

Fall 2019

ME 231-103: Kinematics of Machinery

K. Russell

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Kinematics of Machinery (ME 231-103)

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Office Hours: Tues-Thurs 3:00-5:30 p.m. (no appointment)

Course Summary

ME 231 is an introductory course in the design and analysis of planar and spatial mechanical systems.

Prerequisites

CIS 101, Mech 234 and access to MATLAB[®] and SimMechanics[®] (version 2013 or later).

Course Materials

Textbook: K. Russell, Q. Shen and R. S. Sodhi, "Kinematics and Dynamics of Mechanical Systems: Implementation in MATLAB[®] and SimMechanics[®] Second Edition," CRC Press, Boca Raton, 2019. ISBN 9781498724937.

DATES	TOPICS AND CHAPTERS	HW PROBLEMS
09/05	Introduction (Ch 1), Complex Vectors (Ch 2)	Ch 2: 2, 3, 6, 8, 10
09/12	Kinematics Fundamentals (Ch 3)	2, 3, 8, 10, 13, 14
09/19	4-bar and Slider-crank Kinematic Analysis (Ch 4)	2, 3, 5, 12, 17, 19
09/26	5-bar and Multi-loop Kinematic Analysis (Ch 4)	24, 25, 28, 30, 33, 35
10/03	EXAM 1	
10/10	Dimensional Synthesis (Ch 5)	2, 7, 25, 29, 31, 34
10/17	Planar Mechanism Static Force Analysis (Ch 6)	1, 5, 18, 21, 28, 32
10/24	Planar Mechanism Dynamic Force Analysis (Ch 7)	2, 5, 22, 29, 33, 35
10/31	Gear Design and Kinematic Analysis (Ch 8)	1, 2, 4, 6, 9, 12
11/07	EXAM 2	
11/14	Gear Design and Kinematic Analysis (Ch 8)	14, 15, 22, 27, 31, 34
11/21	Cam Design and Kinematic Analysis (Ch 9)	9, 12, 15, 21, 26, 32
11/26	Kinematic Analysis of Spatial Mech. (Ch 10)	4, 9, 16, 22, 27, 32
12/05	Introduction to Robotic Systems (Ch 11)	5, 9, 13, 22, 26, 34
TBD	EXAM 3	

Grading

3 Examinations (25% each), Project (optional) 25%, Homework 20%, Attendance 5%

A \geq 90, 90>B \geq 85, 85>B \geq 80, 80>C \geq 75, 75>C \geq 70, 70>D \geq 60, 60>F

Policies

Homework submitted after due date will be penalized (**1/2 credit if one week late and no credit beyond one week**).

There is a stiff penalty for any violation of the NJIT Honor Code (e.g., plagiarism and cheating on exams and assignments)

Link for Downloads <http://www.softalink.com/kruss/me231/filename.pdf>
/ME231.pdf