



North Central State College
MASTER SYLLABUS
2019-2020

- A. Academic Division: Business, Industry, and Technology
- B. Discipline: Information Technology - Networking
- C. Course Number and Title: ITEC1680 Scaling Networks (CCNA I)
- D. Course Coordinator: Jesse Payne
Assistant Dean: Toni Johnson, PhD

Instructor Information:

- Name: Click here to enter text.
- Office Location: Click here to enter text.
- Office Hours: Click here to enter text.
- Phone Number: Click here to enter text.
- E-Mail Address: Click here to enter text.

- E. Credit Hours: 2
Lecture: 1 hours
Laboratory: 2 hours
- F. Prerequisites: ITEC1645 (minimum grade of C-)
- G. Syllabus Effective Date: Fall 2019
- H. Textbook(s) Title:

Provided

- I. Workbook(s) and/or Lab Manual:

- J. Course Description: This course describes the architecture and operations of routers and switches in complex networks. Students learn how to configure routers and switches for advanced functionality. Students who successfully complete this course will be able to configure and troubleshoot routers and switches, and resolve common issues with OSPF, EIGRP, and STP, in both IPv4 and IPv6 networks. Students will also develop the knowledge and skills needed to implement WLANs in small to medium-sized business (SMB) networks. This course, together with ITEC1685, prepares students for Cisco's CCNA Routing and Switching certification exam: ICND2 200-105. CTAG: CTIT009

- K. College-Wide Learning Outcomes:

College-Wide Learning Outcome	Assessments - - How it is met & When it is met
Communication – Written	
Communication – Speech	
Intercultural Knowledge and Competence	
Critical Thinking	
Information Literacy	
Quantitative Literacy	

L. Course Outcomes and Assessment Methods:

Upon successful completion of this course, the student shall:

Outcomes	Assessments – How it is met & When it is met
1. Configure and troubleshoot enhanced inter-switch and router connectivity technologies in SMB networks for a given set of conditions	Week 1 tests, labs, practice and final exams
2. Implement PVST+ and Rapid PVST+ in a switched LAN environment for a given set of conditions	Week 2 tests, labs, practice and final exams
3. Implement link aggregation and HSRP to improve performance and redundancy on high traffic switch links and networks for a given set of conditions	Week 3 tests, labs, practice and final exams
4. Implement EIGRP in a SMB network	Week 4 tests, labs, practice and final exams
5. Configure EIGRP to improve network performance	Week 5 tests, labs, and final exams
6. Troubleshoot common EIGRP configuration issues in a SMB network	Week 6 tests, labs, and final exams
7. Implement single-area, and multiarea OSPFv2/v3	Week 7 tests, labs, and final exams
8. Troubleshoot common OSPF configuration issues in a SMB network	Week 8, tests, labs, and final exams

M. Topical Timeline (Subject to Change):

1 LAN Design

- 1.1 Campus Wired LAN Designs: Explain why it is important to design a scalable hierarchical network.
- 1.2 Selecting Network Devices: Select network devices based on feature compatibility and network requirement.

2 Scaling VLANs

- 2.1 VTP, Extended VLANs, and DTP: Configure enhanced inter-switch connectivity technologies.
- 2.2 Troubleshoot Multi-VLAN Issues: Troubleshoot issues in an inter-VLAN routing environment.
- 2.3 Layer 3 Switching: Implement inter-VLAN routing using Layer 3 switching to forward data in a small to medium-sized business (SMB) LAN.

3 STP

- 3.1 Spanning Tree Concepts: Build a simple switched network with redundant links.
- 3.2 Varieties of Spanning Tree Protocols: Explain how different varieties of spanning tree protocols operate.
- 3.3 Spanning Tree Configuration: Implement PVST+ and Rapid PVST+ in a switched LAN environment.

4 Etherchannel and HSRP

- 4.1 Link Aggregation Concepts: Explain link aggregation operation in a switched LAN environment.
- 4.2 Link Aggregation Configuration: Implement link aggregation to improve performance on high traffic switch links.
- 4.3 First Hop Redundancy Protocols: Implement HSRP.

5 Dynamic Routing

- 5.1 Dynamic Routing Protocols: Explain the features and characteristics of dynamic routing protocols.
- 5.2 Distance Vector Dynamic Routing: Explain how distance vector routing protocols operate.

5.3 Link-State Dynamic Routing: Explain how link-state protocols operate.

6 EIGRP

- 6.1 EIGRP Characteristics: Explain the features and characteristics of EIGRP.
- 6.2 Implement EIGRP for IPv4: Implement EIGRP for IPv4 in a SMB network.
- 6.3 EIGRP Operation: Explain how EIGRP operates in a SMB network.
- 6.4 Implement EIGRP for IPv6: Implement EIGRP for IPv6 in a SMB network.

7 EIGRP Tuning and Troubleshooting

- 7.1 Tune EIGRP: Configure EIGRP to improve network performance.
- 7.2 Troubleshoot EIGRP: Troubleshoot common EIGRP configuration issues in a SMB network.

8 Single-Area OSPF

- 8.1 OSPF Characteristics: Explain how single-area OSPF operates.
- 8.2 Single-Area OSPFv2: Implement single-area OSPFv2.
- 8.3 Single-Area OSPFv3: Implement single-area OSPFv3.

9 Multiarea OSPF

- 9.1 Multiarea OSPF Operation: Explain how multiarea OSPF operates in a SMB network.
- 9.2 Configuring Multiarea OSPF: Implement multiarea OSPFv2 and OSPFv3.

10 OSPF Tuning and Troubleshooting

- 10.1 Advanced Single-Area OSPF Configurations: Configure OSPF to improve network performance.
- 10.2 Troubleshooting Single-Area OSPF Implementations: Troubleshoot common OSPF configuration issues in a SMB network.

N. Course Assignments:

- 1. Tests
- 2. Labs
- 3. Practice Exam
- 4. Final Exam

O. Recommended Grading Scale:

NUMERIC	GRADE	POINTS	DEFINITION
93–100	A	4.00	Superior
90–92	A-	3.67	Superior
87–89	B+	3.33	Above Average
83–86	B	3.00	Above Average
80–82	B-	2.67	Above Average
77–79	C+	2.33	Average
73–76	C	2.00	Average
70-72	C-	1.67	Below Average
67–69	D+	1.33	Below Average
63-66	D	1.00	Below Average
60-62	D-	0.67	Poor
00-59	F	0.00	Failure

P. Grading and Testing Guidelines:

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Q. Examination Policy:

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R. Class Attendance and Homework Make-Up Policy:

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S. Classroom Expectations:

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T. College Procedures/Policies:

Important information regarding College Procedures and Policies can be found on the [syllabus supplement](#) located at <https://sharept.ncstatecollege.edu/committees/1/curriculum/SiteAssets/SitePages/Home/SYLLABUS%20SUPPLEMENT.pdf>

The information can also be found Choose an item.