

University at Albany, Computer science
Advanced topics in networking: Mobile Wireless Networks

ICSI 525 – Spring18

Meeting time: MW 1:15-2:35PM

Location: HU 025

Instructor	Mariya Zheleva
Instructor title	Assistant Professor
Office location	UAB 418
Office hours	T 3:00PM-4:30PM and W 3:30PM-5:00PM in UAB418
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TAs/Peer educators	N/A

Textbooks: Kurose and Ross, *Computer Networking: A Top-Down Approach Featuring the Internet, 6th edition*¹, and assigned research papers.

COURSE DESCRIPTION:

This course will focus on the state of the art of mobile wireless networks. We will begin with fundamentals in wireless network architectures, protocols and operations. We will learn how are wireless links different than wired and what challenges does this pose to network design and integration. We will study the architecture and operations of networks you use on a daily basis including Wi-Fi 802.11 and mobile cellular networks. We will then transition to our advanced topics by identifying and surveying pitfalls that shape the wireless capacity crunch. We will cover the state of the art of novel technologies for increased network capacity that have the potential to accommodate the multi-zettabytes traffic projections. The students will gain basic practical skills in mobile computing while working on homework assignments. They will also have the opportunity to learn new techniques and concepts while working on an original research project with the end goal of producing real publishable results. In addition, the students will gain experience in efficient reading and understanding of technical papers, and giving public technical presentations.

LEARNING OBJECTIVES/OUTCOMES:

At the completion of this course the students will:

- Understand the operation of mobile wireless networks.
- Reason about the shortcomings in current mobile wireless networks' design.
- Have a grasp on future mobile wireless network technologies.
- Obtain hands-on experience with mobile wireless networks through a practical project.
- Gain technical writing and presentation skills
- Gain critical reading skills

¹ We will only be using Chapter 6 of the textbook, a PDF of which will be made available through Blackboard to all enrolled students.

PREREQUISITES:

Students taking this course should have strong programming skills and should have taken CS1516 or an equivalent.

RESOURCES:

- **Course website:** <http://www.cs.albany.edu/~mariya/courses/csi525S18/>
- **Blackboard:** Blackboard will be used for paper discussion and to disseminate announcements, maintain grades, provide course materials, the most current syllabus, and assignment documents. However, this is not an online course and class attendance and participation is essential and required.

ASSESSMENTS AND POLICIES:

The accomplishment of course objectives will be assessed by applying the studied concepts and tools in a combination of team and individual assignments that includes research and design, a written component, and an oral presentation.

Final project: Students are required to work on a class project that will form 50% of their final grade. The requirements for this assignment are fully described on the course website.

Assignments: Students will have to complete four homework assignments, which will be fully described on the course website. They will be totaled together to account for 30% of the final grade. I do not accept late assignments. All assignments are due by 11:59PM on the due date (unless otherwise specified).

Paper presentation: Each student will have to prepare a presentation of one of the studied research papers. Details and presentation schedule will be posted on the course website. This task will be 10% of the overall grade.

Class participation: Students need to read the assigned materials ahead of class. In cases where the assigned readings are research papers, students must submit a brief commentary on the paper via the Blackboard discussion board **by Midnight the day before class**. Students should also participate in the in-class discussions. This item will comprise 10% of the final grade.

Grading:

- Project -- 45%
 - Project proposal -- 10%
 - Midterm presentation/Demo -- 5%
 - Testing and evaluation specification -- 5%
 - Final class presentation -- 10%
 - Final project report -- 15%
- Exams -- 20%
- Class participation -- 10%
- Homework -- 25%
 - Homework 1 -- 5%
 - Homework 2 -- 10%
 - Homework 3 -- 5%
 - Homework 4 -- 5%

Policy on I grade: A grade of *I* will only be given for genuine extenuating circumstances that are beyond your control ***after the midterm point***. Both of the following conditions must be met:

1. Your work must be in good standing as of the passing of the midterm point, which is Monday, March 19th, 2018; that is, you must have an average score of at least 50% on homework assignments and project milestones up to that point. Furthermore, your grade from the first exam must also be equivalent to at least a C. Therefore, if you miss the first exam or have hardly turned in homework or participated in project development, you are not eligible for an *I* grade.
2. Written documentation must be supplied about the extenuating circumstance either by you or the University administration.

Under no circumstances will the condition for completing an *I* grade be that the entire course be retaken later without a new registration.

Policy on final grades: Final grades are computed based on the above formulas and are NOT negotiable. Per department policy, "...students may not submit additional work or be re-examined for the purpose of improving their grades once the course has been completed and final grades assigned."

Attendance and Class participation: I expect you to attend every class. If you miss a couple of classes, this will affect your grade. I also expect active participation in in-class discussion; if you attend class but do not participate, you will not receive the full class participation credit. To prepare for these discussions, you must read the assigned reading before coming to class and participate in the Blackboard discussions. I will use a tool called Socrative to facilitate class discussion, get feedback on your learning and track attendance. If you miss a class, it is your responsibility to find out the material covered in the class. It will not be possible for your instructor to conduct makeup classes.

Cheating: Cheating is not tolerated. Please, read the university Community Rights and Responsibilities (http://www.albany.edu/studentconduct/assets/University_at_Albany_CommunityRights8-7-15.pdf) for more information on cheating.

- Cheating in an exam will result in an E grade for the course. Further, the students involved will be referred to the Dean's office for disciplinary action.
- Cheating on assignments – homework exercises and programming assignments ***are meant to be individual exercises*** (unless otherwise stated); you must do these by yourself. Cheating in a homework or programming assignment will result in a ZERO for that homework or program for all the students involved. Students who cheat in two or more homework/programming assignments will receive an E grade for the course. The names of such students will also be forwarded to the Dean's office for disciplinary action.

Responsible Computing:

Students are required to read the University at Albany Policy for the Responsible Use of Information Technology (http://www.albany.edu/its/policies_responsible_use_of_IT.htm). Students will be expected to apply the policies discussed in this document to all computing and electronic communications in the course.

Students with Disabilities:

Reasonable accommodations will be provided for students with documented physical, sensory, systemic, cognitive, learning and psychiatric disabilities. If you believe you have a disability

requiring accommodation in this class, please notify the Director of the Disability Resource Center (Campus Center 137, 442-5490). That office will provide the course instructor with verification of your disability, and will recommend appropriate accommodations. For further information refer to the University's Disclosure Statement regarding Reasonable Accommodation found at the bottom of the document at the following website: <http://www.albany.edu/disability/docs/RAP.doc>. This website can be reached by following the link under "Reasonable Accommodation Policy" at the following webpage <http://www.albany.edu/disability/faculty-staff.shtml>.

Academic Honesty and Overall Regulations:

Every student has the responsibility to become familiar with the standards of academic integrity at the University. Faculty members must specify in their syllabi information about academic integrity, and may refer students to this policy for more information. Nonetheless, student claims of ignorance, unintentional error, or personal or academic pressures cannot be excuses for violation of academic integrity. Students are responsible for familiarizing themselves with the standards and behaving accordingly, and UAlbany faculty are responsible for teaching, modeling and upholding them. Anything less undermines the worth and value of our intellectual work, and the reputation and credibility of the University at Albany degree. Plagiarism and other acts of academic dishonesty will be punished. Read the Standards of Academic Integrity and policies in the Undergraduate Bulletin (http://www.albany.edu/undergraduate_bulletin/regulations.html).

COURSE OUTLINE AND READINGS:

A schedule of lecture topics and reading assignments will be made available on the course website. The schedule is preliminary and may be changed as the semester progresses. Students are expected to have read the listed material before it is covered in class.