

## CSE 720 Advanced Computer Networks, Spring 2014

**Instructor:** Assist. Prof. Ömer Korçak    **E-mail:** [omer.korcak@marmara.edu.tr](mailto:omer.korcak@marmara.edu.tr)

**Office:** MB651    **Office hours:** TBA

**Course Description:** Overview of computer networking basics. Overview of network layers and network architectures. Advanced congestion control and congestion avoidance. Multimedia Networking. Quality of Service. Unicast and multicast routing algorithms. Resource Allocation. Security in computer networks. Network Games. Network Management. Basic network design and analysis. Case studies: All-optical networking, Cognitive Radio, Satellite networks, etc.

**Lecture hours:** Thursday 13:30 - 16:30 (MB 654)

**Textbook:** J.F. Kurose and K.W. Ross, Computer Networking: A Top Down Approach, 6th edition, Addison Wesley, 2013. (web site: [http://www.aw.com/kurose\\_ross](http://www.aw.com/kurose_ross))

**References:** Various IEEE and ACM journals and magazines on communications and networks.

### **Grading (tentative):**

Programming Assignment(s): 20%

Attendance: 5%

Midterm: 25%

Term Project: 25% (Report: 15%, Presentation: 10%)

Final: 25%

**Academic Integrity:** Any kind of cheating and plagiarism will be severely penalized. Write everything in your own words and sentences (your own English, even if it is broken!).

**Notes:** Your term project includes a report and an oral presentation. You should chose a hot topic which overlaps with the issues and methods covered in the class. You are expected to read several state-of-art papers on a theoretical or application area related to the subject. This involves a deep understanding of and critically evaluating the papers. You can include not just synthesis of the material you read, but also (in part) your own research or thoughts on the subject. More details will be given in the project specification.

### **Course Outline (tentative):**

1. Overview of Computer Networks Basics
2. Wireless Networks
3. Mobility in Wireless Networks
4. Multimedia Networking (2 weeks)
5. Security in Computer Networks (2 weeks)
6. Network Management
7. Advanced Congestion Control and Congestion Avoidance
8. Advanced Routing Algorithms, Multicast Routing
9. All optical networking
10. Broadband wireless networking
11. Student presentations