



ME 246 (JAN) 3:0 Introduction to Robotics

Robot manipulators: representation of translation, rotation, links and joints, direct and inverse kinematics and workspace of serial and parallel manipulators, dynamic equations of motion, position and force control and simulation.

Instructor: Ashitava Ghosal

References

1. Course textbook -- Ghosal, A., Robotics: Fundamental Concepts and Analysis, Oxford University Press, 2006.
2. Notes and recent research papers.
3. NPTEL MOOC course on Robotics -- https://onlinecourses.nptel.ac.in/noc21_me37/preview

Pre-requisites

Knowledge/familiarity with basic linear algebra, matrices, ODEs, mechanics and programming (Matlab preferred).

Additional information

This course is open to Master's and Doctoral students interested in robotics. Undergraduate students with sufficient background can approach the instructor for permission.

Course objectives

After taking this course, the students will be able to:

1. Understand the science and technology of robots.
2. Model and analyze serial and parallel robots – write down the equations related to kinematics, dynamics and control of robots and solve them using computer tools.
3. Appreciate and obtain information on recent research in robotics, worldwide and in IISc.
4. Take up independent research/project in robotics -- through a term project.

Course website: Will be informed.