# CIS 411 – Advanced Routing

## Course Description

This course provides the student with the knowledge necessary to implement, monitor, and maintain advanced network routing services. This includes the capability to plan, configure, and verify the performance and implementation of LAN and WAN routing solutions.

## Instructional Materials

CCNP ROUTE Lab Manual. (2010). Lab companion. Indianapolis, IN: Cisco Press.

Teare, D. (2010). *Implementing Cisco IP Routing (ROUTE) Foundation Learning Guide*. (3rd ed.) Indianapolis, IN: Cisco Press.

Wallace, K., Donohue, D., & Swan, J. (2010). *CCNP Route 642-902 Cert Kit Video Mentor*.

## Course Learning Outcomes

1. Describe advanced IP addressing to include classless inter-domain routing (CIDR), IP Version 6 (IPv6), and Network Address Translation (NAT) with route maps.
2. Identify advanced IP routing commands and principles, including static and dynamic routing characteristics and the concepts of classless routing and network boundary summarization.
3. Analyze and configure Enhanced Interior Gateway Routing Protocol (EIGRP) and Open Shortest Path First (OSPF) for a scalable network.
4. Apply routing updates and packet flow using redistribution, distribution lists, administrative distance, route maps, and policy-based routing.
5. Utilize routing commands based on the CISCO IOS.
6. Configure basic Border Gateway Protocol (BGP) for internal and external connections to include path selection process, default behavior of BGP, and multi-homing.
7. Describe and develop implementation solutions for remote enterprise environments.
8. Describe the implementation process of IPv6 in an enterprise network.
9. Describe security design considerations in routing context for a distributed, mobile, and branch office workforce.
10. Explain and develop secure routing strategies based on the Cisco model.
11. Use technology and information resources to research issues in advanced routing.
12. Write clearly and concisely about advanced routing using proper writing mechanics.