



# Syllabus

**Please print a copy of this syllabus for handy reference.**

**Whenever there is a question about what assignments are due, please remember this syllabus is considered the ruling document.**

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### **Policies**

Students will be held responsible for understanding and adhering to all policies. Policies are subject to change; please read them at the beginning of each class as it may have changed since your last class. Policies may be slightly different depending on the modality in which the student attend class. If the student has recently changed modalities it is important the student read the policies governing your current class modality.

### **Late Assignments**

Late assignments receive a maximum score of 70% if assignments are not handed on the date of completion or with later with a valid excuse. Previous assignments will need to be completed first before starting the following course load. Technological issues are not considered valid grounds for late assignment submission.

### **Learning Teams**

Students are expected to work effectively in diverse groups and groups to achieve tasks. Students must collaborate and function well in team settings as both leaders as well as followers. Respect for human diversity and tolerant behavior towards colleagues, peers, and instructors is expected. If difficulties are experienced working with a team, the team is expected to resolve them within it if possible. However, feel free to contact your instructor for guidance if there are concerns in this area.

It is expected an active participation and contribution to the team assignments by a) providing original work that is accepted and used by the team with proof of originality b) participating in the project from assignment organizing through meaningful final review of the team project for submission, and c) ensuring to your team that your contributions are your original work and properly quoted, cited, and referenced.

### **Technical Support**

Technical Support is available from Mon- Fri from 9am to 6pm. Call 201-761-0144 or email any instructor from your class. Email addresses will be provided in class.

### **Feedback**

At the end of each course that is completed, an evaluation sheet will be provided to a general questionnaire to provide feedback to help and improve future courses.



**Vocational Course Objectives of the Internetwork Engineering Program**

This program provides comprehensive training, including theoretical concepts and hands-on practice, to provide students with the expertise and skills to work as a Network Administrator/Engineer or Computer/Network Support Specialist. The graduate will have working familiarity with network hardware and software including Microsoft Windows Desktop and Server operating systems, and will be able to design, install, troubleshoot and support Microsoft and Cisco networks and implement Network Security.

The program is designed to prepare students to become CompTIA certified A+, CompTIA Certified Network+, CompTIA Certified Security+, CompTIA Certified Linux+, Microsoft Certified Solutions Associate (MCSA) on Microsoft Windows Server, and Cisco Certified Network Associates (CCNA). Students will also learn how to create an effective resume, methods for job search, and how to get ready for a job interview.

**Grading Formula**

Percentage %	Grade	GPA
90+	A	4.0
87-89	A-	3.7
84-86	B+	3.3
80-83	B	3.0
77-79	B-	2.7
74-76	C+	2.3
70-73	C	2.0
65-69	D+	1.5
60-64	D	1.0
<59	F	0.0



### Point Values for Course Assignments

#### *Regular Course*

Assignments	Percentage
Exams	60%
Homework Assignments	40%
<b>Total</b>	<b>100%</b>

#### *T- Course*

Assignments	Percentage
In-Class Lab Work	40%
Class Project	60%
<b>Total</b>	<b>100%</b>

### Scoring

Course grade is obtained by multiplying each grading item by the corresponding percentage weight and adding all the points.

#### Notes:

- Homework assignment grade is determined by averaging all quiz scores for the class.
- Quizzes 1 and 2 prepare for the Midterm exam, quizzes 3 and 4 for the Final exam.
- For each exam, students must have the required homework assignments finished before the scheduled time for the exam. If the student do not complete and pass the homework assignments, the student will not be allowed to take the associated exam.
- The student will be given a deadline to complete the homework assignment and be required to take the exam by the day following the deadline. Your score will also be penalized with a score cap of 70%.



**Courses**

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IE100: Introduction to Computers and Internet Fundamentals  
IE100T: Certification Test Preparation  
IE110: Computer Hardware Installation and Troubleshooting  
IE110T: Certification Test Preparation  
IE115: Networking Fundamentals  
IE115T: Certification Test Preparation  
IE121: Supporting Microsoft Windows Desktop Operating System  
IE121T: Certification Test Preparation  
IE122: Supporting Microsoft Windows Server Operating System  
IE122T: Certification Test Preparation  
IE140: Planning, Implementing and Administering Microsoft Windows Directory Service  
IE140T: Certification Test Preparation  
IE160: Planning and Maintaining a Microsoft Windows Network Infrastructure  
IE160T: Certification Test Preparation  
IE170: Technical Career Preparation Workshop  
IE180: Implementing and Managing Security in a Microsoft Windows Network  
IE180T: Certification Test Preparation  
IE190: Introduction to Cisco Router Configuration  
IE190T: Certification Test Preparation  
IE195: Advanced Cisco Router Configuration  
IE195T: Certification Test Preparation  
IE200: Designing, Implementing & Troubleshooting Project  
IE210: Certification Test Preparation  
UN100: Linux System Administration I  
UN100T: Certification Test Preparation  
UN110: Linux System Administration II  
UN110T: Certification Test Preparation



**Course Title: IE100 - Introduction to Computers and Internet Fundamentals**

**Prerequisites(s):** None

**Credits:** 3.0

**Course Description:** Gives students an overview of physical personal computer hardware and peripherals, Printers, Operating systems, Internet technologies, Network Security and Professional Ethics.

**Course Objective:** This course, together with IE110, prepares students for CompTIA A+ Exams 220-1001 and 220-1002.

**Learning outcomes:** Upon successful completion of this course, the student will be able to:

- Install, configure, and upgrade Microsoft Operating Systems while using Microsoft Operating Systems backup and recovery options.
- Performing basic wired and wireless networking, with the use of Internet protocols that are performed everyday computing.
- Understanding and demonstrating functions of Microsoft Operating System fundamentals for successful execution of operations.
- Understand fundamental principles of implementing LANs and internet access, and configuring Internet web browsers
- Demonstrate troubleshooting models and diagnostic of Microsoft Operating Systems

**Instructional Methods:** Class Lecture, homework assignments and in-class discussions include a breakdown of each chapter in the following session that is being attended. Class participations is a must to develop knowledge from other students and instructors to help in on the job situations or interviews. Hands-on with physical computer parts to analyze what has been learned and apply it to real and virtual machines. Major topics covered in the course are: Windows Vista/7/8/10, OS Troubleshooting, Local Area Networking, Internet, Security and IT Professionalism.

**Required Course Materials**

- Meyers, M. 2019. CompTIA A+ Certification All-in-One Exam Guide, 10th Edition. McGraw-Hill.

**Additional Course Material**

- Docter, Q., Dulaney, E., Skandier, T. (2019). CompTIA A+ Complete Study Guide: Exams 220-1001 (Essentials) and 220-1002 (Practical Application). Sybex



Approximate Amount of Time

Task Requirement	Amount of time (Hours)
Lecture, In-Class Lab and Discussion	46
Project	4
<b>Total In-Class</b>	<b>50</b>
Homework Assignment	20
<b>Total Out-Class</b>	<b>20</b>
<b>Grand Total Hours (In-class and Out-of-Class)</b>	<b>70</b>

Evening Schedule Course Outline

Week	Session	Class Content and Homework Reading Assignment	Amount of Homework Time (Hours)
Week 1	Session 1	Chapter 9 – Implementing Mass Storage Chapter 11 – Building a PC	1.75 hours
	Session 2	Chapter 12 – Windows Under the Hood	1.75 hours
	Session 3	Chapter 13 –Users, Groups and Permissions <b>Quiz 1</b>	1.75 hours
Week 2	Session 1	Chapter 14 – Maintaining and Optimizing Windows	1.75 hours
	Session 2	Chapter 15 – Working with the Command-Line Interface	1.75 hours
	Session 3	Chapter 16 – Troubleshooting Operating Systems <b>Quiz 2</b> <b>Mid-Term Test</b>	1.75 hours
Week 3	Session 1	Chapter 18 – Essentials of Networking Chapter 19 – Local Area Networking	1.75 hours



	Session 2	Chapter 20 – Wireless Networking	1.75 hours
	Session 3	Chapter 21 – The Internet <b>Quiz 3</b>	1.75 hours
Week 4	Session 1	Chapter 22 – Virtualization Chapter 25 – Care and Feeding of Mobile Devices	1.75 hours
	Session 2	Chapter 27 – Securing Computers	1.75 hours
	Session 3	Chapter 28 – Operational Procedures <b>Quiz 4</b> <b>Final Test</b>	1.75 hours

***Daytime Schedule Course Outline***

Week	Session	Class Content and Homework Reading Assignment	Amount of Homework Time (Hours)
Week 1	Session 1	Chapter 9 – Implementing Mass Storage Chapter 11 – Building a PC	2.5 hours
	Session 2	Chapter 12 – Windows Under the Hood	2.5 hours
	Session 3	Chapter 13 –Users, Groups and Permissions Chapter 14 – Maintaining and Optimizing Windows <b>Quiz 1</b>	2.5 hours
Week 2	Session 1	Chapter 15 – Working with the Command-Line Interface Chapter 16 – Troubleshooting Operating Systems <b>Quiz 2</b>	2.5 hours
	Session 2	Chapter 18 – Essentials of Networking	2.5 hours





		Chapter 19 – Local Area Networking <b>Mid-Term Test</b>	
	Session 3	Chapter 20 – Wireless Networking Chapter 21 – The Internet <b>Quiz 3</b>	2.5 hours
Week 3	Session 1	Chapter 22 – Virtualization Chapter 25 – Care and Feeding of Mobile Devices	2.5 hours
	Session 2	Chapter 27 – Securing Computers	2.5 hours
	Session 3	Chapter 28 – Operational Procedures <b>Quiz 4</b> <b>Final Test</b>	2.5 hours



**Course Title: IE100T – Certification Test Preparation**

**Prerequisites(s): None**

**Credits: 1.0**

**Course Description:** This course reinforces the student learning process by reviewing learned topics with the aid of online simulation tools and computer-based training. It provides additional simulated hands-on experience as the student prepares for the related certification and technical job interview.

