Information Security Technology Application Specialty Cluster Programs for International Academic Students Enrolled in 2022

Ⅰ **Program Titles**

Information Security Technology Application

Computer Network Technology

Ⅱ **Admission Requirements**

Graduates of General Senior High Schools, Secondary Vocational Schools or equivalent level.

Ⅳ **Duration of Study**

Three years (students can extend the study period to a maximum of six years according to the situation).

Ⅴ **Program Objectives and Program Standards**

(1) Program Objectives

This major is committed to fostering virtue through education as the fundamental task and enhancing professional quality and skills as the core. It is designed to meet the needs of the industrial chain of industry Internet and equip students with skills much needed in the professional field such as the ability to use new technologies, new processes and new standards, so as to realize the integration of the industrial control network and the information security industrial chain. It aims to cultivate compound technicians and skilled workers with solid foundation, new knowledge, strong capabilities, high quality and strengthened innovation and practical abilities.

(2) Program Standards

Graduates of the above specialty cluster should meet the following requirements.

1. Quality Objectives

1.1 Be familiar with the basic knowledge of Chinese national conditions and culture such as Chinese history, geography, society and economy, understand China's political system and foreign policy, the mainstream values of Chinese society and public moral concepts, and form the concept of the rule of law and moral awareness.

1.2 Possess certain cross-cultural competence, have certain international perspective of the major, be able to put professional knowledge and skills into practice among various countries, have the ability to basically communicate and cooperate in the global context.

1.3 Adapt to corporate culture, abide by corporate norms, and keep business secrets with the spirit of dedication and cooperation.

1.4 Have developed quality awareness, environmental awareness, safety awareness, information literacy, craftsmanship and creative power, be able to analyze, transform and solve practical problems, master learning methods and the integration and application of knowledge, and possess certain ability to transfer knowledge to other areas.

1.5 Have the courage to struggle, be optimistic, have self-management ability, awareness of career planning, strong collective consciousness and teamwork spirit, demonstrate perseverance and the ability to endure setbacks, and have the ability to solve problems independently with self-learning skills.

1.6 Have a sound physical and psychological health, a wholesome personality, good behavior and habits, a positive attitude, and strong problem solving and execution abilities.

2. Knowledge Objectives

2.1 Information Security Technology Application

2.1.1 Be familiar with the laws and regulations related to this major and environmental protection, fire safety, civilization production and other related knowledge.

2.1.2 Master digital logic, information security encryption technology and other basic professional knowledge.

2.1.3 Master the basic knowledge of computer network, basic theory of information security, information retrieval and information processing.

2.1.4 Master the configuration and management of Windows, Linux and other operating systems, and be familiar with the knowledge of safety reinforcement of the operating system.

2.1.5 Master network switching, IP routing technology and other basic professional knowledge involved in the establishment of the industry network.

2.1.6 Master the knowledge of firewalls, intrusion detection, VPN, UTM, security audit, and Internet behavior management.

2.1.7 Master the basic knowledge of database creation, user security management and data security management.

2.1.8 Master industry network web penetration testing and protection, and web security assessment.

2.1.9 Master the collection, storage, transmission, processing, exchange and destruction of industrial data and other knowledge related to safety management.

2.1.10 Master the relevant knowledge of security network planning, system integration and safety management.

2.2 Computer Network Technology

2.2.1 Be familiar with the laws and regulations related to this major and environmental protection, fire safety, civilization production and other related knowledge.

2.2.2 Master the basic concepts and principles of computer networks, and master the architecture of computer networks.

2.2.3 Master IP address and subnet partition.

2.2.4 Master the working principle of key IP network equipment and the knowledge and skills related to equipment configuration and management.

2.2.5 Master the configuration and management of mainstream routing protocols for industry networks.

2.2.6 Master the configuration and management of the Linux operating system.

2.2.7 Master the basic elements of Python language and the basic knowledge related to network development.

2.2.8 Master the basics of container technology.

2.2.9 Master the knowledge of the network hierarchy, system constitution and security of industry Internet.

2.2.10 Master the planning, design, deployment, operation and maintenance of the industry network.

3. Capability Objectives

3.1 Information Security Technology Application

3.1.1 Capable of inquiry, lifelong learning, problem analysis and problem solving.

3.1.2 Have good language, writing and communication skills.

3.1.3 Understand the professional demand analysis report and project construction plan, be proficient in looking up, organizing, analyzing and processing various information, and be able to apply information technology to document management.

3.1.4 Be able to select the network operating system, install the operating system, manage users, allocate and manage resources, and deploy WWW, e-mail and other application servers according to the requirements of users.

