

**PELLISSIPPI STATE COMMUNITY COLLEGE  
MASTER SYLLABUS**

**STATICS  
ENS 2110**

**Lecture: 3**

**Credit Hours: 3**

**Lab Hours: 0**

**Date Revised: Spring 2017**

**Catalog Course Description**

Vectors, forces and moments; equivalent force systems; free body diagrams; equilibrium, frames, trusses, friction; and shear and bending moment diagrams.

**Prerequisites:**

None

**Co-requisites:**

MATH 1920

**Textbooks and Other Supplies**

**Required:** Connect Plus Engineering 1 or 2 Semester Access For *Vector Mechanics for Engineers*, Beer and Johnson.

**Optional:** *Vector Mechanics for Engineers: Statics*, Beer, Johnston and Mazurek, McGraw-Hill. current edition.

**Week/Unit/Topic Basis**

<b>Week</b>	<b>Topic</b>
1	Introduction to Mechanics
2-4	Force Systems
5-9	Equilibrium, Distributed Forces, Shear/Bending Moment Diagrams
10-11	Structures
12-13	Friction
14	Centers of Mass, Centroids, Distributed Forces
15	Comprehensive Final Exam

**Course Goals**

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

The course will

- A. Expand the student's understanding of vector based mechanics of objects at rest or moving with constant velocity. (V.4)
- B. Extend the student's comprehension of static equilibrium for two and three dimensional rigid bodies. (V.4)
- C. Guide the student to a better understanding of how to use static analysis to design mechanical components and structures. (V.4)
- D. Enhance the student's critical thinking and problem solving skills. (I.1)
- E. Expand the student's ability to analyze and evaluate written technical information. (I.1)

### **Expected Student Learning Outcomes**

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

The student will

- 1. Apply the basics of trigonometry in breaking forces down into a system of components. (A)
- 2. Compute the moment about a designated point caused by various force systems. (A)
- 3. Apply dimensional analysis to insure correctness of the solution as far as units are concerned. (A)
- 4. Find the resultant of more than two forces in both a coplanar and non-coplanar situation. (A)
- 5. Apply the basics of force analysis to the equilibrium of a system. (B)
- 6. Draw a complete free body diagram of a system. (B)
- 7. Solve equilibrium problems involving distributed forces. (A)
- 8. Draw shear and bending moment diagrams to evaluate internal conditions of an object (C)
- 9. Solve for forces in the members of a truss by the method of sections and the methods of joints. (B)
- 10. Solve for forces in the members of frames or machines (C)
- 11. Solve for frictional forces due to sliding friction on level surfaces and on an inclined plane. (B)
- 12. Solve for belt friction (B)
- 13. Find the centroid or center of gravity of both a homogeneous and non-homogeneous body. (C)

### **Evaluation**

#### **Testing Procedures**

**Unit Exams**

**60%**

<b>Online Homework</b>	<b>10%</b>
<b>Quizzes</b>	<b>10%</b>
<b>Comprehensive Final Exam</b>	<b>20%</b>

### **Laboratory**

N/A

### **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 Pellissippi 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/) (<http://www.pstcc.edu/sswd/>) may be contacted via [Disability Services email](#) or by visiting Alexander 130.

### **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