

## **Proposed University-wide IT Minor**

### **MGMT 411b – Introduction to Data Communications and Networking**

**Catalog Description:** This course focuses on the application of data communications and network technologies for improving organizational functioning. Coverage includes an introduction to the principles of data transmission technology, various communication architectures and protocols, basic network design principles, Internet and intranet technologies, data security issues and elements of network management.

**Prerequisites:** MGMT 345b

#### **COURSE OUTLINE**

**Course Description:** This course focuses on the application of data communications and network technologies for improving organizational functioning. Coverage includes an introduction to the principles of data transmission technology, various communication architectures and protocols, basic network design principles, Internet and intranet technologies, data security issues and elements of network management.

A simple classification of networks by complexity would be 1) the LAN (Local Area Network), 2) the WAN (Wide Area Network), 3) the integrated WAN (for voice and data), and 4) future developments.

- Within the LAN portion of the course, the student would be introduced to the seven layer OSI (Open Systems Interconnection) model beginning with the physical layer and ending with the application layer. The student should also conceptually learn of alternative network topologies, transmission methods, and media alternatives.
- The following WAN coverage would then contrast the new aspects encountered in this setting.
- The third section would encompass the new merging of telephone voice services into the network. The Internet would also enter in this section.
- The final portion of the course would investigate potential future applications resulting from future capabilities.

#### **Course Objectives:**

Following successful completion of the course, students should be able to:

- 1) configure and operate a simple two-node network?
- 2) identify and recommend specific equipment on the market which, when assembled, would allow a multi-node LAN to successfully operate in alternative case settings?
- 3) identify and recommend specific equipment on the market which, when assembled, would allow more complex WANs to successfully operate in alternative case settings?

4) identify and recommend specific equipment on the market which, when assembled, would accommodate the integration of the voice telephone system with the data network of the organization?

5) form a prediction of the future shape of human-technology interactions and a rationale for this possibility?

**Textbook:** A Guide to Designing and Implementing Local and Wide Area Networks, Michael Palmer and Robert Bruce Sinclair. Course Technology – ITP, Cambridge MA, 1999.

**Grading:** Short Answer Exam (100 pts), Design Project (100 pts), Future Technology Project (25 pts)

**Topical Coverage:**

Weeks 1 – 3: Simple Hands-On Configuration and Operation of a Two Node Local Area Network.

Weeks 4 – 6: LAN Connectivity (conceptual textbook presentation), Physical Transmission Options, Transmission Equipment

Weeks 7 – 9: WAN Transmission Methods, TCP/IP

Weeks 10 – 12: Integration of Voice and Data, ATM Technologies

Weeks 13 – 15: Network Protocol Architectures: Advantages and Disadvantages, Future Technologies and Services

**Assessment of Specific Learning Objectives:**

Success in accomplishing the first of the five above objectives would be judged on the basis of actual demonstrations performed by the students for the instructor. The related output from the second, third, and fourth activities would be specific recommendations by students. To understand the appropriate equipment to utilize, the student must learn and apply the concepts describing those specific packages of capabilities. Therefore, application of conceptual learning would be implied. The fifth activity would be much more open-ended. A group paper would document the brain storming activities of the group based upon assigned reading. The completeness of the picture painted should indicate the student's preparation to understand change in the world surrounding them.