

MECH2907 Mechatronic Design and Prototyping

Course Code: MECH 2907	Course Title: Mechatronic Design and Prototyping										
Required Course Or Elective Course: Required	Terms Offered (Credits): Spring, 3 credits										
Faculty In Charge: Robin Ma	Pre/Co-Requisites: MECH2520										
Course Structure: The course includes theoretical and practical contents for students to gain experiences in designing and building a mechatronics system. Students are given opportunities to exercise their hands-on-practice through both laboratory and CAD sessions.											
Textbook/Required Material: Laboratory manual and notes											
Course Description: This courses' aim is to broaden the professional and engineering interests of students by enhancing their practicum/team-based experience through initiatives different from those of traditional lectures and tutorials. This is a project-based course to develop the students' knowledge/experience in designing and building a practical mechatronics system (formerly called Industrial Training). Students will work in teams to identify the needs for their designed prototype. Also, students will be given the opportunity to design and build various mechatronics components including electronic circuits, motors, sensors, etc. from CAD drawings, and practise their engineering knowledge through all laboratory sessions. The main goal is to develop and nurture skills in problem-solving, communication, interpersonal interaction, project and time management, etc. via the entire project.											
Course Topics: 1. CAD Design 2. Motors 3. Electronic/Electrical Circuits 4. Design and Fabrication of a Practical Mechatronics System 5. Materials Selections 6. Manufacturing Process 7. Fundamental of Instrumentation											
Course Objectives:	1. Teach students to design and fabricate a practical mechatronics system. 2. Facilitate hands-on-practice in mechanical and electronics engineering for students.										
Course Outcomes:	A. Explain and apply the basic principles of engineering design. B. Describe the key components of mechatronics systems. C. Communicate and collaborate effectively as a member of a project team.										
Assessment Tools:	<table style="width: 100%; border-collapse: collapse;"> <tr> <td>Peer review</td> <td style="text-align: right;">10%</td> </tr> <tr> <td>Log sheets</td> <td style="text-align: right;">10%</td> </tr> <tr> <td>Project report</td> <td style="text-align: right;">30%</td> </tr> <tr> <td>Project presentation</td> <td style="text-align: right;">20%</td> </tr> <tr> <td>Performance of the final prototype</td> <td style="text-align: right;">30%</td> </tr> </table>	Peer review	10%	Log sheets	10%	Project report	30%	Project presentation	20%	Performance of the final prototype	30%
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