and Information Security, Human-Computer Interaction and Virtual Reality, C++ Programming, Artificial Intelligence

V Criteria for professional admission

1. Curriculum requirements for professional admission and the time for professional classification

Students can obtain the admission to study in Computer Science and Technology when meeting the condition that the courses, which are Introduction to Computer Science, Programming Fundamentals and Linear Algebra, should be learned and achieve 9.5 credits.

Time for professional classification: At the end of the second semester.

2. Curriculum requirements for graduation

Bachelor degree can be granted to students whose credits are no less than 55, which include 14 credits for basic courses of the discipline, 21 credits for core major courses, and 20 credits for practice programs.

VI Length of Schooling, Degree and Credits Requirements for Graduation

1. Length of Schooling: The length of schooling is four years and no longer than six years.

2. Degree Conferred: A Bachelor Degree of Engineering in Computer Science.
3. The Graduation Credits: 160。
4. Pass HSK (Level 4) with a minimum score of 180。

VII Minimum credits for graduation

The minimum graduation credits for computer science and technology are 160, in which 40 credits are from general courses, 14 credits are from the basic courses of the discipline, 62 credits are from core major courses, and 44 credits are from practice programs.

Under the premise that the students have completed the credits of the general education courses stipulated by the school, they have completed all the credits of the approved courses of the major, and the degree courses have met the corresponding requirements. As long as the total scores meet the graduation and degree requirements of the corresponding major, they can be granted graduation and corresponding degrees.

VIII The curriculum and distribution of credits

1. Curriculum Structure

The curriculum consists of general education courses and major courses. The general education courses are related to starting education, Chinese language, Chinese overview, Chinese road and pattern, and practical programs. And the major courses consist of basic courses and core major courses.

Table 1: List of the Credit Allocation

| Category | Curriculum type | Number of Courses | Credits | | Practical Credits | |
|---------------------------------|--------------------------------|-------------------|---------|-------------------|-------------------|---|
| | | | Credits | Credit Ratios (%) | Practical Credits | Credit Ratios of Practical Programs (%) |
| General Education | Starting Education | 1 | 1 | 0.6 | | |
| | Chinese Language Development | 10 | 30 | 18.8 | | |
| | Chinese Overview | 2 | 4 | 2.5 | | |
| | Chinese Road and Chinese Model | 1 | 3 | 1.9 | | |
| | Social Practice | 1 | 2 | 1.3 | | |
| Basic Courses of the Discipline | Required Courses | 4 | 14 | 8.8 | 2 | 1.3 |
| Core Major Courses | Required Courses | 21 | 62 | 38.8 | 18 | 11.2 |

| Category | Curriculum type | Number of Courses | Credits | | Practical Credits | |
|--------------------|------------------|-------------------|---------|-------------------|-------------------|---|
| | | | Credits | Credit Ratios (%) | Practical Credits | Credit Ratios of Practical Programs (%) |
| Practical Programs | Required Courses | 6 | 44 | 27.5 | 44 | 27.5 |
| Total | | 46 | 160 | 100 | 64 | 40 |

3. The curriculum and course arrangement

In the tables below, CPA refers to Courses for Professional Admission, CG refers to Courses for Graduation, and SC refers to Supplementary Courses.

Table 2: Curriculum Setting and Credit Allocation for General Education

(1) General Educational Courses, 40 credits

| Course ID | Course Name | Credits | In-class Hours | | Semester | Notes |
|-----------|---|---------|----------------|-------------------------------|----------|-------|
| | | | Lecture Hours | Experimental (Training) Hours | | |
| 221163001 | ★始业教育类 Starting Education | 1 | 16 | | First | |
| 801035011 | *初级汉语综合I Elementary Chinese I | 4 | 64 | | First | |
| 801036011 | *初级汉语听说I Elementary Chinese Listening and Speaking I | 4 | 64 | | First | |
| 801037012 | *初级汉语综合II Elementary Chinese II | 4 | 64 | | Second | |
| 801038012 | *初级汉语听说II Elementary Chinese Listening and Speaking II | 4 | 64 | | Second | |
| 801039013 | *中级汉语综合I Intermediate Chinese I | 4 | 64 | | Third | |
| 801040013 | *中级汉语听说I Intermediate Chinese Listening and Speaking I | 4 | 64 | | Third | |
| 801041014 | *中级汉语综合II Intermediate Chinese II | 2 | 32 | | Fourth | |