**Learning outcomes:** Upon successful completion of this course, the student will be able to:

- Install, configure, and upgrade Microsoft Operating Systems while using Microsoft Operating Systems backup and recovery options.
- Performing basic wired and wireless networking, with the use of Internet protocols that are performed on a daily basis for everyday computing.
- Understanding and demonstrating functions of Microsoft Operating System fundamentals for successful execution of operations.
- Understand fundamental principles of implementing LANs and internet access, and configuring Internet web browsers
- Demonstrating system troubleshooting models and diagnostic of Microsoft Operating Systems

**Instructional Methods:** In-class labs and project work. Class participations is a must to develop knowledge from other students and instructors to help in on the job situations or interviews. Hands-on with physical computer parts to analyze what has been learned and apply it to real and virtual machines. Major topics covered in the course are: Windows Vista/7/8/10, OS Troubleshooting, Local Area Networking, Internet, Security and IT Professionalism.

**Required Course Materials**

- Meyers, M. 2019. CompTIA A+ Certification All-in-One Exam Guide, 10th Edition. McGraw-Hill.

**Additional Course Material**

- Docter, Q., Dulaney, E., Skandier, T. (2019). CompTIA A+ Complete Study Guide: Exams 220-1001 (Essentials) and 220-1002 (Practical Application). Sybex



**Course Title: IE110 - Computer Hardware Installation and Troubleshooting**

**Prerequisites(s):** None

**Credits:** 3.0

**Course Description:** Gives student essential operating competencies for an entry-level IT professional or PC service technician on computer hardware and peripherals. It provides more hands-on with personal computer hardware in a detail manner.

**Course Objective:** This course, together with IE100, prepares students for CompTIA A+ Exams 220-1001 and 220-1002.

**Learning outcomes:** Upon successful completion of this course, the student will be able to:

- Install, configure, and upgrade computers with hands-on training.
- Install and configure motherboards, processors, memory, hard drives, power supply video cards, printers and laptops
- Troubleshoot system start up, hardware and software errors.
- Configure BIOS and CMOS settings and implementing raid arrays for enhanced security
- Connect to a small wireless network using a single router or access point, while implementing wireless security

**Instructional Methods:** Class Lecture, Lab and In-Class Discussions include a breakdown of each chapter in the following session that is being attended. Hands-on with physical computer parts to analyze what has been learned and apply it to real machines. Class participation is a must to develop knowledge from other students and instructors to help in on the job situations or interviews. Major topics covered in the course: Mice, Keyboard, USB/Firewire Devices, Ports, Motherboards, Monitors, Processors, Memory, Hard Drives, CD/DVD-ROM Drives, Modems, Network Cards, Laptops and Printers.

**Required Course Materials**

- Meyers, M. 2019. CompTIA A+ Certification All-in-One Exam Guide, '0th Edition. McGraw-Hill.

**Additional Course Material**

- Docter, Q., Dulaney, E., Skandier, T. (20'9). CompTIA A+ Complete Study Guide: Exams 220-1001 (Essentials) and 220-1002 (Practical Application). Sybex



Approximate Amount of Time

Task Requirement	Amount of time (Hours)
Lecture, In-Class Lab and Discussion	46
Project	4
<b>Total In-Class</b>	<b>50</b>
Homework Assignment	20
<b>Total Out-Class</b>	<b>20</b>
Grand Total Hours (In-class and Out-of-Class)	70

Evening Schedule Course Outline

Week	Session	Class Content and Homework Reading Assignment	Amount of Homework Time (Hours)
Week 1	Session 1	Chapter 1- Safety and Professionalism Chapter 2 – The Visible PC	1.75 hours
	Session 2	Chapter 3 – CPUs	1.75 hours
	Session 3	Chapter 4 – RAM <b>Quiz 1</b>	1.75 hours
Week 2	Session 1	Chapter 5 – Firmware	1.75 hours
	Session 2	Chapter 6 – Motherboards	1.75 hours
	Session 3	Chapter 7 – Power Supplies <b>Quiz 2</b> <b>Mid-Term Test</b>	1.75 hours
Week 3	Session 1	Chapter 8 – Mass Storage Technologies	1.75 hours



	Session 2	Chapter 10 – Essential Peripherals	1.75 hours
	Session 3	Chapter 17 – Display Technologies <b>Quiz 3</b>	1.75 hours
Week 4	Session 1	Chapter 23 – Portable Computing	1.75 hours
	Session 2	Chapter 24 – Understanding Mobile Devices	1.75 hours
	Session 3	Chapter 26 – Printers <b>Quiz 4</b> <b>Final Test</b>	1.75 hours

***Daytime Schedule Course Outline***

Week	Session	Class Content and Homework Reading Assignment	Amount of Homework Time (Hours)
Week 1	Session 1	Chapter 1- Safety and Professionalism Chapter 2 – The Visible PC	2.5 hours
	Session 2	Chapter 3 – CPUs	2.5 hours
	Session 3	Chapter 4 – RAM <b>Quiz 1</b> Chapter 5 – Firmware	2.5 hours
Week 2	Session 1	Chapter 6 – Motherboards Chapter 7 – Power Supplies <b>Quiz 2</b>	2.5 hours
	Session 2	Chapter 8 – Mass Storage Technologies <b>Mid-Term Test</b>	2.5 hours
	Session 3	Chapter 10 – Essential Peripherals Chapter 17 – Display Technologies <b>Quiz 3</b>	2.5 hours



Week 3	Session 1	Chapter 23 – Portable Computing	2.5 hours
	Session 2	Chapter 24 – Understanding Mobile Devices	2.5 hours
	Session 3	Chapter 26 – Printers <b>Quiz 4</b> <b>Final Test</b>	2.5 hours



**Course Title: IE110T – Certification Test Preparation**

**Prerequisites(s): None**

**Credits: 1.0**

**Objective:** This course reinforces the student learning process by reviewing learned topics with the aid of online simulation tools and computer-based training. It provides additional simulated hands-on experience as the student prepares for the related certification and technical job interview.

**Learning outcomes:** Upon successful completion of this course, the student will be able to:

- Install, configure, and upgrade computers with hands-on training.
- Install and configure motherboards, processors, memory, hard drives, power supply video cards, printers and laptops
- Troubleshoot system start up, hardware and software errors.
- Configure BIOS and CMOS settings and implementing raid arrays for enhanced security
- Connect to a small wireless network using a single router or access point, while implementing wireless security

**Instructional Methods:** Class Lecture, Lab and In-Class Discussions include a breakdown of each chapter in the following session that is being attended. Hands-on with physical computer parts to analyze what has been learned and apply it to real machines. Class participation is a must to develop knowledge from other students and instructors to help in on the job situations or interviews. Major topics covered in the course: Mice, Keyboard, USB/Firewire Devices, Ports, Motherboards, Monitors, Processors, Memory, Hard Drives, CD/DVD-ROM Drives, Modems, Network Cards, Laptops and Printers.

**Required Course Materials**

- Meyers, M. 2019. CompTIA A+ Certification All-in-One Exam Guide, 10th Edition. McGraw-Hill.

**Additional Course Material**

- Docter, Q., Dulaney, E., Skandier, T. (2019). CompTIA A+ Complete Study Guide: Exams 220-1001 (Essentials) and 220-1002 (Practical Application). Sybex



**Course Title: IE115 - Networking Fundamentals (Network+)**

**Prerequisites(s): None**

**Credits: 3.0**

**Course Description:** A typical candidate would have CompTIA's A+ certification or equivalent knowledge and would be able to install, configure and troubleshoot basic networking hardware, protocols and services.

**Course Objective:** This course prepares students for CompTIA Network+ Exam N10-007.

**Learning outcomes:** Upon successful completion of this course, the student will be able to:

- Understand Media and Topologies
- Understand Protocols and Standards
- Understand the Terminology of Network Implementation
- Understand Network Support

**Instructional Methods:** Class Lecture, Lab and In-Class Discussions include a breakdown of each chapter in the following session that is being attended. Lecture, Lab and In-Class Discussions on specific topics like dividing an IP address across multiple networks, working with network devices, protocols and security. Troubleshooting using different models and approaches.

**Required Course Materials**

- Meyers, M. (2019). All-in-One Network+ Study Guide, 7<sup>th</sup> Edition. McGraw-Hill.

**Additional Course Material**

- Lammle, T. (2019). CompTIA Network+ Study Guide: Exam N10-007. 3<sup>rd</sup> Edition. Sybex.





