

ME 6102: Design of Mechatronic Systems

Hands on mechatronic systems



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Preparation

- 🌐 List down functions that the system given to you would perform in broad sense
- 🌐 Based on your current knowledge think of the ways you would use to get these functionalities and discuss with TA or Instructor : what elements (sensors, actuators, microcontroller and plant) you would use for the function!
- 🌐 Be ready with pen paper and mobile to take pics
- 🌐 Open the system given to you with screw drivers given and see the hardware in place to perform the functions you thought of

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What to do?

- ➊ Open the system given to you in such a way that you should be able to put it back exactly the same way **So REMEMBER the steps**
- ➋ Note down, take snaps at various steps so that you are able to put things together
- ➌ Do not use destructively high force on anything or destroy things

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What to Observe?

- ➊ Think of ideas come to your mind were you are given task to develop such system or subsystem therein
- ➋ Identify **sensors, actuators, mechanical plant and controller** you would think for such system
- ➌ Now find these elements in the actual system and reason out any difference in what you thought and what actually IS! Take help of TA or instructor if need be

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What to Observe?

- ➊ Now focus on mechanical plant system and identify its function and carry out similar process
- ➋ Note what you actually observe and what you might have missed to think about
- ➌ Keenly observe each of the parts from
 - ➍ What is function?
 - ➎ Design of mechanical system/component perspective for the identified function!
 - ➏ Mass scale manufacturing perspective
 - ➐ Assembly perspective
 - ➑ Any other interesting curiosity you may develop

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Assignment 1

- ➊ Select one actuator in the setup you opened and carefully remove its connections from the setup so that you can drive it independently. Next connect it with PWM or any other appropriate interface XEP 100 microcontroller (any channel) and show its working.

Group of 2 per system. Should be your project group.

- ➋ No identical components for any two assignments
- ➌ Note: Depending on power, you may require a driver to drive your actuator. Please ask for what kind of driver you need. We will provide you with that. Read specification of microcontroller: [connecting your actuator directly to microcontroller is likely to damage XEP 100](#)

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Assignment 1

Group of 2 per system. Should be your project group.

- No identical components for any two assignments
- Submit the following in PPT format
 - Name and Roll number of the group
 - Working of your setup with pics and videos
 - Picture of your actuator and specification variables
 - Procedure you propose to run the actuator with justification
 - Actual interfacing of actuator with XEP 100 schematic and picture
 - Video of your actuator testing / running with XEP 100

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