

ME 30 Computer Applications, Fall 2021

Course and Contact Information

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| Instructor: | Dr. Salman Ahsan |
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| Office Hours: | TBD (Canvas Homepage for this course will be updated) |
| Class Days/Time: | Friday 0900 – 0950 |
| Classroom: | Virtual (via Zoom) |
| Laboratory: | TBD |

Course Format

Technology Requirements

As a technology intensive course, ME30 requires regular access to the Internet and access to a personal computer. Access to a computer is required and instruction will primarily target the Microsoft Windows Operating System, though some tutorials may be provided for the Apple Macintosh as well. Students with experience in Linux are welcome to utilize that platform, though even less technical support will be available.

Students without a personal computer, please contact the Mechanical Engineering department to see if the department or the university can arrange for a loaner.

ME30 will utilize the following programs:

- Anaconda (Python 3.x, Jupyter Lab)
- Mu (CircuitPython)
- A text editor like Notepad, Wordpad or MS Word
- Adobe Acrobat (Converting files to PDF for submission)

Each student will be required to obtain a Circuit Playground Express (CPX) board from AdaFruit:
<https://www.adafruit.com/product/3333>

Faculty Web Page and Messaging

Course material, such as the syllabus, handouts, copies of the slides, etc. may be found on Canvas,
<http://sjsu.instructure.com>.

Assignments shall be turned into Canvas. Course announcements will also be distributed from the Canvas system. You are required to check Canvas regularly to keep abreast of the course announcements and any changes to the schedule.

Course Description

Using a computer to solve engineering problems through programming and the use of engineering application procedures. Use of procedural and informational problem-solving methods and practices applied to software design, application, programming and testing. Lecture 1 hour/lab 3 hours. 2 units.

Course Goals and Learning Objectives

The goals of this course are to help you:

- o Understand how mechanical engineers can and do use computers to solve engineering problems
- o Learn how to solve engineering problems using computational methods
- o Get experience in developing algorithms for effectively solving problems using computers
- o Gain familiarity with well-known software libraries that are widely used by mechanical engineers to solve analytical and numerical problems
- o Prepare for subsequent courses and industry practice which involve computation to solve engineering problems
- o Your ability to write code to solve simple problems is the KEY performance indicator in this class

Learning Objectives

The student who successfully completes the course will be able to:

1. Code

- 1.1 Be able to conceive of, write and debug simple programs in Python

2. Problem Solving

- 2.1 Describe and apply a general method for solving an engineering problem that leads to a computational solution
- 2.2 Analyze a problem and devise an effective algorithm that can be implemented by a computer by applying specific techniques such as problem decomposition, pseudocode, desk checking, etc.

3. Programming Methodology

- 3.1 Apply the basic concepts of sequence, selection, and repetition in the development of a computational solution to a specific problem
- 3.2 Write programs that are sufficiently documented so that colleagues can understand their operation

4. Application of Software Tools

- 4.1 Write program code to interact with the physical world outside the computer

Textbooks

How to Think Like a Computer Scientist: Learning with Python 3 Documentation Release **3rd Edition**, Peter Wentworth, Jeffrey Elkner, Allen B. Downey and Chris Meyers.

<https://buildmedia.readthedocs.org/media/pdf/howtothink/latest/howtothink.pdf>

Automate the Boring Stuff with Python **2nd Edition**, Al Sweigart:

<https://automatetheboringstuff.com/>

Both of these textbooks are available for free download on the websites listed above.

Additional References

<http://www.learnpython.org/>

<https://www.tutorialspoint.com/python/index.htm>

<https://jakevdp.github.io/WhirlwindTourOfPython/>

<http://ibiblio.org/g2swap/byteofpython/read/index.html>

https://en.wikibooks.org/wiki/Python_Programming

<https://realpython.com/>

https://www.python-course.eu/python3_course.php

<https://www.datacamp.com/community/tutorials/tutorial-jupyter-notebook>

Software

- Anaconda (<https://www.anaconda.com/download/>)
- Mu (<https://codewith.mu/en/download>)

Library Liaison

Our liaison to the University Library is **Rachel Silverstein** <rachel.silverstein@sjsu.edu>, 408-808- 2106. Rachel can help you make optimum use of information resources available to you through the University Library.

Assignments and Grading Policy

Assessment for the purposes of determining your course grade will consist of evaluating your performance on homework/lab assignments, a project, quizzes, a midterm exam, and a final examination. Quizzes will take place on a weekly basis. Homeworks, quizzes and exams will all be administered through Canvas, unless otherwise noted. Consult Canvas for homework due dates. All of your work must be submitted in softcopy form (via the Canvas course management system) by the due date.

The penalty for late homework submission will be calculated by the Canvas system as follows:

- Submitted before the due date/time: No penalty
- Up to 24 hours late: 20% penalty
- From 24 to 48 hours late: 40% penalty
- From 48 to 72 hours late: 60% penalty
- From 72 to 96 hours late: 80% penalty
- More than 96 hours late: No credit will be given!

Keep in mind that Canvas keeps track of the time when homework is uploaded. If the due time is 11:59PM, and your submission finishes uploading at 12:00AM, the Canvas system will mark it as late and you will automatically be docked 20% of your points, despite the fact that you were only seconds late. So, take into account unexpected delays such as slow internet speeds which is the most common cause for such delays.

There will be no make-up assignments or quizzes.

If you cannot take the midterm or the final at the announced times, contact the instructor at least two weeks BEFORE the scheduled examination date. If you have a valid reason, I will try to find a way to accommodate you.

