Course Name: Network Routers and Switches

Course Number: CST* E229

Credits: 3

Catalog description: A study of the technology involved in incorporating routers and switches into LAN/WAN network topologies. Topics include IP addressing, subnets, routing protocols, VLANs, wireless domains, network emulation, network management tools, network diagnostics, troubleshooting, and management reports. Course content is continually updated to reflect the current state of the art in network design.

The course requires substantial hands-on computer work in a computerized classroom environment.

Prerequisite:

- CST184 Network Administration *or* permission of the instructor
- The ability to perform basic file management and word processing tasks on a personal computer

Corequisite or Parallel:

General Education Competencies Satisfied:

HCC General Education Requirement Designated Competency Attribute Code(s):

None

Additional CSCU General Education Requirements for CSCU Transfer Degree Programs:

None

Embedded Competency(ies):

None

Discipline-Specific Attribute Code(s):

☒ **COMP** **Computer Science Elective**

Course objectives:

General Education Goals and Outcomes:

None

Course Specific Objectives:

1. Develop confidence in recommending a network based hardware solution to support a proposed network topology.
2. Develop an emulation plan to forecast the performance of the proposed hardware configuration.
3. Demonstrate the capacity of reading and comprehending current network related material.
4. Be able to evaluate new vendor products to potentially enhance the function and support of a production network environment.

Course Content:

- Review basic network topologies and the interconnection of these LAN / WAN segments.
- Review IP addressing and subnets.
- Review basic Switch and Router set up.
- Investigate static, dynamic, VLAN and DHCP for configuring switches.
- Study the different routing protocols – pros / cons.
- Build project-based networks that will utilize the various routing protocols.
- Install vendor software for the analysis and debugging of class defined network structures.
- Study the various tools available to document the network structure – the preparation of production documentation.
- Use analysis tools to monitor network performance.
- Use wireshark for the analysis of network packets of information.
- Investigate the TCP/IP network support protocols.
- Create daily management reports.

Date Course Created: Spring 2015

Date of Last Revision: 04/03/2017