E 100 Special Topics in Engineering & Applied Science: Caltech Rover Autonomy, Technology, and Exploration Research (CRATER) Project

Spring 2023, 6 units (1-0-5)
Instructor: Chung
Grade scheme: letter or pass/fail
Class time organization meeting: 12PM-1PM, April 4, 2023, 232 Guggenheim

This course will give students an opportunity to gain hands-on design, fabrication, and integration experience in a multidisciplinary system within the context of undergraduate-led project proposals for international rover competitions. Both the University Rover Challenge (URC) and Canadian International Rover Challenge (CIRC) are annual robotics competitions in which collegiate teams design and build a rover capable of completing a variety of tasks while operated remotely and during autonomous operation. By the end of the term, the team is expected to deliver a fully functioning rover, with specifications satisfying criteria for both rover challenges (for more information, see the URC [https://urc.marssociety.org/home] and CIRC [https://urc.marssociety.org/home] websites). Students from a variety of disciplines will work within subteams to reach milestones set based on competition criteria and deadlines. To design and implement creative solutions to the difficult engineering problems posed by competition tasks, students must apply their knowledge from previous courses as well as findings from research conducted during the course. The course includes weekly team meetings for progress updates, subteam meetings for design and organizational discussions, and team work sessions.