

# 信息安全专业人才培养方案

## Undergraduate Program for Information Security Major

学科门类: 工学	国标代码: 08	
Discipline Type: Engineering	Code: 08	
专业类: 计算机类	国标代码: 0809	
Type: Computer	Code: 0809	
专业名称: 信息安全	国标代码: 080904K	校内代码: 29
Title of the Major: Information Security	Code: 080904K	

### 一、学制与学位 Length of Schooling and Degree

学制: 四年      Duration: Four years

授予学位: 工学学士      Degree: Bachelor of Engineering

### 二、培养目标 Educational Objectives

培养服务于社会主义建设事业, 德智体美劳全面发展, 理论基础扎实、创新意识强、具有一定的国际视野和优良的发展潜力, 适应经济社会发展及未来变化, 能源电力特色鲜明的多元化卓越人才。掌握自然科学和人文社科基础知识、计算机科学基础理论、信息安全领域的基本理论、基本技术和应用知识; 具备信息安全领域、信息科学、信息技术及其他相关领域从事科学研究、技术开发和工程应用服务工作能力; 能够从事计算机、通信、电子信息、网络安全、航空航天、电子商务、电子政务、国防科技等领域的信息安全研究、应用、开发和管理等方面的工作。

This major is targeted at cultivating diversified and outstanding talents who serve the cause of socialist construction with all-round development of moral, intellectual, physical, aesthetic and labor, solid theoretical foundation, strong sense of innovation, certain international vision and excellent development potential, adapt to economic and social development and future changes, and have distinctive characteristics of energy and electricity. It enables students to master basic knowledge of natural science, humanities and social science, basic computer science theories, and basic theory, basic technology and working knowledge in the field of information security. Graduates should have a good ability to engage in scientific research, technological development and engineering application services in the field of information security, information science, information technology and other related fields. They should also have the ability to engage in computer, communication, electronic information, network security, aerospace, e-commerce, e-government, national defense science and technology and other fields of information security research, application, development and management.

学生毕业 5 年左右能够达到的职业和专业成就:

(1) 具备良好的理工基础与人文素养, 具有健全的人格和正确的价值观, 能够正确认识工程实践对环境、社会可持续发展的影响; 具备较高的人文社会科学素养、社会责任感和工程职业道德, 具备较丰富的工程经验, 深入了解与信息安全领域相关的职业和行业的信息化需求, 能够提出专业的解决方案;

(2) 具有灵活运用数学、自然科学以及经济、管理知识解决信息安全领域的复杂工程技术问题的能力，能够成为相关项目的管理和技术核心骨干；

(3) 具有较为突出的创新能力，能够深入理解和准确评价复杂工程问题的工程实践对环境、社会可持续发展的影响，能够在综合考虑健康、安全、法律以及文化等因素下进行信息安全系统的设计与开发；

(4) 具备工作团队管理及项目协调能力，能够组织制定工作计划并有效实施；能够在跨职能、多学科的工程实践团队中工作和交流；

(5) 具备终身学习的能力，能够应对科技发展挑战，掌握新兴技术，具备可持续发展理念和国际化视野，能够顺利进行跨文化的交流与合作。

Graduates are expected to have the following professional achievements after 5 years of work practice:

(1) They will have high quality of humanities and social science, social responsibility, and engineering professional ethics. They will possess rich engineering experience, in-depth understanding of the occupations and requirements of industries related to information security, and be able to propose professional technical solutions;

(2) They will have the ability to flexibly apply knowledge of mathematics, natural sciences, economics, and management to solve complex engineering problems of information security, and be able to become management or technical core members in related projects.

(3) They will have outstanding innovation ability. They will be able to deeply understand and accurately evaluate the impact of engineering practices of complex engineering problems on the environment and sustainable development of society, and be able to design and develop complex information security systems with comprehensive consideration of health, safety, legal, and cultural factors.

(4) They will have the ability to manage work teams and coordinate projects, and be able to make work plans and implement them effectively, the ability to effectively work and communicate with colleagues in cross-functional and interdisciplinary engineering teams.

