1. Basic Course Information

a) Instructor  
Dr. Carl Crane  
MAE-B 326  
352-219-6433  
crane@ufl.edu  
carl.crane@gmail.com  
Class communication is via Canvas messaging.  
Office hours: Wed, 9:30 – 10:30

b) Class Meeting Time  
M, W, F 4th period, 10:40 – 11:30 am, Zoom Conference

c) Textbook  
Copies of class text can be purchased at Target Copy Center, University Avenue.

d) Additional (optional) References


2. Course Objectives and Outcomes

At the end of the class every student should:
- be able to understand basic principles of screw theory as applied to velocity analyses and static force analyses, i.e. twists of freedom, dynames, and wrenches
- be able to perform the forward and inverse kinematic velocity analysis for a serial robot and a parallel robot
- be able to perform the forward and inverse static force analysis for a serial robot and a parallel robot
- be able to perform the forward and inverse acceleration analysis for a serial robot manipulator

Topics that will be covered in the laboratory to meet these objectives:

- Chapter 1: Geometry of Points, Lines, and Planes
- Chapter 2: Coordinate Transformations and Manipulator Kinematics
- Chapter 3: Statics of a Rigid Body
- Chapter 4: Velocity Analysis
- Chapter 5: Reciprocal Screws
- Chapter 6: Singularity Analysis
- Chapter 7: Acceleration Analysis

3. Course Assessment

Grading

Exam 1 - 20 %
Exam 2 - 20 %
Exam 3 - 20 %
Final Exam - 25%
Homework - 15 %

4. Other Course Information

- all course correspondence will be via Canvas
- late homework will not be accepted