

EGM3401 - Dynamics (Engineering Mechanics)

1. Catalog Description: Credits: 3;

Dynamics of particles and rigid bodies for rectilinear translation, curvilinear motion, rotation and plane motion. Principles of work and energy, impulse and momentum; plus extended coverage of three-dimensional rigid-body dynamics and orbital motion.

2. Pre-requisites and Co-requisites: Prerequisites: EGM 2511 and MAC 2313.

3. Course Objectives:

This course aims at providing a solid coverage of particle and rigid body dynamics to undergraduate engineering students. The material covered is a foundation for many other courses and is used frequently by most engineers. Students are expected to learn kinematic and kinetic principles, the application of work/energy, and of impulse/momentum principles to dynamical systems.

4. Contribution of course to meeting the professional component:

This course contributes by enhancing the student's abilities to work professionally in rigid body dynamical systems. Its content is 100% engineering science.

5. Relationship of course to program outcomes:

ABET (Accreditation Board for Engineering and Technology) is the sole accrediting agency for engineering and technology programs in the United States. This course will achieve the following ABET outcomes by enhancing the student's abilities in the following areas: (1) Apply knowledge of mathematics, science, and engineering [outcome (a), high coverage, 50% of the course grade, assessed through exams and homework assignments]; (2) Identify, formulate, and solve engineering problems [outcome (e), high coverage, 50% of the course grade, assessed through exams and homework assignments]; (3) Understand professional and ethical responsibilities [outcome (f), low coverage, no formal assessment]; and (4) Understand the impact of engineering solutions in a global and societal context [outcome (h), low coverage, no formal assessment]. In addition, the course will also achieve the following program specific outcomes: (M1) Possess knowledge of chemistry and calculus-based physics with depth in at least one of them; (M2) Possess knowledge of advanced mathematics through multivariate calculus and differential equations; (A5) (*partial*) Possess knowledge of orbital mechanics and mathematics.

6. Instructor:

Daniel J. Dickrell III

Office hours: M,W,R 8th Period

- Office location: 130 MAE-C
- E-mail address: djd3@ufl.edu
- Website: <http://lss.at.ufl.edu> (Links to an external site.) (Canvas)

It is the instructor's policy that no academic help will be conducted over email, only official course business during normal business hours (8AM – 5 PM normally).

Issues such as: "I can't do problem X" or "I don't understand concept Y" are only solvable through face-to-face interaction, which the instructor, graduate TA, and undergraduate assistants are more than happy to provide during office hours or help sessions.

7. Teaching Assistants:

Jake Pratt

Office hours and location: TBA

8. Meeting Times and Location:

MWF 7 - Weimer 1094

9. Class/Laboratory Schedule:

Class meets three times a week for 50 minutes each during Fall and Spring semesters, 75 minutes during Summer semester.

10. Material and Supply Fees: n/a

11. Textbooks:

(I) DYNAMICS OF PARTICLES AND RIGID BODIES: A SYSTEMATIC APPROACH

ISBN: 9780521187909

Author: Anil V. Rao

(II) Classical Mechanics

ISBN: 189138922X

Author: John R. Taylor

These texts are highly suggested for students interested in getting top grades.

12. Recommended Reading: See texts above. Excerpts of both texts will be provided to students for limited topics.

13. Course Outline: See schedule posted on Canvas under “Calendar” link. Additionally, any announcements in class or on the website will take precedence over any information in the syllabus.

14. Attendance and Expectations:

Regular attendance is expected. Periodic attendance-checks will be performed during the semester to help motivate you. Please no laptops open during class or excessive smartphone activity. We see everything.

****Please****

Be on time: Arrive on time for class to start without disrupting the attention of other classmates. If you are late to class, please enter quietly by the back doors.

No phones: Turn off cell phone. No calls, texts, etc.

No reading of irrelevant materials during lectures: Put other reading materials irrelevant to the course away (newspapers, Facebook, Reddit, etc).

Eating and drinking: No eating and drinking during lectures.

15. Grading Components

- Attendance/Participation/Homework* - 10%

- In-Class Quizzes - 20% (duration: 15 minutes, ~ 10 total, drop lowest)
- First Exam - 20% (duration: 120 minutes, 2/8/23 @ 8:20 PM)
- Second Exam - 25% (duration: 120 minutes, 3/22/23 @ 8:20 PM)
- Final Exam - 25% (duration: 120 minutes, May 4th, 2023 @ 3 PM)

note homework based on completion and group collaboration is encouraged

16. Grading Scale

A: 90-100, B+: 87-89.9, B: 80-86.9, C+: 77-79.9, C: 70-76.9, D+: 65-69.9, D: 60-64.9, E: <60

17. Make-up Policy:

There will be no scheduled make-up quizzes or exams. If missing an exam is unavoidable (e.g., due to grave illness with a supporting letter from the examining physician, etc.), meet with your instructor in advance. ***Taking early vacation or having airline tickets is not considered as a valid reason to miss a quiz/exam. Pay attention to Final Exam schedule on the calendar.***

18. Honesty Policy:

All students admitted to the University of Florida have signed a statement of academic honesty committing themselves to be honest in all academic work and understanding that failure to comply with this commitment will result in disciplinary action. Typical disciplinary action would be a grade of E in the course for a first offense. This statement is a reminder to uphold your obligation as a UF student and to be honest in all work submitted and exams taken in this course and all others. Any use of a cell phone during an exam will result in an honor violation.

19. 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.

