Computer Simulation and Analysis in Mechanical Engineering (ME 441-001)
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Office Hours: Mon 4:00-5:30 and Friday 4:00-5:30, no appointment for in-person visit (appointment needed for Zoom visit)

Course Summary
ME 441 covers various topics in Computer-Aided Design (CAD) and Computer-Aided Engineering (CAE). The students will have hands-on experience to analyze kinematic, dynamic, structure, thermal, and computational fluid dynamics problems by using PTC Creo Simulate and MATLAB.

Perquisites
ME 430 and access to MATLAB®

Course Materials
Zoom Lecture Recordings, MATLAB file downloads and PDF downloads

DATES	TOPICS	ASSIGNMENT
09/05	Introduction, Kinematic Analysis – Linkage Systems	A1.pdf
09/12	Dynamic Analysis - Component, Natural Frequency	A2.pdf
09/19	Dynamic Analysis – Spring-Mass-Damper System	A3.pdf
09/26	Stress Analysis – Simple Component, FEA Presentation	A4.pdf
10/03	Stress Analysis – Multi-Featured Component 1	A5.pdf
10/10	Stress Analysis – Multi-Featured Component 2	A6.pdf
10/17	Stress Analysis – Pressurized Cylinders	A7.pdf
10/24	Stress Analysis – Plane Stress-Strain, Symmetry, Axisymmetry	A8.pdf
10/31	Stress Analysis – Mechanism Assembly	A9.pdf
11/07	Stress Analysis - Impact and Fatigue	A10.pdf
11/14	Stress Analysis – Contact Stress and Welds	A11.pdf
11/21	Hear Transfer – Steady State	A12.pdf
11/26	Heat Transfer - Transient	A13.pdf
12/05	Computational Fluid Dynamics (CFD)	A14.pdf

Grading
14 Assignments (7.143% each),
For all Assignments: 70% of grade is based or accuracy and 30% of grade is based on format
Course Grade Scale: A≥90, 90>B+≥85, 85>B≥80, 80>C+≥75, 75>C+≥70, 70>D≥60, 60>F

Policies
Assignments submitted after due date will be penalized (**1/2 credit if one week late and no credit beyond one week**).
Any violation of the NJIT Honor Code (e.g., plagiarism and cheating on assignments) will be penalized.

Link for Downloads http://www.softalink.com/kruss/me441/*filename.pdf*
SYLLABUS.pdf

The following MATLAB toolboxes are needed for the 09/05 and 10/31 course assignments:

1. MATLAB
2. Optimization Toolbox

The following naming approach should be used for homework PDF files using A1.pdf as an example:

A1_###.pdf (where ### are the last 3 digits of your NJIT SID number)

For example, if the student's NJIT SID last 3 digits are 123, the homework PDF file would be named A1_123.pdf (no spaces).