COURSE SYLLABUS

Phy138.02 – General Physics – Mechanics and Heat

Credit Hours: 3

Spring, 2008

Farrington Building, Room 101

MWF – 11:00 a. m. -12:20 p.m.

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

Office Hours: Tuesday and Thursday 12:30 p.m. – 2:30 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" area for this course.

Course Description: **General Physics - Mechanics & Heat**: A modern treatment is made of the laws and principles of mechanics and heat. Derivations are carefully done using non-calculus approach and considerable problem work is required. Prerequisites: Credit or registration for MTH 163 or equivalent. Credit 3. The course consists of the following parts: lectures, homework, midterms and final exam. The tests and final exam will be in the form of multiple choice questions. Content of the course: Chapter 1 to Chapter 8, Chapter 10.

Course Objectives:

- Provide clear definitions and illustrations of the physical quantities used in mechanics to describe motion, such as time, displacement, speed, velocity, and acceleration. Derive the relationships among these quantities and use them to solve some one- and two-dimensional kinematics problems.

- ❖ Explain Newton's three laws of motion and develop skills of applying these laws to solve different kind of problems related to motion and forces.

- ❖ Understand the concepts of work, energy, and momentum. Use Newton's laws to derive the work-energy theorem and the energy and momentum conservation laws. Apply these conservation laws to solve various mechanical problems including collision problems.

- ❖ Understand Newton's Law of Universal Gravity and many physical quantities used for describing rotational motion. Learn how to use Newton's second law to study rotational motion and derive the condition for the conservation of angular momentum.

- ❖ Understand the meaning of temperature defined in physics. Study different temperature scales, thermal expansion problems, and the ideal gas law.

Required Textbook: Raymond. A. Serway and Jerry S. Faughn *College Physics*, 7th ed. (Thomson Brooks/Cole, U.S.A., 2006).

Required Supplies: The following supplies are required for this course:

(1) Pen,
(2) #2 pencils
(3) Notebook or ring binder
(4) 8.5×11 paper
(5) Eraser
(6) Scientific calculator with the following functions: sine, cosine, square root, exponentiation, scientific notation
(7) Textbook
(8) Scantron Form No. 882-E

Optional Textbook: None

Assignments: For each chapter of the textbook, homework will be assigned. However, only some of the assignments will be collected and graded. Each question or problem will receive a maximum of ten points toward your homework grade. At the end of the semester, each homework will be normalized to a 100 point scale. Problems that do not have sufficient work (for example, only the answer is present) will be given a 50% reduction when grading. You are encouraged to work, on your own initiative, as many questions and problems as possible for all the assigned homework. The homework will be due at the end of the class on the due day. Later homework will not be accepted. The definition of "Later" includes,

but not limited to homework placed in the instructors mailbox, submitted electronically or by Fax. Late homework will automatically be given a grade of zero.

Exams: Exam One, Chapters 1-3.
Exam Two, Chapters 4-6.
Final exam, Chapters 6-8,10.

Exam content, schedule, and number of exams are subject to change.

Make-up exams will not be given without a valid medical excuse signed by a licensed physician or the student is in compliance with the School's Religious Holiday 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 be in the form of multiple choice questions.

Grading Plan:

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

Attendance ……..10 %

Homework: .....…….15%

Exam One …… 20%

Exam Two …… 20%

Final exam:..... 35%

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 five times during the semester. Attendance will be used to calculate your final grade of this course (see below). If there is a good reason for each absence, this must be submitted in writing to the instructor. Attendance at exams is mandatory.

Religious Holidays: 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. Section 51.911 (a) (2) defines a religious holy day as: "a holy day observed by a religion whose places of worship are exempt from property taxation under Section 11.20…." 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. For a complete listing of the university policy, see:
http://www.shsu.edu/~vaf_www/aps/documents/861001.pdf

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. For a complete listing of the university policy, see:
http://www.shsu.edu/administrative/faculty/sectionb.html#dishonesty

Classroom Rules of Conduct:

Students are expected to maintaining a classroom environment that is conductive 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 who are especially disruptive also may be reported to the Dear of Students for disciplinary action in accordance with university policy.

Visitors in the Classroom:

Only registered students may attend class. Exceptions can be made on a case-by-case basis by the professor. In all cases, visitors must not present a disruption to the class by their attendance. Students wishing to audit a class must apply to do so through the Registrar's Office.

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 . For a complete listing of the university policy, see: http://www.shsu.edu/~vaf_www/aps/811006.html

Dropping Course: The instructor will not automatically drop a student. 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.

Some Study Tips: Much of academics is devoted to abstract thinking, which is an important part of developing some new ideas. It is, however, not very useful to the students if they do not learn how to apply it to real-life physical situations. Physics is the most fundamental course that attempts to connect abstract ideas with physical applications.

General Problem Solving is one ability that physics students can acquire that can help them in any field. They learn that sometimes certain mathematical solutions imply a physical impossibility and therefore are not solutions at all. This knowledge is important when applying formulas, rules, or criteria developed under one specific set of circumstances to another. In physics, students are taught to observe and analyze new situations and **derive** their own solutions to associated problems. This is in contrast to some other fields in which specific formulas or rules are memorized as solutions to specific problems. This ability can be applied to almost any work environment and can help when conventional solutions do not work.

Textbook topics to be Covered:

CHAPTER 1 Introduction
CHAPTER 2 Motion in One Dimension
CHAPTER 3 Vectors and Two-Dimensional Motion
CHAPTER 4 The Laws of Motion
CHAPTER 5 Energy
CHAPTER 6 Momentum and Collisions
CHAPTER 7 Rotational Motion and the Law of Gravity
CHAPTER 8 Rotational Equilibrium and Rotational Dynamics
CHAPTER 10 Thermal Physics

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