Course Catalog

3 Credit hours (3 h lectures). The objective of this course is to present students with a firm understanding of fundamentals, as well as the state-of-the-art of telecommunications in a business oriented manner. Telecommunication technology will be reviewed and current practices discussed. Topics include distributed data processing, communication techniques, network design, LANs and PC networking, and if time allows introductory topics in management and security will be presented. This course is focused on the TCP/IP architecture, but the OSI model is introduced and discussed. Topics like OSI reference model, architecture of circuits, message and packet switching networks, network topology, routing, flow control, capacity assignments, protocols, coding and multiplexing, will be presented with case studies related to business scenarios to give students the hands-on experience as well. Emphasis is also given to networking using Windows and Linux with comparisons.

Text Book(s)

<table>
<thead>
<tr>
<th>Title</th>
<th>Applied Data Communications: A Business-Oriented Approach</th>
</tr>
</thead>
<tbody>
<tr>
<td>Author(s)</td>
<td>James E. Goldman and Phillip T. Rawles</td>
</tr>
<tr>
<td>Publisher</td>
<td>John Wiley and Sons, Inc.</td>
</tr>
<tr>
<td>Year</td>
<td>2004</td>
</tr>
<tr>
<td>Edition</td>
<td>4/E</td>
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</tbody>
</table>

Title
Other links to tutorials on software and additional material will be presented on time

References

Books

- Recent references available at JUST university library (book name, author, year, copies available)
- Other links to tutorials on software presented on time.

Internet links

www.mcgrawhill.com
**Instructors**

Instructor: Dr. Mostafa Z. Ali

Office Location: Medical building, Ph4 level -1

Office Phone: 720-1000 ext: 23917

E-mail: mzali@just.edu.jo

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**Class Schedule & Room**

Section 1:
Lecture Time: Sunday, Tuesday, Thursday 09:15 -10:15
Room: CIS LAB1

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**Office Hours**

Sunday, Tuesday, Thursday: 01:15 -2:15

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**Teaching Assistant**

TBD

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**Prerequisites**

Prerequisites by course: Algorithms (CS 211)

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**Topics Covered**

<table>
<thead>
<tr>
<th>Topics</th>
<th>Chapters in Text</th>
<th>Week No.</th>
<th>Case Study posted</th>
</tr>
</thead>
<tbody>
<tr>
<td>The Data Communications Industry</td>
<td>Slides + Goldman [1]</td>
<td>1</td>
<td>1 (ref: Ch1+2)</td>
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<tr>
<td>Basic Data Communication Technology</td>
<td>Slides + Goldman [3]</td>
<td>3</td>
<td>2(ref: Ch3+4)</td>
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<tr>
<td>Local Area Networks</td>
<td>Slides + Goldman [6]</td>
<td>6</td>
<td>3(ref: Ch6+7)</td>
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<tr>
<td>Local Area Network Communications Protocols</td>
<td>Slides + Goldman [7]</td>
<td>7</td>
<td>Final Project</td>
</tr>
<tr>
<td>TCP/IP Network Design</td>
<td>Slides + Goldman [8]</td>
<td>8</td>
<td>4(ref: Ch8+9)</td>
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<tr>
<td>Network Security</td>
<td>Slides + Goldman [12]</td>
<td></td>
<td>If time allows</td>
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**Mapping of Course Objectives to Program Outcomes**

1. Define the term protocol architecture and explain the need for and benefits of a communications architecture

   Assessment method: Exams, Case Studies

2. Give a brief description of the OSI architecture and each of its constituent layers.

   Assessment method: Exams, Case Studies

3. Describe the TCP/IP protocol architecture and explain the functioning of each layer.

   Assessment method: Exams, Case Studies

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1 Lower-case letters in brackets refer to the Program outcomes
Discuss the various transmission impairments that affect the quality and transfer rate of information: attenuation, delay distortion, noise

5. Explain the difference between asynchronous and synchronous transmission

6. Describe the purpose of EIA-232 and other interfacing standards

7. Discuss the various control mechanisms required for two devices to exchange data: flow control, error detection, and error control

8. Explain the need for a data link control protocol

9. Describe the basic operation of a data link control protocol such as HDLC

10. Describe the use of multiplexing in digital carrier systems

11. Explain the difference between statistical TDM and synchronous TDM

12. Explain the need for a communications network for wide area data communications

13. Define packet switching and describe the key elements of packet-switching technology

14. Discuss routing strategies in a switched network and congestion control

15. Discuss the general concepts of local area networks (LANs)

16. Discuss the topologies and transmission media commonly used for LANs and describe the combinations that are usually found

17. Discuss the most important types of high-speed LANs: Ethernet-type, Fiber Channel, token ring, and wireless

Relationship to Program Outcomes (score out of 5)

<table>
<thead>
<tr>
<th>Relationship</th>
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Policy

Attendance

Attendance is very important for the course. In accordance with university policy, students missing more than 10% of total classes are subject to failure. Penalties may be assessed without regard to the student’s performance. Attendance will be recorded at the beginning or end of each class.

Homework/Lab

- Students are expected to keep up with the material as it is presented and submit assignments on time.
- Students handing in similar assignments will receive a grade of 0 (ZERO) and face possible disciplinary actions.

Exams

All exams will be CLOSE-BOOK; necessary algorithms/equations/relations will be supplied as convenient. The date of the Exams will be scheduled later.

Cheating

- Standard JUST policy will be applied.

Makeup

- Makeup exam should not be given unless there is a valid excuse.

Prepared by: Dr. Mostafa Z. Ali

Last Modified: January 1, 2011
Due to ubiquitous communication channels, digital transformation demands for a stronger involvement of internal and external stakeholders \([7, 23-25, 33, 34, 36-38]\). On. All about Applied Data Communications, A Business-Oriented Approach - 4th edition by Jams. Goldman. LibraryThing is a cataloging and social networking site for booklovers. This book uses a top-down approach, starting with the overall business problem, and then showing how technology can solve the problem. ——-Library descriptions. No library descriptions found.