Course Syllabus

General Physics – Mechanics and Heat

PHYS 1301-03

Fall 2017

1. Location of Class Meeting: Farrington Building, Room 101
2. Class Meeting times: Tuesday and Thursday, 11:00 am – 12:20 pm
3. Instructor: Dr. Alexander Mikishev
4. Office location: Farrington Building, Room 304A
5. Instructor contact information: Phone: 936.294.1601 (for Dr. Alex Mikishev); email: amik@shsu.edu
6. Office hours:

> Tuesday   3:00 pm – 4:30 pm
> Thursday 3:00 pm – 4:30 pm

As per University policy, other times are available by appointment only. These office hours are subject to change and revision without prior notification during the semester for a variety of university related functions or instructor illness.

7. Course description:

This course is described in the Catalog as:

PHYS 1301 General Physics — Mechanics and Heat. A modern treatment is made of the laws and principles of mechanics and heat. Derivations are carefully done using a non-calculus approach and considerable problem work is required. The laboratory work consists of quantitative experiments. Prerequisite: Credit or registration for MATH 163 or equivalent. Credit 3.

It is assumed that the student has sufficient knowledge of algebra and trigonometry to easily use these tools to solve a wide range of problems. Additionally, the student is assumed to have substantial experience with operating their calculator to obtain numerical results. Finally, it is assumed that the student has completed high school and has a detailed knowledge of the material covered in the K-12 TEKS.

THERE IS A SUBSTANTIAL AMOUNT OF MATHEMATICAL HOMEWORK FOR THIS COURSE WHICH REQUIRES ROUGHLY 2-3 HOURS OF WORK EACH DAY (14-21 hrs/wk). BE PREPARED TO SPEND THIS AMOUNT OF TIME WORKING ON PROBLEMS.

YOU NEED TO ATTEMPT SEVERAL TIMES THE NUMBER OF ASSIGNED PROBLEMS IF YOU WANT TO GET AN "A" OR "B".

8. Course objectives:

The objectives of this course are set to meet the requirements imposed by the Texas Higher Education Coordinating Board's *Lower Division Academic Course Guide Manual* through the common course numbering system. The common course number for this class is PHYS 1301. To successfully complete this course, the student should be able to perform the following tasks:

1) State and understand the basic laws of classical mechanics including, but not limited to, Newton's laws of motion, conservation of energy and momentum.
2) Use the laws of physics to conceptually analyze common physical situations
3) Understand the basic procedures of vector analysis and apply them to forces; momenta, and angular momentum.
4) State and understand the basic concepts of thermodynamics.
5) Use the Laws of Thermodynamics to understand the energy flow through a complex system.
6) Be able to use physics concepts to obtain numerical answers to a wide range of problems.

9. Required textbooks:

The required book for this class is James S. Walker, "Physics", 5th ed. (Pearson, San Francisco CA, 2017 ISBN:978-0-321-97644-4).   Students are required to acquire a copy of the textbook prior to the third class meeting.

10. Required supplies:

The following supplies are required for this course:

1) Writing instrument such as a pen or pencil

2) Scientific calculator with the following functions: sine, cosine, square root, exponentiation, scientific notation. The calculator on your smart phone is generally not adequate for this course.

3) Notebook or ring binder with appropriate paper.

4) Textbook

5) Stapler

11. Optional texts, references, and supplies:

Electronic Access to the "Mastering Physics" on-line materials.

12. Attendance policy:

As per Federal regulations, attendance will be taken at every class by means of a sign-in sheet. The student will be required to sign the sheet. Failure to do so will result in the student being considered absent for the class. Federal regulations, and University policy, require that the instructor reports the last day of attendance any time that a student drops, withdraws from, or fails the course.

Attendance is not used to calculate the final course grade.

13. Assignments:

THERE IS A SUBSTANTIAL AMOUNT OF MATHEMATICS BASED HOMEWORK FOR THIS COURSE WHICH REQUIRES ROUGHLY 2-3 HOURS OF WORK EACH DAY. BE PREPARED TO SPEND THIS AMOUNT OF TIME WORKING ON PROBLEMS.

Homework assignments are assigned for each class. They are accessible via **Pearson MyLab/Mastering** block. To find it please enter your **Blackboard** course; Click **Course Tools** in the left navigation; Find under the Tools **Pearson's MyLab/Mastering** link.