3.1.5 Have the ability to implement comprehensive measures to protect the safety of the network system, such as security network planning and design, network and security equipment installation, basic configuration management, security policy configuration, and equipment management and maintenance according to the requirement of building a safety network for users.

3.1.6 Have the ability to carry out database system installation, security management, backup of user data, disaster recovery and other security management capabilities according to the management requirements of the user information system.

3.1.7 Have the comprehensive ability to deploy anti-virus system, system security reinforcement, system or data encryption and decryption, system upgrade according to the requirements of user system security protection.

3.1.8 Have the ability to carry out system security strategy deployment, system penetration testing, security attack and defense prevention, and rapid response to security incidents according to information system assessment requirements.

3.1.9 Possess certain information security-related software development, tool software application capabilities, and the ability to write test documents for the security system.

3.2 Computer Network Technology

3.2.1 Capable of inquiry learning, lifelong learning, problem analysis and problem solving.

3.2.2 Have good language, written and communication skills.

3.2.3 Understand the professional demand analysis report and project construction plan, be proficient in looking up, organizing, analyzing and processing various information, and be able to apply information technology to document management.

3.2.4 Be able to select the network operating system, install the operating system, manage users, allocate and manage resources, and deploy WWW, e-mail and other application servers according to the requirements of users.

3.2.5 Have the ability to implement comprehensive measures to protect the safety of the network system, such as the planning and design of small and medium-sized networks, network equipment installation and deployment, basic configuration management, and equipment management and maintenance according to the requirement of building a safety network for users.

3.2.6 Be able to diagnose, maintain and optimize small and medium-sized networks according to user's requirements.

3.2.7 Have basic Python language development capabilities.

3.2.8 Have certain network-related software development and tool software application capabilities, as well as the ability to design test cases for network application systems and write test documents.

3.2.9 Possess the ability to build industry Internet networks and its security configuration.

Ⅴ **Graduation Requirements**

1	Chinese Requirements	International academic students enrolled in classes taught in Chinese should obtain HSK level 5 before graduation, and international academic students enrolled in classes taught in English should obtain HSK level 4 before graduation.
2	Course Assessment Requirements	Students are required to pass all course examinations before graduation.

Ⅵ Core Courses and Content

Course Types	Course Titles	Main Teaching Content	Course hours	Credit	Term
Specialty Cluster Core Courses	Foundations of Information Security Technology (Information Security Technology Application)	(1) the basic concepts, principles, methods and technologies of information security technology; (2) the basic knowledge and practice skills of computer network security, system software security and application software security; (3) reasonable configuration and implementation of user account and resource access management; (4) the principle of cryptography, common encryption and decryption methods, and the principle and configuration of encrypted file systems; (5) the general idea and basic practice methods of information security assurance work; (6) the principles and methods of information security risk assessment and classified protection; (7) information security-related standards, laws and regulations and the code of ethics.	32	2	3
	Windows Operating System Security Configuration (Information Security Technology Application)	(1) Windows installation, file system management and user management; (2) security configuration of common network services in Windows: DNS service, print service, DHCP service, Web service, FTP service, VPN service and NAT service.	54	3	3
	Fundamentals of Linux Operating System (Information Security Technology Application)	(1) Linux installation, file system management, user management and the VI editor; (2) security configuration of common network services in Linux: DNS service, DHCP service, Web service, FTP service, VPN service, and NAT service.	54	3	3
	Linux Operating System Security Configuration (Information Security Technology Application)	(1) the control of Special File Permissions in Linux (2) Web, FTP, Telnet, SSH, VNC and other remote access configuration and management in Linux; (3) Iptables, firewall-cmd architecture and commands in Linux; (4) AIDE file system integrity detection system configuration under Linux platform; (5) Snort network intrusion detection system configuration under Linux platform.	54	3	3

