

# CCNA 1&2: Networking Basics/Routing

## Course Outcome Summary

### Course Information

<b>Organization</b>	Madison Area Technical College
<b>Developers</b>	Brent Sieling
<b>Development Date</b>	6/10/2008
<b>Revised By</b>	Brent Sieling
<b>Revised Date</b>	2/27/2010
<b>Course Number</b>	10-150-170
<b>Potential Hours of Instruction</b>	72
<b>Total Credits</b>	5

### Description

Introduction to Networking basics and routing with a focus on network terminology, protocols, local area networks (LANs), Open System Interconnection (OSI) model, cabling, routers and router programming, Ethernet, Internet Protocol (IP) addressing, subnetting, Variable Length Subnet Masking (VLSM), Classless Inter-Domain Routing (CIDR) and network standards. The student will develop skills on configuring a router, using the Cisco IOS Software, and configuring routing using static routes and routing protocols, including RIP version 1 & 2, EIGRP, and single area OSPF. Involves extensive lab work using router, switches, and simulations. Note: Must take CCNA3&4: Switching and WAN Access, 10-150-172 within one year of completion of CCNA 1&2: Networking & Routing Basics, 10-150-170.

### Textbooks

*Check current syllabus for textbooks.*

### Learner Supplies

USB 512 MB or greater flash drive.

Engineering Journal.

### Prerequisites

Working knowledge of Microsoft Windows (computer literacy), proficiency with a mouse, and file management.

### Exit Learning Outcomes

#### Core Abilities

- Critical thinking
- Science and Technology
- Self-management

#### Program Outcomes

- Configure, maintain & troubleshoot routing protocols between routers.
- Create and manage a network environment with network operating system commands and a variety of troubleshooting tools. (Windows, Linux)
- Establish network connectivity (switches, VLANs, routers).
- Install, configure and troubleshoot devices in the network (workstations, servers, routers)
- Solve problems individually and in a team environment.

## Competencies

- A. Explain how data flows in a network using the OSI and TCP/IP models and their associated protocols.**
- Linked Core Abilities**  
 Critical thinking  
 Science and Technology
- Linked Program Outcomes**  
 Create and manage a network environment with network operating system commands and a variety of troubleshooting tools. (Windows, Linux)
- You demonstrate your competence:**
- A.1. through labs (and/or)
  - A.2. through hands-on exams (and/or)
  - A.3. through online exams (and/or)
  - A.4. through participation in daily class activities and assignment
- Your performance is successful when:**
- A.1. you meet standards as described by course syllabus and instructor guidelines.
- B. Implement an IPv4 addressing scheme to meet network requirements.**
- Linked Core Abilities**  
 Self-management  
 Critical thinking  
 Science and Technology
- Linked Program Outcomes**  
 Create and manage a network environment with network operating system commands and a variety of troubleshooting tools. (Windows, Linux)
- You demonstrate your competence:**
- B.1. through labs (and/or)
  - B.2. through hands-on exams (and/or)
  - B.3. through online exams (and/or)
  - B.4. through participation in daily class activities and assignment
- Your performance is successful when:**
- B.1. you meet standards as described by course syllabus and instructor guidelines.
- C. Create, apply, and verify a basic IOS configuration to a Cisco device.**
- Linked Core Abilities**  
 Critical thinking  
 Science and Technology  
 Self-management
- Linked Program Outcomes**  
 Configure, maintain & troubleshoot routing protocols between routers.  
 Establish network connectivity (switches, VLANs, routers).  
 Install, configure and troubleshoot devices in the network (workstations, servers, routers)
- You demonstrate your competence:**
- C.1. through labs (and/or)
  - C.2. through hands-on exams (and/or)
  - C.3. through online exams (and/or)
  - C.4. through participation in daily class activities and assignment
- Your performance is successful when:**
- C.1. you meet standards as described by course syllabus and instructor guidelines.

**D. Implement a small network.****Linked Core Abilities**

Critical thinking

Self-management

Science and Technology

**Linked Program Outcomes**

Configure, maintain &amp; troubleshoot routing protocols between routers.

Create and manage a network environment with network operating system commands and a variety of troubleshooting tools. (Windows, Linux)

Establish network connectivity (switches, VLANs, routers).

Install, configure and troubleshoot devices in the network (workstations, servers, routers)

**You demonstrate your competence:**

D.1. through labs (and/or)

D.2. through hands-on exams (and/or)

D.3. through online exams (and/or)

D.4. through participation in daily class activities and assignment

**Your performance is successful when:**

D.1. you meet standards as described by course syllabus and instructor guidelines.