Approximate Amount of Time

Task Requirement	Amount of time (Hours)
Lecture, In-Class Lab and Discussion	46
Project	4
<b>Total In-Class</b>	<b>50</b>
Homework Assignment	20
<b>Total Out-Class</b>	<b>20</b>
Grand Total Hours (In-class and Out-of-Class)	70

Evening Schedule Course Outline

Week	Session	Class Content and Homework Reading Assignment	Amount of Homework Time (Hours)
Week 1	Session 1	Chapter 1: Windows 10 Installation	1.75 hours
	Session 2	Chapter 2: Configuring Users	1.75 hours
	Session 3	Test Prep <b>Quiz 1</b>	1.75 hours
Week 2	Session 1	Chapter 3: Managing Data	1.75 hours
	Session 2	Chapter 4 Managing the Windows 10 Environment	1.75 hours
	Session 3	Test Prep <b>Quiz 2</b> <b>Mid-Term Test</b>	1.75 hours
Week 3	Session 1	Chapter 5: Configuring Security and Devices	1.75 hours



	Session 2	Chapter 6: Configuring Network Connectivity	1.75 hours
	Session 3	Test Prep <b>Quiz 3</b>	1.75 hours
Week 4	Session 1	Chapter 7: Configuring Recovery	1.75 hours
	Session 2	Test Prep	1.75 hours
	Session 3	Test Prep <b>Quiz 4</b> <b>Final Test</b>	1.75 hours

***Daytime Schedule Course Outline***

Week	Session	Class Content and Homework Reading Assignment	Amount of Homework Time (Hours)
Week 1	Session 1	Chapter 1- Safety and Professionalism Chapter 2 – The Visible PC	2.5 hours
	Session 2	Chapter 3 – CPUs	2.5 hours
	Session 3	Chapter 4 – RAM <b>Quiz 1</b> Chapter 5 – Firmware	2.5 hours
Week 2	Session 1	Chapter 6 – Motherboards Chapter 7 – Power Supplies <b>Quiz 2</b>	2.5 hours
	Session 2	Chapter 8 – Mass Storage Technologies <b>Mid-Term Test</b>	2.5 hours
	Session 3	Chapter 10 – Essential Peripherals Chapter 17 – Display Technologies <b>Quiz 3</b>	2.5 hours



Week 3	Session 1	Chapter 23 – Portable Computing	2.5 hours
	Session 2	Chapter 24 – Understanding Mobile Devices	2.5 hours
	Session 3	Chapter 26 – Printers <b>Quiz 4</b> <b>Final Test</b>	2.5 hours



**Course Title: IE115T – Certification Test Preparation**

**Prerequisites(s): None**

**Credits: 1.0**

**Course Description:** This course reinforces the student learning process by reviewing learned topics with the aid of online simulation tools and computer-based training. It provides additional simulated hands-on experience as the student prepares for the related certification and technical job interview.

**Learning outcomes:** Upon successful completion of this course, the student will be able to:

- Understand Media and Topologies
- Understand Protocols and Standards
- Understand the Terminology of Network Implementation
- Understand Network Support

**Instructional Methods:** Class Lecture, Lab and In-Class Discussions include a breakdown of each chapter in the following session that is being attended. Lecture, Lab and In-Class Discussions on specific topics like dividing an IP address across multiple networks, configuring and enabling router interfaces, working with the Spanning Tree Protocol, and beginner routers, switches, VTP, and STP.

**Required Course Materials**

- Meyers, M. (2019). All-in-One Network+ Study Guide, 7<sup>th</sup> Edition. McGraw-Hill.

**Additional Course Material**

- Lammle, T. (2019). CompTIA Network+ Study Guide: Exam N10-007. 3<sup>rd</sup> Edition. Sybex.



**Course Title: IE121- Supporting Microsoft Windows Desktop Operating System**

**Prerequisites(s):** None

**Credits:** 3.0

**Course Description:** This course will enable the student to install, and configure Windows 10, including ensuring hardware and software compatibility. Share and secure folders, files, and printers in a Windows environment. Configure Internet Explorer security settings.

**Course Objective:** This course prepares students for Microsoft MD-100 Exam.

**Learning outcomes:** Upon successful completion of this course, the student will be able to:

- Install, upgrade, and migrate to Windows 10, and creating a virtual hard disk for Windows deployment
- Configure hardware, applications, and access to resources.
- Configure mobile computing. Using Remote desktop and Managing VPN connections
- Monitor and maintain system that run Windows 10 and Manage quotas.
- Protect the system and data using backups and System restore.

**Instructional Methods:** Class Lecture, Lab and In-Class Discussions include a breakdown of each chapter in the following session that is being attended. In depth Lecture, Lab and In-Class Discussions on Installation, configuration and troubleshooting Windows 10, Driver Signing, Policies, WDS/WSIM Automated Installation, PowerShell. Backups and System Restore. Using Remote Desktop. Configure IPv4 and IPv6 settings.

**Required Course Materials**

- Panek, W. (2019). MCTS Windows 10 Configuration Study Guide: Exam MD-100. Sybex

**Additional Course Material**

- Bettany, Andrew. Exam Ref MD-100 Installing and Configuring Windows 10.



Approximate Amount of Time

Task Requirement	Amount of time (Hours)
Lecture, In-Class Lab and Discussion	46
Project	4
<b>Total In-Class</b>	<b>50</b>
Homework Assignment	20
<b>Total Out-Class</b>	<b>20</b>
<b>Grand Total Hours (In-class and Out-of-Class)</b>	<b>70</b>

Evening Schedule Course Outline

Week	Session	Reading Assignment	Amount of Reading Time
Week 1	Session 1	Chapter 1 – Windows 10 Installation	2.5 hours
	Session 2	Chapter 2 – Installing in an Enterprise Environment Chapter 3- Configuring Devices and Drivers <b>Quiz 1</b>	2.5 hours
Week 2	Session 1	Chapter 4 – Configuring Storage	2.5 hours
	Session 2	Chapter 5 – Configuring the Windows 10 Environment <b>Quiz 2</b> <b>Mid-Term</b>	2.5 hours



Week 3	Session 1	Chapter 6 – Configuring Data Security	2.5 hours
	Session 2	Chapter 7 – Windows 10 Networking Chapter 8 – Installing Applications <b>Quiz 3</b>	2.5 hours
Week 4	Session 1	Chapter 9 – Managing Authorization and Authentication	2.5 hours
	Session 2	Chapter 10 – Configuring Monitoring and Recovery <b>Quiz 4</b> <b>Final Test</b> <b>Final Project</b>	2.5 hours

**Daytime Schedule Course Outline**

Week	Session	Homework Reading Assignment	Amount of homework time (Hours)
Week 1	Session 1	Chapter 1 – Windows 10 Installation	3.5 hours



	Session 2	Chapter 2 – Installing in an Enterprise Environment Chapter 3- Configuring Devices and Drivers <b>Quiz 1</b>	3.5 hours
Week 2	Session 1	Chapter 4 – Configuring Storage	3.5 hours
	Session 2	Chapter 5 – Configuring the Windows 10 Environment <b>Quiz 2</b> Chapter 6 – Configuring Data Security <b>Mid-Term</b>	3.5 hours
Week 3	Session 1	Chapter 7 – Windows 10 Networking Chapter 8 – Installing Applications <b>Quiz 3</b>	3.5 hours
	Session 2	Chapter 9 – Managing Authorization and Authentication Chapter 10 – Configuring Monitoring and Recovery <b>Quiz 4</b> <b>Final Test</b> <b>Final Project</b>	3.5 hours





**Course Title: IE121T – Certification Test Preparation**

**Prerequisites(s): None**

**Credits: 1.0**

**Course Description:** This course reinforces the student learning process by reviewing learned topics with the aid of online simulation tools and computer-based training. It provides additional simulated hands-on experience as the student prepares for the related certification and technical job interview.

**Learning outcomes:** Upon successful completion of this course, the student will be able to:

- Install, upgrade, and migrate to Windows 10, and creating a virtual hard disk for Windows deployment
- Configure hardware, applications, and access to resources.
- Configure mobile computing. Using Remote desktop and Managing VPN connections
- Monitor and maintain system that run Windows 10 and Manage quotas.
- Protect the system and data using backups and System restore.

**Instructional Methods:** Class Lecture, Lab and In-Class Discussions include a breakdown of each chapter in the following session that is being attended. In depth Lecture, Lab and In-Class Discussions on Installation, configuration and troubleshooting Windows 10, Driver Signing, Policies, WDS/WSIM Automated Installation, PowerShell. Backups and System Restore. Using Remote Desktop. Configure IPv4 and IPv6 settings.

**Required Course Materials**

- Panek, W. (2019). MCTS Windows 10 Configuration Study Guide: Exam MD-100. Sybex

**Additional Course Material**

- Bettany, Andrew. Exam Ref MD-100 Installing and Configuring Windows 10.



**Course Title: IE122 - Supporting Microsoft Windows Server Operating System**

**Prerequisites(s): IE121**

**Credits: 3.0**

**Course Description:** Students will learn how to install, manage, monitor, configure, and troubleshoot DNS, and DHCP. Configure DFS, manage network printing, and Configure IPv4 and IPv6 connection settings.

**Course Objective:** Students will learn to operate in medium to very large computing environments that use the Windows 2019 Server operating system.

**Learning outcomes:** Upon successful completion of this course, the student will be able to:

- Install and configure Windows Server 2019
- Configure server roles and features
- Deploy and configure network core services
- Install and administer Active Directory
- Configure File and Print Services

**Instructional Methods:** Class Lecture, Lab and In-Class Discussions include a breakdown of each chapter in the following session that is being attended. In depth Lecture, Lab and In-Class Discussions on Active Directory, DNS and DHCP. Testing configuration machines on securing files and folders using NTFS permissions and EFS. Configure a DHCP relay agent and create DNS zones and records and Manage DNS zone transfers.

