ME 431 - Introduction to Robotics and Automation

Number of credits: 3

Prerequisites: CIS 101, Mech 236.

Description: Introduction to mechanics and control of robotic manipulators. Topics include spatial transformations, kinematics, dynamics, trajectory generation, actuators and control, and relations to product design and flexible automation.


Topics:
  - Introduction
  - Robot Structure and Workspace
  - Spatial Transformations
  - Orientation Matrices
  - Forward Kinematics
  - Inverse Kinematics
  - Jacobian and Singularities
  - Trajectory Generation
  - Dynamics and Control
  - Robot Programming

Week 3: Project Assigned
Week 8: Midterm Exam
Week 14: Project presentation, Project Report due
Week 15: Final Exam.

Grading: Homework 30%
         Project 20%
         Midterm Exam 25%
         Final Exam 25%

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The NJIT Honor Code and Professional Conduct will be strictly enforced.