



**Course Information**

<b>Course Title</b>	Scaling Networks (CISCO 3)
<b>Course Prefix, Num. and Title</b>	ITCC 1478 - Scaling Networks (CISCO 3)
<b>Division</b>	Technology & Business
<b>Department</b>	Computer Science
<b>Course Type</b>	WECM Course
<b>Course Catalog Description</b>	This course describes the architecture, components, and operations of routers and switches in a larger and more complex network. Students learn how to configure routers and switches for advanced functionality. By the end of this course, students will be able to configure and troubleshoot routers and switches and resolve common issues with OSPF, EIGRP, STP, and VTP in both IPv4 and IPv6 networks. Students will also develop the knowledge and skills needed to implement DHCP and DNS operations in a network.
<b>Pre-Requisites</b>	Grade of C or better in ITCC 1476
<b>Co-Requisites</b>	None

**Semester Credit Hours**

<b>Total Semester Credit Hours (SCH): Lecture Hours:</b>	4:3:3
<b>Lab/Other Hours</b>	
<b>Equated Pay Hours</b>	4.5
<b>Lab/Other Hours Breakdown: Lab Hours</b>	3
<b>Lab/Other Hours Breakdown: Clinical Hours</b>	0
<b>Lab/Other Hours Breakdown: Practicum Hours</b>	0
<b>Other Hours Breakdown</b>	0

**Approval Signatures**

<b>Title</b>	<b>Signature</b>	<b>Date</b>
<b>Prepared by:</b>		
<b>Department Head:</b>		
<b>Division Chair:</b>		
<b>Dean/VPI:</b>		
<b>Approved by CIR:</b>		

## Additional Course Information

**Topical Outline:** Each offering of this course must include the following topics (be sure to include information regarding lab, practicum, and clinical or other non-lecture instruction).

Growing the Network  
LAN Redundancy  
Link Aggregation  
Wireless  
Adjust and Troubleshoot Single-Area OSPF  
Multiarea OSPF  
EIGRP  
Adjust and Troubleshoot EIGRP  
IOS File Management

### Course Learning Outcomes:

#### Learning Outcomes – Upon successful completion of this course, students will:

1. Configure and troubleshoot DHCP and DNS operations for IPv4 and IPv6. Understand and describe the operations and benefits of the Spanning Tree Protocol (STP).
2. Configure and troubleshoot STP operations.
3. Understand and describe the operations and benefits of link aggregation and Cisco VLAN Trunk Protocol (VTP).
4. Configure and troubleshoot VTP, STP, and RSTP.
5. Configure and troubleshoot basic operations of routers in a complex routed network for IPv4 and IPv6: A. Open Shortest Path First (OSPF) protocol (single-area OSPF and multi-area OSPF). B. Enhanced Interior Gateway Routing Protocol (EIGRP).
6. Configure and troubleshoot advanced operations of routers and implement RIP, OSPF, and EIGRP routing protocols for IPv4 and IPv6.
7. Manage Cisco IOS Software licensing and configuration files.

#### Methods of Assessment:

All outcomes will be assessed by one or more of the following:

Individual Projects  
Tests and Quizzes  
Lab Assignments  
Final Exam  
Skills Exam

### Required text(s), optional text(s) and/or materials to be supplied by the student:

- CCNA Portable Command Guide Third Edition by Empson ISBN-9781587204302 eBook: 9780133381368
- USB Flash Drive
- High-speed Internet Connection

### Suggested Course Maximum:

18

### List any specific or physical requirements beyond a typical classroom required to teach the course.

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**Course Requirements/Grading System:** Describe any course specific requirements such as research papers or reading assignments and the generalized grading format for the course.

Course Requirements:

Comprehensive Skills Exam: 20-25%

Comprehensive Final Exam: 20-25%

Labs / Homework: 25-30%

Chapter Tests: 20-25%

Attendance / Participation: 0-15%

Grading System:

100-90 = A

89-80 = B

79-70 = C

69-60 = D

and below = F

### Curriculum Checklist:

- Administrative General Education Course** (from ACGM, but not in WCJC Core) – No additional documents needed.
- Administrative WCJC Core Course.** Attach the Core Curriculum Review Forms
  - Critical Thinking
  - Communication
  - Empirical & Quantitative Skills
  - Teamwork
  - Social Responsibility
  - Personal Responsibility
- WECM Course** -If needed, revise the Program SCANS Matrix and Competencies Checklist