

San Jose State University
Department of Computer Science
CS 268, Topics in Wireless Mobile Networking, Sec 1, Spring 2017

Course Outline

Course and Contact Information

Instructor:	Melody Moh
Office Location:	MQH 411
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Office Hours:	Mon and Wed 1120 to 1150 and Wed 1320 to 1400
Class Days/Time:	MW 1200 to 1315
Classroom:	MQH 422
Prerequisites:	CS 158A or instructor consent

Course Format Lecture

Faculty Web Page and MYSJSU Messaging (Optional)

Course materials such as syllabus, handouts, notes, assignment instructions, etc. can be found on my faculty web page <http://www.cs.sjsu.edu/~melody/index.html>

You are responsible for regularly checking with the email system through [MySJSU](http://my.sjsu.edu) at <http://my.sjsu.edu> to learn of any updates.

Course Description

Advanced topics in the area of wireless mobile networking. Content may differ in each offering. Possible topics include though not restricted to: wireless local and metropolitan area networks, mobile Internet, sensor networks, mobile computing, wireless network security. Repeatable when topic changes.

This semester, topics include the following (time permits):

- Introduction.
- Enabling technologies and states of the art of wireless mobile networks:
 - Software Defined Networks (SDN), Network Function Virtualization (NFV).
 - Cellular Networks: LTE Advance and 5G.
 - Internet of Things (IoT).
 - Edge computing
 - Security issues
- Enabling technologies and current practices of cloud computing supporting networks:
 - Distributed systems: coordination, concurrency, consensus, Proxos algorithm.
 - Cloud computing paradigms: Zookeeper, Map-Reduce, Curator.
 - Cloud Storage Systems.
 - Security issues.

Course Learning Outcomes (CLO)

Upon successful completion of this course, students will be able to:

1. **CLO 1** - Understand the above covered topics through completion of homework, quizzes, and examinations.
2. **CLO 2** - Successfully complete labs and programming projects on advanced mobile networking and cloud technologies.
3. **CLO 3** - Work in a (1 or 2 people) team to complete group projects, including independent research, oral presentation, and programming on a latest advancement in mobile networking.

Required Texts/Readings

Required Textbook

Dan C. Marinescu, Cloud Computing: Theory and Practice, Elsevier Science, 2013

- SJSU ebook permanent link: http://discover.sjlibrary.org/iii/encore_sjsu/record/C_Rb4556730
- SJSU ebook Safari version link: http://discover.sjlibrary.org/iii/encore_sjsu/record/C_Rb4562557
- Slides from the publisher link: <http://booksite.elsevier.com/9780124046276/?ISBN=9780124046276>

Major References

- Paul Goransson and Chuck Black, *Software Defined Networks: A Comprehensive Approach*, 1st edition, 2014, Morgan Kaufmann Publishers, Inc., San Francisco. ISBN-13: 978-0124166752, ISBN-10: 012416675X
- (CS 158A textbook) L. Peterson and B. Davie, *Computer Networks: A Systems Approach*, 5th Edition, Morgan Kaufmann Publishers Inc., San Francisco, CA, 2011, ISBN 0123850592
 - e-book version should be available from the SJSU Library.
 - [Slides and other resources](http://booksite.elsevier.com/9780123850591/index.php) available at: <http://booksite.elsevier.com/9780123850591/index.php>
- The Nutanix Bible, available at: <http://nutanixbible.com/>
- Prof. Raj Jain's Slides on Wireless Mobile Networks, available at: <http://www.cse.wustl.edu/~jain/cse574-16/index.html>
- Other references for specific topics/projects will be given along with topic/project assignments.

Course Requirements and Assignments

Homework is due typewritten (include source code, but not executable files) by class starting time on the due date. Each assigned problem requires a solution and an explanation (or work) detailing how you arrived at your solution. Cite any outside sources used to solve a problem. When grading an assignment, I may ask for additional information. A subset of the assigned problems will typically be graded.

ASSIGNMENTS

Refer the course website for latest information of assignments.

