### Course:
Project – 908598-908599 (3 Cr. Core Course)

### Instructor:
Faculty Members  
*Telephone: 5355000 ext 23025*

### Course Website:

### Catalog Data:
In part one, a problem will be assigned to the student in one of the different mechatronics engineering tracks. He will be asked to rely on himself to find a solution for the problem (which could be practical or theoretical). It is expected from the student to develop the abilities of research and independent work and to train himself to observe a time table to perform his project and to be capable to explain and express his findings in a professional manner. In the second part, the student is required to finish the work he started in the first part. The student is required, whenever it is possible, to use the appropriate and available software to solve his problem, simulate his solution, to build a prototype and perform all needed measurements. The student will be required to write down his final year project as a complete report (dissertation) according to the department instructions.

### Prerequisites by Course

#### Prerequisites

Students are assumed to have a background in:
- Basic principles of various Mechatronics engineering fields.
- Mathematical modeling of Mechatronics engineering problems.

### Textbook:
Senior Design Project Guidelines (available on the course website)

### References:

### Schedule & Duration:
Two semesters, 16 weeks each, 16 contact hours per semester.

### Minimum Student Material:
Access to a personal computer.

### Minimum College Facilities:
Department labs with various measurement equipment, computational facilities.

### Course Objectives:
The following are the main objectives of this course:
- Introduce the engineering design process under constraints.
- Develop the student’s soft skills, including oral and written communication skills, and the ability to function in a team.
- Ability to engage in life-long learning (literature review and data collection).
Course Learning Outcomes and Relation to ABET Student Outcomes:

Upon successful completion of this course, a student should:

1. Student demonstrated ability applying the mathematical, scientific and engineering principles in solving engineering problems. [a]
2. Student demonstrated ability to collect, analyze and interpret experimental data. [c]
3. Student demonstrated ability to design, construct a system or part of a system that fulfills a certain requirement. [d]
4. Student demonstrated ability to Working with and/or leading a multidisciplinary team. [d]
5. Student demonstrated ability to achieve the required tasks due timetable. [d]
6. Student demonstrated ability to attendee the meeting. [d]
7. Student demonstrated ability to formulate, and solve mechatronics problems. [c]
8. Understanding of professional and ethical responsibility. [f]
9. Student demonstrated ability to apply the technical writing skills [g]
10. Student demonstrated ability to write the report in clear and effective manner. [g]
11. Student verbal communication skills abilities. [g]
12. Student demonstrated ability to use techniques, skills, and modern engineering tools. [h]
13. The social, economic, commercial, and environmental impact of engineering decisions. [h]
14. Ability to Self-criticism and independent life-long learning. [i]
15. To ably mechanical, electrical, and software engineering principles in modern products and processes.

<table>
<thead>
<tr>
<th>ABET SO</th>
<th>a</th>
<th>c</th>
<th>d</th>
<th>f</th>
<th>g</th>
<th>h</th>
<th>i</th>
</tr>
</thead>
<tbody>
<tr>
<td>Percentage of Course total marks</td>
<td>10%</td>
<td>10%</td>
<td>10%</td>
<td>10%</td>
<td>45%</td>
<td>5%</td>
<td>10%</td>
</tr>
</tbody>
</table>

Course Topics:

<table>
<thead>
<tr>
<th>Topic Description</th>
<th>Hrs</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Orientation: How to write log books and reports, Teamwork and distributing work, etc.</td>
<td></td>
</tr>
<tr>
<td>2. Selecting the design challenge.</td>
<td></td>
</tr>
<tr>
<td>4. Practical Implementation.</td>
<td></td>
</tr>
<tr>
<td>5. System Tesing.</td>
<td></td>
</tr>
<tr>
<td>6. Optimization.</td>
<td></td>
</tr>
<tr>
<td>7. Writing the report and preparing the oral presentation.</td>
<td></td>
</tr>
</tbody>
</table>

Ground Rules:

It is expected from the student to develop the abilities of research and independent work and to train himself to observe a time table to perform his project and to be capable to explain and express his findings in a professional manner. The student is required, whenever it is possible, to use the appropriate and available software to solve his problem, simulate his solution, to build a prototype and perform all needed measurements. The student will be required to write down his final year project as a complete report (dissertation) according to the department instructions. Team members should be considerate to each other, and adhere to their ethical responsibilities.

Assessments:

Reports, Presentations, Project, and Assignments.

Grading policy:

| Supervisor grade for project I | 10 % |
| Supervisor grade for project II | 10 % |
| Exit Exam | 10% |
| ethical responsibility | 10% |
| Committee grade | 60 % |
| **Total** | **100%** |

Last Updated: June 2018