20. UF Counseling Services:

Health and Wellness

U Matter, We Care:

Your well-being is important to the University of Florida. The U Matter, We Care initiative is committed to creating a culture of care on our campus by encouraging members of our community to look out for one another and to reach out for help if a member of our community is in need. If you or a friend is in distress, please contact umatter@ufl.edu so that the U Matter, We Care Team can reach out to the student in distress. A nighttime and weekend crisis counselor is available by phone at 352-392-1575. The U Matter, We Care Team can help connect students to the many other helping resources available including, but not limited to, Victim Advocates, Housing staff, and the Counseling and Wellness Center. Please remember that asking for help is a sign of strength. In case of emergency, call 9-1-1.

Counseling and Wellness Center: <https://counseling.ufl.edu> *Links to an external site.*, and 392-1575; and the University Police Department: 392-1111 or 9-1-1 for emergencies.

Sexual Discrimination, Harassment, Assault, or Violence

If you or a friend has been subjected to sexual discrimination, sexual harassment, sexual assault, or violence contact the [Office of Title IX Compliance](#) *Links to an external site.*, located at Yon Hall Room 427, 1908 Stadium Road, (352) 273-1094, title-ix@ufl.edu

Sexual Assault Recovery Services (SARS)

Student Health Care Center, 392-1161.

University Police Department at 392-1111 (or 9-1-1 for emergencies), or <http://www.police.ufl.edu/> *Links to an external site.*

Students Requiring Accommodations

Students with disabilities who experience learning barriers and would like to request academic accommodations should connect with the disability Resource Center by visiting <https://disability.ufl.edu/students/get-started/> *Links to an external site.* It is important for students to share their accommodation letter with their instructor and discuss their access needs, as early as possible in the semester.

Course Evaluation

Students are expected to provide professional and respectful feedback on the quality of instruction in this course by completing course evaluations online via GatorEvals. Guidance on how to give feedback in a professional and respectful manner is available at <https://gatorevals.aa.ufl.edu/students/> [Links to an external site.](#). Students will be notified when the evaluation period opens, and can complete evaluations through the email they receive from GatorEvals, in their Canvas course menu under GatorEvals, or via <https://ufl.bluera.com/ufl/> [Links to an external site.](#). Summaries of course evaluation results are available to students at <https://gatorevals.aa.ufl.edu/public-results/> [Links to an external site.](#).

In-Class Recording

Students are allowed to record video or audio of class lectures. However, the purposes for which these recordings may be used are strictly controlled. The only allowable purposes are (1) for personal educational use, (2) in connection with a complaint to the university, or (3) as evidence in, or in preparation for, a criminal or civil proceeding. All other purposes are prohibited. Specifically, students may not publish recorded lectures without the written consent of the instructor.

A “class lecture” is an educational presentation intended to inform or teach enrolled students about a particular subject, including any instructor-led discussions that form part of the presentation, and delivered by any instructor hired or appointed by the University, or by a guest instructor, as part of a University of Florida course. A class lecture does not include lab sessions, student presentations, clinical presentations such as patient history, academic exercises involving solely student participation, assessments (quizzes, tests, exams), field trips, private conversations between students in the class or between a student and the faculty or lecturer during a class session.

Publication without permission of the instructor is prohibited. To “publish” means to share, transmit, circulate, distribute, or provide access to a recording, regardless of format or medium, to another person (or persons), including but not limited to another student within the same class section. Additionally, a recording, or transcript of a recording, is considered published if it is posted on or uploaded to, in whole or in part, any media platform, including but not limited to social media, book, magazine, newspaper, leaflet, or third party note/tutoring services. A student who publishes a recording without written consent may be subject to a civil cause of action instituted by a person injured by the publication and/or discipline under UF Regulation 4.040 Student Honor Code and Student Conduct Code.

Commitment to a Safe and Inclusive Learning Environment

The Herbert Wertheim College of Engineering values broad diversity within our community and is committed to individual and group empowerment, inclusion, and the elimination of discrimination. It is expected that every person in this class will treat one another with dignity and respect regardless of gender, sexuality, disability, age, socioeconomic status, ethnicity, race, and culture.

If you feel like your performance in class is being impacted by discrimination or harassment of any kind, please contact your instructor or any of the following:

- Your academic advisor or Graduate Program Coordinator
- Jennifer Nappo, Director of Human Resources, 352-392-0904, jpennacc@ufl.edu
- Curtis Taylor, Associate Dean of Student Affairs, 352-392-2177, taylor@eng.ufl.edu
- Toshikazu Nishida, Associate Dean of Academic Affairs, 352-392-0943, nishida@eng.ufl.edu

[Links to an external site.](#)

Campus Resources:

Academic Resources

E-learning technical support, 352-392-4357 (select option 2) or e-mail to Learning-support@ufl.edu. <https://lss.at.ufl.edu/help.shtml> [Links to an external site.](#)

Career Connections Center, Reitz Union, 392-1601. Career assistance and counseling; <https://career.ufl.edu> [Links to an external site.](#)

Library Support, <http://cms.uflib.ufl.edu/ask> [Links to an external site.](#) Various ways to receive assistance with respect to using the libraries or finding resources.

Teaching Center, Broward Hall, 392-2010 or 392-6420. General study skills and tutoring. <https://teachingcenter.ufl.edu/> [Links to an external site.](#)

Writing Studio, 302 Tigert Hall, 846-1138. Help brainstorming, formatting, and writing papers. <https://writing.ufl.edu/writing-studio/> Links to an external site..

Student Complaints Campus: <https://sccr.dso.ufl.edu/policies/student-honor-code-student-conduct-code/>Links to an external site.;<https://care.dso.ufl.edu> Links to an external site..

On-Line Students Complaints: <https://distance.ufl.edu/state-authorization-status/#student-complaint> Links to an external site..