INFORMATION TECHNOLOGY OPERATIONS PROFESSIONAL (ITOP)

ITOP 1101 Credits: 2
A+ Hardware Total Hours: 30
In this course students will learn about the various hardware components of a Personal Computer (PC), including RAM, the CPU, and the harddrive. Students will research and build a PC from scratch, and will explore topics such as basic networking, cooling strategies and the task manager. Students will also be introduced to virtualization and mobile technologies.

ITOP 1102 Credits: 2
Networking Fundamentals Total Hours: 30
In this course students will learn about networking protocols and infrastructure. Students will gain an understanding of the Open Systems Interconnection model, virtual LANs and WIFI concepts. Students will also compare and contrast different networking peripherals such as routers, hubs, and switches.

ITOP 1103 Credits: 2
Windows Server Fundamentals Total Hours: 30
In this course students will learn about the roles and features of a windows server, and will be introduced to network storage options as well as Active Directory components. In addition, students will gain an understanding of DNS and DHCP. This course builds on the concepts covered in Networking Fundamentals.
Pre-requisite(s): ITOP 1102

ITOP 1104 Credits: 2
Active Directory Total Hours: 30
In this course students will learn about Active Directory components, group policies, and Flexible Single Master Operation (FSMO) roles. Students will have the opportunity to install and configure Active Directory objects, users, computers, and security groups. Students will also learn how to manage group policies and setup network shared folders. This course builds on the concepts covered in Windows Server Fundamentals (ITOP 1103).
Pre-requisite(s): ITOP 1103

ITOP 1105 Credits: 2
Security Fundamentals Total Hours: 30
In the course students will learn about network security concepts, threats and vulnerabilities, the concept of least privilege, and server hardening. Students will have the opportunity to install and maintain Windows updates, and firewalls, and implement group policy protections.

ITOP 1106 Credits: 2
Service Manager Total Hours: 30
In this course students will learn about the various aspects of service management such as service quality, service lifecycle, service improvement, and project management. Emergency recovery options and business continuity planning will also be discussed.

ITOP 1107 Credits: 2
Linux Server Fundamentals Total Hours: 30
In this course students will learn about the basics of the Linux operating system including the command processor (Bash), system processes, media server, and file system. Students will investigate performance and network issues and explore application development tools.

ITOP 1108 Credits: 2
Windows Desktop Support Total Hours: 30
In this course students will learn to configure and maintain desktops. Students will become familiar with the Windows registry, local group policies, and the Windows file system. In addition, students will learn to set up a basic network and secure the Windows environment.

ITOP 1109 Credits: 2
PowerShell Total Hours: 30
In this course students will focus on Windows scripting concepts and the configuration of Windows server roles through the use of PowerShell. Students will also learn to install a module on a system and will become familiar with basic programming control flow structures.

ITOP 2201 Credits: 1
Professional Development Total Hours: 27
This course will introduce students to the skills and competences that will give them the foundation necessary to be successful in their career. Utilizing a variety of resources, students will develop self-awareness and learn about essential job-search and interview skills. Students will also learn about their presentation and communication style and identify their unique strengths, values, and skills. Students will have an opportunity to create a job-application for a role they are likely to apply for. A focus will be placed on strategies that can be used to highlight the student's unique fit and value within a role, industry, or organization. Students will be prepared to demonstrate their unique fit through their resume, cover letter, online presence or, in person, in a formal interview, industry presentation, or chance encounter.

ITOP 2202 Credits: 4
Networking with Cisco Total Hours: 72
This is a hands-on, project-based course on Cisco specific networking topics. LANs, WANs, and VLANs are examined in the context of a typical commercial enterprise network constructed with Cisco IOS based equipment. Configuration of routing protocols and network address translations will also be explored.
Pre-requisite(s): ITOP 1102; ITOP 1103

ITOP 2203 Credits: 3.5
Wireless Technology Networks Total Hours: 54
In this course, students will be introduced to wireless networking concepts and they will implement a secure and standard enterprise level wireless network. Students will learn about network protocols, such as frame relay, ISDN, PPP, DSL, MPLS, and cellular 3G/4G/5G. This course will help students prepare for the Certified Wireless Network Administrator (CWNA) exam.
Pre-requisite(s): ITOP 2202

ITOP 2204 Credits: 3.5
Computing Security Arch Total Hours: 54
Students will learn the principles, concepts, and jargon involved with the security of information technology systems and data. This course involves a large degree of discussion and research. Students will learn about professional terms used to describe security concepts, and common threats and defences to information technology systems. The learner should be familiar with the basic usage and configuration of server and desktop operating systems.
Pre-requisite(s): ITOP 1103; ITOP 1108

ITOP 2205 Credits: 1
Infrastructure Project Total Hours: 18
This course will provide students with a hands-on implementation of networking concepts. The students will have an opportunity to setup network infrastructure according to the industry standards. Students will also learn to design network infrastructure for a business, such as wired, wireless, or cloud network.
Pre-requisite(s): ITOP 2203

ITOP 2306 Credits: 3
Virtualization & Cloud Comput Total Hours: 54
This course will introduce students to the history and concepts of modern hardware virtualization. Students will take this knowledge and learn how to design, implement, and maintain a full virtualization environment using OpenStack, the open-source IaaS (Infrastructure as a Service) cloud computing platform.

