

COURSE SYLLABUS
ME 231 ~ Dynamics
Fall 2012

Course Section: 001
Meeting Time and Place: 10:10AM – 11:00AM | MWF | Min Kao 524
Course Credit Hours: 3

**FACULTY CONTACT
INFORMATION**

Jeff Reinbolt
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**TEACHING ASSISTANT CONTACT
INFORMATION** TBD

1. **COURSE DESCRIPTION.** Kinematics of rigid bodies, center of mass, and kinetics of systems of particles. Mass moments of inertia. Kinetics of rigid bodies. Newton's laws, work-energy, and impulse-momentum.

(Registrar Enforced) Prerequisite(s): ME 202 and Engineering Fundamentals 152.

The goal of this course is to teach you the fundamental concepts of rigid body kinematics and dynamics with an emphasis on the modeling, analysis, and simulation of how forces produce motion of rigid body systems.

2. **COURSE OBJECTIVES.** The objectives of this course related to the department's program objectives are to teach you the basic principles of the dynamics of systems of particles and plane motion of rigid bodies, including instantaneous Newtonian analysis, work-energy relations, and impulse-momentum relations.
3. **TEXTS/MATERIALS/RESOURCES FOR THE COURSE.** *Engineering Mechanics: Dynamics*, 2nd ed., Gray, Costanzo, Plesha, 2012. ISBN: 978-0073380308

Online text & homework: <http://connect.mcgraw-hill.com/class/me231>

Online resources: <http://rrg.utk.edu/resources/ME231>

4. **INFORMATION LITERACY/TECHNOLOGICAL RESOURCES.** Online@UT, Connect

5. **TEACHING APPROACH.**

Methods of Instruction. To learn the fundamental concepts of rigid body kinematics and dynamics, we will use activities in lectures, through homework, and during office hours.

Lectures. We will cover most of the material in Chapters 1 through 6. I do not anticipate these lectures being a one-way communication without your participation. To learn, you will need to think and respond to questions and ask your own questions for clarification.

Class Collaboration and Peer-to-Peer Teaching. You are encouraged to become part of a study group early on in the course, as this will greatly facilitate your ability to learn from one another as well as to complete the homework assignments.

Homework. No solutions will be provided to homework problems. You are encouraged to work together to figure out the *solution process* for homework problems. However, each student must complete his or her own final solutions, and use of another student's solutions will be considered a violation of the University Honor Statement.

Role of the Student. The role of the student is that of a learner, a collaborator, and a team member. You should be disciplined and motivated to follow the course schedule and complete assignments. If you have questions, it will be your responsibility to meet during office hours to receive additional assistance. You will be required to play an active role in identifying your learning issues and needs.

Role of the Instructor. The role of the instructor is that of a tutor, a mentor, and a resource. I should effectively organize, plan, and teach the curriculum. If you need additional assistance, I will provide support and encouragement to address your learning needs.

Classroom Expectations. To maintain a high-quality learning environment, the following standards will be followed:

- Professional courtesy and respect for others
- You are responsible for your own work
- You should show up on-time and be prepared for lectures
- Cell phones, iPods, audio players, and other devices will *not* be used
- Laptop computers will *not* be used
- Disruptive behavior will *not* take place
- The University Honor Statement will *not* be violated

6. COURSE REQUIREMENTS, ASSESSMENT, AND EVALUATION METHODS.

Attendance Policy. Attendance is not required except for exams. However, it will be extremely difficult to pass the course unless you regularly attend lectures.

Tardiness Policy. Arriving late (or leaving early) is disruptive and does not meet the Class Expectations standards nor suggestions for How to be Successful in this Class. Since difficult days will arise during the semester, you will be permitted the occasional late arrival. If tardiness becomes a problem, I will meet with you individually to discuss your issues and possible consequences.

Homework. Homework assignments will involve the completion of selected problems similar to the problems at the end of the textbook sections. See the *Homework Assignments* handout for details on problems assigned and due dates. To receive full credit, you will be required to complete all of the regular assigned problems. No partial credit will be given for incorrect solutions. Extra credit problems will be available throughout the course.

Late Homework Policy. Late homework assignments will not generally be accepted. Since difficult weeks will arise during the semester, each student will be permitted two late homework assignments turned in not more than one week after the original due date. Hardship cases will be considered on an individual basis and only if the instructor has been contacted before the due date.

Exams. Exams will be in-class and will be closed-book, closed notes, but you will be allowed to bring one sheet of letter-sized paper (front and back) with as much material on it as you want. Exam problems may be taken directly from the homework problems with some modifications. If you do not agree with the grading of a particular exam problem, you will have one week from the date the exam is returned to submit a written explanation of why you think the grade should be higher. However, the final decision will remain the instructor's.

Make-up Exam Policy. No make-up exams will be given. If you miss an exam without my prior consent, you will receive a grade of zero for that exam.

Grading System. The final course grade, g , will be calculated based on the following percentages, including one percentage (x) you choose at the final exam:

Assessment	Percentage
Extra Credit (c)	1%
Homework (h)	15%
Exam 1 (e_1)	25%
Exam 2 (e_2)	25%
Final Exam (f)	$0\% \leq x \leq 35\%$

$$g(x) = \frac{(0.15h + 0.25e_1 + 0.25e_2 + xf)}{(0.15 + 0.25 + 0.25 + x)} + 0.01c$$

You will earn your own final course grade based on the percentages above. I am simply the individual who does the calculations. If you are afraid that you are not

performing well enough during the semester, come see me to get back on track.