(5) They will have the ability to learn for life and to meet challenges of technological development, master emerging technologies. They will have the concept of sustainable development, international vision, and be able to smoothly carry out cultural exchange and cross-cultural cooperation.

### 三、专业培养基本要求 Skills Profile

本专业学生主要学习计算机学科基础知识和信息安全专业知识，接受从事信息安全研究与应用的基本训练，毕业时应获得以下几方面的知识和能力：

(1) 工程知识：能够将数学、自然科学、工程基础和专业知用于解决信息安全相关领域的复杂工程问题。具备扎实的知识体系，掌握从事信息安全领域工作所需的相关数学、自然科学、工程基础和专业知，熟悉信息安全专业的发展现状和趋势。

(2) 分析问题能力：具备对复杂信息安全工程问题进行识别、分析、归类和表达的能力，能够运用文献检索和现代信息技术对复杂工程问题进行综合分析、抽象表示和数学建模。掌握信息安全专业基础理论知识和核心知识，并对本专业新知识、新技术有较敏锐的洞察力。

(3) 设计/开发解决方案能力：具备按需求进行信息安全系统设计的能力、信息安全基础部件的研究与构造能力、信息安全各环节综合分析设计能力、信息安全系统评估能力和信息安全系统的运行与维护能力。掌握扎实的信息安全数学、计算机密码学、网络安全等基础

知识，具备数据备份与灾难恢复、计算机病毒原理与防范、安全认证、安全扫描、计算机取证等专业技能。

(4) 研究能力：能够针对复杂信息安全工程问题运用相关的理论和方法建立定性或定量模型，进行分析与比较。掌握信息安全学科的基本思维和研究方法，具有追求创新的态度和科学研究意识，并采用科学方法对信息安全学科的相关问题进行研究。掌握原始数据收集与处理方法、参数分析方法、实验结果检验方法与综合分析方法，并通过信息综合得到科学合理的结论。

(5) 使用现代工具的能力：能够针对计算机网络、信息系统等的安全问题，合理利用资源和技术，熟练使用信息安全的应用环境与开发工具等，包括计算机程序开发环境与工具、数据库系统与工具、计算机网络安全及攻防工具等。

(6) 认识工程与社会关系的能力：能够基于工程相关背景知识进行合理分析，评价信息安全专业实践和复杂工程问题解决方案对社会、健康、安全、法律以及文化的影响，并理解应承担的责任。

(7) 环境和可持续发展理念：能够理解和评价针对复杂工程问题的专业工程实践对环境和社会可持续发展的影响。

(8) 职业规范素养：能够理解并遵守工程职业道德和规范，在工程实践中履行责任。具有人文社会科学素养、社会责任感，熟悉国家信息产业政策及国内外有关信息安全和知识产权的法律法规，

(9) 个人和团队能力：能够在多学科背景下的团队中承担个体、成员以及负责人的角色，具有一定的组织管理能力、人际交往能力和团队合作能力。

(10) 沟通能力：能够就信息安全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) 项目管理能力：理解并掌握信息安全工程与管理的基本方法，具备一定的工程项目规划与管理能力，并能在多学科环境中应用。

(12) 终身学习能力：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。

Students of this major mainly learn basic knowledge of computer discipline and professional knowledge of information security, and receive basic training for research and application of information security. Graduates are expected to acquire the following knowledge and abilities:

(1) Engineering knowledge: Ability to apply mathematics, natural sciences, engineering fundamentals and expertise to solve complex engineering problems in the field of information security. They should have a solid knowledge system, master the relevant mathematics, natural science, engineering foundation and professional knowledge in the field of information security, and be familiar with the development status and trend of information security specialty.

(2) Problem Analysis: Ability to identify, analyze, classify and express complex information security engineering problems, and use literature retrieval and modern information technology to conduct comprehensive analysis, abstract representation and mathematical modeling of complex engineering problems. They should master the basic theoretical knowledge and core knowledge of information security, and have a keen insight into the new knowledge and technology of this profession.