IMPORTANT NOTE! Make it a point to turn in something for every assignment, whether you have completed it or not.

Waiving the Late Penalty

Under special circumstances, such as sickness or family emergencies, the late penalty can be waived once, provided the instructor is informed at least 24 hours before the homework due time. Any subsequent requests have to be accompanied by evidence such as a note from the doctor. No work, under any circumstances, will be accepted 96 hours after the original due date/time.

Weighting of Course Components

Homework/labs 25%, Final exam 30%, Midterm exam 20%, Quizzes 15%, Project 5% and Participation 5%.

The participation grade will depend on:

- Attendance and participation in the lecture
- Attendance and participation in the lab
- Asking and answering questions in the Canvas Discussion forum
- Other out-of-class activity such as reaching out to the instructor and the TAs during office hours or otherwise that demonstrates your commitment to learn
- Improvement arc. If you started on the wrong foot but then showed steady progress, that will be taken into account.

Criteria for Assigning Letter Grades

The scores on your homework, laboratory projects, quizzes and final examination will be normalized, combined and totaled using the weighting scheme described above. A final letter grade will be determined using statistical tools (curving).

Final Project

Details will be announced a few weeks into the semester.

Final Examination

The final examination will take place during the finals' week in December, at a date and time assigned by the Registrar.

From the University:

“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 3 hours per unit per week with 1 of the hours used for lecture) for instruction or preparation/studying or course related activities including but not limited to internships, labs, clinical practice. Other course structures will have equivalent workload expectations as described in the syllabus.”

Additional information is available here: Office of Graduate and Undergraduate Programs' [Syllabus Information web page](http://www.sjsu.edu/gup/syllabusinfo/) at <http://www.sjsu.edu/gup/syllabusinfo/>

Classroom Protocol

I expect a large class, and we'll all have to work together to make the online Zoom experience an enjoyable and productive one for everybody.

Dropping and Adding

Students are responsible for understanding the policies and procedures about add/drops, academic renewal, etc. Information on add/drops are available at <http://info.sjsu.edu/home/schedules.html>. Information about late drop is available at <http://www.sjsu.edu/sac/policies/latedrops/> . Students should be aware of the current deadlines and penalties 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/>

Academic Integrity

Your commitment as a student to learning is evidenced by your enrollment at San José State University. The University's Academic Integrity policy, located at <http://www.sjsu.edu/senate/S07-2.htm>, requires you to be honest in all your academic course work. Faculty members are required to report all infractions to the office of Student Conduct and Ethical Development. The Student Conduct and Ethical Development website is available at http://www.sa.sjsu.edu/judicial_affairs/index.html.

Instances of academic dishonesty will not be tolerated. Cheating on exams or plagiarism will result in a failing grade and sanctions by the University. For this class, all assignments are to be completed by the individual student unless otherwise specified. If you would like to include your assignment or any material you have submitted, or plan to submit for another class, please note that SJSU's Academic Policy S07-2 requires approval of instructors. Plagiarism is defined as, *the use of another person's original (not common-knowledge) work without acknowledging its source.*¹ Thus plagiarism includes, but is not limited to²:

- copying in whole or in part, a picture, diagram, graph, figure, program code, algorithm, etc. and using it in your work without citing its source
- using exact words or unique phrases from somewhere without acknowledgement
- putting your name on a report, homework, or other assignment that was done by someone else

Students are expected to familiarize themselves with how to avoid plagiarism. Several helpful resources can be found at: <http://www.stanford.edu/dept/vpsa/judicialaffairs/students/plagiarism.sources.htm>

I encourage students to collaborate on assignments, such as homework/lab assignments, however what this means is that you can work together to decide on solution *strategies*, but you **may not** copy answers in whole or in part (this includes program code), and you must put together your own lab reports. We will be using Turnitin.com to check the originality of your submissions, so do your own work.

Faculty members are required to report all infractions to the office of Student Conduct and Ethical Development. The website for Student Conduct and Ethical Development is available at http://www.sa.sjsu.edu/judicial_affairs/index.html.

SJSU Senate Policy S12-3 - Federal Regulation of the definition of the credit hour:

Success in this course is based on the expectation that a student 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 with one of the hours used for lecture) for instruction or preparation/studying or course related activities including but not limited to internships, labs, clinical practice, etc. Other course structures will have equivalent workload expectations as described in the syllabus. **[Thus, for this class, it is expected that you will spend at least two hours outside of class working on homework, lab work, test preparation, etc.]**

¹ Definition adapted from "Defining and Avoiding Plagiarism: The WPA Statement on Best Practices," <http://www.ilstu.edu/~ddhesse/wpa/positions/WPAplagiarism.pdf>; and "What is Plagiarism?," <http://www.stanford.edu/dept/vpsa/judicialaffairs/students/plagiarism.sources.htm>.

² Adapted from, "Avoiding Plagiarism," http://owl.english.purdue.edu/handouts/research/r_plagiar.html.

Campus Policy in Compliance with the American Disabilities Act

If you need course adaptations or accommodations because of a disability, or if you need to make special arrangements in case the building must be evacuated, please make an appointment with me as soon as possible, or see me during office hours. Presidential Directive 97-03 requires that students with disabilities requesting accommodations must register with the DRC (Disability Resource Center) to establish a record of their disability.

Student Technology Resources

Computer labs for student use are available in the Academic Success Center located on the 1st floor of Clark

