

**King Fahd University of Petroleum & Minerals**  
**College of Computer Sciences and Engineering**  
**Computer Engineering Department**

**COE 444 - Internetwork Design and Management (3-0-3)**

SMW: 1:10-2:00 PM, Room: 24-244

Fall 2004 (Term 041)

**Syllabus**

**Catalog Description**

Types of computer networks. Principles of internetworking. The network development life cycle. Network analysis and design methodology. Internetworking hardware. Connectionless internetworking. Connection-oriented internetworking. Routing strategies. Structured wiring and backbone design. OSI internetworking. Network management (SNMP). Network security and firewalls. Network administration. Case studies.

*Prerequisite: COE 342 or consent of instructor.*

**Instructor:** Dr. Mohammed Houssaini Sqalli

**Office:** 22-149      **Phone:** 1725      **Email:** sqalli@ccse.kfupm.edu.sa

**Office hours:** SMW 12:10-1:00PM, SM 8:00-8:30PM, and by appointment.

**Course URL:** <http://www.ccse.kfupm.edu.sa/~sqalli/041/coe444>

**Text Book:** *There is no textbook for this course. Handouts from several references will be provided throughout the course.*

**Grading Policy:**

Attendance	5%
Quizzes	15%
Project	15%
Exam 1	20%
Exam 2	20%
Final Exam	25%

**Exam dates**

October 12, 2004, 6:00-8:00 PM  
December 7, 2004, 6:00-8:00 PM  
Scheduled by the registrar

**Attendance:** attendance is required by all students. Official excuse for an authorized absence must be presented to the instructor no later than one week following the absence. More than 9 unexcused absences lead to a “DN” grade.

## **Course Topics:**

### **1. *Overview of Computer Networks***

**1 week**

Types of computer networks. LANs and WANs. Protocols and protocol families. The OSI reference model. The TCP/IP protocol.

### **2. *Internetworking***

**3 weeks**

Basic terminology. Principles of internetworking. Types of internetworking devices. Repeaters, hubs, bridges, routers, switches and gateways. Transparent and source-routing bridges. Multilayer switches. VLANs. Routing strategies. Addressing.

### **3. *The Network Development Life Cycle***

**1 week**

Network analysis. Network design methodology. Writing of a Request For Proposal (RFP) and quotation analysis. Prototyping/simulation. Implementation.

### **4. *Enterprise Network Design***

**3 weeks**

Enterprise Network Design Model. Backbone design concepts. Network security and firewalls. Structured cabling systems. Case studies.

### **5. *Topology design and analysis***

**3 weeks**

Topology design. Network design algorithms. Terminal assignment. Concentrator location. Traffic flow analysis and performance evaluation. Network reliability. Network simulation.

### **6. *Network Management***

**3 weeks**

Network management standards & models. ISO Functional areas of management. Network management tools and systems. SNMP architecture & operations. Network administration.

### **7. *Project Presentations***

**1 week**

More details will be posted on the course web site about the project.