

San José State University
Aviation and Technology Department
Tech 199A Introduction to Internet of Things, Spring 2018

Course and Contact Information

Instructor	Dennis C. Frezzo, PhD
Office Location	Meet in E490
Telephone	Department Phone (408) 924-3192
Email	dennis.frezzo@sjsu.edu
Office Hours	Tu 5:30-5:55 PM
Class Days/Time	Tu 6:00-8:45 PM, 01/30 to 05/08; no class 03/27, 05/15. Final 05/22
Classroom	E490
Prerequisites	None. CompE 30, Tech 60, Tech 65 helpful.

Course Materials

Some course materials including the will be found on the SJSU CANVAS site for the course, and that will be the official system of record. Login instructions can be found at <http://online.sjsu.edu>. You must be registered in the course to receive access. Other materials will be at <https://www.netacad.com>, Accounts will be established and verified in class.

Course Description

Introduction to Internet of Things (IoT) fundamentals, development of the knowledge and skills required for related technologies and hands-on, problem-solving experience. Designing and connecting IoT devices to capture data and control the physical world.

Course Learning Outcomes

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

1. Connect computing devices and networks into Internet of Things (IoT) Systems
2. Design and model IoT solutions using simulation tools
3. Design and prototype IoT solutions using electronics and microcontrollers
4. Design IoT solutions using single board computers
5. Design and secure IoT devices to the Internet
6. Program the behavior of the IoT devices to connect to cloud services

Required Text/Readings

Course reading materials will be provided online by the instructor.

Course Requirements and Assignments

All assignments with description, due dates, and submission guidelines will be posted online.

Laboratory Assignments

Lab instructions will be provided to the students to perform assignments and for safe laboratory conduct.

Final Examination or Evaluation

The final exam will be comprehensive, covering all material presented in class. There will be no make-ups for missed exams, except for medical or other reasons outside the student's control, and such must be documented by written notice.

Grading Information

Course grade will be based on models, labs, activities, assessments, and a project with the following weight:

Homework	20%
In-Class Labs and Activities	20%
Quizzes, Chapter Exams, Midterm, and Final	40%
Capstone Project	20%

Determination of Grades

There will be no curving of grades. Final grades will be assigned as follows:

A 93-100	A- 90-92`	B- 80-82
B+ 87-89	B 83-86	C- 70-72
C+ 77-79	C 73-76	D- 60-62
D+ 67-69	D 63-69	F < 60

Classroom Protocol

Class participation and attendance are strongly encouraged and recorded each week.

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](http://www.sjsu.edu/gup/syllabusinfo/) at <http://www.sjsu.edu/gup/syllabusinfo/>”

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Spring 2018 Course Schedule / Outline

Week	Subject (may change as class needs dictate)
1	01/30: Introduction to IoT; A Spiral Tour Through the Course Content (Lab 1 – activities)
2	02/06: Digitization: sensor and actuator circuits and microcontrollers (Lab 2 - Sparkfun)
3	02/13: Digitization: intermediate (Lab 3 - Sparkfun)
4	02/20: Software: Raspberry Pi Single Board Computer Running Linux, Python (Lab 4 - Pi)
5	02/27: Software: Python (Lab 5 - Python)
6	03/06: Software: Python, HTTP, and MQTT (Lab 6 - Protocols)
7	03/13: Network Access: Physical Layer and Ethernet (Lab 7 – Connectivity 1)
8	03/20: Network Access: Wireless for IoT (Lab 8 – Connectivity 2)
9	03/27: Spring Break, No Class.
10	04/03: Packet Switching and TCP/IP for IoT (Lab 9 – Switching and Routing)
11	04/10: IoT Architectures: LANs, WANs, Edge, Fog, Cloud (Lab 10 - Services)
12	04/17: IoT Verticals; Design Ideation for Capstone Project and form groups. Commitment.
13	04/24: Capstone Project 1 In-Class: Mandatory Check In 1.
14	05/01: Capstone Project 2 In-Class: Mandatory Check In 2.
15	05/08: Capstone Project 3 In-Class: Mandatory Check In 3.
16	05/15: No Class (student study day but available Online for Capstone Project consultations)
17	05/22: Final Capstone Presentations and Final Exam, 5:15 to 7:30 PM