

IN 222 (JAN) 2:1

Sensors and Transducers Laboratory

Department of Instrumentation and Applied Physics (IAP)
Indian Institute of Science
Bangalore 560012

January 6, 2025

Welcome!

- Welcome to all students and instructors!

Class Hours

Time slots: MWF 12:00 to 13:00

... plus flexible time in the laboratory

Venue: Lecture Hall 2, IAP

Instructors

- G. R. Jayanth
- Atanu Mohanty

Who can register for IN 222?

- M.Tech. students of IAP
- Research students of IAP with instructors' consent

Objectives

- To gain experience in using ready-made sensors and transducers.
- To build and characterize some types of sensors and transducers.
- To implement various control systems using sensors and transducers.

Structure

- Lectures and demonstrations
- Laboratory sessions

Types of Experiments

Example Experiments on Sensors and Transducers:

- Principles/Calibration
 - Measure the voltage across a diode at different temperatures.
 - Calibrate a thermistor.
- Construction
 - Make an LVDT.
 - Make an inductive proximity sensor.
- Interfacing
 - Get readings from a packaged MEMS accelerometer.
 - Drive a stepper motor.
- Application
 - Control the speed of a motor.
 - Control the temperature of a water bath.

Useful Skills

- Analysis and design of control systems
- Analogue electronics
- Programming
- Data analysis
- Technical writing and presentation

Safety

- Requires the safety standards of an electronics laboratory
- Proper shoes, masks
- Gloves and safety goggles if required

Reports

Each student should

- maintain a record of all laboratory work,
- and submit reports for each session.

Evaluation

- Attendance
- Completion of experiments
- Proper documentation and presentation
- Laboratory tests
- Written and oral examinations

Next Class

12:00 PM

08 January 2025, Wednesday

<http://iap.iisc.ac.in/~amohanty/IN222/>