| Course ID | Course Name | Credits | In-class Hours | | Semester | Notes |
|-----------|---|---------|----------------|-------------------------------|----------|-------|
| | | | Lecture Hours | Experimental (Training) Hours | | |
| 801042014 | *中级汉语听说II Intermediate Chinese Listening and Speaking II | 2 | 32 | | Fourth | |
| 801050111 | ◆HSK 强化辅导 Enhanced Guidance on HSK | 2 | 32 | | Fifth | |
| 221116001 | ★*中国概况I Chinese Overview I | 2 | 32 | | First | |
| 221116002 | ★*中国概况II Chinese Overview II | 2 | 32 | | Second | |
| 221161001 | *中国道路与中国模式类 Chinese Road and Chinese Model | 3 | 48 | | Third | |
| 221162001 | ◆社会实践类 Social Practice Program | 2 | 32 | | Seventh | |

Table 3: Curriculum Setting and Credit Allocation for Major Courses

(1) Basic Courses of the discipline, 14 credits

| Course ID | Course Name | Credits | In-class Hours | | Semester | Notes | | |
|-----------|--|---------|----------------|-------------------------------|----------|-------------|--------|--------|
| | | | Lecture Hours | Experimental (Training) Hours | | C P A | C G | S C |
| 224111011 | *高等数学 Advanced Mathematics | 4.5 | 72 | 0 | First | | √ | |
| 224112011 | *线性代数 Linear Algebra | 2.5 | 40 | 0 | First | √ | √ | |
| 224113011 | *计算机科学导论 Introduction to Computer Science | 2 | 32 | 0 | First | √ | √ | |
| 224114111 | *程序设计基础 Programming Fundamentals | 5 | 48 | 32 | First | √ | √ | |

(2) Core Major Courses, 62 credits

| Course ID | Course Name | Credits | In-class Hours | | Semester | Notes | | |
|-----------|---|---------|----------------|-------------------------------|----------|-------------|--------|--------|
| | | | Lecture Hours | Experimental (Training) Hours | | C P A | C G | S C |
| 224121011 | *离散数学 Discrete Mathematics | 3 | 48 | 0 | Second | | | |
| 224122111 | *▲数据库原理 Database Principles | 4 | 48 | 16 | Second | | √ | |
| 224123111 | *面向对象程序设计 Object-Oriented Programming | 4 | 32 | 32 | Second | | | |
| 224124111 | *数字逻辑 Digital Logic | 4 | 64 | 0 | Second | | | |
| 224211121 | *▲操作系统 Operating System | 3 | 32 | 16 | Third | | √ | |
| 224212021 | *▲数据结构 Data Structure | 3 | 48 | 0 | Third | | √ | |
| 224213221 | *▲数据结构实验 Data Structure Projects | 2 | 0 | 32 | Third | | √ | |
| 224214121 | *▲算法分析与设计 Algorithm Analysis and Design | 3 | 48 | 0 | Third | | √ | |
| 224215021 | *▲计算机原理 Computer Principles | 3 | 48 | 0 | Third | | √ | |
| 224221121 | *▲计算机网络 Computer Networks | 3 | 32 | 16 | Fourth | | √ | |
| 224222121 | Web 程序设计 Web Programming | 4 | 32 | 32 | Fourth | | | |
| 224223021 | 物联网概论 Introduction to Internet of Things | 1.5 | 24 | 0 | Fourth | | | |
| 224224121 | 移动应用开发 Mobile Application Development | 4 | 32 | 32 | Fourth | | | |
| 224311131 | 软件工程 Software Engineering | 3 | 24 | 24 | Fifth | | | |

