Instructor: Professor Asok Ray

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Office Hours: By appointment

Teaching Assistant: Matthew Ng
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TEXT: ME 355 Laboratory Manuals

PREREQUISITES: ME 450 (concurrent enrollment permissible).

Lab Sessions | Reading/Worksheet
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0. Introduction/Orientation | Introduction Literature, Orientation, and Laboratory Safety
1. Torsion Experiment | Torsion Experiment Worksheet
2. Control Moment Gyroscope | Control Moment Gyroscope Worksheet
3. Magnetic Levitation Experiment | Magnetic Levitation Experiment Worksheet
4. Industrial Servo Trainer | Industrial Servo Trainer Worksheet
5. Rectilinear Plant | Rectilinear Plant Worksheet
6. Inverted Pendulum Experiment | Inverted Pendulum Worksheet
7. Robotic Arm | Robotic Arm Worksheet

LAB GROUPS: The class will be divided into groups of two or three students each.

GRADING: Grades are based on attendance, active participation and group lab reports. Each lab report is due at the end of the two-week lab session (by Friday).
COURSE OBJECTIVES:

The main objective of the course is to develop hand-on experience and working knowledge of basic dynamic and control systems. Specifically,

1. Identify the actuators, sensors, plants, and controllers of physical control systems.
2. Calibrate sensors.
3. Measure steady state, step, and frequency response of various systems.
5. Design simple controllers for various systems.
6. Implement controllers and test control performance.
7. Enjoy the hands-on learning.

LAB POLICIES:

- No Eating, Drinking, or Using Tobacco in the lab.
- Only Students registered for authorized courses are permitted to use the lab equipment.
- No removal of manuals, hardware, or software from the labs without explicit permission of TA or instructor.
- Please backup all your work to avoid loss of data due to hard disk failures or viruses.