**Required Course Materials**

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- Orin, T. (2020). Windows Server 2019 Inside Out. Microsoft Press

**Additional Course Material**

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- Krause, J. (2021). Mastering Windows Server 2019. Packt Publishing



Approximate Amount of Time

Task Requirement	Amount of time (Hours)
Lecture, In-Class Lab and Discussion	46
Project	4
<b>Total In-Class</b>	<b>50</b>
Homework Assignment	20
<b>Total Out-Class</b>	<b>20</b>
<b>Grand Total Hours (In-class and Out-of-Class)</b>	<b>70</b>

Evening Schedule Course Outline

Week	Session	Homework Reading Assignment	Amount of homework time (Hours)
Week 1	Session 1	Lesson 2 - Installation options Lesson 3 - Deployment and Configuration	2.5 hours
	Session 2	Lesson 4 - Active Directory Lesson 5 - DNS, DHCP, and IPAM	2.5 hours
Week 2	Session 1	Lesson 7 - Storage Lesson 8 - File servers <b>Mid-Term</b>	2.5 hours
	Session 2	Lesson 10 - Containers	2.5 hours



Week 3	Session 1	Lesson 11 - Clustering and high availability Lesson 12 - Active Directory Certificate Services	2.5 hours
	Session 2	Lesson 17 - Azure IaaS and hybrid services	2.5 hours
Week 4	Session 1	Lesson 13 – Troubleshooting Methodology and Resolving Core Hardware Problems	2.5 hours
	Session 2	Lesson 20 - Security systems and services Lesson 21 - Maintenance and monitoring <b>Final Test</b> <b>Final Project</b>	2.5 hours

**Daytime Schedule Course Outline**

Week	Session	Homework Reading Assignment	Amount of homework time (Hours)
Week 1	Session 1	Lesson 2 - Installation options Lesson 3 - Deployment and Configuration	3.5 hours



	Session 2	Lesson 4 - Active Directory Lesson 5 - DNS, DHCP, and IPAM	3.5 hours
Week 2	Session 1	Lesson 7 - Storage Lesson 8 - File servers <b>Mid-Term</b>	3.5 hours
	Session 2	Lesson 10 - Containers Lesson 11 - Clustering and high availability	3.5 hours
Week 3	Session 1	Lesson 12 - Active Directory Certificate Services Lesson 17 - Azure IaaS and hybrid services	3.5 hours
	Session 2	Lesson 13 – Troubleshooting Methodology and Resolving Core Hardware Problems Lesson 20 - Security systems and services Lesson 21 - Maintenance and monitoring <b>Final Test</b> <b>Final Project</b>	3.5 hours



**Course Title: IE122T – Certification Test Preparation**

**Prerequisites(s): None**

**Credits: 1.0**

**Course Description:** This course reinforces the student learning process by reviewing learned topics with the aid of online simulation tools and computer-based training. It provides additional simulated hands-on experience as the student prepares for the related certification and technical job interview.

**Learning outcomes:** Upon successful completion of this course, the student will be able to:

- Deploy, manage and maintain servers
- Configure File and Print Services
- Configure a Network Policy Server (NPS) infrastructure
- Configure and manage Active Directory
- Configure and manage Group Policy

**Instructional Methods:** Class Lecture, Lab and In-Class Discussions include a breakdown of each chapter in the following session that is being attended. In depth Lecture, Lab and In-Class Discussions on DNS, DHCP, RRAS, and NAP. Testing configuration machines on configuring LAN routing, secure files and folders using NTFS permissions and EFS. Configure a DHCP relay agent and create DNS zones and records and Manage DNS zone transfers.

**Required Course Materials**

- Panek, W. (2018). MCSA Windows Server 2019 Study Guide: Exams 70-741. Sybex

**Additional Course Material**

- Russel, C. (2018). Exam Ref 70-741 Administering Windows Server 2019 (MCSA). Microsoft Press



**Course Title: IE140 - Planning, Implementing and Administering Microsoft Windows Directory Services**

**Prerequisites(s): IE122**

**Credits: 3.0**

**Course Description:** Students will learn to operate in medium to very large computing environments that use the Windows Server 2019 operating system in the cloud through Microsoft Azure. It will help implement an AD DS in distributed environments that can include complex network services and multiple locations and domain controllers.

**Course Objective:** This course prepares students for Microsoft AZ-900 Exam.

**Learning outcomes:** Upon successful completion of this course, the student will be able to:

- Define cloud computing and concepts
- Implement core solutions and tools
- Configure general security and network settings
- Implement basic identity, governance and privacy
- Manage Azure costs and Service Level Agreements

**Instructional Methods:** Class Lecture, Lab and In-Class Discussions include a breakdown of each chapter in the following session that is being attended. Lecture, Lab and In-Class Discussions on specific topics on Installation, Groups & User management, Organizational units, Domain Controller, Permission, and Backups. Changing domain and forest functional levels. Creation of GPOs and configure GPO settings.

**Required Course Materials**

- Boyce, J. (2021). Microsoft Certified Azure Fundamentals: Exam AZ-900. Sybex

**Additional Course Material**

- Cheshire, J. (2020). Exam Ref AZ-900. Microsoft Azure Fundamentals. Microsoft Press



Approximate Amount of Time

Task Requirement	Amount of time (Hours)
Lecture, In-Class Lab and Discussion	46
Project	4
<b>Total In-Class</b>	<b>50</b>
Homework Assignment	20
<b>Total Out-Class</b>	<b>20</b>
Grand Total Hours (In-class and Out-of-Class)	70

Evening Schedule Course Outline

Week	Session	Homework Reading Assignment	Amount of homework time (Hours)
Week 1	Session 1	Lesson 1 - Describe cloud concepts	2.5 hours
	Session 2	Lesson 2 - Describe core Azure services	2.5 hours
Week 2	Session 1	Lesson 3 - Describe core solutions and management tools on Azure <b>Midterm</b>	2.5 hours
	Session 2	Lesson 4 - Describe general security and network security features	2.5 hours





Week 3	Session 1	Lesson 5 - Describe identity, governance, privacy, and compliance features	2.5 hours
	Session 2	Lesson 5 - Describe identity, governance, privacy, and compliance features	2.5 hours
Week 4	Session 1	Lesson 6 - Describe Azure pricing, SLAs, and lifecycles	2.5 hours
	Session 2	<b>Final Test</b> <b>Final Project</b>	2.5 hours

***Daytime Schedule Course Outline***

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Week	Session	Homework Reading Assignment	Amount of homework time (Hours)
Week 1	Session 1	Lesson 1 - Describe cloud concepts	3.5 hours



	Session 2	Lesson 2 - Describe core Azure services	3.5 hours
Week 2	Session 1	Lesson 3 - Describe core solutions and management tools on Azure <b>Midterm</b>	3.5 hours
	Session 2	Lesson 4 - Describe general security and network security features	3.5 hours
Week 3	Session 1	Lesson 5 - Describe identity, governance, privacy, and compliance features	3.5 hours
	Session 2	Lesson 6 - Describe Azure pricing, SLAs, and lifecycles <b>Final Test</b> <b>Final Project</b>	3.5 hours



**Course Title: IE140T – Certification Test Preparation**

**Prerequisites(s): None**

**Credits: 1.0**

**Course Description:** This course reinforces the student learning process by reviewing learned topics with the aid of online simulation tools and computer-based training. It provides additional simulated hands-on experience as the student prepares for the related certification and technical job interview.

**Learning outcomes:** Upon successful completion of this course, the student will be able to:

- Define cloud computing and concepts
- Implement core solutions and tools
- Configure general security and network settings
- Implement basic identity, governance and privacy
- Manage Azure costs and Service Level Agreements

**Instructional Methods:** Class Lecture, Lab and In-Class Discussions include a breakdown of each chapter in the following session that is being attended. Lecture, Lab and In-Class Discussions on specific topics on Installation, Groups & User management, Organizational units, Domain Controller, Permission, and Backups. Changing domain and forest functional levels. Creation of GPOs and configure GPO settings.

**Required Course Materials**

- Boyce, J. (2021). Microsoft Certified Azure Fundamentals: Exam AZ-900. Sybex

**Additional Course Material**

- Cheshire, J. (2020). Exam Ref AZ-900. Microsoft Azure Fundamentals. Microsoft Press



**Course Title: IE160 - Planning and Maintaining a Microsoft Windows Network Infrastructure**

**Prerequisites(s): IE122**

**Credits: 3.0**

**Course Description:** The student will learn to analyze the business requirements for a network infrastructure, design and implement a network infrastructure that meets business requirements using Windows Server in the cloud through Microsoft Azure.

**Course Objective:** This course prepares students for Microsoft AZ-104Exam.

**Learning outcomes:** Upon successful completion of this course, the student will be able to:

- Configure and manage high availability
- Implement business continuity and disaster recovery
- Configure Network Services
- Configure the Active Directory infrastructure
- Configure Identity and Access solutions

**Instructional Methods:** Class Lecture, Lab and In-Class Discussions include a breakdown of each chapter in the following session that is being attended. Lecture, Lab and In-Class Discussions on specific topics on Clustering, Access Solutions, Business Continuity and Data Recovery.

**Required Course Materials**

- Skaria, R. (2022). MCA Microsoft Certified Associate Azure Administrator Study Guide: Exam AZ-104. Sybex

**Additional Course Material**

- Patel, H. (2021). Microsoft Azure Administrator Exam Ref AZ-104. Microsoft Press



Approximate Amount of Time

Task Requirement	Amount of time (Hours)
Lecture, In-Class Lab and Discussion	46
Project	4
<b>Total In-Class</b>	<b>50</b>
Homework Assignment	20
<b>Total Out-Class</b>	<b>20</b>
<b>Grand Total Hours (In-class and Out-of-Class)</b>	<b>70</b>

Evening Schedule Course Outline

Week	Session	Homework Reading Assignment	Amount of homework time (Hours)
Week 1	Session 1	Lesson 1. Manage Azure identities and governance	2.5 hours
	Session 2	Lesson 2. Implement and manage storage	2.5 hours
Week 2	Session 1	Lesson 2. Implement and manage storage	2.5 hours
	Session 2	Lesson 3. Deploy and manage Azure compute resources <b>Mid-Term</b>	2.5 hours



Week 3	Session 1	Lesson 4. Configure and manage virtual networking	2.5 hours
	Session 2	Lesson 4. Configure and manage virtual networking	2.5 hours
Week 4	Session 1	Lesson 5. Monitor and back up Azure resources	2.5 hours
	Session 2	Lesson 5. Monitor and back up Azure resources <b>Final Test</b> <b>Final Project</b>	2.5 hours

***Daytime Schedule Course Outline***

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Week	Session	Homework Reading Assignment	Amount of homework time (Hours)
Week 1	Session 1	Lesson 1. Manage Azure identities and governance	3.5 hours



	Session 2	Lesson 2. Implement and manage storage	3.5 hours
Week 2	Session 1	Lesson 3. Deploy and manage Azure compute resources <b>Mid-Term</b>	3.5 hours
	Session 2	Lesson 4. Configure and manage virtual networking	3.5 hours
Week 3	Session 1	Lesson 5. Monitor and back up Azure resources	3.5 hours
	Session 2	Lesson 5. Monitor and back up Azure resources <b>Final Test</b> <b>Final Project</b>	3.5 hours



**Course Title: IE160T – Certification Test Preparation**

**Prerequisites(s): None**

**Credits: 1.0**

**Course Description:** This course reinforces the student learning process by reviewing learned topics with the aid of online simulation tools and computer-based training. It provides additional simulated hands-on experience as the student prepares for the related certification and technical job interview.