| Course ID | Course Name | Credits | In-class Hours | | Semester | Notes | | |
|-----------|---|---------|----------------|-------------------------------|----------|-------------|--------|--------|
| | | | Lecture Hours | Experimental (Training) Hours | | C P A | C G | S C |
| 224312131 | 应用密码学 Applied Cryptography | 2.5 | 32 | 8 | Fifth | | | |
| 224314031 | 云计算概论 Introduction to Cloud Computing | 1.5 | 18 | 6 | Fifth | | | |
| 224315131 | 计算机图形学 Computer Graphics | 3 | 32 | 16 | Fifth | | | |
| 224321031 | 网络与信息安全 Network and Information Security | 3 | 24 | 24 | Sixth | | | |
| 224322131 | 人机交互与虚拟现实 Human-Computer Interaction and Virtual Reality | 3 | 32 | 16 | Sixth | | | |
| 224324131 | C++编程 C++ Programming | 2.5 | 20 | 20 | Sixth | | | |
| 224325131 | 人工智能 Artificial Intelligence | 2 | 32 | 0 | Sixth | | | |

Table 4. Curriculum Setting and Credit Allocation for Practical Programs

1. Practice Programs, 44 credits

| Course ID | Course Name | Credits | In-class Hours | | Semester | Notes | | |
|-----------|---|---------|----------------|-------------------------------|----------|-------------|--------|----|
| | | | Lecture Hours | Experimental (Training) Hours | | C P A | C G | SC |
| 224125311 | 信息技术实践 Information Technology Practice | 2 | | 32 | Second | | | |
| 224225321 | 专业实践 Professional Practice | 2 | | 32 | Fourth | | | |
| 224411341 | 专业实习 1 Internship1 | 20 | | 320 | Seventh | | | |

| Course ID | Course Name | Credits | In-class Hours | | Semester | Notes | | |
|-----------|------------------------|---------|----------------|-------------------------------|----------|-------------|--------|----|
| | | | Lecture Hours | Experimental (Training) Hours | | C P A | C G | SC |
| 224411342 | ▲专业实习 2 Internship1 | 10 | | 160 | Eighth | | | |
| 224412341 | ▲论文 1 Thesis 1 | 5 | | 80 | Seventh | | | |
| 224412342 | ▲论文 2 Thesis 1 | 5 | | 80 | Eighth | | | |

Note: 1. Annotation symbols: Degree Program▲, Bilingual Courses★, Independent Experimental (Training) program◆, Examination Class *.

2. In the table, the supplementary courses and the courses for admission and graduation are marked with the character √.

计算机科学与技术专业本科培养方案

（国际学生）

一、培养目标

以计算机与互联网产业需求为导向，以计算机科学与技术为主线，着力培养具备较好的汉语语言能力，了解中国的国情、文化和政策法规【目标 1】，具有扎实的数学与自然科学知识基础【目标 2】，掌握计算机基本理论、基本技能和技术【目标 3】，具有社会责任感和创新创业精神【目标 4】，德智体全面发展，具有较强的专业技能和综合素质【目标 5】，能胜任计算机科学研究、系统与软件开发、网络空间安全等相关应用领域工作的专业人才【目标 6】。

本科毕业生适合到计算机科学相关行业和领域从事计算机系统的研发、维护，信息安全，云计算与大数据、人工智能等方面工作，或攻读计算机及相关学科的研究生，或从事相关学科的教学与科研工作。

二、毕业要求

通过专业学习，毕业生应获得以下几方面的知识、能力和素质：

1. 工程知识：具有扎实的自然科学知识、计算机科学与技术专业知识和工程知识，并能够综合应用这些知识解决计算机科学与技术领域复杂工程问题。

2. 问题分析：能够应用自然科学和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：能够综合运用理论和技术手段，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，设计满足信息获取、传输、处理或使用等需求的系统、单元（部件），并能够在设计环节中体现创新意识，考虑社会、健康、安全、法律、文化以及环境等因素。

4. 研究：能够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，包括设计实验、分析与解释数据、并通过信息综合得到合理有效的结论。

