

**Course Description for Calendar: Special Advanced Course MECH 550R  
Roboethics – Perspectives from Engineering (3 credits)**

This seminar-style course will provide students with an awareness of the current state of thinking of the design of robots that are meant to co-exist with people (service, therapy, military, sentry, etc.). The course will provide insight into how sociology, psychology, law, literature and design can contribute knowledge to arrive at a safe and effective co-existence between humans and machines that have some autonomy from their computational intelligence, i.e., robots. The course will examine the taxonomy of collaborative robots, the underpinnings of bioethics applied to technology, and several controversial robot application areas. The course will include one team-based experiential assignment designed to allow students to explore and evaluate a particular facet of roboethics in detail.

### Course Syllabus

Instead of running the normal 13 weeks of a full term, this course will be twice as intensive and only run half as long. Therefore, each of the Modules 1-6 below is a 1-week period. The last module is an assignment that must be completed by the end of the period of this course (Thursday, June 14). The total timespan is 6 weeks, from the week of May 7 through the week of June 11. Classes are held Tuesdays and Thursdays 9:00 AM – 12:30 PM. There will be a readiness assessment quiz for each of the first 6 modules during the first 30 minutes of each Tuesday class. It is expected that students will have read several components (approximately 25%, and to be clearly defined beforehand) of the weekly readings before each Tuesday class.

The weekly modules are as follows:

1. Categorize robots and application areas with respect to human interaction
2. Evaluate ethics principles and their application to technology
3. Question the role of cultural differences in deploying robotics technology
4. Criticize the role of fiction in framing current thinking on collaborative robot usage
5. Analyze the use of robots in the military and in the healthcare sector
6. TERM ASSIGNMENT: Evaluate in depth one specific actual (product or research) robot and the ethical issues involved in its deployment. For example, a) listen to an outside or online lecture by an expert in roboethics in a specific field and write a paper on the topic; b) write a report that focuses on one specific roboethics topic in depth; or c) create a prototype/demo (blog, website, survey, Second Life island, robot control program, etc.). Students will present their project on the last day of class, Thursday, June 14, 2012.