**Learning outcomes:** Upon successful completion of this course, the student will be able to:

- Configure and manage high availability
- Implement business continuity and disaster recovery
- Configure Network Services
- Configure the Active Directory infrastructure
- Configure Identity and Access solutions

**Instructional Methods:** Class Lecture, Lab and In-Class Discussions include a breakdown of each chapter in the following session that is being attended. Lecture, Lab and In-Class Discussions on specific topics on Clustering, Access Solutions, Business Continuity and Data Recovery.

**Required Course Materials**

- Skaria, R. (2022). MCA Microsoft Certified Associate Azure Administrator Study Guide: Exam AZ-104. Sybex

**Additional Course Material**

- Patel, H. (2021). Microsoft Azure Administrator Exam Ref AZ-104. Microsoft Press





**Course Title: IE170 - Technical Career Preparation Workshop**

**Pre-Requisites:** None

**Credits:** 2.0

**Course Description:** To enable students to obtain a job using effective resume, good interviewing skills and effective job search methods.

**Learning outcomes:** Upon successful completion of this course, the student will be able to:

- Create an effective resume.
- Learn effective methods for job searching.
- Learn how to get ready for a personal and technical interview.
- Technical interview preparation.

**Instructional Methods:** Class Lecture, Lab and In-Class Discussions include a breakdown of each chapter in the following session that is being attended. Lecture, Lab and In-Class Discussions on specific topics on Resume preparation, interviewing skills and preparation, cover letter preparation, job hunting strategies, following-upon an interview.

**Required Course Materials**

- Getting a Good Job in Less Time (PC AGE)

**Approximate Amount of Time**

Task Requirement	Amount of time (Hours)
Distance Learning	26
Lecture, Lab and In-Class Discussion	4
Total Hours	30

**Grading**

Students have to:

- Attend the Lecture, Lab and In-Class Discussion on Resume Writing and Interview Preparation
- Students have to complete all the required online modules by the end of the course.



- Grading based as an average of the scores obtained in all completed modules. If a student has a failing grade for Distance Learning because of not being able to complete all the required modules by the end of the course, he/she will be given an extra week and awarded a grade of 70 when all the hours are completed, otherwise he/she will keep the same grade.

### Course Outline

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	Topics	Time
1	Getting the Interview	3.0 hour(s)
2	Preparing Yourself	3.0 hour(s)
3	Making an Entrance	3.0 hour(s)
4	Listening and Answering	3.0 hour(s)
5	Taking the Reins	3.0 hour(s)
6	Asking Questions	3.0 hour(s)
7	Opening Interviews	2.0 hour(s)
8	Tough Interviews	3.0 hour(s)
9	Following Through	2.0 hour(s)
10	Coaching Videos	5.0 hours
	<b>Total</b>	<b>30.0 hours</b>



**Course Title: IE180 - Implementing and Managing Security in a Microsoft Windows Network**

**Prerequisites(s): IE110/IE100**

**Credits: 3.0**

**Objective:** Give students the knowledge and skills to design, implement, administer, and troubleshoot network security with such encryption like SSL, Kerberos, EFS and Bitlocker.

**Course Objective:** This course prepares students for CompTIA Security+ SY0-601 Exam.

**Learning outcomes:** Upon successful completion of this course, the student will be able to:

- Understand the concepts of authentication, encryption, access control and logging.
- Configure SSL connections and Configure Kerberos settings
- Plan, implement and test an enterprise security strategy
- Identify penetration testing such as White, Black, and Grey box testing.
- Identify and implement appropriate disaster recovery procedures

**Instructional Methods:** Class Lecture, Lab and In-Class Discussions include a breakdown of each chapter in the following session that is being attended. Lecture, Lab and In-Class Discussions on specific topics on Authentication, Encryption, Security Protocols, Network Security Devices, and Access Permissions. Secure remote access connections. Configure the Windows Firewall. Secure folder and file access using DACLs.

**Required Course Materials**

- Chapple, M. (2021). CompTIA Security+ Study Guide: Exam SY0-601. Sybex

**Additional Course Material**

- Conklin, W., White, G., Williams, D, Davis, R., Cothren, C. (2021). CompTIA Security + All-in-One Exam Guide (Exam SY0-601), 6th Edition. McGraw-Hill



Approximate Amount of Time

Task Requirement	Amount of time (Hours)
Lecture, In-Class Lab and Discussion	46
Project	4
<b>Total In-Class</b>	<b>50</b>
Homework Assignment	20
<b>Total Out-Class</b>	<b>20</b>
<b>Grand Total Hours (In-class and Out-of-Class)</b>	<b>70</b>

Evening Schedule Course Outline

Week	Session	Homework Reading Assignment	Amount of homework time (Hours)
Week 1	Session 1	Chapter 1: Managing Risk Chapter 2: Monitoring and Diagnosing Networks	2.5 hours
	Session 2	Chapter 3: Understanding Devices and Infrastructure <b>Quiz 1</b>	2.5 hours
Week 2	Session 1	Chapter 4: Identity and Access Management Chapter 5: Wireless Networks Threats	2.5 hours
	Session 2	Chapter 6: Securing the Cloud <b>Quiz 2</b> <b>Mid-Term</b>	2.5 hours



Week 3	Session 1	Chapter 7: Host, Data, and Application Security Chapter 8: Cryptography	2.5 hours
	Session 2	Chapter 9: Threats, Attacks and Vulnerabilities <b>Quiz 3</b>	2.5 hours
Week 4	Session 1	Chapter 10: Social Engineering and Other Foes Chapter 11: Security Administration	2.5 hours
	Session 2	Chapter 12: Disaster Recovery and Incident Response <b>Quiz 1</b> <b>Final</b> <b>Final Project</b>	2.5 hours

**Daytime Schedule Course Outline**

Week	Session	Homework Reading Assignment	Amount of homework time (Hours)
Week 1	Session 1	Chapter 1: Managing Risk Chapter 2: Monitoring and Diagnosing Networks	3.5 hours



	Session 2	Chapter 3: Understanding Devices and Infrastructure <b>Quiz 1</b> Chapter 4: Identity and Access Management	3.5 hours
Week 2	Session 1	Chapter 5: Wireless Networks Threats Chapter 6: Securing the Cloud <b>Quiz 2</b>	3.5 hours
	Session 2	Chapter 7: Host, Data, and Application Security Chapter 8: Cryptography <b>Mid-Term</b>	3.5 hours
Week 3	Session 1	Chapter 9: Threats, Attacks and Vulnerabilities <b>Quiz 3</b> Chapter 10: Social Engineering and Other Foes	3.5 hours
	Session 2	Chapter 11: Security Administration Chapter 12: Disaster Recovery and Incident Response <b>Quiz 4</b> <b>Final Test</b> <b>Final Project</b>	3.5 hours



**Course Title: IE180T – Certification Test Preparation**

**Prerequisites(s): None**

**Credits: 1.0**

**Course Description:** This course reinforces the student learning process by reviewing learned topics with the aid of online simulation tools and computer-based training. It provides additional simulated hands-on experience as the student prepares for the related certification and technical job interview.

**Learning outcomes:** Upon successful completion of this course, the student will be able to:

- Understand the concepts of authentication, encryption, access control and logging.
- Configure SSL connections and Configure Kerberos settings
- Plan, implement and test an enterprise security strategy
- Identify penetration testing such as White, Black, and Grey box testing.
- Identify and implement appropriate disaster recovery procedures

**Instructional Methods:** Class Lecture, Lab and In-Class Discussions include a breakdown of each chapter in the following session that is being attended. Lecture, Lab and In-Class Discussions on specific topics on Authentication, Encryption, Security Protocols, Network Security Devices, and Access Permissions. Secure remote access connections. Configure the Windows Firewall. Secure folder and file access using DACLs.

**Required Course Materials**

- Chapple, M. (2021). CompTIA Security+ Study Guide: Exam SY0-601. Sybex

**Additional Course Material**

- Conklin, W., White, G., Williams, D, Davis, R., Cothren, C. (2021). CompTIA Security + All-in-One Exam Guide (Exam SY0-601), 6th Edition. McGraw-Hill



**Course Title: IE190 - Introduction to Cisco Router Configuration (CCNA)**

**Prerequisites(s): IE115**

**Credits: 3.0**

**Course Description:** The course teaches the networking concepts and basic command required to configure Cisco routers and switches for small sized networks. The student will gain skills in managing Cisco devices with multiple subnets.

**Course Objective:** This course prepares students for Cisco CCNA Exam 200-301.

**Learning outcomes:** Upon successful completion of this course, the student will be able to:

- IP Addressing, subnetting, CIDR and VLSM
- Backup, restore, upgrade Cisco IOS software image.
- Configure and troubleshoot static routes.
- Control router password, identification and messages and list and solve problems that each routing type encounters

**Instructional Methods:** Class Lecture, Lab and In-Class Discussions include a breakdown of each chapter in the following session that is being attended. Lecture, Lab and In-Class Discussions on specific topics like dividing an IP address across multiple networks, configuring and enabling router interfaces, working with the Spanning Tree Protocol, and beginner routers, switches, VTP, and STP.