ITOP 2307 Credits: 1
ITIL Foundation Total Hours: 18
In this course, students will learn about the fundamental concepts of the ITIL, formerly Information Technology Infrastructure Library. Students will gain an understanding of key IT service management concepts, including a basic framework, dimensions, and guiding principles of ITIL. This course will help prepare students for the ITIL® Foundation Certification.

ITOP 2308 Credits: 3
Enterprise Messaging & Service Total Hours: 54
This course will teach students to set up, configure, and troubleshoot a Microsoft Exchange server. Students will become familiar with vendor neutral concepts and components involved in all email servers. Students will also learn about basic network infrastructure, email administration, high availability, security, and administrative best-practices.
Pre-requisite(s): ITOP 1103; ITOP 1104

ITOP 2309 Credits: 4.5
Data Communications & Networks Total Hours: 72
This course provides students with the knowledge and skills required to administer a Linux-based networked environment. It will build upon the foundation of Linux operating system concepts established in the Linux Server Fundamentals (ITOP 1107) course. Students will learn the skills, techniques, and best practices required to provide novice and intermediate level Linux network server administration. Students will configure recent versions of various server software, such as BIND, DHCP, FTP, NFS, NIS, and Sendmail, on one or more Linux distributions.
Pre-requisite(s): ITOP 1107

ITOP 2310 Credits: 3
Industry Capstone Project Total Hours: 72
Students will learn about project design, implementation, maintenance and monitoring. In this course, students will utilize the concepts learned in previous courses to design and implement a computer network. They will perform penetration testing in order to list vulnerabilities and come up with a patching mechanism in order to secure the entire network.
Pre-requisite(s): ITOP 2414; ITOP 2415

ITOP 2403 Credits: 2
Intro to Netw. Opt. Monitoring Total Hours: 36
This course provides students with foundational knowledge of network monitoring which can be used for optimizing data flow and access in a complex and changing environment. Students will learn about various industry standard network monitoring and optimization tools, such as Nagios, Cacti, SolarWinds and PRTGs. It will also help students understand the importance of continuity planning for mission critical applications.

ITOP 2411 Credits: 4.5
Advanced Network Systems Total Hours: 72
This is a project-based course in which participants will learn to manage and maintain their Linux network. This course will build upon the foundation of UNIX and UNIX-like operating system concepts established in ITOP 1107 (Linux Server Fundamentals) and ITOP 2301 (Data Communications and Networks). Students will learn the skills, techniques, and best practices required to provide novice and intermediate level Linux network server administration, especially web servers and Windows network integration. Students will also configure recent versions of various server software (e.g., Apache, Samba, etc.) on one or more Linux distributions.
Pre-requisite(s): ITOP 1107; ITOP 2309

ITOP 2412 Credits: 2
Computer Forensics Total Hours: 36
This course will cover conceptual and technical skills for the first responder for forensic investigation. Students will learn about the rules of engaging in a forensic examination, including areas such as liturgical and non-liturgical forensic examination, abuse issues, intrusion management, profiling, and privacy issues. Students will also learn about computer forensics and investigation as a profession. This course will utilize some of the concepts learnt in the ITOP 2305: Encryption, Public Key Infrastructure Architecture and Administration course. Skills gained in this course can be applied towards fields involving law enforcement, legal processes, report writing for high-tech investigations, and ethics and codes in expert witness.

ITOP 2413 Credits: 4.5
Network Optimized Monitoring Total Hours: 72
This course provides students with foundational knowledge of network monitoring which can be used for optimizing data flow and access in a complex and changing environment. Students will learn about various industry standard network monitoring and optimization tools, such as Nagios, Cacti, SolarWinds and PRTGs. It will also help students understand the importance of continuity planning for mission critical applications.

ITOP 2414 Credits: 3.5
Encryption, PKI Archit & Admin Total Hours: 54
This course covers topics on encryption technology, security techniques, and their application to a production network. Students will gain conceptual overviews of cryptographic algorithms, confidentiality, integrity, authentication, non-repudiation, access control, and cryptographic standards and protocols. Students will examine public key infrastructure (PKI) concepts, including certificates, revocation and trust models.
Pre-requisite(s): ITOP 2204

ITOP 2415 Credits: 4.5
NetworkExploits-Vul-PenTesting Total Hours: 72
This course introduces students to the art of ethical hacking and security testing. The course covers the legality of ethical hacking, TCP/IP, malicious software, security attacks, enumeration, programming concepts, vulnerabilities of operating systems, cryptography basics and network protection systems. Students will learn up-to-date techniques in protecting and defending their networks for internal and external intruders. Students will work in groups to find vulnerabilities in the network and try to exploit that vulnerability using various hacking tools.
Pre-requisite(s): ITOP 2411; ITOP 2204