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# **ENGR3199 - Special Topics in Engineering**

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Credits: Variable Credits ENGR

For information contact: Staff

## Course Description

Special Topics in Engineering classes (ENGR X199) typically cover a specific topic in Engineering and are intended to enhance and expand the selection of offerings from semester to semester.

## Additional Information

SP15: Designing Resources for Empowerment and Making (DREAM); 4 credits (Millner)

The DREAM course will engage students in designing multiple types of resources for making, those related to: space, tools, and activities. Students enrolled in the course will leave empowered to passionately pursue making in contexts that enable others to make in ways that they may not have otherwise been able to. The course will entail rethinking the ways in which spaces are designed to facilitate young people creating physical objects; extending toolkits that afford hands-on exploration of making in technical domains such as programming and electronics design; and developing activities that take advantage of what new tools and spaces for making have to offer. The ideal offering being experiences that compel pre-college learners to feel empowered to extend their own (and their peers') engagement in science, technology, engineering, art, and math (STEAM) endeavors.

This project-based course is running for the first time at Olin College in the Spring of 2015. The early weeks will expose students to principles and practices for transforming living rooms, community centers and cities into areas conducive to making, and situate the ways in which doing so can empower groups to redefine their relationship with information and individuals around them. The following weeks entail exploring existing tools for making interactive systems (e.g., microcontroller-powered development boards with sensing and actuation modules geared toward integrating with clothing or outdoor environments). Students will have opportunities to extend the kits based on an open-hardware design ethos, which could entail adding a "bit" to the library of LittleBits (littlebits.cc). Students will then grapple with experience design to envision what should become possible at the intersection of new spaces and new tools. After prototyping experiences, students will contribute their curricular resources to appropriate online outlets (such as instructables.com).

SP15: ENGR3199A: Elecanisms; 4 credits (Minch, Hoover)

This course can be used to satisfy either the ME and ECE advanced elective requirements.



Mechatronics involves the synergistic integration of mechanical engineering with electronics and intelligent computer control in the design of products. In this course, we will develop topics critical to the engineering of modern mechatronic systems including electromechanical actuators (e.g., DC motors, stepper motors, and solenoids), practical electronics design including interfacing sensors and actuators to embedded processors, and embedded software design in the C programming language. During the first part of the course, students will work in small groups on a series of miniprojects to gain experience with course concepts and develop core engineering competencies. During the second part of the course, students to engineer a mechatronic system of their choosing subject to realistic constraints.

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