

Prepared by the Department of Business

Date of Departmental Approval: January 29, 2018

Date Approved by Curriculum and Programs: February 28, 2018

Effective: Fall 2018

1. **Course Number:** BIT248/BIT248L  
**Course Title:** Routing and Switching Essentials (Cisco 2)
2. **Description:** This course covers the structure of small networks connected to the internet utilizing routers and switches. Students learn about routing protocols, Virtual LANs (VLANs) and inter-VLAN routing for both IPv4 and IPv6 networks. Students use simulation tools and network equipment to configure and troubleshoot networking protocols and services. This is the second of two courses necessary for the Cisco Certified Entry Networking Technician (CCENT) exam/Interconnecting Cisco Networking Devices Part 1 (ICND1). (3 class hours/2 laboratory hours)
3. **Student Learning Outcomes:** Upon successful completion of this course, students are able to do the following:
  - Describe basic switching concepts and operation.
  - Describe the purpose, nature, and operation of a router , routing tables, and the route lookup process
  - Demonstrate how VLANs create logically separate networks and how routing occurs between them
  - Compare and describe dynamic routing protocols, distance vector routing protocols, and link-state routing protocols
  - Configure and troubleshoot static routing and default routing (RIP and RIPng)
  - Explain, configure and troubleshoot an Open Shortest Path First (OSPF) network
  - Monitor, configure and troubleshoot access control lists (ACLs) for IPv4 and IPv6 networks
  - Configure and troubleshoot Dynamic Host Configuration Protocol (DHCP) for IPv4 and IPv6 networks
  - Implement and troubleshoot Network Address Translation (NAT) operations
  - Structure a network implementing host routes
  - Monitor and manage networks using device discovery
  - Synchronize clocks between computer systems over packet-switched, variable-latency data networks using; Network Time Protocol (**NTP**)
  - Utilize password recovery when users are unable to log into a network device due to unknown passwords
  - Display proficiency with various networking configurations and commands using different protocols that support small sized networks compliant with the Cisco Academy hands on requirements.
  - Write documentation responding to multiple networking situations, questions and issues.
4. **Credits:** 4 credits
5. **Satisfies General Education Requirement:** No
6. **Prerequisites:** BIT187 (Introduction to Networks (Cisco 1))
7. **Semester Offered:** Varies
8. **Suggested General Guidelines for Evaluation:** hands on labs, simulated labs, homework, quizzes, final
9. **General Topical Outline (optional):**