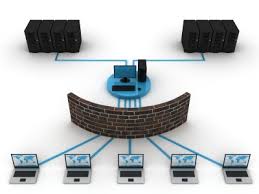
**Computer Networking II**

2021-2022 Course Syllabus

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Location: Room 257

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**Course Description:**

The first course in the CCNA curriculum, Introduction to Networks, covers the architecture, structure, functions and components of the Internet and other computer networks. Students achieve a basic understanding of how networks operate and how to build simple local area networks (LAN), perform basic configurations for routers and switches, and implement Internet Protocol (IP).

The second course in the CCNA curriculum, Switching, Routing, and Wireless Essentials, covers the architecture, components, and operations of routers and switches in small networks and introduces wireless local area networks (WLAN) and security concepts. Students learn how to configure and troubleshoot routers and switches for advanced functionality using security best practices and resolve common issues with protocols in both IPv4 and IPv6 networks. Both of the courses are eligible for Running Start credit. Student are eligible to earn up to 6 college credits.

**Classroom materials:**

Cisco Academy: <https://www.netacad.com>

**Goals and Objectives of this course:**

**CCNA 1: Introduction to Networks**

* Configure switches and end devices to provide access to local and remote network resources.
* Explain how physical and data link layer protocols support the operation of Ethernet in a switched network.
* Configure routers to enable end-to-end connectivity between remote devices.
* Create IPv4 and IPv6 addressing schemes and verify network connectivity between devices.
* Explain how the upper layers of the OSI model support network applications.
* Configure a small network with security best practices.
* Troubleshoot connectivity in a small network.

**CCNA 2: Switching, Routing, and Wireless Essentials**

* Configure VLANs and Inter-VLAN routing applying security best practices.
* Troubleshoot inter-VLAN routing on Layer 3 devices.
* Configure redundancy on a switched network using STP and EtherChannel.
* Troubleshoot EtherChannel on switched networks.
* Explain how to support available and reliable networks using dynamic addressing and first-hop redundancy protocols.
* Configure dynamic address allocation in IPv6 networks.
* Configure WLANs using a WLC and L2 security best practices.
* Configure switch security to mitigate LAN attacks.
* Configure IPv4 and IPv6 static routing on routers.

**Certificates and Certifications available to students:**

**Certificates:**

Upon successful completion of Introduction to Networks and Switching, Routing, and Wireless Essentials, you will receive a certificate of completion and a digital badge from Cisco Systems. Certificates are not certifications, however, they demonstrate that you have completed the training.

**Certifications:**

CCNT – Cisco Certified Network Technician – Routing and Switching

Network+

This course prepares you for these certifications. Certifications are conducted off-site at an independent testing site. These exams have a fee. I have practice exams and study materials if you are interested in pursuing any of these nationally recognized certifications.

**Assessments:**

Graded assignments, testing, projects, and hands-on are evaluated as follows: Formative or Summative. Formative assessments determine how well you are grasping the concepts presented. This could be a vocabulary quiz on new terms introduced, or demonstration on your knowledge of CLI to perform a basic switch configuration. Summative assessments determine how well you have learned the concepts of the chapter(s). Summative assessments would include the Chapter exams, collaborative projects, or overall skill such as building a small LAN network.

**Late work:**

The Computer Networking Program is an Honors-level, Running Start program. What that means is that you can earn college credit and, if you desire, attempt several certifications. In keeping with the expectation that comes with earning college credit, you will submit all work on time.

**Formative assessments and other non-summative categories:**

Instructor will grade these assessments within one week after the due date. Students can re-submit work, **once**, within 5 days after receiving the initial grade. Work is due on the due date, unless negotiated in advance with the instructor. Work submitted late will receive the following score: Grace period of three days after due date; students will lose 10 points each day. On the third day, the highest score you will receive is a 70. Work turned in after three days will receive a grade of 50. If you are struggling with an assignment, please ask for help, attend flex, or arrange time on Wednesday afternoon.

Summative assessments are due on the date assigned. Mid-term and Final Exams are expected to be taken on the day they are assigned. Students that are unable to take an exam on the scheduled day are expected to make arrangements with the teacher, in advance.

