

UAT-Online: Network Security (Associate of Science in Software Engineering)

Program Description

An Information Security specialist is an Information Technology professional who designs and manages security infrastructure. Students pursuing the Network Security major will learn the responsibilities associated with the design and implementation of proactive defenses and strategies by guarding against exploits and vulnerabilities in an expanding global environment. These duties will include proactive maintenance and security of the network hardware and operating systems by locking down those systems, being attentive to emerging vulnerabilities and hardening these systems as appropriate.

Students will study such business-critical components as analysis and rating of security risks and the requirements of the information, products, systems and services. Students will formulate a security focused design plan to implement and maintain the security infrastructure to protect and mitigate information from security breaches.

An Information Security specialist is highly technical role which will require intimate knowledge of systems in order to alleviate the vulnerabilities including programming.

Students in Network Security program will plan and develop effective, secure and efficient networks that protect information and information systems and infrastructures while developing non-technical skills such as teamwork, troubleshooting, documentation and interpersonal communication that are key to becoming a successful Information Security specialist.

The Network Security program reflects the application of theory and an alignment with industry standards and guidelines. It also provides students with the opportunity to synthesize and apply the vital skills and knowledge necessary to succeed in the workforce. Instruction will lead students into hands-on and real-world situations, where they will gain invaluable experience working with actual systems and networks.

This program will also prepare students to anticipate and integrate new and emerging technologies so that they can be successful within the rapidly evolving technology environment.

How UAT-Online Works

UAT-Online's Associate of Science in Software Engineering degree with a major in Network Security has been developed to give students the ability to focus 100% of their attention on each individual skill and class needed to become successful in this rapidly growing field. Classes are taken one at a time, and last five weeks each. Three classes will be taken each semester for a total of 15 weeks per semester. Courses are taken sequentially in order to build on the foundation of previous skills learned. This helps to increase overall understanding and comprehension of the material.

Objectives

- Install, configure and secure computer, network, security components, client and server operating systems following industry-standard guidelines
- Identify the various topologies, standards, technologies and protocols employed in secured systems
- Design, install, configure, maintain and secure network directory services and infrastructure, server services, routers and switches
- Plan, audit, document and troubleshoot information security systems using the OSI model
- Examine and demonstrate familiarity of federal guidelines, policies and procedures that govern information security
- Document and implement systems defense and countermeasures by utilizing a disaster recovery planning and by hardening systems to ensure information security
- Examine and mitigate current industry threats, risks, malicious activities, covert methodology and unconventional tactics that may be deployed against a system then utilize procedures and techniques evaluate, select, deploy and assess security measures to respond to and alleviate a security incident to prevent loss of sensitive information
- Implement and maintain security tools in the detection, notification, isolation and resolution of issues impacting information security
- Demonstrate familiarity with different scripting and/or programming languages as they relate to maintaining network security

University Core

INT200 Internship

PRO102 Professional Skills Development

PRO211 Thesis I: Innovation

TCH110 Foresight Development

General Education

ENG101 Composition I

ENG102 Composition II

ENG305 Mythology, Folktale and Fairy Tale

MAT175 College Algebra

PHY120 Introduction to Electricity and Magnetism

SOC150 Technology and Society

Major

CIS204 UNIX and LINUX I

NTS201 Security Essentials (WI)

NTS222 Hacking Essentials

NTS250 Network Defense Theory

NTS300 TCP/IP v.4

NTW100 Network and Telecommunication Essentials

NTW105 Computer Hardware Essentials

NTW215 Client and Server Administration

NTW230 Network Infrastructure and Services

NTW250 Scripting for Networks

NTW440 Business Continuity/Disaster Recovery (WI)

Additional semester for NSA-approved courseware:

UAT's Network Security courseware are certified by the US National Security Agency's (NSA) Information

Assurance Courseware Evaluation program for 4011 CNSS National Standard for Information Systems Security (INFOSEC) Professionals and 4013 National Standard for System Administrators in Information Systems Security (INFOSEC). Students who wish to receive acknowledgement noting that they have completed curricula that adhere to national training standards must take these courses: NTS201, NTS300, NTS330, NTS350, NTS355, NTS415, NTS435, NTS450, NTW100, NTW105, NTW330, NTW440.]

