

AIAA Robo Ops Rover

Facilitators:

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Synopsis: This course is linked to the Cal Robo-Ops rover design team, which will participate in a competition to pick up rock samples from the Johnson Space Center Rock Yard in Texas. Students will work on a rover which will be remotely piloted via an internet connection and will also pick up a variety of skills, including microcontroller programming, mechanical design and analysis.

Format: There will be classroom meetings on **6-7PM on Monday, in 81 Evans hall**. New material and concepts will be introduced during the class times. By the third week, the class will split into two groups: programming and mechanical, and students will fall into those groups based on what they like best. In lieu of homework, students will be *required* to attend work sessions where they will be able to more physically apply the things that are learned in class, very much like a lab section. In order to pass, students must attend at least 75% of all mechanical work/build sessions, or 75% of all programming work/build sessions. **First meeting is on Monday, September 9, 2013. It's the Monday after Labor Day.**

Schedule (Tentative, and subject to change):

Week 1: Introduction to Robo Ops	
Week 2: Overview of the rover	
Week 3: Introduction to Python, as well as signups for worksessions	Week 3: Introduction to SolidWorks as well as signups for worksessions
Week 4: Introduction to Python (Part 2)	Week 4: Introduction to SolidWorks (Part 2)
Week 5: Command syntax	Week 5: Designing for manufacturing/Production
Week 6: Controls (Part 1)	Week 6: Manipulators
Week 7: Controls (Part 2)	Week 7: Motor and drivetrain
Week 8: State machines	Week 8: Swerve drives
Week 9: Power systems and management	
Weeks 10-14: Work sessions	

The last four weeks or so have been budgeted as a buffer zone. We may need more time to cover the topics needed/flesh out the rover.