**Required Course Materials**

- Lammle, T. (2019). CCNA Certification Study Guide, Volume 2: Exam 200-301, 1st Edition. Sybex

**Additional Course Material**

- Odom, W. (2019). Cisco CCNA 200-301 Official Cert Guide, 1<sup>st</sup> Edition. Sybex





Approximate Amount of Time

Task Requirement	Amount of time (Hours)
Lecture, In-Class Lab and Discussion	46
Project	4
<b>Total In-Class</b>	<b>50</b>
Homework Assignment	20
<b>Total Out-Class</b>	<b>20</b>
<b>Grand Total Hours (In-class and Out-of-Class)</b>	<b>70</b>

Evening Schedule Course Outline

Week	Session	Homework Reading Assignment	Amount of homework time (Hours)
Week 1	Session 1	Chapter 1: Network Fundamentals Chapter 2: TCP/IP Chapter 3: Easy Subnetting <b>Quiz 1</b>	2.5 hours
	Session 2	Chapter 4: Troubleshooting TCP/IP Chapter 5: IP Routing	2.5 hours
Week 2	Session 1	Chapter 6: OSPF <b>Quiz 2</b>	2.5 hours



	Session 2	Chapter 7: Layer 2 Switching <b>Mid-Term</b>	2.5 hours
Week 3	Session 1	Chapter 8: VLANs and Inter-VLAN Routing	2.5 hours
	Session 2	Chapter 9: Enhanced Switched Technologies <b>Quiz 3</b>	2.5 hours
Week 4	Session 1	Chapter 10: Access Lists	2.5 hours
	Session 2	Chapter 11: Network Address Translations Chapter 12: IP Services <b>Quiz 4</b> <b>Final Test</b> <b>Final Project</b>	2.5 hours



***Daytime Schedule Course Outline***

Week	Session	Homework Reading Assignment	Amount of homework time (Hours)
Week 1	Session 1	Chapter 1: Network Fundamentals Chapter 2: TCP/IP	3.5 hours
	Session 2	Chapter 3: Easy Subnetting <b>Quiz 1</b> Chapter 4: Troubleshooting TCP/IP	3.5 hours
Week 2	Session 1	Chapter 5: IP Routing Chapter 6: OSPF <b>Quiz 2</b> <b>Mid-Term</b>	3.5 hours
	Session 2	Chapter 7: Layer 2 Switching Chapter 8: VLANs and Inter-VLAN Routing <b>Quiz 3</b>	3.5 hours
Week 3	Session 1	Chapter 9: Enhanced Switched Technologies Chapter 10: Access Lists	3.5 hours
	Session 2	Chapter 11: Network Address Translations Chapter 12: IP Services <b>Quiz 4</b> <b>Final Test</b> <b>Final Project</b>	3.5 hours



**Course Title: IE190T – Certification Test Preparation**

**Prerequisites(s): None**

**Credits: 1.0**

**Course Description:** The course teaches the concepts and command required to configure, secure, manage and troubleshoot Cisco routers for small and medium sized networks. The student will gain skills in managing Cisco devices on a private network, with multiple subnets, connected to the Internet.

**Learning outcomes:** Upon successful completion of this course, the student will be able to:

- IP Addressing, subnetting, CIDR and VLSM
- Backup, restore, upgrade Cisco IOS software image.
- Configure and troubleshoot static routes.
- Control router password, identification and messages and list and solve problems that each routing type encounters

**Instructional Methods:** Class Lecture, Lab and In-Class Discussions include a breakdown of each chapter in the following session that is being attended. Lecture, Lab and In-Class Discussions on specific topics like dividing an IP address across multiple networks, configuring and enabling router interfaces, working with the Spanning Tree Protocol, and beginner routers, switches, VTP, and STP.

**Required Course Materials**

- Lammle, T. (2019). CCNA Certification Study Guide, Volume 2: Exam 200-301, 1st Edition. Sybex

**Additional Course Material**

- Odom, W. (2019). Cisco CCNA 200-301 Official Cert Guide, 1<sup>st</sup> Edition. Sybex



**Course Title: IE195 - Advanced Cisco Router Configuration (CCNA)**

**Prerequisites(s): IE190**

**Credits: 3.0**

**Course Description:** The course teaches the concepts and command required to configure, secure, manage and troubleshoot Cisco routers for small and medium sized networks. The student will gain skills in managing Cisco devices on a private network, with multiple subnets, connected to the Internet.

**Course Objective:** This course prepares students for Cisco CCNA Exam 200-301.

**Learning outcomes:** Upon successful completion of this course, the student will be able to:

- Configure and troubleshoot routing protocols (RIP, OSPF, EIGRP)
- Configure, monitor and troubleshoot routing protocols.
- Install, configure and operate routed LAN and WAN while Improve network reliability and quality of service.
- Control and filter shared Internet access using NAT and ACLs.

**Instructional Methods:** Class Lecture, Lab and In-Class Discussions include a breakdown of each chapter in the following session that is being attended. Lecture, Lab and In-Class Discussions on specific topics such as enabling and disabling switch ports, routing protocol troubleshooting, routing tables, access control lists, VLAN Trunking Protocol (VTP), Frame Relay, and PPP.

**Required Course Materials**

- Lammle, T. (2019). CCNA Certification Study Guide, Volume 2: Exam 200-301, 1st Edition. Sybex

**Additional Course Material**

- Odom, W. (2019). Cisco CCNA 200-301 Official Cert Guide, 1<sup>st</sup> Edition. Sybex



Approximate Amount of Time

Task Requirement	Amount of time (Hours)
Lecture, In-Class Lab and Discussion	46
Project	4
<b>Total In-Class</b>	<b>50</b>
Homework Assignment	20
<b>Total Out-Class</b>	<b>20</b>
<b>Grand Total Hours (In-class and Out-of-Class)</b>	<b>70</b>

Evening Schedule Course Outline

Week	Session	Homework Reading Assignment	Amount of homework time (Hours)
Week 1	Session 1	Chapter 13: Security Chapter 14: First Hop Redundancy Protocol (HSRP)	2.5 hours
	Session 2	Chapter 15: Virtual Private Networks (VPNs) <b>Quiz 1</b>	2.5 hours
Week 2	Session 1	Chapter 16 Quality of Service (QoS) Chapter 17: Internet Protocol Version 6 (IPv6)	2.5 hours
	Session 2	Chapter 18: Troubleshooting IP, IPv6, and VLANs Chapter 19: Wireless Technologies <b>Quiz 2</b> <b>Mid-Term</b>	2.5 hours



Week 3	Session 1	Chapter 20: Configuring Wireless Technologies	2.5 hours
	Session 2	Chapter 21: Virtualization, Automation, and Programmability <b>Quiz 3</b>	2.5 hours
Week 4	Session 1	Chapter 22: SDN Controllers	2.5 hours
	Session 2	Chapter 23: Configuration Management <b>Quiz 4</b> <b>Final Test</b> <b>Final Project</b>	2.5 hours

**Daytime Schedule Course Outline**

Week	Session	Homework Reading Assignment	Amount of homework time (Hours)
Week 1	Session 1	Chapter 13: Security Chapter 14: First Hop Redundancy Protocol (HSRP)	3.5 hours



	Session 2	Chapter 15: Virtual Private Networks (VPNs) Chapter 16 Quality of Service (QoS)	3.5 hours
Week 2	Session 1	Chapter 17: Internet Protocol Version 6 (IPv6) Chapter 18: Troubleshooting IP, IPv6, and VLANs	3.5 hours
	Session 2	Chapter 19: Wireless Technologies Chapter 20: Configuring Wireless Technologies <b>Mid-Term</b>	3.5 hours
Week 3	Session 1	Chapter 21: Virtualization, Automation, and Programmability	3.5 hours
	Session 2	Chapter 22: SDN Controllers Chapter 23: Configuration Management <b>Final Test</b> <b>Final Project</b>	3.5 hours





**Course Title: IE195T – Certification Test Preparation**

**Prerequisites(s): None**

**Credits: 1.0**

**Course Description:** The course teaches the concepts and command required to configure, secure, manage and troubleshoot Cisco routers for small and medium sized networks. The student will gain skills in managing Cisco devices on a private network, with multiple subnets, connected to the Internet.

**Learning outcomes:** Upon successful completion of this course, the student will be able to:

- Configure and troubleshoot routing protocols (RIP, OSPF, EIGRP)
- Configure, monitor and troubleshoot routing protocols.
- Install, configure and operate routed LAN and WAN while Improve network reliability and quality of service.
- Control and filter shared Internet access using NAT and ACLs.

**Instructional Methods:** Class Lecture, Lab and In-Class Discussions include a breakdown of each chapter in the following session that is being attended. Lecture, Lab and In-Class Discussions on specific topics such as enabling and disabling switch ports, routing protocol troubleshooting, routing tables, access control lists, VLAN Trunking Protocol (VTP), Frame Relay, and PPP.

**Required Course Materials**

- Lammle, T. (2019). CCNA Certification Study Guide, Volume 2: Exam 200-301, 1st Edition. Sybex

**Additional Course Material**

- Odom, W. (2019). Cisco CCNA 200-301 Official Cert Guide, 1<sup>st</sup> Edition. Sybex



**Course Title: IE200 – Designing, Implementing and Troubleshooting Windows and Cisco Networks**

**Pre-Requisites:** IE170

**Credits:** 1.0

**Course Description:** The course will enable a student to design, implement and troubleshoot local and wide area networks.

**Learning outcomes:** Upon successful completion of this course, the student will be able to:

- Design and implement a TCP/IP network for a medium sized company.
- Install and configure all the components of network including application servers.
- Install and configure Cisco routers for public network access.
- Implement Remote Access to access company network through internet.
- Deploy a network environment
- Configure network access and filtering.

**Instructional Methods:** Class project that includes coverage of all topics learned in prior courses. Lecture, Lab and In-Class Discussions on specific topics on TCP/IP, LAN, WAN, Routing, Firewall, Proxy, VPN, Domain Controller, DNS, DHCP, Maintaining an Upgrade Infrastructure.