5. 使用现代工具：能够针对计算机科学与技术领域的复杂工程问题，选择、使用与开发合适的资源、现代工程工具和信息技术工具，包括对复杂计算机工程问题的预测与模拟，并能够理解其局限性。

6. 工程与社会：能够基于计算机科学与技术专业相关背景知识进行合理分析，评估专业工程实践和复杂计算机工程问题解决方案对社会、健康、安全、法律以及文化的影响，并理解应承担的责任。

7. 环境和可持续发展：能够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、社会责任感，能够在计算机科学与工程实践中理解并遵守工程职业道德和规范，履行责任。

9. 个人和团队：能够在多学科背景下的团队中承担个体、团队成员以及负责人的角色。

10. 沟通：能够就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。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：具有项目管理能力，能理解计算机工程实践项目管理的原理与经济决策方法，并能够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，有不断学习和适应发展的能力。

三、“培养目标-毕业要求”和“毕业要求-课程体系”对应矩阵

(一)“培养目标-毕业要求”

| | 目标 1 | 目标 2 | 目标 3 | 目标 4 | 目标 5 | 目标 6 |
|---------|------|------|------|------|------|------|
| 毕业要求 1 | | ● | | | | |
| 毕业要求 2 | | ● | ● | ● | ● | |
| 毕业要求 3 | | ● | ● | ● | ● | |
| 毕业要求 4 | | ● | ● | ● | ● | |
| 毕业要求 5 | | ● | ● | ● | ● | |
| 毕业要求 6 | ● | ● | | ● | ● | ● |
| 毕业要求 7 | | ● | ● | | ● | ● |
| 毕业要求 8 | | | ● | | ● | |
| 毕业要求 9 | | | | ● | | ● |
| 毕业要求 10 | ● | | | | ● | |
| 毕业要求 11 | | | | ● | ● | ● |
| 毕业要求 12 | ● | | | ● | ● | ● |

注：在相应表栏中标注“●”。

(二) “毕业要求-课程体系”对应矩阵

(以关联度标识, 课程与某个毕业要求的关联度根据该课程对相应毕业要求的支撑强度来定性估计, H: 表示关联度高; M: 表示关联度中; L: 表示关联度低。)

| 课程性质 | 课程名称 | 毕业要求 | | | | | | | | | | | |
|-------------|------------|------|---|---|---|---|---|---|---|---|----|----|----|
| | | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 |
| 思想教育 必修课 | 始业教育类 | | | | | | L | | M | | M | | M |
| | 初级汉语综合I | | | | | | L | | | | H | | M |
| | 初级汉语听说I | | | | | | L | | | | H | | M |
| | 初级汉语综合II | | | | | | L | | | | H | | M |
| | 初级汉语听说II | | | | | | L | | | | H | | M |
| | 中级汉语综合I | | | | | | L | | | | H | | M |
| | 中级汉语听说I | | | | | | L | | | | H | | M |
| | 中级汉语综合II | | | | | | L | | | | H | | M |
| | 中级汉语听说II | | | | | | L | | | | H | | M |
| | HSK 强化辅导 | | | | | | L | | | | H | | M |
| | 中国概况I | | | | | | M | L | | | | | |
| | 中国概况II | | | | | | M | L | | | | | |
| | 中国道路与中国模式类 | | | | | | M | L | | | | | |
| | 社会实践类 | | | | | | M | H | M | | M | | |
| 学科基础 平台课 | 高等数学 | | H | | M | M | | | | | | | |
| | 线性代数 | | H | | M | M | | | | | | | |
| | 计算机科学导论 | M | | | M | | M | | M | | | | M |
| | 程序设计基础 | | | H | M | | | | | | | M | |
| 专业核心 课 | 离散数学 | H | | M | M | | | | | | | | |
| | ▲数据库原理 | H | | H | M | | M | | | | | | |
| | 面向对象程序设计 | | | | H | | | | H | H | | M | |
| | 数字逻辑 | | M | M | H | | | | | | | | |
| | ▲操作系统 | H | H | H | | | H | | | | | | |
| | ▲数据结构 | | M | | H | | | | | | | | |
| | ▲数据结构实验 | | M | | H | | | | | | | | |
| | ▲算法分析与设计 | | H | | H | | | | | | | | |
| | ▲计算机原理 | H | | H | | | | | | | | | |
| | ▲计算机网络 | H | H | | M | | | | M | | | | |