- **HW:** Weekly homework assignments and several in-class quizzes
- **PROJ:** Several hands-on labs, individual and/or group research and programming projects will span the entire semester
- **Oral Presentation:** Included in projects (PROJ)

EXAMS

One mid-term exam (**Mid**) scheduled approximately at the end of 8th week, and a final exam (**FIN**).

Schedule

For continual updates of course schedule, please check the course webpage available at http://www.cs.sjsu.edu/~melody/CS268_17F.html

CS 268 final exam is scheduled on Tuesday, May 23, at 9:45am.

Spring 2017 Final Exam Schedule can be found at

<http://info.sjsu.edu/static/catalog/final-exam-schedule-spring.html>

Grading Policy

- *I will determine letter grades for the course, including +/- grades based on*

Percentage	Grade
92 and above	A
90 - 91	A-
88 - 89	B+
82 - 87	B
80 - 81	B-
78 - 79	C+
72 - 77	C
70 - 71	C-
60 - 69	D
59 and below	F

- *Percentage weight [or point value] assigned to various class assignments*
 - HW - 20%, PROJ- 40%, Mid - 20%, FIN - 20%.
- *No make-up exams will be given and **no** late assignment will be accepted.*

NOTE that [University policy F69-24](http://www.sjsu.edu/senate/docs/F69-24.pdf) at <http://www.sjsu.edu/senate/docs/F69-24.pdf> states the following:

- *Students should attend all meetings of their classes, not only because they are responsible for material discussed therein, but because active participation is frequently essential to insure maximum benefit for all members of the class. Attendance per se shall not be used as a criterion for grading.*

Classroom Protocol and Other Notes

- **Always start your email subject with "CS268" to get my attention.**
- The pre-requisite to this course (CS 158A or instructor consent) will be monitored.
- It is preferred that you either have taken an undergraduate operating systems class.
- **Cheating** will not be tolerable; a ZERO will be given to any cheated assignment/exam, and will be reported to the Department and the University.
- **Wireless laptop** is required. Your laptop must remain closed (preferably in your backpack and not on your desk) until you are informed that it is needed.
- To encourage participation from students, **no** recording is allowed.
- Students must be respectful of the instructor and other students. For example: turn off/silence **cell phones and other mobile devices**.
- Attendance is crucial to doing well on assignments and examinations.
- Students are responsible for all materials distributed and discussed in the class.
- Office hours are on a 90% basis; they may be rescheduled or canceled due to conflicting department/university or other professional meetings.

University Policies (Required)

Per University Policy S16-9, university-wide policy information relevant to all courses, such as academic integrity, accommodations, etc. will be available on Office of Graduate and Undergraduate Programs' [Syllabus Information web page](http://www.sjsu.edu/gup/syllabusinfo/) at <http://www.sjsu.edu/gup/syllabusinfo/>

CS 268, Spring 2017, Course Schedule

The schedule is subject to change with fair notice; the notice will be made available in class.

Course Schedule

Weeks	Topics
1	Introduction to wireless mobile networks
2	Introduction to Wireless Signal Propagation
3	Software Defined Networking (SDN) , Network function virtualization (NFV)
4	1. Introduction to Cloud computing
5	2. Distributed systems: coordination, concurrency, consensus, Paxos algorithm.
6	2. Distributed systems: coordination, concurrency, consensus, Paxos algorithm.
7	3. Cloud computing paradigms: Zookeeper, Map-Reduce, Curator.
8	3. Cloud computing paradigms: Zookeeper, Map-Reduce, Curator.
9	4. Cloud Storage Systems.
10	5. Security issues of cloud computing and virtualization
11	Wireless Local Area Networks
12	Cellular Networks: 1G-4G, LTE
13	Cellular Networks: LTE-A, 5G
14	Internet of Things (IoT) and IoT Protocols, Edge Computing
15	Security issues of wireless mobile networks
16	Review
Final Exam	Tuesday, May 23, at 9:45am