San José State University
College of Engineering
Department of Mechanical Engineering

ME 30 Computer Applications, Fall 2021

Course and Contact Information

Instructor:

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:

- Understand how mechanical engineers can and do use computers to solve engineering problems
- Learn how to solve engineering problems using computational methods
- Get experience in developing algorithms for effectively solving problems using computers
- Gain familiarity with well-known software libraries that are widely used by mechanical engineers to solve analytical and numerical problems
- Prepare for subsequent courses and industry practice which involve computation to solve engineering problems
- 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

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 b (eC-33 (ill)]i(b-5)-14.5 (L)4.5 (L)i)2.08 rt EMCTT -1 arsal

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.

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 to[2]:

- 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.

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Hall and on the 2nd floor of the Student Union. Additional computer labs are available in the Engineering Building in E390, and for MAE students, in E213 and E215. Computers are also available in the Martin Luther King Library (see: http://www.sjlibrary.org/services/computers/index.htm).

SJSU Writing Center

The SJSU Writing Center is located in Room 126 in Clark Hall. It is staffed by professional instructors and upper-division or graduate-level writing specialists from each of the seven SJSU colleges. Our writing specialists have met a rigorous GPA requirement, and they are well trained to assist all students at all levels within all disciplines to become better writers. The Writing Center website is located at