San Jose State University
Department of Computer Science
CS 218, Topics in Cloud Computing, Sec 1, Fall 2018

Course and Contact Information

Instructor:	Melody Moh
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Office Hours:	Mon and Wed 1120 to 1150 and 1330 to 1400
Class Days/Time:	MW 1200 to 1315
Classroom:	MQH 422
Prerequisites:	CS 149 or instructor consent
Course Format:	Lecture

Faculty Web Page and MYSJSU Messaging

Course materials such as syllabus, handouts, notes, assignment instructions, etc. can be found on my faculty web page at http://www.cs.sjsu.edu/~melody/index.html You are responsible for regularly checking with the email system through MySJSU at http://my.sjsu.edu to learn of any updates.

Course Description

Topics in cloud computing, including distributed system models, virtual machines, virtualization, cloud platform architectures (IaaS, PaaS, SaaS), service-oriented architectures, cloud programming and software environments, peer-to-peer computing, ubiquitous cloud, cloud security and trust management.
This semester, topics include the following (time permits):

- Principles of cloud computing systems
- Data analytics, Internet of Things, and cognitive computing
- Virtual Machines, Docker containers, and server clusters
- Cloud architectures and service platform design
- Cloud for mobile, IoT, social media, and mashup services
- Machine learning algorithms and model fitting
- Cloud programming with Hadoop and Spark
- Cloud performance, security, and data privacy
- Fog Computing, Edge Computing, Cloudlets
- Applications of machine learning algorithms to cloud and fog/edge computing
- Intelligent machines and deep learning networks; TensorFlow, Keras, DeepMind, and graph analytics

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 programming projects on cloud and edge computing.
3. **CLO 3 -** Complete a term project, including independent research, oral presentation, and programming on a latest advancement in cloud computing.

Required Texts/Readings

Textbooks

- (Required) Kai Hwang, *Cloud Computing for Machine Learning and Cognitive Applications*, The MIT Press, 2017.
- (Optional) P. Tan, M. Steinbach, a. Karpatne, and V. Kumar, *Introduction to Data Mining*, 2nd ed., Pearson, 2018.

References

- Dan C. Marinescu, Cloud Computing: Theory and Practice, Elsevier Science, 2013
  - Slides from the publisher link: http://booksite.elsevier.com/9780124046276/?ISBN=9780124046276
- Hwang, Fox, and Dongarra, *Distributed and Cloud Computing*, Morgan Kaufmann, 2012.
  - URL (Amazon): http://www.amazon.com/Distributed-Cloud-Computing-Parallel-Processing/dp/0123858801/ref=sr_1_1?ie=UTF8&qid=1345660685&sr=8-1&keywords=hwang+cloud
- References for specific topics/projects will be given along with topic/project assignments.

Course Requirements and Assignments

Homework is due (hard copy) 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.

- **HQP**: Weekly homework assignments, several in-class quizzes, and classroom participation.
- **PROJ:** Several hands-on labs and individual research and programming projects will span the entire semester.
- **Oral Presentation:** Included in projects (PROJ).

Success in this course is based on the expectation that students will spend, for each unit of credit, a minimum of 45 hours over the length of the course (normally three hours per unit per week) for instruction, preparation/studying, or course related activities, including but not limited to internships, labs, and clinical practica. Other course structures will have equivalent workload expectations as described in the syllabus.

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 schedule web page at http://www.cs.sjsu.edu/faculty/melody/218_18F_Sched.htm

CS 218 final exam is scheduled at 9:45am on Thursday, December 13 2018. Refer to the Final exam schedule,

posted at http://info.sjsu.edu/web-dbgen/narr/catalog/rec-16332.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*
    - HQP - 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 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 "CS218" to get my attention.**
- The pre-requisite to this course (CS 149) will be monitored.
- **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.
- The instructor may decide to replace the final exam by a term paper. This will be communicated in class at least 2 weeks before the end of the instruction.
- Office hours are on a 90% basis; they may be rescheduled or canceled due to conflicting department/university or other professional meetings.

University Policies

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 at http://www.sjsu.edu/gup/syllabusinfo/

CS 218, Fall 2018, 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
2	Principles of cloud computing systems
3	Data analytics, Internet of Things
4	Virtual Machines, Docker containers, and server clusters
5	Virtual Machines, Docker containers, and server clusters
6	Cloud architectures and service platform design
7	Cloud for mobile, IoT, social media, and mashup services
8	Cloud for mobile, IoT, social media, and mashup services
9	Machine learning algorithms and model fitting
10	Machine learning algorithms and model fitting
11	Cloud programming with Hadoop and Spark
12	Cloud performance, security and privacy Issues
13	Fog computing, edge computing, and cloudlets
14	Applications of machine learning algorithms to cloud and fog/edge computing
15	Case studies of Cloud Computing
16	Applications of machine learning algorithms to cloud and fog/edge computing
Final Exam	9:45am on Thursday, December 13 2018.

Last Modified: Aug 25, 2018