COURSE OUTLINE

CITA 220 - DATA COMMUNICATIONS AND NETWORK TECHNOLOGY

Revised by: Minhua Wang
A. **TITLE:** Data Communications and Network Technology

B. **COURSE NUMBER:** CITA 220

C. **CREDIT HOURS:** 3

D. **WRITING INTENSIVE COURSE:** No

E. **COURSE LENGTH:** 15 weeks

F. **SEMESTER(S) OFFERED:** Fall/Spring

G. **HOURS OF LECTURE, LABORATORY, RECITATION, TUTORIAL, ACTIVITY:**
   3 lecture hours per week

H. **CATALOG DESCRIPTION:** A study of terminology, hardware and software associated with data communications and network technology. Areas of study include design principles for human-computer dialogue, selection criteria for communications devices, the technology of data transmission, techniques and message protocols for line control and error processing, local area networks, networking concepts, network topologies and access control, network performance, network services and design issues, and network media and access methods. Design, configuration, operation and maintenance questions are explored. Topics include end-user perspective, network operating systems, cabling, hardware protocols, software and applications, design, and administration. This course should be taken concurrently with CITA 221 Data Communications and Network Technology Lab course.

I. **PRE-REQUISITES/CO-REQUISITES:**
   b. Co-requisite(s): CITA 221 Data Communications and Network Technology Lab

J. **GOALS (STUDENT LEARNING OUTCOMES):**
   By the end of this course, the student will be able to:

<table>
<thead>
<tr>
<th>Course Objective</th>
<th>Institutional SLO</th>
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<tr>
<td><strong>a. Describe the properties and limitations of data communications as implemented for the Internet model</strong></td>
<td>2. Crit. Thinking</td>
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<td>3. Prof. Competence</td>
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<td><strong>b. Specify fundamental data transmission concepts underlying data communication practices used in business</strong></td>
<td>2. Crit. Thinking</td>
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<td>3. Prof. Competence</td>
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<td><strong>c. Enumerate the hardware facilities and protocols required in communications systems</strong></td>
<td>2. Crit. Thinking</td>
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<td>3. Prof. Competence</td>
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<td><strong>d. Explain the basic concepts and models of data communications and networks</strong></td>
<td>2. Crit. Thinking</td>
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<td>3. Prof. Competence</td>
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<td><strong>e. Describe the components of data communications and network systems</strong></td>
<td>2. Crit. Thinking</td>
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<td>3. Prof. Competence</td>
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<td><strong>f. Illustrate the protocols and standards required for networking and inter-networking</strong></td>
<td>2. Crit. Thinking</td>
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<td>3. Prof. Competence</td>
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K. **TEXTS:**

L. **REFERENCES:** N/A

M. **EQUIPMENT:** smart classroom

N. **GRADING METHOD:** A-F

O. **MEASUREMENT CRITERIA/METHODS:**
- Exams
- Quizzes
- Participation

P. **DETAILED COURSE OUTLINE:**

I. Fundamentals of Network Technology
   A. Network Models
   B. History of Network Development

II. The Application Layer
   A. Application architectures
   B. Communications
   C. Services
   D. Protocols

III. The Transport Layer
   A. Delivery protocols
   B. Quality of service

IV. The Network Layer
   A. Network models
   B. Services
   C. Addressing
   D. Routing

V. The Data Link Layer
   A. Data Transmission
   B. Switches

VI. The Physical Layer
   A. Communications Hardware
   B. Types of Networks
   C. Wireless and mobile technology
   D. Multimedia

VII. Network Management
   A. Administration
   B. Performance and Optimization
   C. Design Issues
   D. Security

Q. **LABORATORY OUTLINE:** N/A