	Database Application and Security Management (Information Security Technology Application)	(1) basic concepts of databases; (2) basic SQL syntax; (3) the basic concepts and operations of database views; (4) database security operation and maintenance management and maintenance; (5) database backup and operation.	54	3	3
	Routing Switching Technology (Information Security Technology Application)	(1) construct networks with switches (port security, link aggregation, port mirroring, VLAN and STP); (2) LANs interconnection (VLAN interconnection, static routing, RIP and OSPF); (3) access to the Wide Area Network Access (PPP); (4) Network Access Control (ACL, NAT, VPN); (5) network backup redundancy.	72	4	3
	Information Security Product Configuration and Application (Information Security Technology Application)	(1) firewall technology; (2) intrusion detection technology; (3) VPN technology; (4) data encryption technology.	54	3	3
	Security Analysis of Network Protocols (Information Security Technology Application)	(1) ARP protocol vulnerabilities and utilization; (2) the principle and utilization of IP fragmentation; (3) TCP and UDP protocol analysis; (4) HTTP and FTP protocol analysis.	54	3	3
	Web Penetration and Protection (Information Security Technology Application)	(1) SQL injection methods and prevention; (2) principles and applications of code injection, command injection, and bypassing through front-end restrictions; (3) causes and attack objects of cross-site vulnerabilities, reflective cross-site and storage-based cross-site utilization; (4) common file upload protection bypass methods; (5) Local files inclusion vulnerabilities and remote files inclusion vulnerabilities; (6) CTF offensive and defensive competition training.	54	3	3
	Wireless Local Area Network (Information Security Technology Application)	(1) major wireless technologies and 802.11; (2) wireless router, FAT AP, FIT AP and AC; (3) Layer 2 registration, Layer 3 registration, wireless access control; (4) wireless encryption, SSID and service templates.	54	3	3
	Python Penetration Testing (Information Security Technology Application)	(1) the use of Scapy and request libraries; (2) socket network programming; (3) the use of regular expressions; (4) writing and application of shellcode.	70	4	3

Specialty Cluster Core Courses	Routing Switching Technology (Computer Network Technology)	(1) the working principles and main functions of Ethernet technology and switches; (2) the basic concepts of routing protocols and the working principles and main functions of routers; (3) WAN protocols and mainstream remote access technologies; (4) basic techniques of network security; (5) basic techniques of network reliability.	72	4	4
	Automatic Operation and Maintenance Technology (Computer Network Technology)	(1) basics of Python ; (2) configuration and management of the virtual simulation platform ; (3) Netmiko device management; (4) Telnetlib device management; (5) the configuration and management of automated devices.	54	3	4
	SDN Technology (Computer Network Technology)	(1) basics of SDN; (2) SDN architecture and industrial ecosystem; (3) the principle and implementation of SDN solutions; (4) the principle of SDN interface protocols.	70	4	4
	Linux Network Service Configuration (Computer Network Technology)	(1) the basic concepts and principles of Linux system management; (2) file system management, user management and rights management based on Linux operating system; (3) basics of Shell (4) the basic configuration of Linux network operating system; (5) the service configuration of Linux network operating system network.	54	3	4
	Windows Network Service Configuration (Computer Network Technology)	(1) Windows installation, file system management and user management; (2) security configuration of common network services in Windows: DNS service, printing service, DHCP service, Web service, FTP service, VPN service, and NAT service.	32	2	4
	Information Security Product Configuration and Application (computer network Technology)	(1) firewall technology; (2) intrusion detection technology; (3) VPN technology; (4) data encryption technology.	54	3	4
	CAD Drawing (Computer Network Technology)	(1) foundations of AutoCAD software; (2) the drawing of architectural planar graphs; (3) the drawing of general wiring diagrams; (4) the drawing of indoor distribution maps of communication systems.	54	3	4
	Security Analysis of Network Protocols (Computer Network Technology)	(1) ARP protocol vulnerabilities and its utilization; (2) the principle and utilization of IP fragmentation; (3) TCP and UDP protocol analysis; (4) HTTP and FTP protocol analysis.	54	3	4

	The Bearer Network of Mobile Communication (Computer Network Technology)	(1) introduction to the bearer network; (2) the composition of the bearer network; (3) bearer network configuration; (4) technical analysis of the bearer network of mobile communication; (5) optimization of the bearer network of mobile communication.	54	3	4
	Advanced Network Technology (Computer Network Technology)	(1) Layer 3 routing technology; (2) MPLS&MPLS and VPN technology; (3) the principle of multicast technology; (4) the principle of QoS technology.	54	3	4
	Wireless Local Area Network (Computer Network Technology)	(1) major wireless technologies and 802.11; (2) wireless router, FAT AP, FIT AP and AC; (3) Layer 2 registration, Layer 3 registration, wireless access control; (4) Wireless encryption, SSID and service templates.	54	3	4
Comprehensive Courses (Expansion)	Information Security Project Practice (Information Security Technology Application)	(1) network operation and maintenance security management; (2) network remote safety assessment; (3) network security audit; (4) cyber threat intelligence analysis.	60	4	5
	Network Case Comprehensive Training (Computer Network Technology)	(1) the process of network design planing; (2) reliability, safety, and redundancy analysis; (3) campus network technology and campus network planning and design; (4) data center network technology and data center network planning and design; (5) WAN technology and WAN network design; (6) other networks and technologies.	60	4	5
	Internships and Graduation Projects	(1) internships should be undertaken under the guidance of teachers or technical personnel of enterprises and institutions; (2) project preparation; (3) project design; (4) project implementation; (5) acceptance test; (6) dissertation writing; (7) dissertation defense.	108	7	5、6