Faculty of Eng. & Natural Sci.
EE414-202301
Multimedia Communication

Instructor(s)

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<tr>
<th>Name</th>
<th>Email</th>
<th>Office</th>
<th>Phone</th>
<th>Web</th>
</tr>
</thead>
<tbody>
<tr>
<td>Özgür Erçetin</td>
<td><a href="mailto:oercetin@sabanciuniv.edu">oercetin@sabanciuniv.edu</a></td>
<td>FENS-1111</td>
<td>9608</td>
<td><a href="http://people.sabanciuniv.edu/~oercetin/">http://people.sabanciuniv.edu/~oercetin/</a></td>
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Course Content


Objectives

To introduce students with communication networks and networking technologies, performance analysis of networks, multimedia traffic and networking.

Recommend or Required Reading

Textbook


Readings

Alberto Leon-Garcia, Indra Widjaja, Communication Networks, MCGrEW Hill
Dimitri Berstekas, Robert Gallager, Data Networks, Prentice Hall
Assessment Methods and Criteria

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<tr>
<th></th>
<th>Percentage(%)</th>
<th>Number of assessment methods</th>
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<tr>
<td>Final</td>
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<tr>
<td>Midterm</td>
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<td>Quiz</td>
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<td>Individual Project</td>
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<td>2</td>
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Course Outline

Introduction
Networking basics, Reference models, Layering concept
Application Layer
Principles of Network Applications, Web & HTTP, Electronic Mail, Peer-to-peer Applications
Transport Layer
Connectionless Transport (UDP), Principles of Reliable Data Transfer, Connection Oriented Transport (TCP), Principles of Congestion Control, TCP Congestion Control
Network Layer: Data Plane
What's Inside A Router? The Internet Protocol, IPv4, IPv6
Network Layer: Control Plane
Routing Algorithms, Routing in the Internet, Software Defined Networks
The Link Layer and Local Area Networks
Error Detection Techniques, Multiple Access Protocols, Ethernet, WiFi: 802.11 LANs, Link Layer Switches
Multimedia Networking
Multimedia Applications, Protocols for Real-Time Services, Traffic Management
Network Performance Analysis
Traffic characterization, basic queueing models, examples from network queueing problems

Learning Outcomes

By the end of this course, students should be able to:
Describe the operation of existing network technologies
Construct applications or interfaces to work with existing network technologies
Propose networking solutions at all layers
Build models for analyzing network algorithms/protocols
Build simulation models for analyzing the performance of network algorithms/protocols, architectures, deployments, etc.
Use network simulation tools
Record and interpret the results of simulation experiments
Adopt a systematic approach to understand network problems
Improve programming skills by building models in simulation tools
Improve team working skills via course project
Course Policies

The prerequisite is CS201. However, proficiency in MATH 203 is more important.

There will be three programming assignments from your book. We will have bi-weekly homework assignments.