<u>COURSE OUTLINE</u>

Computer Science/Information Systems 187
Advanced Topics in IT

Catalog Statement

CS/IS 187 course will cover the advanced topics in Information Technology including Switching and Routing Concepts and applications, Advanced Networking topics such as Cloud Computing, Advanced Security topics such as effective Intrusion Detection, System, and Network administration. The topics will cover the most current and applicable technologies for the modern business environment.

Total Lecture Units: 3.0
Total Laboratory Units: 0.0
Total Course Units: 3.0

Total Lecture Hours: 48.0
Total Laboratory Hours: 0.0
        Total Laboratory Hours to Be Arranged**:** 0.0
Total Faculty Contact Hours: 48.0

Prerequisite: CS/IS 193 or CS/IS 196 or equivalent.

Course Entry Expectations

Prior to enrolling in the course, the student should be able to:
- describe ethical hacking and appropriate uses of hacking;
- protect computer based networks with security devices;
- use encryption methods to safeguard information;
- test and evaluate network security.

Course Exit Standards

Upon successful completion of the required coursework, the student will be able to:
- define switching and routing concepts;
- apply static and dynamic routes;
- apply system and network administration practices.

Course Content   **Total Faculty Contact Hours = 48.0**
Introduction to Switched Networks **(4 hours)**
        Local area network (LAN) Design
        The Switched Environment

Basic Switching Concepts and Configuration **(4 hours)**
      Basic Switch configuration
      Switch Security Management and Implementation
Virtual Local Area Networks (VLANs) **(4 hours)**
      VLAN Segmentation
      VLAN Implementation
      VLAN Security and Design
Routing Concepts **(4 hours)**
      Initial configuration of a Router
      Routing Decisions
      Router Operation
Static Routing **(4 hours)**
      Static Routing Implementation
      Classless Inter-Domain Routing (CIDR) and Variable-Length Subnet Masking (*VLSM*)
      Troubleshoot Static and Default Route Issues
Routing Dynamically **(4 hours)**
      Dynamic Routing Protocols
      Distance Vector Dynamic Routing
      RIP and RIPng Routing
      Link-State Dynamic Routing
      The Routing Table
Advanced Networking **(6 hours)**
Advanced Security **(6 hours)**
System Administration **(6 hours)**
Network Administration **(6 hours)**

Methods of Instruction

The following methods of instruction may be used in the course:
- lecture/demonstration;
- simulation.

Out of Class Assignments

The following out of class assignments may be used in the course:
- reports (e.g. reports on assigned reading topics such as current networking, security, system and network administration);
- labs on NETLAB (e.g. simulated labs that provide hands on learning such as advanced networking scenarios).

Methods of Evaluation

The following methods of evaluation may be used in the course:

- hands-on projects (e.g. computing projects);
- problem-solving assignments (e.g. use of networking/security tools);
- quizzes;
- midterm examinations;
- final examination.

Textbook(s)

None. Instructor created material.

Student Learning Outcomes

Upon successful completion of the required coursework, the student will be able to:
- explain how to setup systems and networks utilizing current administrative practice;
- implement static and dynamic routes in a modern day network setup.