1. **Course number and name**  
ENGR 476: Computer Communications and Networks

2. **Credits and contact hours**  
2 credit hours; two 50-minute lecture sessions/week, or one 1-hr-40-minute lecture session/week, depending on semester

3. **Instructor's or course coordinator's name**  
Instructor: Hamid Shahnasser,  
Professor of Electrical & Computer Engineering

4. **Text book, title, author, and year**  
Behrouz Forouzan, “Introduction to Data Communications and Networking, 4th edition”,  
McGraw-Hill 2007

   a. **other supplemental materials**  
   (none)

5. **Specific course information**  
   a. **brief description of the content of the course (catalog description)**  
      The objectives of this course is to lay out the available technological precedents and alternatives in setting up a computer communication network ranging from simple local area networks for office automation in small businesses to large wide area networks for applications in geographically dispersed commercial, educational and government enterprises. The course will cover OSI reference model, Ethernet, Frame Relay, ATM, and SONET topics, TCP/IP, DNS.

   b. **prerequisites or co-requisites**  
      Prerequisite: ENGR 103; a grade of C or better in ENGR 356.

   c. **indicate whether a required, elective, or selected elective course in the program**  
      Elective for Electrical and Computer Engineering programs

6. **Specific goals for the course**  
   a. **specific outcomes of instruction, ex. The student will be able to explain the significance of current research about a particular topic.**  
      - To learn various different local area network protocols
      - To learn the wide area networking protocols and technologies
      - To learn about the Transmission Control Protocol/Internet Protocol
      - To learn about Internetworking devices such as bridges and routers
      - To gain experience in implementing programs and protocols
b. explicitly indicate which of the student outcomes listed in Criterion 3 or any other outcomes are addressed by the course.

Course addresses ABET Student Outcome(s): a, c, e, k.

7. Brief list of topics to be covered

- Background Review: OSI Model, Transmission and Media
- IEEE 802.3 Ethernet local area network
- Network Layer: Logical Addressing
- Network Layer: Address mapping, Error reporting
- Switching techniques
- Virtual circuit networks: Frame Relay and Asynchronous Transfer Mode (ATM)
- Synchronous Optical Network (SONET/SDH)
- Internetworking devices: Repeaters, Bridges, Routers and Gateways
- Application Layer Services and Protocols
- Domain Name System (DNS)