**Approximate Amount of Time**

Task Requirement	Amount of time (Hours)
In Class Project	21
Total Hours	21

**Grading**

Students will earn credit for the course after successful completion of the project.



**Course Title: IE210 - Certification Test Preparation**

**Pre-Requisites:** IE122

**Credits:** 3.0

**Course Objectives:** The course will enable a student to take the certification tests for Microsoft Azure.

**Learning outcomes:** Upon successful completion of this course, the student will be able to:

- How to provision virtual machines
- How to leverage PaaS to develop applications
- How to develop serverless cloud applications
- How to process high-performance computing jobs

**Instructional Methods:** Self- paced and online modules.

**Approximate amount of time**

Task Requirement	Amount of time (Hours)
Distance Learning	45
Total Hours	45

**Grading**

Students have to complete all the required online modules by the end of the course. Grading based as a percentage of the hours that student completed by the end of the course and the number of hours, he/she was required to. For a module's hours to be awarded to the student, a score of 100 must be obtained on the "Done" and "Mastered" columns. If a student has a failing grade for Distance Learning because of not being able to complete all the required hours by the end of the course, he/she will be given an extra week and awarded a grade of 70 when all the hours are completed, otherwise he/she will keep the same grade.



***Distance Learning***

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	Topics	Time (Approx Hrs)
1	Managing Microsoft Azure Identity and Security	21.0 hour(s)
2	Managing Microsoft Azure Storage	12.0 hour(s)
3	Microsoft Azure Deployment	6.5 hour(s)
4	Managing Microsoft Azure Networking	5.5 hour(s)
	<b>Total</b>	<b>45.0 hours</b>



**Course Title: UN 100 – Linux System Administration I**

**Pre-Requisites:** IE100

**Credits:** 3.0

**Course Description:** The course will introduce the students to Linux operating system. Installing, maintaining and troubleshooting packages, patches, users, groups, file system and permission.

**Course Objective:** This course prepares students for CompTIA XK0-104 Exams.

**Learning outcomes:** Upon successful completion of this course, the student will be able to:

- Install the Linux Environment on a Standalone System.
- Install, remove and check status or information about packages and patches.
- Create, Delete, and modify users and groups properties. Work with files and directory structure.
- Configure Linux for Network use.
- Use Terminal Commands and Use commands to manipulate device aliases.

**Instructional Methods:** Class Lecture, Lab and In-Class Discussions include a breakdown of each chapter in the following session that is being attended. Lecture, Lab and In-Class Discussions on specific topics on View command help, Manage files and directories. Create hard and symbolic links, Configure the boot file, manage system and service run, levels, Stop, restart, and manage services. Shut down the system, Manage users and groups. Manage passwords, format a hard disk, mount a volume, manage quotas, and Manage file and directory permissions. Manage printing, and Manage network interfaces

**Required Course Materials**

- Bresnahan, Christine and Blum, Richard (2019). CompTIA Linux+ Study Guide: Exam XK0-104. Sybex.

**Additional Course Material**

- Jordan, Ted (2019). CompTIA Linux+ Certification All-in-One Exam Guide: Exam XK0-004. McGraw-Hill.



Approximate Amount of Time

Task Requirement	Amount of time (Hours)
Lecture, In-Class Lab and Discussion	46
Project	4
<b>Total In-Class</b>	<b>50</b>
Homework Assignment	20
<b>Total Out-Class</b>	<b>20</b>
<b>Grand Total Hours (In-class and Out-of-Class)</b>	<b>70</b>

Evening Schedule Course Outline

Week	Session	Homework Reading Assignment	Amount of homework time (Hours)
Week 1	Session 1	Chapter 1 Preparing Your Environment Chapter 2: Sifting Through Services	2.5 hours
	Session 2	Chapter 3: Managing Files, Directories, and Text	2.5 hours
Week 2	Session 1	Chapter 4: Searching and Analyzing Text Chapter 5: Explaining the Boot Process	2.5 hours
	Session 2	Chapter 6: Maintaining System Startup and Services Chapter 7: Configuring Network Connections <b>Mid-Term Exam</b>	2.5 hours



Week 3	Session 1	Chapter 8: Comparing GUIs Chapter 9: Adjusting Localization Options	2.5 hours
	Session 2	Chapter 10: Administering Users and Groups Chapter 11: Handling Storage	2.5 hours
Week 4	Session 1	Chapter 12: Protecting Files Chapter 13: Governing Software	2.5 hours
	Session 2	Chapter 14: Tending Kernel Modules <b>Final Test</b> <b>Final Project</b>	2.5 hours

**Daytime Schedule Course Outline**

Week	Session	Homework Reading Assignment	Amount of homework time (Hours)
Week 1	Session 1	Chapter 1 Preparing Your Environment Chapter 2: Sifting Through Services	3.5 hours



	Session 2	Chapter 3: Managing Files, Directories, and Text Chapter 4: Searching and Analyzing Text Chapter 5: Explaining the Boot Process	3.5 hours
Week 2	Session 1	Chapter 6: Maintaining System Startup and Services Chapter 7: Configuring Network Connections	3.5 hours
	Session 2	Chapter 8: Comparing GUIs Chapter 9: Adjusting Localization Options Chapter 10: Administering Users and Groups <b>Mid-Term</b>	3.5 hours
Week 3	Session 1	Chapter 11: Handling Storage Chapter 12: Protecting Files	3.5 hours
	Session 2	Chapter 13: Governing Software Chapter 14: Tending Kernel Modules <b>Final Test</b> <b>Final Project</b>	3.5 hours





**Course Title: UN100T – Certification Test Preparation**

**Prerequisites(s): None**

**Credits: 1.0**

**Course Description:** This course reinforces the student learning process by reviewing learned topics with the aid of online simulation tools and computer-based training. It provides additional simulated hands-on experience as the student prepares for the related certification and technical job interview.

**Learning outcomes:** Upon successful completion of this course, the student will be able to:

- Install the Linux Environment on a Standalone System.
- Install, remove and check status or information about packages and patches.
- Create, Delete, and modify users and groups properties. Work with files and directory structure.
- Configure Linux for Network use.
- Use Terminal Commands and Use commands to manipulate device aliases.

**Instructional Methods:** Class Lecture, Lab and In-Class Discussions include a breakdown of each chapter in the following session that is being attended. Lecture, Lab and In-Class Discussions on specific topics on View command help, Manage files and directories. Create hard and symbolic links, Configure the boot file, manage system and service run, levels, Stop, restart, and manage services. Shut down the system, Manage users and groups. Manage passwords, format a hard disk, mount a volume, Manage quotas, and Manage file and directory permissions. Manage printing, and Manage network interfaces

**Required Course Materials**

- Bresnahan, Christine and Blum, Richard (2019). CompTIA Linux+ Study Guide: Exam XK0-104. Sybex.

**Additional Course Material**

- Jordan, Ted (2019). CompTIA Linux+ Certification All-in-One Exam Guide: Exam XK0-004. McGraw-Hill.



**Course Title: UN 110 – Linux System Administration II**

**Pre-Requisites:** UN100

**Credits:** 3.0

**Course Description:** The course will introduce the students to Linux operating system. Installing, maintaining and troubleshooting packages, patches, users, groups, file system and permission.

**Course Objective:** This course prepares students for CompTIA Linux+ XK0-004 Exams.

**Learning outcomes:** Upon successful completion of this course, the student will be able to:

- Create, Delete, and modify users and groups properties.
- Work with files and directory structure.
- Configure Linux for Network use.
- Install, remove and troubleshoot the user interface.
- Perform administrative tasks and customize the shell environment.

**Instructional Methods:** Class Lecture, Lab and In-Class Discussions include a breakdown of each chapter in the following session that is being attended. Lecture, Lab and In-Class Discussions on specific topics on View command help, Manage files and directories. Create hard and symbolic links, Configure the boot file, manage system and service run, levels, Stop, restart, and manage services. Shut down the system, Manage users and groups. Manage passwords, format a hard disk, mount a volume, manage quotas, and Manage file and directory permissions. Manage printing, and Manage network interfaces

**Required Course Materials**

- Bresnahan, Christine and Blum, Richard (2019). CompTIA Linux+ Study Guide: Exam XK0-104. Sybex.

**Additional Course Material**

- Jordan, Ted (2019). CompTIA Linux+ Certification All-in-One Exam Guide: Exam XK0-004. McGraw-Hill.



Approximate Amount of Time

Task Requirement	Amount of time (Hours)
Lecture, In-Class Lab and Discussion	46
Project	4
<b>Total In-Class</b>	<b>50</b>
Homework Assignment	20
<b>Total Out-Class</b>	<b>20</b>
<b>Grand Total Hours (In-class and Out-of-Class)</b>	<b>70</b>

Evening Schedule Course Outline

Week	Session	Homework Reading Assignment	Amount of homework time (Hours)
Week 1	Session 1	Chapter 15: Applying Ownership and Permissions Chapter 16: Looking at Access and Authentication Methods	2.5 hours
	Session 2	Chapter 17: Implementing Logging Services Chapter 18: Overseeing Linux Firewalls	2.5 hours
Week 2	Session 1	Chapter 19: Embracing Best Security Practices Chapter 20: Embracing Best Security Practices	2.5 hours
	Session 2	Chapter 21: Optimizing Performance Chapter 22: Investigating User Issues <b>Mid-Term Exam</b>	2.5 hours



Week 3	Session 1	Chapter 23: Dealing with Linux Devices Chapter 24: Troubleshooting Application and Hardware Issues	2.5 hours
	Session 2	Chapter 25: Deploying Bash Scripts Chapter 26: Automating Jobs	2.5 hours
Week 4	Session 1	Chapter 27: Controlling Versions with Git Chapter 28: Understanding Cloud and Virtualization Concepts	2.5 hours
	Session 2	Chapter 29: Inspecting Cloud and Virtualization Services Chapter 30: Orchestrating the Environment <b>Final Test</b> <b>Final Project</b>	2.5 hours

