COMPSCI 425: Introduction to Computer Networks
3-credit course with 3 lecture hours per week
Course Coordinator: Murali Medidi

Textbook(s) and Supplemental Material

Catalog Description

PREREQ: COMPSCI 253 and COMPSCI 342.

Elective

Goals for the Course
Successful students will be expected to:

• understand the basic concepts of data communications and computer networks (different network types, applications, protocols, OSI layered architecture model, packet switching, etc.)
• understand different layer protocols (application, transport, network, and data link layer)
• understand Internet and principles of the TCP/IP protocol stack
• program simple network applications using socket API

Outcomes Addressed
a. an ability to apply knowledge of computing and mathematics appropriate to the discipline
b. an ability to analyze a problem, and identify and define the computing requirements appropriate to its solution
c. an ability to design, implement, and evaluate a computer-based system, process, component, or program to meet desired needs
i. an ability to use current techniques, skills, and tools necessary for computing practice
j. an ability to apply mathematical foundations, algorithmic principles, and computer science theory in the modeling and design of computer-based systems in a way that demonstrates comprehension of the trade-offs involved in design choices
k. an ability to apply design and development principles in the construction of software systems of varying complexity

Outcomes Assessed: none

Topics Covered
Introduction (Application Layer)
Link Layer (services, error detection & correction, data link protocols)
MAC Layer (channel allocation, media access protocols, Ethernet)
Network Layer (design issues, routing, Internet routing)
Transport Layer (socket programming, transport protocols, UDP, TCP)
Introduction to wireless networking

Grading
A letter grade is assigned to each student at the end of the course based on the numerical scores of these activities:

<table>
<thead>
<tr>
<th>Activity</th>
<th>Weight</th>
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<tbody>
<tr>
<td>Mid-terms (2)</td>
<td>30%</td>
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<tr>
<td>Homeworks</td>
<td>20%</td>
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<tr>
<td>Programming assignments</td>
<td>30%</td>
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<tr>
<td>Final</td>
<td>20%</td>
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**Curriculum Category Content (Credits)**

<table>
<thead>
<tr>
<th>Area</th>
<th>Core</th>
<th>Advanced</th>
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<tbody>
<tr>
<td>Algorithms</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>Software Design</td>
<td>2</td>
<td></td>
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<tr>
<td>Computer Architecture</td>
<td></td>
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<tr>
<td>Data Structures</td>
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<tr>
<td>Programming Languages</td>
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