This list represents the combination of courses necessary for the degree. Course sequence and offerings may change due to software or other scheduling requirements. All courses designated (WI) are Writing Intensive courses.



University Core

INT200 Internship

An internship is considered a supervised, practical experience that is the application of previously learned theory. Employers/sponsors work with the student to meet specific objectives and/or learning goals and provide special mentoring or networking opportunities. In exchange, the intern helps the employer/ sponsor in meeting overall work goals for the agency/company. Students completing 3.0 credit internships must work a total of 150 hours, or 10 hours per week for 15 weeks.

PRO102 Professional Skills Development

This course is designed to develop life-long learning strategies. This course provides the basic skills for success in the educational, professional and personal environment. Specific topics explored are personality profile analysis, developmental styles, conflict resolution skills, group problem solving and learning style analysis. Collaboration and group skills development will be emphasized. Students will have the opportunity to receive extra assistance in computer and word processing skills.

PRO211 Thesis: Innovation

The purpose of this course is to develop students as technologists who can explore and critically analyze a potential and emerging topic for their thesis and shape their ideas into a form that represents a clear set of thinking to be used as the basis for developing their innovation. In creating a topic document based upon their investigations, students will demonstrate their ability to communicate their technology ideas to others

and increase the likelihood that their idea will take form and find a relevant application in society. The course will culminate with the composition and approval of the student's topic paper. The topic paper will include an abbreviated introduction of the innovation, short prior art identification and general methodology.

TCH110 Foresight Development

You learn better global, business and personal foresight, so you can better enjoy and manage your own future. This course will explore the big picture history of accelerating change from universal, historical and technological perspectives, as well as identifying global trends that are affecting individuals, society, businesses and governments. Additionally, the course will examine how organizations make bets on the future, and gives the student a chance to explore career prospects in a variety of fields. Finally, discussion of how biology, psychology, community and culture help and hinder personal thinking about the future will be discussed. We will articulate and explain the four fundamental foresight processes: innovating the future (creative development of products and services); planning the future (developing shared goals and processes); profiting in the future (achieving measurable positive results, including environmental, social, and economic benefits); and predicting the future (trend identification and analysis). Assignments will be fun, personalized to your own foresight goals, and will include brief readings, brief writing, discussions, debates, visuals, film, podcasts and games.

General Education

ENG101 Composition I

This course is designed to present effective techniques in organizing, developing and writing academic essays that reflect a collegiate-level of writing. The purpose of this course is to help students write correctly, clearly and thoughtfully.

ENG102 Composition II

This course expands and refines the objectives of English Composition I. It empathizes critical/logical thinking and reading, problem definition, research strategies and writing analytical, evaluative and/or persuasive papers that incorporate research. In this section, each student will devote her/himself to a research topic that we'll approach in a variety of ways over the course of the semester. The result will be a final project that centers on a topic that the student has a deep interest in.

ENG305 Mythology, Folktale and Fairy Tale

Escape to the fantastic realms of mythology, folktales and fairy tales as we read stories from around the world and through the ages. You might be surprised at how pervasive the archetypes and themes from these genres are in our modern world, from movies to popular animation and games. The course allows students to explore the cultural similarities and differences in myths, folktales and fairy tales through selected readings, discussions and writings.

MAT175 College Algebra

This course will include a thorough treatment of relations and functions, polynomial functions, exponential and logarithmic functions, systems of

equations and inequalities, matrices, conic sections, sequences, induction and probability.

PHY120 Introduction to Electricity and Magnetism

This course will introduce the student to basic concepts of electricity and magnetism with discussion of practical applications. Charges and fields will be used to understand the concepts of potential, resistance, capacitance and inductance and solve basic DC circuits. Math through college algebra required.

SOC150 Technology and Society

SOC150 is designed to introduce students to the essential understanding, development, theories, strategies and historical interrelation of technology and society. The purpose of the course is to provide students with the tools necessary to understand the role technology has played in society and to prepare students for interaction in a technology driven world with a comprehensive look at the relationship between technology and culture. Technology will be recognized as a driving force in cultural revolutions and as a foundational concept of human development. The course will consider rapidly changing technologies in modern society, the problems associated with these changes, and the affects of these technologies on the societies and cultures around the world.

