

CSCI196: Robotics

1.	Course Prefix and number	CSCI 196
2.	Number of semester hours	3.00 An undergraduate student should expect to spend on this course a minimum of two hours outside the classroom for every hour in the classroom. The outside hours may vary depending on the number credit hours or type of course. More details are available from the faculty member or department office and in CMU's <i>Curriculum Policies and Procedures Manual</i> .
3.	Pre-requisites	Predisposition to tinker and code.
4.	Location of classroom and time course meets	WS 118 3:00-3:50 Mon, Wed, Fri
5.	Intstructor Web Page	Dr. Warren MacEvoy http://www.coloradomesa.edu/~wmacevoy
6.	Office Hours	See my web page.
7.	Course Description	We will make robots: machines with electronics controlled by a microcontroller or computer.
8.	General Education Objectives	This is not a general education class.
9.	Textbook and Materials	<u>Making Things Move</u> , by Dustyn Roberts. You will also need to purchase materials and equipment for your project.
10.	Course Objectives	To conceive and build a mechanical system that is controlled controlled by software.
11.	Policy on absences and	Attendance counts for 20% of your grade.

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12.	Policy on late work	If a student needs more time on an assignment, the instructor needs to be contacted before the assignment is due.
13.	Policy on academic dishonesty	You may be given a failing grade on a project or the course overall for academic dishonesty.
14.	Disability Arrangements	In coordination with Educational Access Services, reasonable accommodations will be provided for qualified students with disabilities. Please meet with the instructor the first week of class to make arrangements. Nancy Conklin, the Coordinator of Educational Access Services, can be contacted at 248-1826, or in person in Houston Hall, Suite 108.
15.	Evaluation and grading	You will be graded on projects and completion of assignments, but the major goal will be completion of a robotics project.
16.	Major assignments	The most important assignment will be the development of your own robot.
17.	Course Topics	See below
18.	Success	General

date	mon	tue	wed	thu	fri
20-Aug	1		2		3
27-Aug	4		5		6
3-Sep	7		8		9
10-Sep	10		11		12
17-Sep	13		14		15
24-Sep	16		17		18
1-Oct	19		20		21
8-Oct	22		23		24

15-Oct	fall break	fall break	mod 2/ 25		26
22-Oct	27		28		29
29-Oct	30		31		32
5-Nov	33		34		35
12-Nov	36		37		38
19-Nov	39		thanks	thanks	thanks
26-Nov	40		41		42
3-Dec	43		44		last / 45
10-Dec	3PM	finals	finals	finals	

DAY	TOPIC	DESCRIPTION	ASSIGNMENT
1	intro		Making Things Move (MTM) p 1-31
2	mech/1	lever, pulley	Sketch a machine
3	mech/2	plane, screw, wedge	Describe the parts that are levers, pulleys, etc.
4	mech/3	degrees of freedom	Describe the degrees of freedom.
5	materials/ 1	properties	What material properties matter where in your design?
6	materials/ 2	types	What are good material choices?
7	fasten/1	temporary	
8	fasten/2	permanent	What are the connections and how are they made?
9	forces/1	force	
10	forces/2	friction	
11	forces/3	torque	

12	motion/1	power	
13	motion/2	work	
14	motion/3	energy	
15	motors/1	basics,ac,dc	
16	motors/2	servo,stepper	
17	motors/3	misc	
18	motors/4	move it	
19	gears/1	bearings/couple rs/collars	
20	gears/2	gears/belts/scre ws/springs	
21	gears/3	cranks/cams	
22	make/1	analog	
23	make/2	digital	
24	make/3	digital	
25	inputs/1	adc	
26	inputs/2	v,r,i	
27	inputs/3	switches	
28	inputs/4	digital	
29	outputs/1	dac,pwm	
30	outputs/2	serial	
31	outputs/3	i2c	
32	outputs/4	spi	
33	control/1	event loop	
34	control/2	state machine	

35	control/3	interrupts	
36	control/4	tasks	
37	control/5	monitor	
38	control/6	configure	
39	control/7	safety	
40	control/8	performance	
41	control/9	complexity	
42	advance/1	planning	
43	advance/2	simulation	
44	present/1		
45	present/2		

Ferdinand The CMU Bull

1. Body - 3D printer
2. Head/Neck Attachment
- 3.