General Information

Instructor  
Dr. Marwan M. Krunz  
ECE Building, Room 365  
Email: krunz@email.arizona.edu. Phone: 621-8731  
Office Hours: Monday 11am–12pm and Tuesday 1–2pm, and by appointment

Class Material

There is no textbook for this class. The material will be covered from:

- **Class notes** — Notes will be provided in several parts, which will either be posted on the D2L class page (https://d2l.arizona.edu) or will be emailed directly to students. To access the D2L page, you need to log in using your UA NetID and password.

- **Assigned reading** — Technical articles from the literature will be assigned throughout the semester. Their titles will be announced in class and posted on the class web page, whose URL is given above (Note: This is NOT the same as the D2L page assigned to the class). Electronic copies of such articles can often be obtained from the UA Digital Library. Papers not available in the UA Digital Library will be provided to students. Occasionally, I will be assigning copyrighted material that is not available in electronic form (e.g., a chapter from a published book). Such material will be made available for purchase from Fast Copy at the Student Union. Reading material will be continuously assigned throughout the semester. You should check the class page periodically for the latest assigned reading. Unless indicated otherwise, you are responsible for the content of all assigned papers.

- **IETF RFCs and IEEE standards.**

Prerequisites

- Introductory graduate/undergraduate course to computer networking (e.g., ECE 578).

- Introductory graduate or upper-level undergraduate course in probability theory and random processes (e.g., ECE 503).

Note: Depending on your background, you may still be allowed to enroll in this class even if you have not taken ECE 578 and ECE 503. Discuss your situation with the instructor.

Course Objectives

The goal of this course is to expose students to recent advances in packet networks, with focus on the architectural and protocol aspects underlying the design and operation of these networks. The course covers protocols related to medium access, routing, quality-of-service provisioning, traffic/flow control, and media streaming in various networked systems, including IP-based Internet, wireless LANs, ad hoc networks, sensor networks, dynamic spectrum access (DSA) networks, etc.
In the process of learning network architectures and protocols, students will be exposed to various analytical methods that are used in the design and engineering of next-generation networks. They will also use simulations to evaluate the performance of various design concepts.

**Grading**

<table>
<thead>
<tr>
<th>Component</th>
<th>Percentage</th>
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<tbody>
<tr>
<td>Homework Assignments (3–6)</td>
<td>25%</td>
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<tr>
<td>Quizzes (3–6)</td>
<td>20%</td>
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<tr>
<td>Midterm Exam (tentatively on Wednesday Oct. 22)</td>
<td>20%</td>
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<tr>
<td>Final (on Wednesday Dec. 17, 1-3pm)</td>
<td>25%</td>
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<tr>
<td>Class Participation</td>
<td>10%</td>
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**Remark:** Your homework assignments may require you to perform numerical computations or run discrete-event simulations. For assignments that require numerical computations, you can use C or Matlab. For simulation assignments, you are REQUIRED to use the Csim software. Csim is a C-based programming environment for discrete-event simulation, developed by Mesquite Software. I will spend a few lectures reviewing the basics of Csim, but that will not be enough to cover all of its features. Therefore, you should start reading the Csim documentation on your own as soon as possible, and before I cover it in class. Csim’s *User’s Guide* is available at [http://www.mesquite.com/](http://www.mesquite.com/) (under ‘Documentation’).

**General Course Policies**

- **Academic Integrity:** The University’s Code of Academic Integrity (Section 2.1a) states that students shall not “represent the work of others as their own.” This policy will be applied to all work submitted for a grade: exams, quizzes, homework, computer work, and projects. Any student submitting homework solutions or computer project reports with part(s) copied from solutions provided by any instructor(s) in previous semesters, or from the text solutions manual, or from students who took the course in previous semesters, will automatically receive zero credit for ALL homework/computer work for the entire semester. In other words, all work must be original. The minimum penalty for cheating on exams and quizzes is an E grade. For the homework assignments, group efforts are not permitted and will be considered academic dishonesty.

  You are free to use reference books to help you with assignments, but make sure that you cite any used reference.

- **No late homework will be accepted.**

- **Make-up exams will be given only in emergency, which must be supported by written documentation (e.g., doctor’s letter).**

- **All work must be completed during the semester (i.e., no incompletes will be given).**