| 课程性质 | 课程名称 | 毕业要求 | | | | | | | | | | | |
|---------|------------------|--------|---|---|---|---|---|---|---|---|----|----|----|
| | | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 |
| | Web 程序设计 | M | | M | | H | M | | | M | M | | |
| | 物联网概论 | | | M | M | | | | | | | | H |
| | 移动应用开发 | M | | | | H | | | M | M | | M | |
| | 软件工程 | | | M | | | H | | | H | H | H | |
| | 应用密码学 | M | | | H | | | H | | | | | |
| | 云计算概论 | | | M | | | H | M | | | | | M |
| | 计算机图形学 | M | H | | | H | | | | | | | |
| | 网络与信息安全 | M | | H | | | | H | | | | | |
| | 人机交互与虚拟现实 | | | M | M | H | | | | | | | |
| | C++编程 | | | H | | | | | | | | | |
| | 人工智能 | M | | M | | H | | H | | | | | H |
| | 实践环节、毕业论文(设计)和其他 | 信息技术实践 | | | | | | | | H | | H | |
| 专业实践 | | | | M | | | | | H | | H | | H |
| 专业实习 1 | | | | M | M | | H | | H | H | | | |
| ▲专业实习 2 | | | | M | M | H | H | H | | | | H | |
| ▲论文 1 | | | | H | M | M | | | | | H | H | H |
| ▲论文 2 | | | | M | H | M | | | | | H | H | |

四、学科基础平台课程和专业核心课程

(一) 学科基础平台课程

高等数学、线性代数、计算机科学导论、程序设计基础

(二) 专业核心课程

离散数学、数据库原理、面向对象程序设计、数字逻辑、操作系统、数据结构、数据结构实验、算法分析与设计、计算机原理、计算机网络、Web 程序设计、物联网概论、移动应用开发、软件工程、应用密码学、云计算概论、计算机图形学、网络与信息安全、人机交互与虚拟现实、C++编程、人工智能

五、专业准入和准出标准

(一) 准入课程要求及分流时间

学生修满下列课程：计算机科学导论（2 学分）、程序设计基础（5 学分）、线性代数（2.5 学分）。获得 9.5 学分，准许进入计算机科学与技术专业进行学习。

分流时间：第二学期期末。

(二) 准出课程要求

学生获得学士学位的最低课程要求是 55 学分，包含所有专业类基础平台课程 14 学分，

专业核心课程 21 学分，实践环节 20 学分。

六、学制和学位

1. 学制：学制为 4 年，最长不超过 6 年；
2. 授予学位：授予计算机工学学位；
3. 本专业毕业学分要求：160。
4. 通过中国汉语水平考试（HSK）新四级考试（180 分）。

七、最低毕业学分及课内学时

本专业最低毕业学分为 160 学分。其中思想教育课程 40 学分，学科基础平台课程 14 学分，专业核心课程 62 学分，实践环节 44 学分。

学生在修完学校规定的通识教育课程学分的前提下，修完专业所有准出课程学分，学位课程达到相应要求的前提下，总学分数只要达到相应专业的毕业及学位要求，即可准予毕业，并授予相应学位。

八、课程结构、课程设置及学分分配

（一）课程结构

课程结构由思想教育课程和专业课程组成。思想教育课程包括始业教育类、汉语能力类、中国概况类、中国道路与中国模式类和社会实践类课程；专业课程包括学科基础平台课程和专业核心课程。

