ECE 455: Introduction to Robot Programming/Simulation

IN

OUT

- Basic concepts from linear algebra

- Basic programming language experience

Pre-requisites

- CS152 with a minimum grade of C or CS162 with a minimum grade of C or CS163 with a minimum grade of C or CS164 with a minimum grade of C

Concepts:

- Computer graphics: Object modelling, homogeneous transformations, and perspective displays
- Position/orientation interpolation
- Forward/inverse kinematics
- Jacobians and DH parameters
- Singular value decomposition, conditioning, and singularities
- Generalized inverses and damped least squares

Applications:
- Computer graphics simulation
- Robot motion control

Tools:
- Robotstudio

- Design a three-dimensional world that includes rigid bodies and articulated objects.

- Simulate a three-dimensional world with accurate animation of moving objects.

- Control the motion of arbitrary robot manipulators to achieve a desired trajectory for the joints.