Based on ABET CAC Student Learning Outcomes

1. **Course Number and Name:**
   CSET 4750 Computer Networks and Data Communications
2. **Credits and Contact hours:**
   Credits: 4 hours, Contact: 3 lecture hours; 1 lab hours
3. **Instructor's or course coordinator's name:**
   Scott Brahaney
4. **Text book, title, author, and year:**
   Internetworking with TCP/IP Volume 1: Principles, Protocols, and Architecture, 6th Edition, Douglas Comer, 2013
   a. **Other supplemental materials:**
      None
5. **Specific Course Information:**
   a. **Brief description of the content of the course (catalog description):**
      Computer network architectures and their application to industry needs. Major topics include vocabulary, hardware, design concepts, current issues, trends, hardware, multi-user operating systems, network protocols, local and wide area networks, intranet and internet communications, analog and digital data transmissions.
   b. **Pre-requisites, or co-requisites:**
      CSET 2200
6. **Specific goals for the course:**
   a. **Specific outcomes of instruction:**
      1. Use advanced networking to plan and deploy internetworks.
      2. Provide an understanding of sub-networks
      3. Work with the Internetworking concepts: Implement and manage the functions of the Internet protocol suite: TCP/IP, Develop IP address based sub-networking, Implement IP Routing and Routing Protocols, Debug transport level services, Manipulate and troubleshoot application services: E-mail, FTP, Rlogin etc.
      4. Gain hands-on experience with network hardware: Routers (emphasis), Switches
      5. Gain an understanding of the widely used Unix servers across the Internet: Troubleshoot end to end connectivity problems, Diagnose packets, frames and segments traversing a network.
      6. Gain hands-on experience with real-world Cisco routers and switches: Describe the various Cisco IOS software features, Implement Basic IOS Configuration, Describe Remote Management, Develop and implement network designs

b. Explicitly indicate which of the student outcomes listed in Criterion 3 or any other outcomes are addressed by the course: 1, 2, 4

1. An ability to analyze a complex computing problem and to apply principles of computing and other relevant disciplines to identify solutions;

2. An ability to design, implement, and evaluate a computing-based solution to meet a given set of computing requirements in the context of the program's discipline;

4. An ability to recognize professional responsibilities and make informed judgments in computing practice based on legal and ethical principles.

Brief list of topics to be covered:

1. Networks and Inter-networks
2. The OSI Model
3. Physical Layer
4. Data Link Layer
5. Transport Layer and Session Layer
6. Presentation and Application Layer
7. Network Layer
8. IP Addressing and Sub-netting: IPv4, DHCP,IPv6
9. Wide Area Network Design
10. Data Path Determination
11. Basic Router Operations and Configuration
12. IP Routing: RIP, OSPF, BGP
13.Network Security: NAT, Proxy Servers, Firewalls