

MIDDLE EAST TECHNICAL UNIVERSITY
Department of Electrical and Electronics Engineering
EE542 Computer Networks

Given by:

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Background Requirement(s):

General background on computer networking. There is a review in the beginning of the course.

Catalog Description:

The layered architecture, Local Area Networks, data link protocols, error correction with FEC and ARQ, routing, flow control, transport protocols, application layer protocols, recent subjects in networking.

Course Overview:

This course is designed to provide the students with a research oriented point of view on recent topics in computer networking. To this end, the first part of the course consists of a reminding overview of the layered architecture of the contemporary computer networks in top-down order. The second part of the course covers introduction and motivation of the recent problems in computer networking by the instructor. Finally each student is expected to select a topic and present a seminal research paper selected from the academic literature in class followed by a project work on the subject. The emphasized theme throughout the course is performance, quality of service and scalability of the discussed new approaches in computer networking.

Textbooks and Reference Material:

- Background: Computer Networking: A Top Down Approach, 6th edition, Jim Kurose, Keith Ross, Addison-Wesley, March 2012.
- Selected journal and conference papers

Tentative Grading:

Midterms: 50%

Final: 30%

Class Project: 20%

Paper Review: 5% (bonus)

Tentative OUTLINE

- **Introduction**
- **Layered Architecture of Computer Networks**
 - **Application Layer**
 - **Transport Layer**
 - **Network Layer**
 - **Data link Layer**
- **Contemporary Topics (tentative, order can change)**
 - **Network architectures for Multimedia Delivery**
 - **Software Defined Networks (SDN)**
 - **Cloud Computing**
 - **Data Center Networking**
 - **Virtualization**
 - **Hardware architectures for IP core and Data Centers**
 - **Content distribution networks (CDN)**
 - **Internet of Things (IoT)**