(3) Design/Development Solutions: Ability to design the information security system according to the demand, research and construct the basic components of information security, comprehensively analyze and design the various information security, evaluate the information

security system , and operate or maintain the information security system. They should master information security mathematics, computer cryptography, network security and other basic knowledge and have the professional skills of data backup and disaster recovery, computer virus theory and prevention, security certification, security scanning and computer forensics.

(4) Research: Ability to analysis and comparison of complex information security engineering problems using related theories and methods to establish qualitative or quantitative models. They should master the basic thinking and research methods of information security discipline, have the attitude of pursuing innovation and the awareness of scientific research, use scientific methods to study related issues of information security discipline, and master the methods of original data collection and processing, parameter analysis, test of experimental results and comprehensive analysis, and get scientific and reasonable conclusions.

(5) Use modern tools: Ability to rationally use resources, technology and development tools aiming at the security problems of computer network and information system, including computer program development environment and tools, database system and tools, computer network security and offensive and defensive tools.

(6) Engineering and Society: Ability to conduct a rational analysis based on engineering-related background, evaluate the impact of information security practices and solutions of complex engineering problems on society, health, safety, law, and culture, and ability to understand the responsibilities.

(7) Environment and Sustainable Development: Ability to understand and evaluate the impact of engineering practices on complex engineering problems on environmental and social sustainability.

(8) Professional norms: Ability to understand and abide by engineering professional ethics and norms and fulfill responsibilities in engineering practice. They should have humanities and social science literacy and social responsibility, and be familiar with national information industry policies and laws and regulations related to information security and intellectual property at home and abroad.

(9) Individuals and teams: Ability to assume the roles as individuals, team members, and managers in interdisciplinary teams. They should have certain organizational and management skills, interpersonal skills and team cooperation skills.

(10) Communication: Ability to effectively communicate and exchange opinions with industry peers and the public on complex engineering problems related to information security systems, including writing reports and design manuscripts, presenting statements, articulating or responding to instructions. Ability to survey from international perspective and communicate, exchange opinions in a cross-cultural context.

(11) Project management: Ability to understand and master the basic methods of information security engineering and management, plan and manage engineering project, and apply in a multidisciplinary environment.

(12) Lifelong learning: Ability to continuously learn and keep pace with development, self-directed learning and lifelong learning aware.

#### 四、学时与学分 Hours and Credits

类别		学时	学分	比例
必修课 Required courses	公共基础 Public infrastructure	644	33	19.53%
	学科门类基础 Basis of discipline	576	36	21.30%
	专业类基础 Basis of major	368	24	14.20%
	专业核心 Required courses of major	288	18	10.65%
	集中实践 Intensive practice	208 学时+21 周 208class hours + 21 weeks	33	19.53%
必修课小计 Subtotal of Required courses		2084 学时+21 周 2084class hours + 21 weeks	144	85.21%
选修课 Electives		320	20	11.83%
课外实践学分 Practice credits of extra-curricular		5 周 5 weeks	5	2.96%
总计 Total		2404 学时+26 周 2404class hours + 26 weeks	169	100%

#### 说明:

必修实践环节学分包括：集中实践课程 33 学分，课外实践课程 5 学分，学科门类基础、专业基础课程中的实验课程 4 学分，学科门类基础、专业基础、专业必修课程中的实验、上机学时折算 1 学分，共计 43 学分，占总学分 25.44%。

#### Note:

Total of 43 credits for required practice training, accounting for 25.44% of the total credits, including: 33 credits for Intensive practice, 5 credits for practice credits of extra-curricular, 4 credits for basis of discipline and basis of major, 1 credit for experiment and computer practice in basis of discipline, basis of major, and required courses of major.

