Given by:
Dr. Ece Güran Schmidt
Office: A402
email: eguran@metu.edu.tr
web: http://users.metu.edu.tr/eguran/

Background Requirement(s):
General background on computer networking. There is a review in the beginning of the course as required by the catalog description.

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, 7th edition, Jim Kurose, Keith Ross, Addison-Wesley, 2016.
- Foundations of Modern Networking: SDN, NFV, QoE, IoT, and Cloud, William Stallings, Addison-Wesley Professional, 2015.
- Selected journal and conference papers for reference and review

Grading:
3 Midterms: 45%
Final: 35%
Class Project+ Paper reviews: 20%

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**
    - **Network Virtualization**
    - **Software Defined Networks (SDN)**
    - **Networks for Cloud Computing and Data Centers**
    - **Network Function Virtualization**
    - **Resource Management**