

CASPER COLLEGE COURSE SYLLABUS

ES2120-01 Dynamics

Semester/Year: Spring 2009

Lecture Hours: 4

Lab Hours: 0

Credit Hours: 4

Class Time: 1:00 - 2:50 pm

Days: MW

Room: PS 216

Instructor's Name: Paul Marquard

Instructor's Contact

Office Phone: 268 - 2250 **Email:** marquard@caspercollege.edu

Information: Office - PS 210

Office Hours: MWF: 10:00 - 10:50 am; MTW: 11:00 - 11:50 am; others by appointment

Please read the entire syllabus carefully; you are responsible for all of the requirements and procedures described. You are also responsible for all announcements, assignments, changes to the syllabus, etc., whether or not you are in class.

Course Description: The study of particle and body motion. Includes the study of translation and rotation and the related concepts of work, energy, impulse, and momentum.

Note: Dynamics takes your prerequisite knowledge from Physics, Calculus, Trigonometry, Geometry, and Algebra and puts it all together. You will need to tap this information and utilize it to learn the problem solving processes used.

Statement of Prerequisites: ES 2110 Statics and MATH 2205 Calculus II; PHYS 1310 College Physics I, or concurrent enrollment.

Goal: The goals of this course include, but are not limited to

- developing, in the student, the ability to analyze problems in a simple and logical manner and to apply to its solution a few well understood basic principles.
- developing a solid background in drawing vector models of dynamic systems and applying Newton's second law to these systems.
- studying applications of the methods of work, energy, impulse, and momentum to these dynamic physical systems.

Outcomes:

For particles:

- Describe straight line motion with regard to definitions of displacement, velocity, and acceleration
- Apply the equations for projectile motion

- Describe curvilinear motion using Cartesian, normal/tangential, and radial/transverse coordinate systems – both kinematic equations and kinetic equations
- Apply the concept of work-energy principles
- Apply the principle of linear impulse and momentum
- Apply conservation of momentum and the coefficient of restitution to direct-central and oblique impacts

For rigid bodies:

- Write the proper kinematics equations for velocity and acceleration
- Understand and use the concept of Instantaneous Center of Rotation
- Calculate the mass moment of inertia
- Apply the proper kinetic equations for planer motion – with rotation and/or translation
- Apply the concept of work-energy principles
- Apply the concept of impulse and momentum

Methodology: A mixture of lectures, examples, and problem solving sessions will be used to meet the objectives. In addition, the student is expected to read the covered sections of the textbook before the day they are covered in class.

Evaluation Criteria: This grading scale may be lowered at any time. It will never be raised.

Homework	300
Pre-Quizzes (top 10)	100
Post-Quizzes (top 10)	100
Terrible Twenty	200
Midterm Exam	100
Final Exam	200
Total	1000

Grades:

A	900 - 1000
B	800 - 899
C	700 - 799
D	600 - 699
F	0 - 599

Required Text, Readings, and Materials: *Engineering Mechanics: Statics & Dynamics*, by Bedford & Fowler, 5th Ed., 2008. ISBN:

Class Policies:

You are encouraged to discuss course topics and assignments with one another. However, the homework turned in by each student must be that individual's own work. Assignments will be handed in on

engineering computation paper with all parts labeled and complete work shown. Homework will be submitted on a daily basis, 4 – 8 problems per day. Two problems will be randomly chosen for grading. Late homework will be docked 25% per day late. Assignments cannot be turned in after the corrected work has been returned or posted. No late materials will be accepted after the final exam.

Students are expected to read the chapter material listed on the schedule **prior** to coming to class. Quizzes may cover reading material before it is discussed in class. Missed quizzes will not be made up. They will be dropped.

Work not picked up by the end of the semester becomes the property of the instructor.

Exams will be taken as scheduled unless prior arrangements are made. Makeup exams must be prearranged. A makeup may be given at the discretion of the instructor depending on the reason, the status of the student's homework, and attendance. One 8.5" x 11" sheet of paper with notes is allowed on each exam. If there is a cancellation of classes on the day of an exam, the exam will be the next day classes meet.

The student is responsible for obtaining a scientific calculator approved by the instructor; and for making time to access a computer outside of class time to complete assignments.

All graded material must be saved in case the instructor loses the grades on the computer.

Last date to change to Audit status or to withdraw with a "W" grade: April 3, 2009 unless it is a full withdrawal from Casper College--which may be done at anytime.

Student Rights and Responsibilities: Please refer to the [Casper College Student Handbook](http://www.caspercollege.edu/students/whileyourhere/handbook/index.html) for information concerning your rights and responsibilities as a Casper College Student.
<http://www.caspercollege.edu/students/whileyourhere/handbook/index.html>

Chain of Command: If you have any problems with this class, you should first contact the instructor in order to solve the problem. If you are not satisfied with the solution offered by the instructor, you should then take your problem through the appropriate chain of command starting with the department head, then the division chair, and lastly the vice president for academic affairs.

Academic Dishonesty - Cheating & Plagiarism: As an educational institution, Casper College demands intellectual honesty and integrity from its students. Proven plagiarism or any other form of academic dishonesty can result in the failure of the class as well as a possible expulsion from Casper College. Students are expected to see the [Casper College Student Code of Conduct](http://www.caspercollege.edu/pdf/current_students/student_handbook_conduct_code.pdf) for more details.
http://www.caspercollege.edu/pdf/current_students/student_handbook_conduct_code.pdf

ADA Accommodations Policy: It is the policy of Casper College to provide appropriate accommodations to any student with a documented disability. If you have a need for accommodation in this course, please make an appointment with Brent Heuer, Accommodative Services Counselor, at 268-2557, or at <http://www.caspercollege.edu/adultstudents/helpservices/accomodative/index.html>.

Calendar or schedule indicating course content (all dates tentative):

Date	Sections	Topics	Homework
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