### 五、专业主干课程 Main Courses

离散数学、数据结构、信息安全数学基础、计算机网络、信息论与编码、计算机密码学、网络安全、计算机组成原理、操作系统、编译技术、数据库原理。

Discrete Mathematics, Data Structure, Fundamentals of Information Security Mathematics, Computer Networks, Information Theory and Coding, Computer Cryptography, Network Security, Principles of Computer Composition, Operating System, Compiling Technology, Database Principles.

### 六、总周数分配 Arrangement of the Total Weeks

总周数分配

学期 Semester	一	二	三	四	五	六	七	八	合计
教学环节 Teaching Program									
理论教学 Theoretic Teaching	17	16	17	17	16	16	17	2	118
复习考试 Review and Exam	2	2	1	1	1	1	3	0	11
集中实践环节 Intensive practice	3	2	2	2	5	3	0	16	33

学期 Semester	一	二	三	四	五	六	七	八	合计
教学环节 Teaching Program									
小计 Subtotal	22	20	20	20	22	20	20	18	162
寒假 Winter Vacation	5		5		5		5		20
暑假 Summer Vacation		6		6		6			18
合计 Total	27	26	25	26	27	26	25	18	200

# 信息安全专业必修课程体系及教学计划

## Table of Teaching Schedule for Required Course

类别	课程编号	课程名称	学分	总学时	课内学时	实验学时	课外学时	开课学期
公共 基础 教育	00700975	中国近现代史纲要 Outline of Modern Chinese History	3	48	32		16	2
	00701353	思想道德与法治 Ideology and Moral Cultivation & Law Basis	3	48	32		16	1
	00700981	毛泽东思想和中国特色社会主义理论体系概论 Mao Zedong Thought and the Theory of Building Socialism with Chinese characteristic	3	48	32		16	3
	00700971	马克思主义基本原理 Marxism Theory	3	48	32		16	3
	00700988	习近平新时代中国特色社会主义思想概论 Outline of Xi Jinping's New China's Socialist Ideology	3	48	32		16	2
	00701661 -00701668	形势与政策 Current Affair and Policy	2	64	64			1-8
	01390011	军事理论 Military Theory	2	36	24		12	1
	J100010	现代电力工程师 Modern Power Engineer	2	32	32			2
	00801410	通用英语 English for General Purpose	4	64	64			1
	00801400	学术英语 English for Academic Purpose	4	64	64			2
	01000011	体育(1) Physical Culture (1)	1	36	30		6	1
	01000021	体育(2) Physical Culture (2)	1	36	30		6	2
	01000031	体育(3) Physical Culture (3)	1	36	30		6	3
	01000041	体育(4) Physical Culture (4)	1	36	30		6	4
	公共基础教育小计 Subtotal of public infrastructure			33	644	528		116
学科 门类 基础 课	00900130	高等数学(1) Advanced Mathematics (1)	5.5	88	88			1
	00900140	高等数学(2) Advanced Mathematics (2)	6	96	96			2
	00900462	线性代数 Linear Algebra	3	48	48			3
	00900111	概率论与数理统计 Probability and Mathematical Statistics	3.5	56	56			4
	00900053	大学物理(1) College Physics (1)	3.5	56	56			2
	00900064	大学物理(2) College Physics (2)	3	48	48			3
	00900440	物理实验(1) Experiments of Physics (1)	2	32		32		2
	00900450	物理实验(2)	2	32		32		3

