# **Syllabus for IFSM450** (Telecommunications Systems in Management)

## Course Description

**Prerequisites:** IFSM 300 and IFSM 310. An analysis of technical and managerial perspectives on basic concepts and applications in telecommunication systems. An overview of data communication protocols and standards; local area networks, wide area networks, and internetworks; and trends in telecommunications is provided. The implications of the regulatory environment and communications standards on transmission of voice, data, and image are examined. Students may receive credit for only one of the following courses: CMIS 370, CMSC 370, or IFSM 450.

## Course Goals/Objectives

After completion of this course, you should be able to:

- demonstrate a high-level understanding of terminology associated with business-oriented telecommunications
- discuss the historical and present relationship between telecommunication and information systems
- identify and discuss the business and organizational issues involving telecommunications technology and management
- use financial formulas to develop criteria and costs for telecommunications projects
- discuss the legal and ethical issues involved in telecommunications projects
- demonstrate an understanding of the implications of the global regulatory environment and communications standards on transmission of voice, data, and image
- research and recommend specific telecommunications application appropriate for the end user
- recommend specific network topologies and configurations appropriate for a firm

## Course Materials

Dodd. Essential Guide to Telecommunications, 4th ed. Prentice Hall. (ISBN: 0536279837)

## Course Introduction

Telecommunications is a very exciting field with knowledge and applications for one's current and/or future work. Telecommunication Systems in Management, IFSM 450, is a capstone course that builds on IFSM 300 (Information Systems in Management) and IFSM 310 (Software and Hardware Concepts) or equivalent. IFSM 450 gives the

student a basic foundation in the knowledge and concepts of telecommunications and, at the same time, provides the student with a working knowledge of telecommunications technology, applications, and management.

Telecommunications may be defined as any process that permits the passage of information from a sender to one or more receivers in any usable form (printed copy, fixed or moving pictures, visible or audible signals, etc.) by means of any electromagnetic system (electrical transmission by wire, radio, optical transmission, wave guides, etc.). It includes telegraphy, telephony, video-telephony, data transmission, etc. Note that telephony refers to the engineering science of converting voice and other sounds into electrical signals that can be transmitted by wire, fiber, or radio and reconverted to audible sound upon receipt.

## Grading Criteria

*Section removed.*

## Academic Policies and Procedures

*Section removed.*

## Project Descriptions

### Reading Assignments

Each student is required to read selected papers and tutorials from the LIDO Telecommunications Essentials web site: http://www.telecomessentials.com/articlestutorials1.htm.

1. Go through the Intro by clicking on which version (Flash or Non-Flash)
2. Click on the Learning Center button
3. Click on the Papers and Tutorial platter. To read these you may have to register with the web site to obtain a login and password.

I. **Term Paper**
Each student will prepare a proposal to management on the need and benefits of transition to a new technology. The student may choose any technology related to the course. Specifics include:
- One page memo to management briefly explaining the proposal.
- Two-three (2-3) pages, single spaced proposal with a minimum background, discussion and conclusion areas.
- Include one time and recurring costs
- Show all benefits and risks in implementing technology
- Use diagrams and tables (not included in page count)

Refer to the UMUC Writers Guide for more information on writing style. It can be found on the UMUC web site. Post reports as a student assignment.

II. **Team Project**

Each student will be assigned to a four (4) person team to complete a project. Each team will select one of the following Mini-Case studies:

I. Mini-Case I

Computer Dynamics is a microcomputer software development company that has a 300-computer network. The company is located in three adjacent five-story buildings in an office park, with about 100 computers in each building. The current network is a poorly designed mix of Ethernet and token ring (Ethernet in two buildings and token ring in the other). The networks in all three buildings are heavily overloaded and the company anticipates significant growth in network traffic. There is no network connection among the buildings, but this is one objective in building the new network. Describe the network you would recommend. Describe how it would be configured with the goal of building a new network that will support the company's needs for the next three years with few additional investments. Be sure to include your assumptions and explain why you have designed the network in this way.

II. Mini-Case

Drop and Forge is a small manufacturing firm with a 60-computer network. The company has one very large manufacturing plant with an adjacent office building. The office building houses 50 computers with an additional 10 computers in the plant. The current network is an old 1 Mbps Ethernet that will need to be completely replaced. Describe the network you would recommend and how it would be configured. The goal is to build a new network that will support the company's needs for the next 3 years with few additional investments. Be sure to include the devices and type network circuits you would use. You will need to make some assumptions. So be sure to document your assumptions and explain why you have designed the network in this way.

