

MECHANICAL ENGINEERING PROGRAM

ABET COURSE SYLLABUS

ME 460: High School Mentoring for Engineering Design (3 credit): Elective Course

Course Description (2008-2010 Catalog):

Students help high school teams design robots for the FIRST robotics competition. Weekly meetings discuss: mentoring, design, robotics, organizational skills, and teamwork. Must arrange transport to assigned local high school. Class begins with the international FIRST Kick-off meeting usually scheduled for the first Saturday after New Year's Day.

Prerequisite Course: Junior Standing

Prerequisite by Topic:

- Junior Standing

Textbook: N/A

Other Reference Material: N/A

Course Coordinator: Brendan O'Toole, Associate Professor

Course learning outcomes:

- Understand engineering design and fabrication issues related to robotics including: statics, machine design, materials, power systems, control systems
- Appreciate importance of time management and decision making in pressure situations with limited time and information
- Learn about individual and team dynamics while mentoring young high school students
- Learn about the realities of obtaining parts from suppliers or making parts in the machine shop in a short time-frame
- Learn to present problems clearly and succinctly in weekly group design meetings.

Relationship of Course to Mechanical Engineering Program Educational Outcomes:

Goal 1: Provide mechanical engineering graduates with technical capabilities.					Goal 2: Prepare the mechanical engineering graduates to have effective workplace skills.				Goal 3: Instilling a sense of responsibility as a professional member of society.			
1.a	1.b	1.c	1.d	1.e	2.a	2.b	2.c	2.d	3.a	3.b	3.c	3.d
H	H	H	M	M	H	M	H	M	L	L	M	M

(L)ow

(M)edium (H)igh

Topics Covered:

1. Mentoring Guidelines for High School Design
2. Materials and Structures
3. Power Supply Systems
4. Control Systems
5. Time Management and Scheduling
6. Parts Suppliers and fabrication
7. Presentation of design projects

Laboratory Projects: This is a group project class focused on the design and fabrication of a robotic system that has autonomous and tele-operated control segments.

Class/Laboratory Schedule: 170 minutes lecture one session per week

Assessment of Student Progress toward Course Objectives

Weekly Progress reports, Written Final Report, Oral Final Presentation

Class/Laboratory Schedule: F 10:00 – 12:50 PM (Spring Semester)

Contribution of Course for meeting Professional Component:

- | | |
|--|-----------|
| (a) Mathematics and basic sciences: | 0 credit |
| (b) Engineering Topics (Design/Science): | 3 credit |
| (c) General Education: | 0 credit |
| (d) Others: | 0 credits |

Prepared By:

Brendan O'Toole

Date:

October 12, 2009