类别	课程编号	课程名称	学分	总学时	课内学时	实验学时	课外学时	开课学期
		Experiments of Physics (2)						
	04100300	高级语言程序设计 Advanced Language Programming	3.5	56	56			1
	10410221	面向对象程序设计 Object-Oriented Programming	3	48	40	8		3
	04101700	计算机导论 Introduction to Computer Science	1	16	16			1
	学科门类基础课小计 subtotal of basis of discipline		36	576	504	72		
专业 类基 础课	00600460	离散数学 Discrete Mathematics	4	64	64			1
	00600600	数据结构 Data Structure and calculation	3.5	56	56			2
	00600651	数字逻辑与数字系统设计 Digital Logic and Digital Design	3	48	48			4
	10410160	计算机网络 Computer Network	3	48	48			3
	00601120	信息安全数学基础 Mathematical Foundation of Information Security	3	48	48			4
	00600660	算法设计与分析 Algorithm Design and Analysis	3	48	40	8		4
	10410971	汇编语言程序设计 Assembly Language Programming	2	32	32			4
	00500641	信息论与编码 Information Theory and Coding	2.5	40	40			5
	专业类基础课小计 subtotal of basis of major		24	384	376	8		
专 业 核 心 课	10410560	计算机组成原理 Principles of Computer Organization	3.5	56	56			5
	00601141	网络安全 network security	3	48	48			6
	00600321	计算机密码学 computer cryptology	3	48	48			5
	00600100	操作系统 Operating Systems	3.5	56	56			4
	00600621	数据库原理 Principles of Database	2.5	40	40			5
	00600091	编译技术 Compiling Techniques	2.5	40	40			5
	专业核心课程小计 Subtotal of Required courses of major		18	288	288			
必修课程学分小计 Subtotal of Required course			111 学分					



# 信息安全专业集中实践环节设置及教学计划

Table of Teaching Schedule for Main Practical Training

类别 Type	课序号 ID	环节名称 Name	学分 Credits	周数 Weeks	学时数 Hours	开课学 期 Semester
必修 Required	01390012	军事技能 Military Training	2	2周		1
	J100060	劳动教育 Labor Education	2	2周		3
	00690092	程序设计实验 Programming Experiments	1	1周		1
	00690210	数据结构课程设计 Data Structure Curriculum Design	1	1周		2
	00690380	数字逻辑与数字系统设计综合实验 Experiment of Digital Logic and Digital System Design	1	1周		4
	10410569	计算机组成原理综合实验 Experiment of Computer Composition Principle	1	1周		5
	00690290	计算机网络综合实验 Experiment of Computer Network	1	1周		3
	00690240	计算机密码学综合实验 Experiment of Computer Cryptography	2	2周		5
	00601149	网络安全综合实验 Experiment of Network Security	1	1周		6
	00690061	操作系统综合实验 Experiment of Operating System	1	1周		4
	00690280	信息安全综合实验 Experiment of Information Security	2	2周		6
	00690190	数据库原理课程设计 Database Principles Curriculum Design	1	1周		5
	00690040	编译技术课程设计 Compiling Technology Curriculum Design	1	1周		5
	00690021	毕业设计 Graduation Project	13		208	7-8
	00690130	认识实习 Acquaintanceship Practice	1	1周		2
	00690031	毕业实习 Major Practice	2	2周		8
00690010	毕业教育 Graduation Education	0	1周		8	
集中实践小计 Subtotal of Major Practical Training			33	21周	208	

## 信息安全专业选修课教学进程

### Table of Teaching Schedule for Electives

选修课程分为专业领域课程、其它专业课程、通识教育课程 3 个部分，总学分不低于 20 学分。其中，专业领域课程和其它专业课程学分不低于 10 学分。学生可根据自身情况、兴趣爱好等进行选课。

Elective courses are divided into 3 parts: major courses, general education courses, other major courses. The total elective credits are not less than 20 credits total credits, and the total courses including major courses and other major courses are not less than 12 credits total credits. Students can choose courses according to their own situation and interests.

#### 1. 专业领域课程 Major field courses

专业领域课程旨在培养学生在该专业某领域内具备综合分析、处理（研究、设计）问题的技能及专业前沿知识。本专业领域的选修课程如下表所示。

Major field courses aim to develop students' skills and advanced knowledge of comprehensive analysis, processing (research, design) problems in a certain field of the major. Elective courses in this field are shown in the following table.

#### 2. 其他专业课程 Other major courses

为了培养复合型人才，鼓励学生跨专业选修课程。学生可以选修我校开设的任何专业的课程。

In order to cultivate compound talents, students should be encouraged to cross major elective courses. Students can take any courses offered by our university.