The details of grading is as follows:

**Formative: 20%**

* Soft skills, professionalism, conduct
* Quizzes
* Labs
* Competency – demonstration of a particular skill

**Summative: 80%**

* Chapter Exams
* Projects
* Labs
* Competency – demonstration of combined set of skills

**Student Expectations: Whether we are in the classroom or online**

* Arrive on time, be prepared, ready to work, and learn.
* Professionalism. Dress, manners, and attitude. No hats or hoods, please.
* Attendance: In order to do well in this class, you need to present and able to participate. Students who know in advance of a tardy or absence, should discuss with the teacher.
* Follow all safety rules at ALL times.
* Complete all assignments and assessments.
* Be respectful of one another.
* Raise your hand when asking or answering questions.
* Equipment, peripherals, devices, components and tools are in the classroom for all students to use. The removing any equipment, peripherals, devices, components or tools without permission, is considered grounds for removal from the program. You will be receiving equipment and tools to take home with you during virtual learning. It is expected that you will bring back all of the equipment assigned to you. Failure to bring back the equipment will result in an Obligation.
* **Use of personal technology (smart phones, cell phones, iPods, iPads or similar) are at the teacher’s discretion only. Personal technology devices are out of sight and silenced.**

**Course Outline:**

The following schedule of topics is preliminary and may be changed as the school year progresses. Students are expected to read assigned materials before it is covered in class.

**Semester I: Introduction to Networks**

**Quarter 1: Quarter 2:**

|  |  |
| --- | --- |
| * Networking Today | * Basic Router Configuration |
| * Basic Switch and End Device Configuration | * IPv4 Addressing |
| * Protocols and Models | * IPv6 Addressing |
| * Physical Layer * Number Systems * Data Link Layer * Ethernet Switching * Network Layer * Address Resolution | * ICMP * Transport Layer * Application Layer * Network Security Fundamentals * Build a Small Network |

**Semester II: Switching, Routing, and Wireless Essentials**

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| --- | --- |
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**Quarter 3: Quarter 4:**

|  |  |  |  |
| --- | --- | --- | --- |
| * Basic Device Configuration | * FHRP Concepts |  |  |
| * Switching Concepts * VLANs * Inter-VLAN Routing * STP Concepts * EtherChannel * DHCPv4 * SLAAC and DHCPv6 | * LAN Security Concepts * Switch Security Configuration * WLAN Concepts * WLAN Configuration * Routing Concepts * IP Static Routing * Troubleshoot Static and Default Routes |  |  |

**Semester I Schedule:**

|  |  |  |
| --- | --- | --- |
| Week (Estimation) | Lecture Topics | Assignments |
| 1 | Course Overview, Build Accounts  Syllabus  Networking Today | Chapter 1  Quiz, Labs  Chapter Test |
| 2 | Basic Switch and End Device Configuration | Chapter 2  Quiz, Labs  Chapter Test |
| 3 | Protocols and Models | Chapter 3  Quiz, Labs  Chapter Test |
| 4 | Physical Layer | Chapter 4  Quiz, Labs  Chapter Test |
| 5 | Number Systems | Chapter 5  Quiz, Labs  Chapter Test |
| 6 | Data Link Layer | Chapter 6  Quiz, Labs  Chapter Test |
| 7 | Ethernet Switching | Chapter 7  Quiz, Labs  Chapter Test |
| 8 | Network Layer | Chapter 8  Quiz, Labs  Chapter Test |
| 9 | Address Resolution | Chapter 9  Quiz, Labs  Chapter Test |
| 10 | Basic Router Configuration | Chapter 10  Quiz, Labs  Chapter Test |
| 11 | IPv4 Addressing | Chapter 11  Quiz, Labs  Chapter Test |
| 12 | IPv6 Addressing | Chapter 12  Quiz, Labs  Chapter Test |
| 13 | ICMP | Chapter 13  Quiz, Labs  Chapter Test |
| 14 | Transport Layer | Chapter 14  Quiz, Labs  Chapter Test |
| 15 | Application Layer | Chapter 15  Quiz, Labs  Chapter Test |
| 16 | Network Security Fundamentals | Chapter 16  Quiz, Labs  Chapter Test |
| 17 | Build a Small Network | Chapter 17  Quiz, Labs  Chapter Test |