

Spring 2024

## ME 403-102: Mechanical Systems Design I

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# ME-403

## Mechanical Systems Design

**TEXT:** Atila Ertas, Jesse Jones, The Engineering Design Process, John Wiley & Sons, 1996 2 Edition

**LAB MANUAL:** Engineering Design with SolidWorks 2022, Planchard & Planchard, SDC Publications

WEEK	TOPIC	PROJECT ASSIGNMENTS
1	Introduction/Engineering Design Search on Process/CAE/CAD/CAM/CAE Library Awareness User Skills	<b>Proj #1:</b> MCAE Software Literature Search.
2	Structured and Unstructured Problems	
3	Design Methods	
4	Creative Design/Ideation	<b>Proj #2:</b> Solid Model Design
5	Innovations in Engineering Design	
	<b>EXAM # 1</b>	
6	Design Synthesis/Mathematical Models	
7	Decision Processes/Material Selection	<b>Proj #3:</b> FEA Simulation in Mechanical Systems
8	Decision Support: Selection Problem	
9	Finite Element Analysis/Modeling and Simulation in Mechanical and Thermal/Fluid Systems	<b>Proj #4:</b> FEA Simulation in Thermal Systems
	<b>EXAM #2</b>	
10	Decision Support: Compromise Problem	
11	Optimization Methods in Design: Overview	
12	Optimization/Mathematical Methods	<b>Proj #5:</b> Design Proposal For ME 408
13	Leadership and Professionalism in Engineering/ Engineering Law/Engineering Ethics	
14	<b>FINAL EXAM</b>	