Engineering Mechanics - Dynamics

EGM 3401 Section 4453
Class Periods: MWF, period 8, 3:00-3:50 PM
Location: MAE-A 303
Academic Term: Spring 2026

Instructor:
John W. Conklin
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Office Phone Number: 352-392-0614
Office Hours: Thursdays, 3:30-4:30 PM in NEB 401

Teaching Assistant/Peer Mentor/Supervised Teaching Student:
Please contact through the Canvas website

- TBD

Course Description
Continues the dynamics sequence begun in EGM 3400 plus extended coverage of three-dimensional rigid-body dynamics and orbital motion.

Course Pre-Requisites / Co-Requisites
Pre-requisites: EGM 2511 or EGM 2500, and MAC 2313.

Course Objectives
To provide a thorough and systematic introduction to the subject of dynamics of particles and rigid bodies using a Newton-Euler approach. To develop a deep understanding of the kinematics of particles and rigid bodies, the kinetics of a particle, the kinetics of a system of particles, and the kinetics of a rigid body. Many examples will provide insight into the underlying physical processes.

Materials and Supply Fees
None.

Relation to Program Outcomes (ABET):

Outcome	Coverage*
1. An ability to identify, formulate, and solve complex engineering problems by applying principles of engineering, science, and mathematics	High
2. An ability to apply engineering design to produce solutions that meet specified needs with consideration of public health, safety, and welfare, as well as global, cultural, social, environmental, and economic factors	Low
3. An ability to communicate effectively with a range of audiences	Low
4. An ability to recognize ethical and professional responsibilities in engineering situations and make informed judgments, which must consider the impact of engineering solutions in global, economic, environmental, and societal contexts	
5. An ability to function effectively on a team whose members together provide leadership, create a collaborative and inclusive environment, establish goals, plan tasks, and meet objectives	
6. An ability to develop and conduct appropriate experimentation, analyze and interpret data, and use engineering judgment to draw conclusions	
7. An ability to acquire and apply new knowledge as needed, using appropriate learning strategies	Low

*Coverage is given as high, medium, or low. An empty box indicates that this outcome is not part of the course.

Required Textbooks and Software

- Dynamics of Particles and Rigid Bodies: A Systematic Approach, A. Rao, Cambridge University Press, 2006.

Recommended Materials

- None

Required Computer

Recommended Computer Specifications: https://it.ufl.edu/get-help/student-computer-recommendations/
HWCOE Computer Requirements: https://www.eng.ufl.edu/students/advising/fall-semester-checklist/computer-requirements/

- No computers are required for this course.

Course Schedule

Week 1: Lecture 1, Scalars, vectors, tensors, matrices (Rao Ch. 1)
Week 2-6: Lecture 2, Kinematics of particles and rigid bodies (Rao Ch. 2)
Week 7-10: Lecture 3, Kinetics of particles (Rao Ch. 3)
Week 11-13: Lecture 4, Kinetics of a system of particles (Rao Ch. 4)
Week 14-16: Lecture 5, Kinetics of rigid bodies (Rao Ch. 5)

Important Dates

23 February Quiz 1 (in class, MAE-A 303)
6 April Quiz 2 (in class, MAE-A 303)
30 April Final Exam (12:30 – 2:30 PM, MAE-A 303)

Attendance Policy, Class Expectations, and Make-Up Policy

Regular lectures will be held in person in MAE-A 303. Class attendance is vital to your success in the course. When in class, ALL personal communication devices (smartphones, etc.) must be turned off (or in the silent mode). Please contact Professor Conklin via email if you need to make up any of the quizzes due to for example, illness.

Evaluation of Grades

Assignment	**Percentage of Final Grade**
Homework (6)	20%
Quiz 1 (in-class)	20%
Quiz 2 (in-class)	20%
Final Exam	40%
TOTAL	100%

Grading Policy

Percent	**Grade**	**Grade Points**
92.0 - 100	A	4.00
89.0 - 91.9	A-	3.67
86.0 - 88.9	B+	3.33
82.0 - 85.9	B	3.00
79.0 - 81.9	B-	2.67
76.0 - 78.9	C+	2.33
72.0 - 75.9	C	2.00
69.0 - 71.9	C-	1.67
66.0 - 68.9	D+	1.33
62.0 - 65.9	D	1.00
59.0 - 61.9	D-	0.67
0 - 58.9	E	0.00

Academic Policies & Resources
To support consistent and accessible communication of university-wide student resources, instructors must include this link to academic policies and campus resources: https://go.ufl.edu/syllabuspolicies. Instructor-specific guidelines for courses must accommodate these policies.

Commitment to a Positive Learning Environment
The Herbert Wertheim College of Engineering values varied perspectives and lived experiences within our community and is committed to supporting the University's core values.

If you feel like your performance in class is being impacted, please contact your instructor or any of the following:
- Your academic advisor or Undergraduate Coordinator
- HWCOE Human Resources, 352-392-0904, student-support-hr@eng.ufl.edu
- Pam Dickrell, Associate Dean of Student Affairs, 352-392-2177, pld@ufl.edu