**The team will prepare a 5-7 page, single-spaced report based on the case. Format and Grading Criteria for Projects**

The report must follow the format below (author: Dr. Lynn Ray). Projects not following this format will drop by two (2) points. The PowerPoint presentation should use bullet statements and cover the main points of the paper.

**Executive Summary (2 points)**
Clearly defines the main points and recommendations at an executive (non-technical) level.
**Overview of project (2 points)**
Define and describe the problem.
**Situation Analysis (5 points)**
Clearly define the Information Systems related issues. Discuss reasoning behind identification of specific problems. Describe any assumptions and how were they handled.
**Solution (5 points)**
Clearly explain the solution to the problems posed. Discuss why the solution was selected.
**Conclusion (3 points)**
Emphasize the main points and solutions.
**Format (2 points)**
Followed format. Provided proper cover sheet and Table of Contents. Numbered papers and provided subheadings as necessary.
**Diagrams and Tables (2 points)**
Diagrams/tables were used and properly labeled.
**References and works cited (2 points)**
At least five references were used, at least three of them were Web-based. References properly identified.
**Grammar, punctuation, spelling and appearance (2 points)**
**TOTAL: 25 Points**

Be sure to include diagrams and tables (not included in page count). Include a separate reference page and include a minimum of five references (not included in page count). Also each team will prepare a short PowerPoint presentation.

Refer to the UMUC Writers Guide for more information on writing style. It can be found on the UMUC web site. Both report and presentation will be posted in the Conference Area.

**Alternate Projects:**

**OVERVIEW**: This project has 4 parts. you are to participate in at least 2 Parts. Part 1 is required from every student. You can select between parts 2 –4.

**Part 1**. Communications-related News (CN)

**REQUIRED of all students *(Part 1)***:

1. Each student must participate in this portion of Project #1. You should subscribe to a Communications-related news service or have access to an online newsweekly (e.g., eWeek, InfoWorld, etc.).
2. No two students can use the same news service. Announce your intentions via the News conference under the News & Reports area in WebTycho, or coordinate with your instructor on your choice.
3. Each student must report/share information at least two times during the semester. When submitting your summaries online, make sure that you number them appropriately (e.g. Project 1 Part 1 Summary 1). Oral reports should be no more than five minutes in duration, not including any ensuing discussions.
4. Present your News items at the beginning of the class session or submit your summaries to the News conference under the News & Reports area as appropriate.
5. Individual reports cannot be submitted in consecutive weeks or reported in consecutive sessions.
6. Try to keep the news related to the weekly topic being studied (or a previous topic).
7. You will edit the articles, news or announcements to summarize the content in your own words. **DO NOT** plagiarize. Use proper citations (MLA or APA styles permitted).
8. Web pages may ***not*** be sent. Web links are allowed in the summary.
9. Always cite the source when writing your summary.
10. Start as soon as possible, but begin sharing appropriate excerpts.

**Students should choose one of the following options:**

**Part 2** NetMeeting (NM) This optional element is for students having access to appropriate computer resources to conduct this project.

1. If you select this portion of Project #1, you need to install or have available Microsoft NetMeeting (minimum version 3) on a computer. NetMeeting is available from the Microsoft web site (http://www.microsoft.com)2
2. Install NetMeeting 3 and practice using it. Familiarize yourself with the program.
3. You should be able to utilize the Chat, Whiteboard, and File Transfer feature.
4. Be prepared to discuss the 'share an application' and 'collaboration' features of NetMeeting.
5. After sufficient proficiency in using NetMeeting, you will be asked to collaborate briefly either with the instructor or with another student at mutually convenient times. Two students can (by arrangement) conduct this project with each other.
6. Submit copies of screenshots, chat sessions, etc. for grading.