**Daytime Schedule Course Outline**

Week	Session	Homework Reading Assignment	Amount of homework time (Hours)
Week 1	Session 1	Chapter 15: Applying Ownership and Permissions Chapter 16: Looking at Access and Authentication Methods	3.5 hours



	Session 2	Chapter 17: Implementing Logging Services Chapter 18: Overseeing Linux Firewalls Chapter 19: Embracing Best Security Practices	3.5 hours
Week 2	Session 1	Chapter 20: Embracing Best Security Practices Chapter 21: Optimizing Performance Chapter 22: Investigating User Issues	3.5 hours
	Session 2	Chapter 23: Dealing with Linux Devices Chapter 24: Troubleshooting Application and Hardware Issues Chapter 25: Deploying Bash Scripts <b>Mid-Term</b>	3.5 hours
Week 3	Session 1	Chapter 26: Automating Jobs Chapter 27: Controlling Versions with Git Chapter 28: Understanding Cloud and Virtualization Concepts	3.5 hours
	Session 2	Chapter 29: Inspecting Cloud and Virtualization Services Chapter 30: Orchestrating the Environment <b>Final Test</b> <b>Final Project</b>	3.5 hours



**Course Title: UN110T – Certification Test Preparation**

**Prerequisites(s): None**

**Credits: 1.0**

**UN 110: Linux System Administration II**

**Credits: 3**

**Course Description:** This course reinforces the student learning process by reviewing learned topics with the aid of online simulation tools and computer-based training. It provides additional simulated hands-on experience as the student prepares for the related certification and technical job interview.

**Learning outcomes:** Upon successful completion of this course, the student will be able to:

- Create, Delete, and modify users and groups properties.
- Work with files and directory structure.
- Configure Linux for Network use.
- Install, remove and troubleshoot the user interface.
- Perform administrative tasks and customize the shell environment.

**Instructional Methods:** Class Lecture, Lab and In-Class Discussions include a breakdown of each chapter in the following session that is being attended. Lecture, Lab and In-Class Discussions on specific topics on View command help, Manage files and directories. Create hard and symbolic links, Configure the boot file, Manage system and service run, levels, Stop, restart, and manage services. Shut down the system, Manage users and groups. Manage passwords, Format a hard disk, mount a volume, Manage quotas, and Manage file and directory permissions. Manage printing, and Manage network interfaces

**Required Course Materials**

- Bresnahan, Christine and Blum, Richard (2019). CompTIA Linux+ Study Guide: Exam XK0-104. Sybex.

**Additional Course Material**

- Jordan, Ted (2019). CompTIA Linux+ Certification All-in-One Exam Guide: Exam XK0-004. McGraw-Hill.



**Course Title: IE 230 - Implementing Advanced Network Security**

**Pre-Requisites:** IE180

**Credits:** 3.0

**Course Description:** Provides students with skills on risk management, research and identification of threats and applicable countermeasures and learn how to collaborate securely.

**Course Objective:** This course prepares students for the CompTIA Advanced Security Practitioner (CASP) exam CAS-002.

**Learning outcomes:** Upon successful completion of this course, the student will be able to:

- Analyze network security concepts, components, and architectures, and implement controls
- Use research and analysis to secure the enterprise
- Implement security controls
- Conduct vulnerability assessments
- Conduct incident and emergency responses.

**Instructional Methods:** Class Lecture, Lab and In-Class Discussions include a breakdown of each chapter in the following session that is being attended. Lecture, Lab and In-Class Discussions on specific topics on Host, network, application, and storage integration, Enterprise-level infrastructure security, Secure cloud computing, Enterprise security research and analysis, Advanced authentication tools and techniques, Security policies and procedures, and Best security practices for changing business models.

**Required Course Materials**

- Abernathy, R., McMillan, T. (2015). CompTIA Advanced Security Practitioner (CASP) CAS-002 Cert Guide. 1<sup>st</sup> Edition. Pearson IT Certification.
- Abernathy, R., McMillan, T. (2015). CompTIA Advanced Security Practitioner (CASP) CAS-002 Cert Guide. 1<sup>st</sup> Edition. uCertify.

**Additional Course Material**

- Gregg, M. (2010). CASP CompTIA Advanced Security Practitioner Study Guide: Exam CAS-002. 2<sup>nd</sup> Edition. Sybex.



Approximate Amount of Time

Task Requirement	Amount of time (Hours)
Lecture, In-Class Lab and Discussion	46
Project	4
<b>Total In-Class</b>	<b>50</b>
Homework Assignment	20
<b>Total Out-Class</b>	<b>20</b>
<b>Grand Total Hours (In-class and Out-of-Class)</b>	<b>70</b>

Evening Schedule Course Outline

Week	Session	Homework Reading Assignment	Amount of homework time (Hours)
Week 1	Session 1	Chapter 1: Defending Against Cybersecurity Threats Chapter 2: Reconnaissance and Intelligence Gathering	2.5 hours
	Session 2	Chapter 3: Designing a Vulnerability Management Program Chapter 4: Analyzing Vulnerability Scans	2.5 hours
Week 2	Session 1	Chapter 5: Building an Incident Response Program	2.5 hours
	Session 2	Chapter 6: Analyzing Symptoms for Incident Response Chapter 7: Performing Forensic Analysis <b>Mid-Term Test</b>	2.5 hours





Week 3	Session 1	Chapter 8: Recovery and Post-Incident Response	2.5 hours
	Session 2	Chapter 9: Policy and Compliance Chapter 10: Defense-in-Depth Security Architectures	2.5 hours
Week 4	Chapter 11: Identity and Access Management Security	Chapter 11: Identity and Access Management Security	2.5 hours
	Session 2	Chapter 12: Software Development Security Chapter 13: Cybersecurity Toolkit <b>Final Test</b> <b>Final Project</b>	2.5 hours

**Daytime Schedule Course Outline**

Week	Session	Homework Reading Assignment	Amount of homework time (Hours)
Week 1	Session 1	Chapter 1: Defending Against Cybersecurity Threats Chapter 2: Reconnaissance and Intelligence Gathering	3.5 hours



	Session 2	Chapter 3: Designing a Vulnerability Management Program Chapter 4: Analyzing Vulnerability Scans	3.5 hours
Week 2	Session 1	Chapter 5: Building an Incident Response Program Chapter 6: Analyzing Symptoms for Incident Response	3.5 hours
	Session 2	Chapter 7: Performing Forensic Analysis Chapter 8: Recovery and Post-Incident Response <b>Mid-Term Test</b>	3.5 hours
Week 3	Session 1	Chapter 9: Policy and Compliance Chapter 10: Defense-in-Depth Security Architectures	3.5 hours
	Session 2	Chapter 11: Identity and Access Management Security Chapter 12: Software Development Security Chapter 13: Cybersecurity Toolkit <b>Final Test</b> <b>Final Project</b>	3.5 hours



**Course Title: IE 260 – Ethical Hacking**

**Pre-Requisites:** IE180

**Credits:** 3.0

**Course Description:** Provides students with advanced hacking tools and techniques used by hackers and information security professionals to break into an organization.

**Course Objective:** This course prepares students for the Certified Ethical Hacker 312-50 exam.

**Learning outcomes:** Upon successful completion of this course, the student will be able to:

- Understand the basic elements of information security
- List the 5 stages of ethical hacking
- Understand the different type of hacker attacks
- Understand vulnerability research and list the various vulnerability research tools
- Describe the ways to conduct ethical hacking

**Instructional Methods:** Class Lecture, Lab and In-Class Discussions include a breakdown of each chapter in the following session that is being attended. Lecture, Lab and In-Class Discussions on specific topics on Issues plaguing the information security world, Incident management process, Footprinting, tools and countermeasures, Network scanning and countermeasures, Enumeration and countermeasures, System hacking methodologies and covering tracks, Trojan, analysis and countermeasures, Working of viruses, worms, malware analysis and countermeasures, DoS/DDoS attack techniques, botnets, and countermeasures.

**Required Course Materials**

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- CEHv10 Official Guide. (2019). EC-Council Press.

**Additional Course Material**

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- CEH: Official Certified Ethical Hacker Review Guide. (2019). EC-Council Press.



Approximate Amount of Time

Task Requirement	Amount of time (Hours)
Lecture, In-Class Lab and Discussion	46
Project	4
<b>Total In-Class</b>	<b>50</b>
Homework Assignment	20
<b>Total Out-Class</b>	<b>20</b>
<b>Grand Total Hours (In-class and Out-of-Class)</b>	<b>70</b>

Course Outline

Week	Session	Homework Reading Assignment	Amount of homework time (Hours)
Week 1	Session 1	Chapter 1 - Introduction to Ethical Hacking Chapter 2 - Footprinting and Reconnaissance	2.5 hours
	Session 2	Chapter 3 - Scanning Networks Chapter 4 – Enumeration Chapter 5 - Vulnerability Analysis	2.5 hours
Week 2	Session 1	Chapter 6 - System Hacking Chapter 7 - Malware Threats	2.5 hours
	Session 2	Chapter 8 – Sniffing Chapter 9 - Social Engineering Chapter 10 - Denial-of-Service <b>Mid-Term Test</b>	2.5 hours



Week 3	Session 1	Chapter 11 - Session Hijacking Chapter 12 - Evading IDS, Firewalls, and Honeypots	2.5 hours
	Session 2	Chapter 13 - Hacking Web Servers Chapter 14 - Hacking Web Applications Chapter 15 - SQL Injection	2.5 hours
Week 4	Session 1	Chapter 16 - Hacking Wireless Networks Chapter 17 - Hacking Mobile Platforms	2.5 hours
	Session 2	Chapter 18 - IoT Hacking Chapter 19 - Cloud Computing Chapter 20 - Cryptography <b>Final Test</b> <b>Final Project</b>	2.5 hours

