

EGM 3400 Elements of Dynamics

1. Catalog Description:
Credits: 2
2. Dynamics of particles and rigid bodies for rectilinear translation, curvilinear motion, rotation and plane motion. Also includes principles of work and energy, and impulse and momentum.
3. Pre-requisites and Co-requisites:
Prereq: EGM 2511 and MAC 2313
4. Course Objectives:
5. This course provides an undergraduate coverage of basic dynamic systems. The course emphasizes the fundamental principles of vector analysis to both particles and rigid bodies, the application of Newton's laws of motion and conservation of energy, the concept of impulse and momentum, and the general calculation of dynamic states in three dimensions. Students will learn to apply these concepts through exposure to numerous practical engineering problems. Upon completion of the course, students are expected to have developed a thorough understanding of the fundamentals of dynamics and problem solving techniques applicable to dynamical systems.
6. Contribution of course to meeting the professional component:
Not applicable
7. Relationship of course to program outcomes: Skills student will develop in this course
Not applicable
8. Instructor: Philip Jackson
 - a. Office location: NSC 202E
 - b. Telephone: (352) 392 - 4521
 - c. E-mail address: philipbjackson@ufl.edu
 - d. Class Web site: <http://elearning.ufl.edu>
 - e. Office hours: MF 7th, 8th period
9. Teaching Assistants: Alex Higgins, Jareb Mendez,
 - a. Office location: Weil 202, NSC 202C, Weil 202
 - b. Telephone: none
 - c. E-mail address: alexhiggins@ufl.edu, jmendez31@ufl.edu
 - d. Office hours: M 7th and 8th periods, T 7th and 8th periods
10. Meeting Times: T R 7th period
11. Class/laboratory schedule: Two 50-minute class sessions per week
12. Meeting Location: NEB 201
13. Material and Supply Fees: None
14. Textbooks and Software Required
 - a. Title: Engineering Mechanics: Dynamics
 - b. Author: Hibbeler, R.C.
 - c. Publication date and edition: 2013, 14th Edition
 - d. ISBN number: 9780133915389

15. Recommended Reading

- a. Title: None
- b. Author: None
- c. Publication date and edition: None
- d. ISBN number: None

A paper copy of the book is not required but is included here for those students wishing to have the course text in physical form.

16. Course Outline

| Week of | Topics |
|----------------|---|
| January 4 | Introduction, Kinematics of a Particle, Rectilinear Motion |
| January 9 | Kinematics of a Particle, Curvilinear Motion |
| January 16 | Kinetics of a Particle, Forces, Rectangular Coordinates |
| January 23 | Energy, Work, Systems of Particles |
| January 30 | Conservation of Energy, Power, Potential Energy |
| February 6 | Linear Impulse and Momentum |
| February 13 | Angular Impulse and Momentum |
| February 20 | Planar Kinematics of a Rigid Body, Translation, Rotation |
| February 27 | Planar Kinematics and Relative Motion |
| March 6 | SPRING BREAK – No Class |
| March 13 | Planar Kinetics of a Rigid Body, Moments of Inertia, Forces |
| March 20 | Planar Kinetics: Work and Energy |
| March 27 | Planar Kinetics: Conservation of Energy |
| April 3 | Planar Kinetics: Linear Momentum of Rigid Bodies |
| April 10 | Planar Kinetics: Angular Momentum of Rigid Bodies |
| April 17 | Finals Week |

17. Attendance and Expectations:

Class attendance is optional. Those who have no scheduling conflicts with the recording of live lectures are encouraged to attend, but doing so is not mandatory. All homework will be submitted electronically and all quizzes will be administered through Canvas.

18. Grading:

| | |
|-------------|-----|
| Quizzes: | 20% |
| Homework: | 20% |
| Exam 1: | 20% |
| Exam 2: | 20% |
| Final Exam: | 20% |

19. Grading Scale:

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|----|------------|----|------------|
| A | 90 - 100 | C | 70 – 76.99 |
| A- | 89 – 89.99 | C- | 69 – 69.99 |
| B+ | 87 – 88.99 | D+ | 67 – 68.99 |
| B | 80 – 86.99 | D | 60 – 66.99 |
| B- | 79 – 79.99 | D- | 59 – 59.99 |
| C+ | 77 – 78.99 | | |

A C- will not be a qualifying grade for critical tracking courses. In order to graduate, students must have an overall GPA and an upper-division GPA of 2.0 or better (C or better). Note: a C- average is equivalent to a GPA of 1.67, and therefore, it does not satisfy this graduation requirement. For more information on grades and grading policies, please visit: <https://catalog.ufl.edu/ugrad/current/regulations/info/grades.aspx>

20. Requirements for class attendance and make-up exams, assignments, and other work are consistent with university policies that can be found at:

<https://catalog.ufl.edu/ugrad/current/regulations/info/attendance.aspx>

21. Honesty Policy – UF students are bound by The Honor Pledge which states, “We, the members of the University of Florida community, pledge to hold ourselves and our peers to the highest standards of honor and integrity by abiding by the Honor Code. On all work submitted for credit by students at the University of Florida, the following pledge is either required or implied: “On my honor, I have neither given nor received unauthorized aid in doing this assignment.” The Honor Code

(<http://www.dso.ufl.edu/sccr/process/student-conduct-honor-code/>) specifies a number of behaviors that are in violation of this code and the possible sanctions. Furthermore, you are obligated to report any condition that facilitates academic misconduct to appropriate personnel. If you have any questions or concerns, please consult with the instructor or TAs in this class.

Note that failure to comply with this commitment will result in disciplinary action compliant with the UF Student Honor Code Procedures.

See <http://www.dso.ufl.edu/sccr/procedures/honorcode.php>

22. Accommodation for Students with Disabilities – Students Requesting classroom accommodation must first register with the Dean of Students Office. That office will provide the student with documentation that he/she must provide to the course instructor when requesting accommodation.
23. UF Counseling Services –Resources are available on-campus for students having personal problems or lacking clear career and academic goals. The resources include:
 - UF Counseling & Wellness Center, 3190 Radio Rd, 392-1575, <http://www.counseling.ufl.edu/cwc/Default.aspx>, counseling services and mental health services.
 - Career Resource Center, Reitz Union, 392-1601, career and job search services.
 - University Police Department 392-1111
24. Software Use – All faculty, staff and student of the University are required and expected to obey the laws and legal agreements governing software use. Failure to do so can lead to monetary damages and/or criminal penalties for the individual violator. Because such violations are also against University policies and rules, disciplinary action will be taken as appropriate. We, the members of the University of Florida community, pledge to uphold ourselves and our peers to the highest standards of honesty and integrity.
25. Students are expected to provide feedback on the quality of instruction in this course by completing online evaluations at <https://evaluations.ufl.edu>. Evaluations are typically open during the last two or three weeks of the semester, but students will be given specific times when they are open. Summary results of these assessments are available to students at <https://evaluations.ufl.edu/results/>.