Santa Clara University

Department of Electrical Engineering

Mechatronics - ELEN 123/MECH143
Winter Quarter 2015, TR 8:30am-10:10 pm, EC106
Lab: T 2:15pm-5:00pm EC326

Instructor:

Andrew Wolfe   **email:** awolfe@scu.edu
Office Hours: Wed. 5-6:30 – EC305

Text: "Problem Solving and Program Design in C", Jeri R. Hanly and Elliot B. Koffman, 6th edition. (or 7th)
 "Introduction to Mechatronic Design" Carryer, Ohline, Kenny
Prentice Hall/Pearson, 2011.

Grading:

HW: 20%; Quizzes: 10%; Exam1: 10%; Exam2: 10%; Labs:20%; Project: 30%

Home Work:

Due Thursdays. To be turned in at **beginning** of class on day it is due.
NO LATE homework will be accepted.

TAs:

Garrett Bonner	**email:** gbonner@scu.edu	Off. Hrs. Mon 3-5 EC305
Paulo Borges	**email:** pborges@scu.edu	Off. Hrs. Wed 10-12 EC305
Kristopher Sanford	**email:** ksanford@scu.edu	Off. Hrs. Sat 4-6 EC305

Lab Policy: Lab assignments/Project are done in pre-assigned groups of two.

Each lab group must meet weekly to prepare for lab and prepare a pre-lab.
Prelabs due Monday by 10:00pm on Camino.
25% of lab credit is for pre-lab turned in on time and correct.
Lab reports are due in lab (on paper) one week after experiment.

Lab Grading: Prelabs: 25%   Lab Reports: 30%   Lab participation/performance: 45%

You will need a laptop running Windows, MacOS, or Ubuntu with a USB port. Bring it to class and lab each day. (A Windows 8 tablet with USB and a keyboard will probably work as well)

Course Outline:

Tuesday	Laboratory - Tuesday	Thursday
Jan. 6th **Introduction/Programming Basics**	Lab 0: Jan. 6th Lab Introduction/Safety Training Learn to Solder	Jan. 8th **Arduino Programming**
Jan. 13th **Basic Circuits**	Lab 1: Jan. 13th **Introduction to Programming**	Jan. 15th **Signal Conditioning** HW #1
Jan. 20st **Transistor Circuits/Motor Driver** Quiz #1	Lab 2: Jan. 20st **Sensor Design and Measurement**	Jan. 22rd **Interrupts, Performance, and Debugging** HW #2
Jan. 27th **Basic Controls**	Lab 3: Jan. 26th **Interrupt Usage** **Wheel Sensor**	Jan. 29th **Robot Controller Design** HW #3
Feb. 3th **Mechanical Design**	Lab 4: Feb. 3th **Platform Build** **Drive Motor** **Speed Control**	Feb. 5th **Mechanical Design** HW #4
Feb. 10th **Sensors/ Actuators/Real Time** Quiz #2	Lab 5: Feb. 10th **Line Follower Calibration** **Accelerometer**	Feb. 12th *Exam 1* HW #5
Feb. 17th **Motors**	Lab 6: Feb. 17th **Mechanical Structure** **Distance Control**	Feb. 19th **Motors**
Feb. 24th **State-based systems** Quiz #3	Lab 7: Feb. 24th **Motors**	Feb. 26th **Planning** HW #6
Mar. 3th **Power System Design**	Lab 8: Mar. 3th **Line Following**	Mar. 5th *Exam 2*
Mar. 10th Project Work	Mar. 10th Project Work	Mar. 12th Project Work

Project Demos during FINAL EXAM time
March 19 - Thursday 9:10 am – 12:10 pm