

**PELLISSIPPI STATE COMMUNITY COLLEGE
MASTER SYLLABUS**

**ENGINEERING FUNDAMENTALS II
ENS 1520**

Lecture/Lab Hours: 3/3

Credit Hours: 4

Date Revised: Spring 2017

Catalog Course Description

Calculus-based study of basic physics concepts, including statics, gravitation, oscillations, waves, fluid mechanics, heat and temperature, and first and second law of thermodynamics. Introduction to team work. Introduction to the engineering disciplines, examination of engineering principles and design issues; oral and written presentation skills.

Prerequisites

ENS 1510

Co-requisites

MATH 1920

Textbooks and Other Supplies

Physics for Scientists and Engineers eBook: Tipler and Mosca, Webassign Premium 1 semester access.

Week/Unit/Topic Basis

Week	Topic
1	Gravitation, Oscillatory Motion
2	Waves, Superposition and Interference of Waves
3-4	Statics
5	Strength of Materials
6	Properties of Fluids, Fluid Statics
7	Fluid Dynamics
8	Temperature and Ideal Gases
9-10	Heat Flow, First Law of Thermodynamics
11	Second Law of Thermodynamics

12	Entropy
13-14	Thermal Properties and Processes, Review
15	Final Exam Period

Course Goals

NOTE: Roman numerals after course goals reference the University Parallel Transfer program (General Education Goals).

The course will

- A. Develop the student's awareness of the need to use a variety of learning methods in order to grasp fundamental engineering concepts. (I, V, VI,VII)
- B. Expand the student's knowledge of fundamental engineering topics including statics of rigid bodies, gravitation of planetary motion, oscillatory motion and waves, fluid mechanics, ideal gases, temperature and heat, and the first and second laws of thermodynamics.(V, VI)
- C. Enhance the student's ability to work with a team and to complete hands-on laboratory experiments and projects. (I, V, VI,VII)

Expected Student Learning Outcomes

NOTE: Capital letters after Expected Learning Outcomes reference the course goals listed above.

The student will

1. Take responsibility for their learning by reading the textbook material prior to the lecture, attending and participating in lecture and laboratory, completing all assignments and laboratories, collaborating with peers, using tutors in the PSCC Learning Center, meeting with the instructor during office hours, and using outside sources such as study guides and internet sites. (A)
2. Apply equations of static equilibrium to determine forces acting on objects at rest. (B)
3. Analyze forces acting on objects in planetary motion to determine the gravitational force, trajectory, velocity, acceleration or radius of curvature. (B)
4. Relate springs, pendulum, and uniform circular motion with simple harmonic motion. (B)
5. Evaluate various parameters of wave motion for both standing and traveling waves. (B)
6. Comprehend the various properties of incompressible fluids and how pressure and velocity are affected by changes in the elevation and flow area. (B)
7. Grasp the basic concepts of thermal science and how they relate to the first and second laws of thermodynamics. (B)
8. Apply dimensional analysis to insure correctness of solution concerning units. (B, C)
9. Participate in a positive manner with a group to complete experiments and team projects. (C)

10. Analyze a set of laboratory instructions and complete the tasks in an accurate and timely manner. (C)
11. Complete written reports and oral presentations employing correct diction, syntax, usage, grammar, and mechanics (C)

Evaluation

Testing Procedures

Five Module Exams	55%
Online Homework	9%
Homework Portfolio	3%
Comprehensive Final Exam	18%

Laboratory

Laboratory Expectations	15%
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Group experiments/projects will be completed and results will be documented in a laboratory report. All lab material will be kept in a portfolio which will also be part of the laboratory grade.

Field Work

N/A

Other Evaluation Methods

N/A

Grading Scale

A	90-100
B+	87-89
B	80-86
C+	77-79
C	70-76
D	60-69
F	Below 60

Policies

Attendance Policy

Pellissippi State expects students to attend all scheduled instructional activities. As a minimum, students in all courses (excluding distance learning courses) must be present for at least 75 percent of their scheduled class and laboratory meetings in order to receive credit for the course. Individual departments/programs/disciplines, with the approval of the vice president of Academic Affairs, may have requirements that are more stringent. In

very specific circumstances, an appeal of the policy may be addressed to the head of the department in which the course was taken. If further action is warranted, the appeal may be addressed to the vice president of Academic Affairs.

Academic Dishonesty

Academic misconduct committed either directly or indirectly by an individual or group is subject to disciplinary action. Prohibited activities include but are not limited to the following practices:

- Cheating, including but not limited to unauthorized assistance from material, people, or devices when taking a test, quiz, or examination; writing papers or reports; solving problems; or completing academic assignments.
- Plagiarism, including but not limited to paraphrasing, summarizing, or directly quoting published or unpublished work of another person, including online or computerized services, without proper documentation of the original source.
- Purchasing or otherwise obtaining prewritten essays, research papers, or materials prepared by another person or agency that sells term papers or other academic materials to be presented as one's own work.
- Taking an exam for another student.
- Providing others with information and/or answers regarding exams, quizzes, homework or other classroom assignments unless explicitly authorized by the instructor.
- Any of the above occurring within the Web or distance learning environment.

Please see the Mississippi State Policies and Procedures Manual, Policy 04:02:00 Academic/Classroom Conduct and Disciplinary Sanctions for the complete policy.

Accommodations for Disabilities

Students that need accommodations because of a disability, have emergency medical information to share, or need special arrangements in case the building must be evacuated should inform the instructor immediately, privately after class or in her or his office. Students must present a current accommodation plan from a staff member in Disability Services (DS) in order to receive accommodations in this course. [Disability Services](#) (<http://www.pstcc.edu/sswd/>) may be contacted via [Disability Services email](#) or by visiting Alexander 130.

Other Policies

Safety and Equipment Abuse

Repeated safety violations will result in a reduction of final grade, at the instructor's discretion. Flagrant violations which result in equipment damage or personal injury could result in automatic failure of the course