

# **PHYS 4370.01 – Classical Mechanics**

**Credit Hours: 3**

**Spring, 2018**

**Farrington Building, Room 107**

**TTH – 9:30 a.m. - 10:50 a.m.**

**Instructor:** Dr. Gan Liang  
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**Office Location:** Farrington Building, Room 204F

**Office Hours:** Tuesday and Thursday 1:00 p.m. – 4:00 p.m.  
Other times are available by appointment only.  
These office hours are subject to change during the semester for a variety of university-related functions or instructor illness. Notification will be made by posting an announcement on the "Blackboard" for this course.

**Course Description:** **Classical Mechanics:** The dynamics of particles, rigid bodies, vibrating systems and normal coordinates, and other selected topics of advanced mechanics are stressed. Lagrangian and Hamiltonian concepts are introduced. Considerable problem work is required. Prerequisite: MATH 3376. Credit: 3. The course consists of the following parts: lectures, homework, and exams

**Textbook:** Grant R. Fowles and George L. Cassiday, *Analytical Mechanics*, 7<sup>th</sup> edition (Brooks/Cole), 2005. ISBN: 0-534-49492-7.

**Assignments:** There are about eight assignments. Each assignment is due on the due day except as directed. The solution for assignment problems will be posted on Blackboard. Some of the homework assignments could be optional and may not be collected and graded. You are encouraged to work, on your own initiative, as many questions and problems as possible for all the assigned homework.

**Exams:** Exam One, Chapters 1-3.  
Exam Two, Chapters 4-6.

Final exam, Chapters 6-10.

Make-up exams will not be given without a good excuse, such as a valid medical excuse signed by a licensed physician or one that is in compliance with the School's Religious Holy Day policy. Student is responsible for knowing the final exam schedule.

Unless advised differently by instructor all exams will be closed book and closed notes. Each exam will have 5-10 problems.

**Grading Plan:**

90 up     A  
80 - <90   B  
70 - <80   C  
60 - <70   D  
<60        F

Attendance: .....10 %

Homework: .....20%

Exam One: ..... 20%

Exam Two: ..... 20%

Final exam:..... 30%

**Attendance Policy:** Attendance at lectures is required. Excessive (more than three times) absences may result in a serious lowering of the final grade. The instructor will check the class attendance no less than ten times during the semester. Attendance will be used to calculate your final grade of this course. If there is a good reason for each absence, this must be submitted in writing to the instructor. Attendance at exams is mandatory.

**Religious Holy Days:**

Section 51.911(b) of the Texas Education Code requires that an institution of higher education excuses a student from attending classes or other required activities, including examinations, for the observance of a religious holy day, including travel for that purpose. "Religious holy day" means a holy day observed by a religion whose places of worship are exempt from property taxation under Section 11.20, United States Tax Code. A student whose absence is excused under this subsection may not be penalized for that absence and shall be allowed to take an

examination or complete an assignment from which the student is excused within a reasonable time after the absence.

University policy 861001 provides the procedures to be followed by the student and instructor. A student desiring to absent himself/herself from a scheduled class in order to observe (a) religious holy day(s) shall present to each instructor involved a written statement concerning the religious holy day(s). The instructor will complete a form notifying the student of a reasonable timeframe in which the missed assignments and/or examinations are to be completed.

### **Academic Dishonesty:**

All students are expected to engage in all academic pursuits in a manner that is above reproach. Students are expected to maintain honesty and integrity in the academic experiences both in and out of the classroom. Any student found guilty of dishonesty in any phase of academic work will be subject to disciplinary action. The University and its official representatives may initiate disciplinary proceedings against a student accused of any form of academic dishonesty including but not limited to, cheating on an examination or other academic work which is to be submitted, plagiarism, collusion and the abuse of resource materials.

### **Classroom Rules of Conduct:**

Students are expected to maintaining a classroom environment that is conducive to learning. Students are to treat faculty and students with respect. Students will refrain from behavior in the classroom that intentionally or unintentionally disrupts the learning process and thus impedes the mission of the university. Cellular telephones and pagers must be turned off before class begins. Students are prohibited from eating in class, using tobacco products, making offensive remarks, reading newspapers, sleeping, talking at inappropriate times, wearing inappropriate clothing, or engaging in any other form of distraction. Inappropriate behavior in the classroom shall result in a directive to leave class.

### **Students with Disabilities Policy**

It is the policy of Sam Houston State University that individuals otherwise qualified shall not be excluded, solely by reason of their disability, from participation in any academic program of the university. Further, they shall not be denied the benefits of these programs nor shall they be subjected to discrimination. Students with disabilities that might affect their academic performance are expected to visit with the Office of Services for Students with Disabilities located in the Counseling Center. They should then make arrangements with their individual instructors so that appropriate strategies can be considered and helpful procedures can be developed to ensure that participation and achievement opportunities are not impaired.

SHSU adheres to all applicable federal, state, and local laws, regulations, and guidelines with respect to providing reasonable accommodations for students with disabilities. If you have a disability that may affect adversely your work in this class, then I encourage you to register with the SHSU Counseling Center and to talk with me about how I can best help you. All disclosures of disabilities will be kept strictly confidential. NOTE: No accommodation can be made until you register with the Counseling Center. *Any student with a disability that affects his/her academic performance should contact the Office of Services for Students with Disabilities in the SHSU Lee Drain Annex (telephone 936-294-3512, TDD 936-294-3786) to request accommodations.*

**Dropping Course:** It is the student's responsibility to be aware of the final drop date and to drop if he or she deems it is necessary. Should you encounter any course difficulties during the term and need help, do not hesitate to ask and do not wait too late.

**Grievances:** Students should express grievances outside of class to your instructor first then to others in the following order, Department Head, and Dean.

**Textbook topics to be covered:**

- Chapters:
1. Fundamental Concepts: Vectors
  2. Newtonian Mechanics: Rectilinear Motion of Particle
  3. Oscillations
  4. General Motion of a Particle in Three Dimensions

5. Noninertial Reference Systems
6. Gravitation and Central Forces
7. Dynamics of Systems of Particles
8. Mechanics of Rigid Bodies: Planar Motion
9. Mechanics of Rigid Bodies in Three Dimensions
10. Lagrangian Mechanics
11. Dynamics of Oscillating Systems

For some chapters, only selected sections will be covered.  
Additional material from other sources could be covered at the discretion of the instructor.