Department of Electrical and Computer Engineering  
Faculty of Engineering and Architecture  
American University of Beirut  

EECE 350: Computer Networks

Catalog Description
A course that outlines data communications; wide area networks; circuit and packet switching; routing; congestion control; local area networks; communications architecture and protocols; internetworking.

Prerequisites
**By course:** STAT 230 Probability and Random Variables, and EECE 330 Data Structures and Algorithms.  
**By topic:** Programming language (such as C++). Basic understanding of probability theory and data structures. Basic understanding of the internal operations of computers

Textbook
J. Kurose and K. Ross, Addison Wesley, 2012
http://kuroseross.com/

Course Objectives
1. An understanding of the basic principles of computer networking.  
2. An overview of the main technologies used in computer networks.  
3. An overview of internetworking principles and how the Internet protocols, routing, and applications operate.  
4. The basic background in computer networks that will allow them to practice in this field, and that will form the foundation for more advanced courses in networking.  
5. The basic skills needed to write network applications.

Topics Covered
1. Introductory concepts  
2. Physical media  
3. Link layer and local area networks  
4. Packet switching  
5. Internetworking  
6. Routing  
7. Transport layer  
8. Network applications  
9. Network programming
Learning Outcomes

1. Understand the basic principles of computer networking, and how network applications communicate.
2. Understand the Internet architecture, including the role of Internet Service Providers, and the composition of the network edge and the network core.
3. Understand how key application-layer protocols such as Web, Email, and DNS work.
4. Have the basic skills needed to write network applications using client-server socket programming.
5. Understand how circuit-switched and packet-switched networks work, and the difference between them.
6. Understand the operations of the transport layer protocols UDP and TCP, and how TCP offers reliability, flow control, and congestion control.
7. Understand the various services of the Internet Protocol, including IPv4 and IPv6, IP addressing, subnetting, DHCP, and ICMP.
8. Understand how routers work.
9. Understand routing principles and algorithms, such as the distance vector and link-state algorithms.
10. Understand how the Internet routing protocols RIP, OSPF, and BGP operate.
11. Are aware of local area network technologies such as Ethernet, Switches, and role of MAC Addressing.

Assessment

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<thead>
<tr>
<th>Component</th>
<th>Percentage</th>
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<tbody>
<tr>
<td>Final</td>
<td>36%</td>
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<tr>
<td>Midterm</td>
<td>30%</td>
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<tr>
<td>Assignments</td>
<td>12%</td>
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<tr>
<td>Project</td>
<td>10%</td>
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<tr>
<td>(programming using Python)</td>
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<tr>
<td>Short quizzes</td>
<td>8%</td>
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<tr>
<td>Class attendance / participation</td>
<td>4%</td>
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</tbody>
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Professional Components

- Engineering topics: 90%
- General education: 0%
- Mathematics and basic sciences: 10%

Person(s) who prepared this description and date of preparation
Ayman Kayssi, February 2013