#### 3. 通识教育课程 General education curriculum

通识教育课程包括人文社科、语言交流、文化艺术、科学技术、经济管理、创新创业等模块，学生从学校给定的通识教育课程中选择。

General education curriculum includes humanities and social sciences, language communication, culture and art, science and technology, economic management, innovation and entrepreneurship modules. Students choose from general education courses offered by the university. The courses “Introduction to environmental protection and sustainable society” and “Engineering Project Management” are suggested to be selected.

# 信息安全专业选修课程体系及教学计划

Table of Teaching Schedule for Elective Course and Teaching Plan

组别 Group	课程编号 Course ID	课程名称 Course name	学分 Credits	总学时 Hours	课内学时 In class hours	实验学时 Lab hours	课外学时 Off class hours	开课学期 Semester	模块 module
1	00601391	信息安全概论 Information Security Conspectus	2	32	32			5	信息安全专业模块
	00600900	信息安全工程与管理 Information Security Engineering and Management	2	32	32			7	
	00600940	电力信息化 Electric Power Informationization	2	32	32			6	
	00601160	电力信息安全 Electric Power Security	2	32	32			6	
	00600011	C++程序设计 Programming in C++	2	32	32			4	
	00600521	人工智能及应用 Artificial Intelligence and Application	2	32	32			4	
	00600920	专业英语阅读(信息安全) Information Security Specialty English	2	32	32			6	
	00600702	接口与通信技术 Interface and Communicational Techniques	2	32	26	6		6	
	00601740	Web 智能编程与应用 Web intelligent programming and application	2	32	32			5	
		跨专业选修其他专业的专业课程 Interdisciplinary Electives						2-8	其他专业模块
2		通识教育选修课程 General Education Electives	公共艺术类课程至少选修 2 学分；其它可用组别 1 中课程学分替代						
选修课小计 Subtotal of Elective Courses			18	288	282	6			
选修课总学分不低于 20 学分。其中，组别 1 中的专业领域课程和其它专业课程学分不低于 12 学分。 The total credits of elective courses should not be less than 20 credits. Among them, the course credits in Group 1 shall not be less than 12 credits.									

## 选修课选课建议：Recommendations for electives

1. 第二、第三学期：建议每学期选修通识教育选修课程模块中的课程 1-2 门。
2. 第四、五、六、七、八学期：建议每学期从专业选修课各模块中选修 1-3 门课程；也可根据个人兴趣，跨专业选修其他专业的专业课程。
  1. Second and third semesters: It is recommended to select 1-2 courses in **General Education Electives** every semester.
  2. Fourth, fifth, sixth, seventh, and eighth semesters: It is recommended to choose 1-3 courses from each part of electives each semester; you can also select Interdisciplinary Electives based on personal interests.

## 辅修信息安全专业人才培养方案

### Undergraduate Program for the Information Security Major

组别 Group	课程编号 Course ID	课程名称 Course name	学分 Credits	总学时 Hours	课内学时 In class hours	实验学时 Lab hours	开课学期 Semester	备注 Comment
A	00600460	离散数学 Discrete Mathematics	4	64	64		1	
	00600600	数据结构 Data Structure	3.5	56	56		2	
	10410160	计算机网络 Computer Networks	3	48	48		3	
	10410560	计算机组成原理 Principles of Computer Composition	3.5	56	56		5	
	00601120	信息安全数学基础 Fundamentals of Information Security Mathematics	3	48	48		4	
	00601140	网络安全 Network Security	3	48	48		6	
	00600321	计算机密码学 Computer Cryptology	3	48	48		5	
	00500641	信息论与编码 Information Theory and Coding	2.5	40	40		5	
	00600100	操作系统 Operating System	3.5	56	56		4	
B	00690031	毕业设计 Graduation Project	13				7-8	
学分合计 Subtotal of courses			42	464	464			

说明：1. 辅修专业需修读 A 组课程，计 29 学分；

2. 辅修专业学士学位需修读 A、B 两组课程，计 42 学分。