Grading Scale. Assessed grades will use the following divisions that are linearly related to the University's quality point scale:

Grade	Quality Points (x)	Percentage (10x+50)
A	4.0	$90\% \leq g$
A-	3.7	$87 \leq g < 90\%$
B+	3.3	$83 \leq g < 87\%$
B	3.0	$80 \leq g < 83\%$
B-	2.7	$77 \leq g < 80\%$
C+	2.3	$73 \leq g < 77\%$
C	2.0	$70 \leq g < 73\%$
C-	1.7	$67 \leq g < 70\%$
D+	1.3	$63 \leq g < 67\%$
D	1.0	$60 \leq g < 63\%$
D-	0.7	$57 \leq g < 60\%$
F	0.0	$g < 57\%$

Honor Statement Policy. See the University Policies section below.

7. **COURSE OUTLINE/ASSIGNMENT/UNITS OF INSTRUCTION.** See the *Lecture Schedule* handout for a day-by-day outline of the following general topics we will cover:

- Chapter 1: Introduction to Dynamics
- Chapter 2: Particle Kinematics
- Chapter 6: Planar Rigid Body Kinematics
- Chapter 3: Force and Acceleration Methods for Particles
- Chapter 7: Newton-Euler Equations for Planar Rigid Body Motion
- Chapter 5: Momentum Methods for Particles
- Chapter 4: Energy Methods of Particles
- Chapter 8: Energy and Momentum Methods for Rigid Bodies

See the *Homework Instructions* handout for details on how to complete assigned problems. See the *Homework Assignments* handout for details on problems assigned and due dates. Homework due dates will generally be one week after the corresponding chapters are completed in lecture. Plan your time carefully, since you may have more than one homework assigned at the same time.

8. **HOW TO BE SUCCESSFUL IN THIS CLASS.** In addition to fully completing the homework assignments and exams, general guidelines for improving your performance are as follows:

- Attend every class and be on time
 - Bring textbook, printouts of web documents, notebook, and pen/pencil to class
 - Take notes and go over them before the next class
 - Read the assigned sections before each class.
 - In class, we will complete examples as a group exercise. However, if you are unable to complete an example in class, you should do so on your own. The examples will not be graded, but they are designed to teach you the skills you need to do the assignments and exams that will be graded.
 - Take advantage of office hours for extra help whenever you need it!
 - Use the textbook!
 - Ask questions!
 - Do your own work!
9. **COURSE FEEDBACK.** In addition to formative feedback opportunities during office hours or via email, you will be given the opportunity to provide this feedback in writing after each exam. For anonymous feedback, you may complete a *Feedback Form* online at any time:

<http://rrg.utk.edu/resources/ME231/feedback.html>

10. **UNIVERSITY POLICIES.**

Freedom to Learn. The responsibility to secure and to respect general conditions conducive to the freedom to learn is shared by all members of the academic community. The university welcomes and honors people of all races, creeds, cultures, and sexual orientations, and values intellectual curiosity, pursuit of knowledge, and academic freedom and integrity.

Academic Integrity. The Honor Statement as printed in *Hilltopics* encourages each student to make a personal commitment to academic integrity:

"An essential feature of the University of Tennessee is a commitment to maintaining an atmosphere of intellectual integrity and academic honesty. As a student of the University, I pledge that I will neither knowingly give nor receive any inappropriate assistance in academic work, thus affirming my own personal commitment to honor and integrity."

All students admitted to the University of Tennessee have signed and dated a pledge acknowledging their affirmation 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.

Plagiarism. Students are also responsible for any acts of plagiarism that uses the intellectual property of someone else without giving proper credit. Plagiarism is a serious offense, subject to disciplinary action that may include failure in a course and/or dismissal from the university.

Final Exam Policy. Final exams must be given during the final exam period at the scheduled time, although alternative uses of the scheduled exam period may be designated by the instructor.

- Students are not required to take more than two written exams on any day. The instructor(s) of the last non-departmental exam(s) on that day must reschedule the student's exam during the exam period. It is the obligation of students with such conflicts to make appropriate arrangements with the instructor at least two weeks prior to the end of classes.
- All final exams must be given during the final exam period at the scheduled time, although alternative uses of the scheduled exam period may be designated by the instructor.
- No in-class written quizzes or tests counting more than 10 percent of the semester grade may be given the last five calendar days prior to the study period.

11. STUDENTS WITH DISABILITIES POLICY. Any student who feels s/he may need an accommodation based on the impact of a disability should contact the instructor privately to discuss their specific needs. Students with documented disabilities should contact the Office of Disability Services for assistance with appropriate accommodations at (865) 974-6087 or ods@tennessee.edu.

12. IMPORTANT DATES IN THE ACADEMIC CALENDAR FALL 2012.

Last Day to Add Classes	August 31, 2012
Last Day to Drop Course without "W"	August 31, 2012
Labor Day (no classes)	September 3, 2012
Fall Break (no classes)	October 11-12, 2012
Last Day to Drop Course with "W"	November 13, 2012
Thanksgiving Holidays (no classes)	November 22-23, 2012
Last Day of Classes	December 4, 2012
Final Exam (10:10-11:00AM MWF Class)	December 10, 2012 8-10 AM

13. SYLLABUS CHANGES. I reserve and likely will exercise the right to revise, alter, and/or amend this syllabus as necessary. You will be notified of any such changes. You should check the course web site on a regular basis for up-to-date course information.