

## Fall 2021-2022 MECT410 & MENG410 CAPSTONE TEAM PROJECT GROUPS

Gr. No	Supervisor	Project Title	Pre-Requisites	Students
1	Prof. Dr. Hasan Hacisevki	<b>3 Axis small scale router</b> - A small scale 50 cm x 50 cm x 4 cm small scale router will be designed and manufactured. The system will be compatible with Solid Works <sup>®</sup> and other softwares.	MENG303, MENG364, MENG376, Group members must be min 40% Mechatronics students.	
2	Prof. Dr. Hasan Hacisevki	<b>Drag forced measuring apparatus for wind tunnel experiments</b> - A Drag force measuring device will be designed and manufactured for drag for measuring experiments performed in department wind tunnel.	MENG104, MENG353, At least one member should be from Mechatronics program.	
3	Prof. Dr. Uğur Atikol	<b>Solar Air Heater Demonstration Unit</b> – Previously manufactured solar air heater is to be used as a part of a demonstration unit for training technicians and architects. It is required to mount the whole apparatus on the roof of the solar lab and have controls and digital displays of temperature, flow rate and pressure.	MENG345, MENG353, MECT361, MENG364	
4	Prof. Dr. Uğur Atikol	<b>Ice Thermal Storage Tank</b> – Ice thermal storage is now more and more interesting as multi tariff system is in force in N: Cyprus. In this project it is required to design the storage tank of the ice thermal storage system.	MENG246, MENG345, MENG364, MENG443	
5	Assoc. Prof. Dr. Murat Özdenefe	<b>Heat Pipe Integrated Evacuated Tube Solar Air Heater:</b> The objective of this project is: To design and manufacture a novel type of solar air heater which employs heat pipe integrated evacuated tubes as absorber. The system will involve heat pipes to convey the absorbed radiation to a heat exchanger where the air will be heated. The evacuated tubes will help to minimize the thermal losses.	Prerequisites: MENG303, MENG353, MENG345, Corequisites: MENG442	
6	Assoc. Prof. Dr. Murat Özdenefe	<b>Parabolic Trough Solar Collector with U-Tube Integrated Evacuated Cylinder:</b> The objective of this project is: To design and manufacture a parabolic trough solar thermal collector which employs U-tube integrated evacuated tube as a receiver. The structure will be made up from two main portions, concentrator and receiver. The concentrator will be a parabolic trough type, whereas the receiver will involve a U-tube with thermally decoupled absorber surface as conduit which will be placed in an evacuated glass cylinder in order to minimize thermal losses.	Prerequisites: MENG303, MENG353, MENG345, Corequisites: MENG442	
7	Asst. Prof. Dr. Devrim Aydın	<b>Continuous type desiccant dehumidifier:</b> The objective of this project is: To design, manufacture, simulate and experiment a novel type of air dehumidifier where the desiccant material will be recirculated in vertical direction and passed through regeneration and air dehumidification stages continuously. *This project requires substantial amount of work for manufacturing and testing the unit therefore all group members should be located in Cyprus.	Prerequisites: MENG303, MENG353, MENG345, Corequisites: MENG442	
8	Asst. Prof. Dr. Devrim Aydın	<b>Rotary endo-hydration cooler:</b> The objective of this project is: To design, manufacture, simulate and experiment an air cooling system consisting of a rotary wheel filled with composite salts capable of producing cooling effect through the endo-hydration process. Part of the wheel will receive regeneration hot air, whereas the other half will be used for cooling the air. With the rotation of the wheel, continuous cooling effect will be obtained. *This project requires substantial amount of work for manufacturing and testing the unit therefore all group members should be located in Cyprus.	Prerequisites: MENG303, MENG353, MENG345, Corequisites: MENG442	
9	Assist. Prof. Dr. Mohammad Asmael	<b>Microhardness Testing Machine</b>	MENG303, MENG364, MENG376,	
10	Assist. Prof. Dr. Mohammad Asmael	<b>Quenching Machine</b>	MENG303, MENG364, MENG376,	
11	Assist. Prof. Dr. Babak Safaei	<b>PORTABLE SHAKER / VIBRATION EXCITER :</b> A set of equipment capable of producing vibration, of required amplitude and frequency. Portable shaker (or exciter) capable of delivering peak sine forces up to. The ideal solution for vibration testing of small articles and for experimental modal analysis in the field. Useful for vibration studies, endurance testing and modal testing. The setup consists of vibration exciter, Power Amplifier and vibration exciter control. Utility: 1. Vibration testing 2. Natural frequency identification. 3. Vibration modes shape assessment.	MENG303, MENG331, MENG364, MENG375, MECT361, MECT444, EENG320, EENG410, EENG428 SPECIAL REQUIREMENT: At least 2 team member should be from the Mechatronics Program Software: Solidworks, MATLAB, Simulink, ARDUINO	
12	Assist. Prof. Dr. Babak Safaei	<b>Portable 3D Printer :</b> A compact, mini printer that is quite easy to set up and use. The printer must be designed with designed on the plug-and-play approach, which makes it easy to use. More than that, the Wi-Fi connection enables online printing – with the availability of offline printing through USB. Other requirements are : Strong, sturdy body, Compact size, Wi-Fi available, USB connectivity, and Paired with the onboard camera, you can easily monitor the status of your print job from afar.	MENG303, MENG331, MENG364, MENG375, MECT361, MECT444, EENG320, EENG410, EENG428 SPECIAL REQUIREMENT: At least 2 team member should be from the Mechatronics Program Software: Solidworks, MATLAB, Simulink, ARDUINO	
13	Assoc. Prof. Dr. Qasim Zeeshan	<b>EXOSKELETON:</b> Exoskeletons (which may also be referred to as exosuits, exosystems, industrial human augmentation, or simply exos) are mechanical devices worn by a user that provide passive or powered assistance to support or augment human performance. An exoskeleton may include rigid or soft components, or both. The augmented activity may be static or dynamic. Exoskeleton robotics has ushered in a new era of modern neuromuscular rehabilitation engineering and assistive technology research. This project focuses on the design, development and working of a full body exoskeleton using motors, and sensors to improve the user's movements and strength within the cost, manufacturing, availability, reliability and safety constraints. In addition to deliver a design that meets all customer's needs and engineering requirements.	MENG303, MENG331, MENG364, MENG375, MECT361, MECT444, EENG320, EENG410, EENG428 SPECIAL REQUIREMENT: At least 2 team member should be from the Mechatronics Program Software: Solidworks, MATLAB, Simulink, ARDUINO	
14	Assoc. Prof. Dr. Qasim Zeeshan	<b>Digitization of Universal Vibration Apparatus – TM16</b> - TM16 series is a range of products that teach different aspects of vibrations and oscillations in mechanical systems. These include pendulums, mass-springs systems and shafts and beams. The TM16 series is a modular system, based around a Frame and Cupboard. The aim of the project is to digitize the apparatus by integrating it with digital sensors and a digital display unit with data transmission to a PC. The work will cover several key areas of mechanical and mechatronics engineering.	MENG303, MENG331, MENG364, MENG375, MECT361, MECT444, EENG320, EENG410, EENG428 SPECIAL REQUIREMENT: At least 2 team members should be from the Mechatronics Program. Software: Solidworks, MATLAB, Simulink, ARDUINO, PLC	
15	Sn. Lec. Cafer Kızıloğrs	<b>Redesign the red pepper grinding machine</b>	MENG303, MENG364	
16	Sn. Lec. Cafer Kızıloğrs	<b>Digitizing the shear machine</b>	MENG303, MENG364, MECT361, MECT444, EENG320, EENG410	