MECH 236 - Engineering Mechanics: Dynamics Spring 2024

Text: 1. Hibbeler, R.C., Engineering Mechanics-Dynamics, 13th Edition, Prentice Hall, 2010, ISBN 978-0-13-291127-6 or 0-13-291127-2
2. NCEES, Fundamentals of Engineering Supplied-Reference Handbook, 8th Edition, (optional, free from: https://ncees.org/engineering/fe/)

Instructor: Prof. Y. Ding, 264 Colton hall, 973-642-7046, ding@njit.edu

Prerequisite: Mech 235 (or Mech 234 for EE, CoE, IE, ME majors). Provides an understanding of the mathematics of the motion of particles and rigid bodies, and of the relation of forces and motion of particles.

WEEK	TOPIC	ARTICLES
1	Kinematics of Particles	12-1,2,4,5
2	Kinematics of Particles	12-6,7,9,10
3	Force & Acceleration	13.1 - 13.3
4	Force & Acceleration	13.4 - 13.5
5	Exam-1 (ch12)	Detailed confirmation on canvas
6	Energy & Work	14.1 - 14.6
7	Momentum,	15.1 - 15.3
8	Impact, Kinematics of Rigid Bodies	15.4, 16.1 - 16.4
9	Exam-2 (ch13-14)	Detailed confirmation on canvas
10	Rigid body: Relative Velocity	16.5
11	Rigid body: Instant Center	16.6
12	Rigid Bodies Acceleration	16.7
13	Exam-3 (ch 15-16)	Detailed confirmation on canvas
14	Kinetics of a Rigid Body	17.1 – 17.3
15	Kinetics of a Rigid Body	17.4
16	Final Exam (ch17 only)	

CLASS SCHEDULE:
In person: week of 1/15,1/29,2/12,2/26,3/10,4/1,4/15,4/28. Others are on webex (link on canvas)

TUTORIAL HELP:
Tutorial schedule (in person and webex link) is on canvas under "pages".

GRADING:		**The grade schedule:**	
Homework	16 %	A = 90+	C = 65+
Exam-1	21 %	B+ = 80	D = 60+
Exam-2	21%	B = 75+	F = 59 or less
Exam-3	21%	C+ = 70+	W
Final Exam	21%		
Total	100%		

Incomplete is given in rare instances where the student is unable to attend or otherwise do the work of the course due to illness, etc. The grade must be made up in the next semester by completing all of the missed work.

EXAMs:
Generally, calculator is need for all exams. Other electronic device, storage medium, or accessory of any kind, are NOT allowed during any exam.

HOMEWORK:
To obtain full credit, you must submit the work on time and in the proper form. A minimum of 70% of the homework must be submitted to receive a passing grade in the course. Late homework will get reduced points (3% off for each day). The followings are required for homework:

1. On the top of the first page, PRINT your name, class day and time (e.g. Tuesday 6pm), date.
2. The problems must be presented in numerical order as assigned. If more than one problem on the same page**, a clear dividing line is required between problems.** (Do not write one problem on two pages). Writings are to be neat, clear and legible.
3. Draw neat, clear free body diagrams as required. Use a straight edge if needed.
4. Box the final answer(s) with unit(s) (and direction if needed).
5. **All hw submission will be on canvas. Do not email HW.**

Academic Integrity

Academic Integrity is the cornerstone of higher education and is central to the ideals of this course and the university. Cheating is strictly prohibited and devalues the degree that you are working on. As a member of the NJIT community, it is your responsibility to protect your educational investment by knowing and following the academic code of integrity policy that is found at: http://www5.njit.edu/policies/sites/policies/files/academic-integrity-code.pdf.

Please note that it is my professional obligation and responsibility to report any academic misconduct to the Dean of Students Office. Any student found in violation of the code by cheating, plagiarizing or using any online software inappropriately will result in disciplinary action. This may include a failing grade of F, and/or suspension or dismissal from the university. If you have any questions about the code of Academic Integrity, please contact the Dean of Students Office at dos@njit.edu

Outcomes Course Matrix – MECH 236 Dynamics

Strategies, Actions and Assignments	ABET Student Outcomes (1-7)	Program Educational Objectives	Assessment Measures
Student Learning Outcome 1: Identify transition concepts from Physics (science) to Dynamics (engineering).			
Present engineering approach and problem solving techniques.	1	1	Homework, tests and success in future courses.
Student Learning Outcome 2: Analyze and solve kinematics, kineties of particles and rigid bodies in engineering dynamics problems.			
Discuss the underlying concepts, principals and procedures of dynamics of particles and rigid bodies.	1	1	Homework, tests and success in future courses.
Student Learning Outcome 3: Formulate, diagram and solve FBD problems.			

Require FBD's for all problems .	1, 2	1	Homework, tests and success in future courses.
Illustrate the problem solving process including FBD, equation formulation and mathematical solution.	1	1	Homework, tests and success in future courses.

CEE Mission, Program Educational Objectives and Student Outcomes

The mission of the Department of Civil and Environmental Engineering is:

- to educate a diverse student body to be employed in the engineering profession
- to encourage research and scholarship among our faculty and students
- to promote service to the engineering profession and society

Our program educational objectives are reflected in the achievements of our recent alumni:

1 – Engineering Practice: Alumni will successfully engage in the practice of civil engineering within industry, government, and private practice, working toward safe, practical, resilient, sustainable solutions in a wide array of technical specialties including construction, environmental, geotechnical, structural, transportation, and water resources.

2 – Professional Growth: Alumni will advance their skills through professional growth and development activities such as graduate study in engineering, research and development, professional registration and continuing education; some graduates will transition into other professional fields such as business and law through further education.

3 – Service: Alumni will perform service to society and the engineering profession through membership and participation in professional societies, government, educational institutions, civic organizations, charitable giving and other humanitarian endeavors.

Revised 02/20/2024