PHYS 531 Classical Mechanics for Educators
COURSE SYLLABUS: Spring 2015

Instructor: Dr. Robynne Lock
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COURSE INFORMATION

Textbook: Analytical Mechanics, 7th edition by Fowles and Cassiday

Recommended text: Pocket Book of Integrals and Mathematical Formulas by Ronald J. Tallarida

Course Description

Basic topics in motion, forces, properties of matter, energy, and related topics will be explored in the framework of Hamiltonian and Langragian mechanics. The elegant derivation of basic conservation laws will be demonstrated using Noether’s theorem. Modern topics such as Chaotic systems and special relativity will be introduced. Emphasis will be placed on conceptual understanding.

This course requires advanced mathematical techniques. Students are expected to have a basic understanding of differential equations and vector calculus.

Student Learning Outcomes

1. Students will be able to use Newton’s laws to analyze the motion of objects.
2. Students will apply knowledge of work and energy to analyze physical systems.
3. Students will analyze physical systems using the Lagrangian.
COURSE REQUIREMENTS

Instructional / Methods / Activities Assessments

This course will consist of lecture, active problem-solving, reading, and discussion activities. Students are expected to complete relevant readings prior to class. Students are encouraged to ask questions during lecture.

GRADING

Grades will be based on two components:
- Exams 60%
- Homework 40%

Grading scale:
- 90% < A < 100%
- 80% < B < 89%
- 70% < C < 79%
- 60% < D < 69%
- F < 60%

Exams: There will be two midterms and a final. They will be weighted equally. Midterms will be scheduled at least two weeks in advance. The date will depend on the speed at which material is covered.

Homework: Homework will be assigned weekly. Assignments will be graded primarily for effort but also for correctness. The lowest homework grade will be dropped.

COURSE AND UNIVERSITY PROCEDURES/POLICIES

Course Specific Procedures

1. No electronics are allowed to be used during class.

2. Eating is not allowed. However, covered drinks are allowed.

3. Attendance will be taken by sign-in sheet.

4. The instructor must be notified about any absences as soon as possible, preferably by email.

5. You are responsible for obtaining notes and class announcements from missed classes.

7. Excessive absences may result in being dropped from the course.

8. When emailing the instructor, include the course and section number the subject line.
9. You are expected to check your email at least once a day for class announcements. Emails will be sent to the email addresses you provided to MyLeo. Notify the instructor if you would prefer to receive emails at a different address.

10. Homework is due at the beginning of class. Late work will be accepted up to a week late at 50% off.

11. Students are expected to be professional and respectful.

**University Specific Procedures**

**ADA Statement**

**Students with Disabilities**
The Americans with Disabilities Act (ADA) is a federal anti-discrimination statute that provides comprehensive civil rights protection for persons with disabilities. Among other things, this legislation requires that all students with disabilities be guaranteed a learning environment that provides for reasonable accommodation of their disabilities. If you have a disability requiring an accommodation, please contact:

**Office of Student Disability Resources and Services**
Texas A&M University-Commerce
Gee Library- Room 132
Phone (903) 886-5150 or (903) 886-5835
Fax (903) 468-8148
StudentDisabilityServices@tamuc.edu

**Student Conduct**

All students enrolled at the University shall follow the tenets of common decency and acceptable behavior conducive to a positive learning environment. (See *Code of Student Conduct from Student Guide Handbook*).

A&M-Commerce will comply in the classroom, and in online courses, with all federal and state laws prohibiting discrimination and related retaliation on the basis of race, color, religion, sex, national origin, disability, age, genetic information or veteran status. Further, an environment free from discrimination on the basis of sexual orientation, gender identity, or gender expression will be maintained.

**COURSE OUTLINE / CALENDAR**

(Exam dates are approximate.)

Newton’s Laws
Oscillations
3D motion
**Exam 1 (~2/25)**
Central forces
Spring Break (3/18)
Lagrangian mechanics
Exam 2 (~4/15)
Oscillating systems
Final