**Part 3.** Software Evaluation (SE)

1. If you select this portion of the project, report on a shareware or freeware version of a piece of telecommunications-related software (no hardware).
2. The software should run on Win95/98/ME/2K or XP.
3. No two students can report on the same software.
4. The software you represent should have been tested personally by you or have been used extensively. You should also be informed about the latest release of the product, even though you may not have tested or own it.
5. Include acquisition sources, price, commercial reviews and other important information.
6. Do not send web pages about the software, but rather include web links to relevant information in your written evaluation.
7. Possible sites to acquire shareware: www.shareware.com; www.tucows.com; www.zdnet.com; www.microsoft.com

**Part 4.** Data Encryption

1. Students will procure a version of PGP (Pretty Good Privacy) - freeware/shareware version for evaluation.
2. Every student will install and setup PGP onto a functioning computer under their control.
3. Documentation is included / available at the PGP international site (www.pgpi.com).
4. Please read your documentation carefully; is this material may show up on a quiz or test.
5. There are certain export restrictions which you must respect in the procurement. Please read the licensing agreements.
6. Submit any questions regarding the PGP software first to your group and if your group can't answer your question, submit the question to the conference area. Then other students will have the opportunity to answer, learn or help with your inquiry.
7. Practice sending encrypted messages and decrypting messages within your group. You need only share your public key with your group members to perform this.
8. Make sure you :
    - can send an encrypted message including a digital signature.
    - can send a plaintext message with an encrypted digital signature.
    - can upload an encrypted assignment into WebTycho.
    - make a proper backup of your keys before submitting your key into the WebTycho study group area.
9. After proficiency is reached with PGP, your instructor will exchange several encrypted e-mail messages with you.

**Additional Alternate Projects:**

1. **The Telecom Research Report or Telecom Project**
   Each student is required to complete either a research report or a project dealing with telecommunications. The report or project offers the opportunity to investigate or work in an area of telecommunications that is of special interest.

   **Research Report**
   The research report should consist of 1,500 words or more (about four pages of text). The topic of the research report must be approved so that no student researches the same topic. Once the topic is OK'd, an outline is prepared and references (at least four) are identified. The completed report is then posted in the conference section of webtycho during the latter part of week 11.

   Topic suggestions, Internet references, and guidelines for preparing and delivering the report will be included with assignments one and two. The topic selected for the report is a telecom topic that is not covered in the textbook or is one that goes BEYOND the textbook discussion. AND, most important, the topic should be of particular interest to you and should be one in which information can be located easily. The Internet is an excellent source of information.

   **Project**
   The project is one that is developed / designed by you to address a particular area or application of telecommunications. The project may or may not be related to your work, but the project should be one of particular interest to you. A brief description of the project must be provided so that the suggested project can be easily implemented. Suggestions for projects and guidelines for preparing and delivering a report of the project will be included with assignments one and two.

2. **Review of Other Students Reports/Projects**
   After the reports and/or projects are completed, you are to review a specified number of the reports and/or projects that have been posted by class members. Guidelines for reviewing are provided. These reviews give you an opportunity to increase your knowledge about telecommunications and to strengthen writing and reviewing skills.

3. **Team or Individual Projects/Assignments**
   a. Select a network application for analysis. Investigate the equipment needed, the operation, the cost of installing and operating the network, the pros and cons of the network application. Present your report to the class (or post in the Conferences area, if a distance education course). Include diagrams and any other relevant information. The report should be easily understood and should include sources of your information.

b. Prepare a report/presentation for the president of a small company who wants to know about emerging telecom technologies and networking solutions for decision-making purposes. Explain why the technology should be of interest to the company. Provide a description of the technology including its characteristics and operation. Compare this technology to others and explain it will solve specific problems. Discuss the costs and the compatibility with existing and future technologies.
c. Prepare a feasibility study. Analyze the communications operation of a small company. Prepare a report which examines its existing communications operation and offers suggestions for improvement. For example, the feasibility of a new telephone system might be examined.

## Course Schedule

| Week | Readings/Assignments | Due Date |
|---|---|---|
| **1** | chapters 1 and 2 | |
| **2** | chapters 3 and 4 | |
| **3** | chapter 5 | |
| **4** | chapter 6 | |
| **5** | chapter 7 | |
| **6** | chapter 8 | |
| **7** | chapter 9 | |
| **8** | chapter 7<br><br>**Term paper due** | |
| **9** | chapter 10 | |
| **10** | chapter 11 | |
| **11** | chapter 12 | |
| **12** | chapter 13 | |
| **13** | chapters 14 and 15 | |
| **14** | Review for exam<br>**Team Project Due** | |
| **15** | **FINAL EXAMINATION** | |