

**MET 212
SLN 77817
Applied Engineering Mechanics: Dynamics
Fall 2013**

Course information will be posted on my.asu.edu Blackboard web site throughout the semester.

Catalog Description

Masses; motion kinematics; dynamics of machinery.

Class Schedule

Tuesday and Thursday, 10:30 – 11:45 AM in San Tan 135

Required textbook

"Engineering Mechanics: Dynamics" by J. J. Meriam and L. G. Kraige, 7th Edition, John Wiley & Sons, Inc., 2012

Pre-requisites:

MET 211 (or CON 221 or MAE 212); MAT 266 (or MAT 271)

Instructor

C.Y Kuo
(cykuo@asu.edu)
Peralta Hall 335K
Phone: 480-727-1032

Office Hours

Monday and Wednesday: 12:00-1:00
Tuesday and Thursday: 9:00-10:00
and by appointment

Course Objectives

1. Students will be able to recall concepts of mass, force, moment, friction, particles and extended bodies.
2. Students will be able to apply kinematic principles and predict rectilinear/planar motions, such as velocity and acceleration, of a particle as a function of time.
3. Students will be able to compare and differentiate the three coordinate systems (rectangular, normal-tangential and polar) used in the kinematic study of planar motions.
4. Students will be able to construct free body diagrams for a particle, a system of particles and a rigid body.
5. Students will be able to apply Newton's laws of motion and carry out derivations of equations of motion for particles and rigid bodies in rectilinear/planar motions.
6. Students will be able to interpret the motions of an object based on their understanding of the concepts of work, kinetic and potential energy, linear and angular momentum.
7. Students will be able to differentiate and select different approaches (Newton's laws, work-energy and impulse-momentum) for solving a dynamics problem.
8. Students will be able to illustrate the relative motion between two points on a rigid body.

9. Students will be able to classify the motion of a rigid body either as translational motion, rotational motion about a fixed point or general plane motion.

Course Policies

1. Attendance will not be taken. However, you will not receive credit if you miss any quiz or in-class problem solving session.
2. Review sessions will be conducted before midterm and final exams.
3. You shall not come to class and sleep, talk on your cell phone, work on homework or assignments for other classes or surf Internet sites that are not related to this course. Please turn off your cell phone or put it on silent mode.
4. You are expected to come to class prepared. You should study materials assigned by your instructor as well as from previous lectures, practice problems and be prepared to ask questions about topics/problems that you don't understand.
5. You are encouraged to see me during my office hours or make an appointment.

Course Topics

- Newton's Laws and units.
- Position, velocity and acceleration of a particle in 1-D (rectilinear) motion.
- 2-D (planar) motion of a particle formulated in rectangular, polar and normal-tangential coordinates.
- Free body diagrams (FBD's).
- Kinetics of a particle in 1-D/2-D motion.
- Kinetic energy, potential energy.
- Linear impulse-momentum.
- Angular impulse-momentum.
- Center of mass.
- Moment of inertia.
- Rotating reference frame.
- Plane kinetics of rigid bodies.

Grading Plan for Applied Engineering Mechanics: Dynamics

GRADING COMPONENT	% CONTRIBUTION TO COURSE GRADE
Homework*	15
Quizzes**	12
In-Class Problem Solving	8
Mid-term Exam I & II	30
Final Exam	35

* All students are expected to solve every assigned homework problem independently. You may study in groups. But, please make sure that your solutions to the homework problems are entirely your own. Without prior approval from the instructor, no homework assignment will be accepted after its due date.

** 8-12 quizzes will be administered throughout the semester, some of them without prior announcement. These are 20-30 minutes, closed-book, closed-notes exams. You are allowed to use calculator and a 3" by 5" formula card. You can use both sides of that

card. However, you can not put anything other than formulas on that card. **NO make-ups!**

ADA Statement

The Americans with Disabilities Act (ADA) is a federal antidiscrimination statute that provides comprehensive civil rights protection for persons with disabilities. One element of this legislation requires that all qualified students with documented disabilities be guaranteed a learning environment that provides for reasonable accommodation of their disabilities. If you believe you have a disability requiring an accommodation please contact the Disability Resource Center at ASU Polytechnic located in Sutton Hall, Room 240 or call 480-727-1039 / TTY: 480-727-1009. Eligibility and documentation policies online: <http://www.asu.edu/studentaffairs/ed/drc/>

Other Resources

Writing Center – <http://www.asu.edu/duas/wcenter/>
Learning Resources Center – <http://www.asu.edu/lrc/>
Counseling/Consultation – http://www.asu.edu/counseling_center/

Legal Disclaimers

Students are expected to participate in the educational process and not be a disruptive element with regard to the learning of others. Self discipline and respect for others are necessary elements in the educational processes employed in this course. All students should be familiar with the Student Code of Conduct, which can be found at <http://www.asu.edu/studentlife/judicial/>.

Students are expected to execute all course assignments and activities in accordance with the University's Student Academic Integrity Policy. Detailed information on the Academic Integrity Standard and the Student Code of Conduct can be found at http://www.asu.edu/studentaffairs/studentlife/judicial/academic_integrity.htm.