Major

CIS204 UNIX and LINUX I

This course provides an overview of the commands, utilities and supporting architecture used in the UNIX operating system. This course provides the student with skills needed to navigate the UNIX aspects of the Internet and perform file/ system operations on graphics workstations. Topics include common utilities, making files, the VI and EMAC editors, and C, Bourne and Korn shells.

NTS201 Security Essentials (WI)

The goal of this course is to provide network administrators with the knowledge they need to design and implement an effective security strategy in a corporate network environment. This course will cover anti-virus tools, security policies, password management, risk analysis, security policies, network communication vulnerabilities, enhancing security with cabling and network hardware, understanding different types of firewalls, packet filtering and NAT, setting up and securing a virtual private network and understanding hacker exploits. The documentation created during this course can be added to the student's portfolio.

NTS222 Hacking Essentials

When talking about network security, we have to acknowledge that all systems have vulnerable points. This course examines the fundamental and historical perspective of hacking methodology and psyche. The hacking topics are explored in order to examine the current systems associated with these vulnerable points. This course examines the techniques and tools to detect and evaluate these vulnerable points of known exploits in network and operating systems. Types of hackers include those that snoop around networks, vandalize websites or even steal proprietary information by the use of well-known schemes, such as viruses, worms, Trojan horses, denial-of service attacks and buffer overflows.

NTS250 Network Defense Theory

This course examines the art of defense for network protection. Topics include designing a network defense, security policies, choosing and designing various hardware, and software defense solutions. Additionally, this course will provide solutions for identifying and assessing external and internal threats to your network in a multi-vendor environment.

NTS300 TCP/IP v.4

Transmission Control Protocol/Internet Protocol is the suite of communications protocols used to connect the Internet and network systems. In this course, students will travel in-depth into the TCP/IP protocol suite to learn concepts such as link layers, subnetting, Internet Protocol (IP), address resolution protocol (ARP), Reverse Address Resolution Protocol (RARP), Internet Control Message Protocol, IP routing and Domain Name System.

NTW100 Network and Telecommunication Essentials

A firm grasp of basic networking concepts is a key to success in this field. This course is the foundation of knowledge for a networking infrastructure that will enable you to engage and understand future networking courses. This course provides an overview of fundamental networking concepts to connect your established knowledge.

NTW105 Computer Hardware Essentials

Where is the "1" pin? This course introduces the fundamentals of personal computer hardware. It is a hands-on course focused on the computer hardware elements in which students will construct a computer in teams. Topics and types of hardware introduced in this course include the following: processors, motherboards, interrupts, DMA, bus size, cycle time, memory refresh rates, the difference between IDE and SCSI, RAM, ROM, Flash Memory, CMOS, Parallel and Serial ports, other ports and an assortment of controller cards. The applied topics of computer component safety, proper handling techniques, PC assembly, OS installation and basic hardware troubleshooting are employed.

NTW215 Client and Server Administration

This course provides the knowledge and skills necessary to install and configure a client and server operating systems in a stand-alone and networked environment. This course is a mixture of theoretical and applied knowledge to develop the administration skills necessary to the successful completion and understanding of many of the networking and security courses.

NTW230 Network Infrastructure and Services

This course provides the necessary skills to install, configure and manage network services in a Microsoft Windows network. A mixture of theoretical and applied knowledge to implement diverse networking services and network protocols are utilized. Some examples of networking services are DHCP server, DNS server, WINS, RRAS, IP Routing, IP Security, NAT, VPNs and Certificate Services.

NTW250 Scripting for Networks

A how-to script course designed to create customized operating systems, automate commands and simplify administration tasks using scripts. The techniques and instructions include shells as a user interface, basic scripting, script editing and debugging, graphing data,

and simplifying administrative tasks utilizing current platforms and examples. The documentation created during this course can be added to the student's portfolio.

NTW440 Business Continuity/Disaster Recovery (WI)

This course will provide a comprehensive overview of disaster recovery and countermeasures for networks and businesses. Assess risks in the enterprise, develop an enterprise disaster recovery system, develop disaster policies, procedures, departmental roles and communication processes for enterprise network. Produce a disaster recovery document of procedures and policies to implement training, testing and rehearsal of a disaster recovery. The documentation created during this course will be added to the student's portfolio.