Students can receive 24/7 technical assistance with their Pearson account by visiting http://247pearsoned.custhelp.com/

Our Contact person: **Ashlen.Smolik@pearson.com**

14. Homework grades:

Homework will be graded **automatically** by MyLab & Mastering.

Homework grades will be provided on "Blackboard" as a courtesy only - the official grades are maintained off-line.

15. Exams:

There will be three exams for this course. All exams will consist of five to ten problems that must be solved. Because of the nature of the subject, all exams are cumulative, although recent material will be emphasized. The final exam will be held on the final week of the semester. The scheduled dates for the midterm exams are given in the tentative schedule at the end of the syllabus.

The following additional rules and conditions apply:

1) **Attendance at exams is mandatory.** Failure to attend will result in the grade of zero.

2) **Midterm grades will be provided on "Blackboard" as a courtesy only** - the official grades are maintained off-line.

3) **Exam dates will not be changed due to conflicts with other courses.** Failure to attend will result in a grade of zero being given to the student.

4) 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 Religious Holy Days policy given below.

16. <u>Grading plan</u>:

The official grades and calculations are maintained off-line. Only the official grades are used to calculate the final course grade. The average course grade is calculated as a simple unweighted average of the exam grades: Avg = 1/4(MT1 + MT2 + MT3+ Avg(HW) (as a bonus)).

After obtaining the average, letter grades will be assigned according to the following scale:

$90 \le A \le 100$

$80 \le B < 90$

$70 \le C < 80$

$60 \le D < 70$

$F < 60$

Final letter grades are assigned by a computer program that follows the grading rule given above**. Be aware:** an average of 79.99999999999999999999 is a "C."

University mandated parts of syllabi:

Student Syllabus Guidelines: You may find on-line a more detailed description of the following policies. These guidelines will also provide you with a link to the specific university policy or procedure:

http://www.shsu.edu/syllabus/

Academic Dishonesty: Students are expected to maintain honesty and integrity in the academic experiences both in and out of the classroom. *See Student Syllabus Guidelines*.

Classroom Rules of Conduct: Students are expected to assist in maintaining a classroom environment that is conducive to learning. Students are to treat faculty and students with respect. Students are to turn off all cell phones while in the classroom. Under no circumstances are cell phones or any electronic devices to be used or seen during times of examination. Students may tape record lectures provided they do not disturb other students in the process.

Student Absences on Religious Holy Days: Students are allowed to miss class and other required activities, including examinations, for the observance of a religious holy day, including travel for that purpose. Students remain responsible for all work. *See Student Syllabus Guidelines*.

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 should register with the Office of Services for Students with Disabilities located in the Lee Drain Annex (telephone 936-294-3512, TDD 936-294-3786, and email disability@shsu.edu). 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 Services for Students with Disabilities 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 Services for Students with Disabilities. For a complete listing of the university policy, see: http://www.shsu.edu/dept/academic-affairs/documents/aps/students/811006.pdf

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.

17. Tentative Lecture Schedule

Week	Date	Material
1	August 24	Chapter 1 – Introduction to Physics
2	August 29	Chapter 2 – One-dimensional kinematics
	August 31	
3	September 5	Chapter 3 – Vectors in Physics
	September 7	Chapter 4 – Two-dimensional Kinematics
4	September 12	
	September 14	Chapter 5 – Newton's laws of motion
5	September 19	Chapter 5 (continuation)
	September 21	**Exam 1**
6	September 26	Chapter 6 – Applications of Newton's Laws

	September 28	
7	October 3	Chapter 7 – Work and Kinetic energy
	October 5	
8	October 10	Chapter 8 – Potential energy and
	October 12	conservation of energy
9	October 17	Chapter 9 – Linear momentum
	October 19	and collisions
10	October 24	Review of material
	October 26	**Exam 2**
11	October 31	Chapter 10 – Rotational Kinematics
	November 2	and Energy
12	November 7	Chapter 11 – Rotational Dynamics
	November 9	and static equilibrium
13	November 14	Chapter 16 – Temperature and Heat
	November 16	Chapter 17 – Phases and Phase changes
November 21 and November 23		**Thanksgiving Week** **No classes**
14	November 28	Chapter 18 – The Laws of
	November 30	Thermodynamics
15	**December 5 or December 7** **Exam 3**	