

ENGR 2130 Dynamics

Biological and Agricultural Engineering Department

Fall Semester, 2007

Instructor

Ron McClendon

113 Driftmier Engineering Center(will be moving to 312 during semester)

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UGA Bulletin Course Description

Particles and rigid bodies that are moving with respect to a reference system. Kinematics deals with motion in terms of displacement, velocity, and acceleration. Kinetics includes the effect of forces on particles and bodies.

<u>Offered</u>	<u>Credits</u>	<u>Level</u>	<u>Weekly Class Meeting Pattern</u>
Fall, Spring, Summer	3	Undergrad	Three 1 hr. cl.

Course Prerequisites

ENGR 2120 Statics

Pre- or Corequisites by Topic

Free body diagrams, Two and three dimensional force systems, Equilibrium equations, Computer Programming

Courses that Require this Course as a Prerequisite

ENGR 3300 Mechanism Design

Please note that a C or better in ENGR 2130 is a prerequisite for ENGR 3300. If you do not have a C or better in ENGR 2130 you will be dropped from the rolls of ENGR 3300.

Text

J.L. Meriam and L.G. Kraige "Engineering Mechanics – Statics" Volume 2, John Wiley and Sons, 6th Edition

References

none

Topics and (Number of 1 hr classes)

<u>Sections</u>	<u>Topics</u>	<u>Number of Class Meetings (estimated)</u>
1/1 – 1/7	Intro	2
2/1 – 2/9	Kinematics of Particles	9
<u>EXAM #1</u>		1 (Class #12)
3/1 – 3/10	Kinetics of Particles	6
4/1 – 4/5	Kinetics of Systems of Particles	4
<u>EXAM #2</u>		1 (Class #23)
5/1 – 5/7	Plane Kinematics of Rigid Bodies	11
<u>EXAM #3</u>		1 (Class #35)
6/1 – 6/6, 6/8	Plane Kinetics of Rigid Bodies	9
Review		1
Last Class	Wednesday, December 5, 2006(also Tues. Dec. 4)	
<u>Final Exam</u>	Friday, Dec 14, 2007 noon - 3:00 pm	

Laboratory Exercises (none)

Course Learning Objectives Matrix

Course Learning Objectives	Course Assessment Methods*	Extent of Coverage of Program Outcomes** (ABET Criterion 3)
Upon successful completion of this course, the student will be able to:		
1. Describe the linear, circular and general motion of particles.	A, B, C, E	a xxx e xxx
2. Determine the kinetics of particles due to forces.	A, B, C, E	a xxx e xxx
3. Describe the linear, circular, and general motion of rigid bodies.	A, B, C, E	a xxx e xxx
4. Determine the kinetics of rigid bodies due to forces.	A, C, E	a xxx e xxx
5. Solve a repetitive calculation dynamics problem by writing a procedural computer program and plot and analyze results of solution.	D, E	a xxx e xxx g xx k xx

* Course Assessment Methods: A – Homework; B – Hourly Exams; C – Final Exam; D – Computer based project; E – Student Evaluation

** Extent of Coverage: x – some, xx – moderate, xxx - extensive

ABET EC-2000 Criterion 3 Program Outcomes

- a) an ability to apply knowledge of mathematics, science, and engineering
- b) an ability to design and conduct experiments, as well as to analyze and interpret data
- c) an ability to design a system, component, or process to meet desired needs
- d) an ability to function on multi-disciplinary teams
- e) an ability to identify, formulate, and solve engineering problems
- f) an understanding of professional and ethical responsibility
- g) an ability to communicate effectively
- h) the broad educational necessary to understand the impact of engineering solutions in a global and societal context
- i) a recognition of the need for, and an ability to engage in life-long learning
- j) a knowledge of contemporary issues
- k) an ability to use techniques, skills, and modern engineering tools necessary for engineering practice.

Overall Course Contribution to Program Outcomes

- a extensive
- e extensive
- g moderate
- k moderate

Method of Grading

Avg. of three hourly exams	60%
Final exam	30%
Daily grade (approx. 10 collected homework assignments and computer assignment)	10%
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	100%

Additional Information

GENERAL INSTRUCTIONS:

1. You are expected to attend all class meetings. Please read the UGA Bulletin statement on Class Attendance and Withdrawal from Courses. If you miss a class, it is your responsibility to determine the assignment and learn the material covered in the class you have missed.
2. Bring your calculator to each class.
3. Have theory studied and problems solved by the date assigned.
4. Exams and quizzes will be "closed book" unless otherwise announced.
5. Short unannounced quizzes may be given periodically.
6. Problem assignments will be collected periodically to check your progress in statics and your development of good problem solving techniques. These are due at the beginning of class and will not be accepted later.
7. Present your problems in a neat and orderly fashion. Clarity will be considered in grading. Please use problem format standards from ENGR 2120.
8. Be able to show evidence that you have made a significant attempt at a problem before you seek assistance.
9. Please do not bring food or drink (including water) to class.
10. Please do not wear your hat during class.
11. Please switch off your cell phone. (If it rings, zero for the day. If you answer it, zero for the course.)
12. Please read and follow the UGA Bulletin statement on Academic Honesty. Remember that you signed the UGA Honor Code.

SPECIFIC INSTRUCTIONS:

In order to succeed in mastering the subject matter covered in this course, you must work homework problems individually and participate in class discussions.

GRADING:

Three hour exams will be given during the semester with no make-up exams. You will be given a grade of zero on an assigned exam if you do not take the exam. You will, however, be allowed to substitute the grade you make on the final exam for your lowest hour exam grade. NOTE: You must request that I make this substitution in writing at the final exam before the exam is handed out. The final itself will still count 30% of your grade.

The daily grade will be a composite of grades from selected homework problems collected at the beginning of class and short unannounced quizzes. Homework problems and unannounced quizzes will count 10 points each. The short quizzes can cover material from the previous lecture or from the current lecture. An unexcused absence will result in a grade of zero for either of these daily grades. Homework problems are collected at the beginning of class and will not be accepted later during the class or afterwards. It is not permissible for someone to submit homework for you in your absence without prior approval of the instructor. You will have at least one drop grade in your daily grade average.

Computer assignments will be collected at the beginning of class on the due date. Assignments submitted later that day will be reduced by 20%. Each subsequent day will result in

an additional 20% reduction in grade. The computer assignment will count 50 points (the equivalent of five homework grades).

Thirty percent of the grade on computer and homework assignments will be based on quality of communication. Communication quality is evidenced by spelling, grammar, punctuation, and clarity of writing.

The final class grades will be based on the following:

90 - 100	A
89	A-
88	B+
80 - 87	B
79	B-
78	C+
70-77	C
69	C-
60-68	D
< 60	F

I am not posting specific hours for assistance with ENGR 2130. Please contact me after class to make an appointment. Also, feel free to send me an e-mail message or call me at work to make an appointment. Leave a voicemail message and I will return your call.

ACADEMIC HONESTY

All students are responsible for maintaining the highest standards of honesty and integrity in every phase of their academic careers. The penalties for academic dishonesty are severe and ignorance is not an acceptable defense. The document for academic honesty may be found at the web site for The University of Georgia Office of Senior Vice President for Academic Affairs and Provost

ENGINEERING PROFESSIONALISM POLICY

The engineering profession is governed by a code of ethics that have developed alongside the rigors of the practice and its many contributions to society. Engineering students at UGA are responsible for maintaining the highest standards of professionalism and professional practice. Engineering faculty at UGA expect students to act in a professional manner at all times.