

**Robot Workshop Daily Schedule**

Date	Day	Event	Lecture Topic	Lab Topics
12-Aug-19	Sun	Students Arrive		
12-Aug-19	Mon	First day, start 9am-noon at UF classroom. Noon to 2:30pm, Welcome BBQ with Bball and frisbee at UF.	Lecture: Intro to MIL/CIMAR robots; Sense/react; Embedded systems (what's important)	No lab
13-Aug-19	Tues	Lectures, Lab 1	Part 1: Introduction to Autonomous Vehicles Part 2: Introduction - Basic review of voltage, current, energy, power, basic overview of robotics and kit	Introduction - Setting up Code Composer Studio (CCS), getting familiar with measurement tools (voltmeter, ohmmeter, scope, etc.), introduction to lab kits
14-Aug-19	Wed	Lectures, Lab 2	Part 1: Sensors and Actuators Part 2: Introduction to microprocessors/microcontrollers - General information, ARM Cortex M, Assembly & C programming	Introduction to assembly and C programming (for MSP432 microcontroller), introduction to debugging (with oscilloscope, etc.)
15-Aug-19	Thur	Lectures, Lab 3	Part 1: Sensors for Autonomous Navigation (Lidar Sensor Demo) Part 2: Basic voltage regulation, importance of power distribution for robotics system design, introduction to GPIO, etc.	Connecting power distribution board and LaunchPad, basic GPIO, interfacing with switch and LEDs
16-Aug-19	Fri	Visit to UF Labs	MIL/CIMAR	N/A
17-Aug-19	Sat	Trip to beach (optional)	N/A	N/A
18-Aug-19	Sun	NASA	N/A	N/A
19-Aug-19	Mon	Lectures, Lab 4	Finite State Machines, Timers (SysTick and regular timers), Interrupts	Introduction to finite state machines with provided code, creating simple finite state machine using timers, GPIO, and interrupts
20-Aug-19	Tues	Lectures, Lab 5	Part 1: Points, Lines, and Planes, part 1 Part 2: DC motors (physics, interface, etc.), PWM, periodic interrupts to control motors	Interfacing with the DC motor (measurements, provided solution to Labs 12 & 13, etc.)
21-Aug-19	Wed	Lectures, Lab 6	Real-time debugging (using various techniques, e.g., data dumping, toggling pins, etc.), LCD interfaces, more real-time systems theory (latency, priority, response time, etc.)	Real-time debugging using CCS and LCD display (using line sensor, bump switches, etc.)
22-Aug-19	Thur	Lectures, Lab 7	Part 1: Points, Lines, and Planes, part 2 Part 2: Data acquisition systems (e.g., ADC), sensors (e.g., tachometer, etc.)	Utilizing sensors (IR, tachometer, etc.), moving robot along walls, measuring distance, etc.
23-Aug-19	Fri	Laser Tag	N/A	N/A
24-Aug-19	Sat	Overnight trip to Orlando (optional)	N/A	N/A
25-Aug-19	Sun	in Orlando	N/A	N/A
26-Aug-19	Mon	Lectures, Lab 8	Part 1: Analysis of Lidar Data Part 2: Various supplemental topics in preparation for competition, etc.	Create program to allow robot to maze follow, enter tunnel
27-Aug-19	Tues	Lectures, Lab 9	Serial Communication (UART), Bluetooth Communication, etc.	Creating command-line interpreter, connecting smartphone to control finite-state machine solution used previously
28-Aug-19	Wed	Lectures, Start of Competition	Part 1: More Analysis of Lidar Data Part 2: Various supplemental topics in preparation for competition, etc.	Start creating systems for competition
29-Aug-19	Thur	End of competition, Awards assembly	N/A	Demonstration of systems created for competition
30-Aug-19	Fri	Leave		