表 1 课程结构比例表

| 课程类型 | 修习类型 | 课程门数 | 学分 | | 实践学分 | |
|----------|------------|------|-----|----------|-------|------------|
| | | | 学分数 | 学分比例 (%) | 实践学分数 | 实践学分比例 (%) |
| 思想教育课程 | 始业教育类 | 1 | 1 | 0.6 | | |
| | 汉语能力培养 | 10 | 30 | 18.8 | | |
| | 中国概况类 | 2 | 4 | 2.5 | | |
| | 中国道路与中国模式类 | 1 | 3 | 1.9 | | |
| | 社会实践类 | 1 | 2 | 1.3 | | |
| 学科基础平台课程 | 必修课 | 4 | 14 | 8.8 | 2 | 1.3 |
| 专业核心课程 | 必修课 | 21 | 62 | 38.8 | 18 | 11.2 |
| 实践环节 | 必修课 | 6 | 44 | 27.5 | 44 | 27.5 |
| 合计 | | 46 | 160 | 100 | 64 | 40 |

(二) 课程设置与学分分配

表 2 思想教育课程设置与学分分配

1. 思想教育必修课程 40 学分

| 课程 代码 | 课 程 名 称 | 课程 学分 | 课内学时 | | 建议修读 年级学期 | 备注 课外学时 |
|-----------|---|----------|------|--------|--------------|------------|
| | | | 理论课 | 实验(训)课 | | |
| 221163001 | ★始业教育类 Starting Education | 1 | 16 | | 一秋 | |
| 801035011 | *初级汉语综合I Elementary Chinese I | 4 | 64 | | 一秋 | |
| 801036011 | *初级汉语听说I Elementary Chinese Listening and Speaking I | 4 | 64 | | 一秋 | |
| 801037012 | *初级汉语综合II Elementary Chinese II | 4 | 64 | | 一春 | |
| 801038012 | *初级汉语听说II Elementary Chinese Listening and Speaking II | 4 | 64 | | 一春 | |
| 801039013 | *中级汉语综合I Intermediate Chinese I | 4 | 64 | | 二秋 | |
| 801040013 | *中级汉语听说I Intermediate Chinese Listening and Speaking I | 4 | 64 | | 二秋 | |
| 801041014 | *中级汉语综合II Intermediate Chinese II | 2 | 32 | | 二春 | |
| 801042014 | *中级汉语听说II Intermediate Chinese Listening and Speaking II | 2 | 32 | | 二春 | |
| 801050111 | ◆HSK 强化辅导 Enhanced Guidance on HSK | 2 | 32 | | 三秋 | |
| 221116001 | ★*中国概况I Chinese Overview I | 2 | 32 | | 一秋 | |
| 221116002 | ★*中国概况II Chinese Overview II | 2 | 32 | | 一春 | |
| 221161001 | *中国道路与中国模式类 Chinese Road and Chinese Model | 3 | 48 | | 二秋 | |
| 221162001 | ◆社会实践类 Social Practice Program | 2 | 32 | | 四秋 | |

表 3 专业课程设置与学分分配

1. 学科基础平台课程 14 学分

| 课程代码 | 课程名称 | 课程学分 | 课内学时 | | 建议修读学期 | 备注 | | |
|-----------|--|------|------|--------|--------|------|------|------|
| | | | 理论课 | 实验(训)课 | | 准入课程 | 准出课程 | 副修课程 |
| 224111011 | *高等数学 Advanced Mathematics | 4.5 | 72 | 0 | 一秋 | | √ | |
| 224112011 | *线性代数 Linear Algebra | 2.5 | 40 | 0 | 一秋 | √ | √ | |
| 224113011 | *计算机科学导论 Introduction to Computer Science | 2 | 32 | 0 | 一秋 | √ | √ | |
| 224114111 | *程序设计基础 Programming Fundamentals | 5 | 48 | 32 | 一秋 | √ | √ | |

