

MURRAY STATE UNIVERSITY
DEPARTMENT OF INDUSTRIAL AND ENGINEERING TECHNOLOGY

Course Number: TSM 411

Credit Hours: 3

I. TITLE: Network Design, Operation, and Management

II. CATALOG DESCRIPTION:

Advanced study of network design, operations, and management from a technical point of view. As the capstone to the undergraduate TSM program, the course examines the technologies, tools, and procedures available to network managers as well as the principles of project justification and management. Students will learn to do requirements analysis, estimate cost, and calculate return on investment. Issues of efficiency, performance, reliability, risk management, disaster recovery, and security will be addressed. The course includes a major network design project. Prerequisites: TSM 241, CIS304, and senior standing.

III. PURPOSE:

The purpose of the course is to provide the student with an understanding of the principles of network design, operation, and management, and an overview of the technologies, tools, and procedures available to network managers.

IV. COURSE OBJECTIVES:

By the completion of the course, students will be able to:

- A. Explain and demonstrate how to make a business case for investment in networks
- B. Design and plan for Wide Area Networks
- C. Design and plan for Local Area Networks
- D. Describe management issues and technology for inter-networking
- E. Describe management issues and technology distributed networks
- F. Develop network security plans and measures
- G. Develop network continuity and recovery plans and measures

V. CONTENT OUTLINE:

- A. The Business Case for Networks
 - a. Strategic Positioning
 - b. Major Design Challenges
 - c. Voice versus Data
 - d. Technology Trends
 - e. Legal, Regulatory, and Social Trends
- B. Wide Area Network Design and Planning
 - a. Centralized Network Design
 - b. Distributed Network Design
 - c. Topologies
 - d. Value-Added Network Services
- C. Local Area Network Design and Planning
 - a. LAN Design & Management
 - b. Topologies
 - c. Performance
- D. Architectures
 - a. Intranets
 - b. Extranets
 - c. Client Server
 - d. Distributed Networking
 - e. Storage
- E. Network Security

F. Continuity and Recovery

VI. INSTRUCTIONAL ACTIVITIES:

Lecture, discussion, case studies, hands-on exercises, and problem-based learning.

VII. FIELD, CLINICAL, AND/OR LABORATORY EXPERIENCES:

Students will conduct periodic web based research of course related current events/topics and present the results in class during informal presentations and discussions. Students will design a network to meet a business requirement and justify system cost, schedule and performance.

VIII. RESOURCES:

<http://estudy.murraystate.edu> – MSU Blackboard

IX. GRADING PROCEDURES:

Homework	30 %
Final Project	60 %
Career Planning	10 %
Total	100 %

Grading Scale:

90-100%	A
80-89%	B
70-79%	C
60-69%	D
Below 60%	E

Grievance and Appeals Policy: <http://www.murraystate.edu/cbpa/PDF/Appeals.pdf>.

X. ATTENDANCE POLICY:

This course will adhere to the policy published in the MSU Undergraduate Bulletin.

XI. ACADEMIC HONESTY POLICY:

This course will adhere to the policy published in the MSU Undergraduate Bulletin.

XII. TEXT AND REFERENCES:

McCabe, James D. *“Network Analysis, Architecture, and Design 3rd Ed.”*, 2007, Morgan Kaufmann, ISBN: 978-0-12-370480-1

Other references provided as needed.

XIII. PREREQUISITES:

TSM 241, CIS304, and senior standing

XIV. STATEMENT OF AFFIRMATIVE ACTION AND EQUAL OPPORTUNITY:

Murray State University endorses the intent of all federal and state laws created to prohibit discrimination. Murray State University does not discriminate on the basis of race, color, national origin, gender, sexual orientation, religion, age, veteran status, or disability in employment, admissions, or the provision of services and provides, upon request, reasonable accommodation including auxiliary aids and services necessary to afford individuals with disabilities equal access to participate in all programs and activities.