**E. Verify the operation of data networks.****Linked Core Abilities**

Critical thinking

Science and Technology

Self-management

**Linked Program Outcomes**

Configure, maintain &amp; troubleshoot routing protocols between routers.

Establish network connectivity (switches, VLANs, routers).

Solve problems individually and in a team environment.

**You demonstrate your competence:**

E.1. through labs (and/or)

E.2. through hands-on exams (and/or)

E.3. through online exams (and/or)

E.4. through participation in daily class activities and assignment

**Your performance is successful when:**

E.1. you meet standards as described by course syllabus and instructor guidelines.

**F. Explain the route lookup process and determine the path packets will take in the network.****Linked Core Abilities**

Critical thinking

Science and Technology

**Linked Program Outcomes**

Configure, maintain &amp; troubleshoot routing protocols between routers.

**You demonstrate your competence:**

F.1. through labs (and/or)

F.2. through hands-on exams (and/or)

F.3. through online exams (and/or)

F.4. through participation in daily class activities and assignment

**Your performance is successful when:**

F.1. you meet standards as described by course syllabus and instructor guidelines.

**G. Evaluate the characteristics of routing protocols.**

**Linked Core Abilities**

Critical thinking

Science and Technology

**Linked Program Outcomes**

Configure, maintain &amp; troubleshoot routing protocols between routers.

**You demonstrate your competence:**

G.1. through labs (and/or)

G.2. through hands-on exams (and/or)

G.3. through online exams (and/or)

G.4. through participation in daily class activities and assignment

**Your performance is successful when:**

G.1. you meet standards as described by course syllabus and instructor guidelines.

**H. Verify, analyze and troubleshoot static and default routing on a Cisco router.****Linked Core Abilities**

Critical thinking

Science and Technology

Self-management

**Linked Program Outcomes**

Configure, maintain &amp; troubleshoot routing protocols between routers.

Establish network connectivity (switches, VLANs, routers).

Install, configure and troubleshoot devices in the network (workstations, servers, routers)

Solve problems individually and in a team environment.

**You demonstrate your competence:**

H.1. through labs (and/or)

H.2. through hands-on exams (and/or)

H.3. through online exams (and/or)

H.4. through participation in daily class activities and assignment

**Your performance is successful when:**

H.1. you meet standards as described by course syllabus and instructor guidelines.

**I. Verify, analyze and troubleshoot single area RIPv2 on a Cisco router.****Linked Core Abilities**

Critical thinking

Science and Technology

Self-management

**Linked Program Outcomes**

Configure, maintain &amp; troubleshoot routing protocols between routers.

Establish network connectivity (switches, VLANs, routers).

Install, configure and troubleshoot devices in the network (workstations, servers, routers)

Solve problems individually and in a team environment.

**You demonstrate your competence:**

I.1. through labs (and/or)

I.2. through hands-on exams (and/or)

I.3. through online exams (and/or)

I.4. through participation in daily class activities and assignment

**Your performance is successful when:**

I.1. you meet standards as described by course syllabus and instructor guidelines.

**J. Verify, analyze and troubleshoot EIGRP on a Cisco router.****Linked Core Abilities**

Critical thinking  
 Science and Technology  
 Self-management

**Linked Program Outcomes**

Configure, maintain & troubleshoot routing protocols between routers.  
 Establish network connectivity (switches, VLANs, routers).  
 Install, configure and troubleshoot devices in the network (workstations, servers, routers)  
 Solve problems individually and in a team environment.

**You demonstrate your competence:**

- J.1. through labs (and/or)
- J.2. through hands-on exams (and/or)
- J.3. through online exams (and/or)
- J.4. through participation in daily class activities and assignment

**Your performance is successful when:**

- J.1. you meet standards as described by course syllabus and instructor guidelines.

**K. Verify, analyze and troubleshoot single area OSPF on a Cisco router.**

**Linked Core Abilities**

Critical thinking  
 Science and Technology  
 Self-management

**Linked Program Outcomes**

Configure, maintain & troubleshoot routing protocols between routers.  
 Establish network connectivity (switches, VLANs, routers).  
 Install, configure and troubleshoot devices in the network (workstations, servers, routers)  
 Solve problems individually and in a team environment.

**You demonstrate your competence:**

- K.1. through labs (and/or)
- K.2. through hands-on exams (and/or)
- K.3. through online exams (and/or)
- K.4. through participation in daily class activities and assignment

**Your performance is successful when:**

- K.1. you meet standards as described by course syllabus and instructor guidelines.