2. 专业核心课程 62 学分

| 课程代码 | 课程名称 | 课程学分 | 课内学时 | | 建议修读学期 | 备注 | | |
|-----------|--|------|------|--------|--------|------|------|------|
| | | | 理论课 | 实验(训)课 | | 准入课程 | 准出课程 | 副修课程 |
| 224121011 | *离散数学 Discrete Mathematics | 3 | 48 | 0 | 一春 | | | |
| 224122111 | ▲*数据库原理 Database Principles | 4 | 48 | 16 | 一春 | | √ | |
| 224123111 | *面向对象程序设计 Object-Oriented Programming | 4 | 32 | 32 | 一春 | | | |
| 224124111 | *数字逻辑 Digital Logic | 4 | 64 | 0 | 一春 | | | |
| 224211121 | ▲*操作系统 Operating System | 3 | 32 | 16 | 二秋 | | √ | |
| 224212021 | ▲*数据结构 Data Structure | 3 | 48 | 0 | 二秋 | | √ | |

| 课程 代码 | 课 程 名 称 | 课程 学分 | 课内学时 | | 建议 修读 学期 | 备注 | | |
|-----------|--|----------|---------|------------|----------------|------------------|------------------|------------------|
| | | | 理论 课 | 实验 (训)课 | | 准 入 课 程 | 准 出 课 程 | 副 修 课 程 |
| 224213221 | ▲*数据结构实验 Data Structure Projects | 2 | 0 | 32 | 二秋 | | √ | |
| 224214121 | ▲*算法分析与设计 Algorithm Analysis and Design | 3 | 48 | 0 | 二秋 | | √ | |
| 224215021 | ▲*计算机原理 Computer Principles | 3 | 48 | 0 | 二秋 | | √ | |
| 224221121 | ▲*计算机网络 Computer Networks | 3 | 32 | 16 | 二春 | | √ | |
| 224222121 | Web 程序设计 Web Programming | 4 | 32 | 32 | 二春 | | | |
| 224223021 | 物联网概论 Introduction to Internet of Things | 1.5 | 24 | 0 | 二春 | | | |
| 224224121 | 移动应用开发 Mobile Application Development | 4 | 32 | 32 | 二春 | | | |
| 224311131 | 软件工程 Software Engineering | 3 | 24 | 24 | 三秋 | | | |
| 224312131 | 应用密码学 Applied Cryptography | 2.5 | 32 | 8 | 三秋 | | | |
| 224314031 | 云计算概论 Introduction to Cloud Computing | 1.5 | 18 | 6 | 三秋 | | | |
| 224315131 | 计算机图形学 Computer Graphics | 3 | 32 | 16 | 三秋 | | | |
| 224321031 | 网络与信息安全 Network and Information Security | 3 | 24 | 24 | 三春 | | | |
| 224322131 | 人机交互与虚拟现实 Human-Computer Interaction and Virtual Reality | 3 | 32 | 16 | 三春 | | | |
| 224324131 | C++编程 C++ Programming | 2.5 | 20 | 20 | 三春 | | | |
| 224325131 | 人工智能 Artificial Intelligence | 2 | 32 | 0 | 三春 | | | |

表 4. 实践环节设置与学分分配

2. 实践环节 44 学分

| 课程 代码 | 课 程 名 称 | 课程 学分 | 课内学时 | | 建议 修读 年级 学期 | 备注 | | |
|-----------|---|----------|---------|------------------------|----------------------|------------------|------------------|------------------|
| | | | 理论 课 | 实 验 (践) 课 | | 准 入 课 程 | 准 出 课 程 | 副 修 课 程 |
| 224125311 | 信息技术实践 Information Technology Practice | 2 | | 32 | 一春 | | | |
| 224225321 | 专业实践 Professional Practice | 2 | | 32 | 二春 | | | |
| 224411341 | 专业实习 1 Internship1 | 20 | | 320 | 四秋 | | | |
| 224411342 | 专业实习 2▲ Internship1 | 10 | | 160 | 四春 | | √ | |
| 224412341 | 论文 1▲ Thesis 1 | 5 | | 80 | 四秋 | | √ | |
| 224412342 | 论文 2▲ Thesis 1 | 5 | | 80 | 四春 | | √ | |

注：1. 课程标注说明：学位课程▲；双语课程★，单独开设实验（训）课程◆；考试课程*。

2. 准入准出课程和副修课程在表格中打√。