Class Hours: 3.0  Credit Hours: 3.0
Laboratory Hours: 0.0  Date Revised: Summer 01

NOTE: This course is intended for University Parallel Transfer.

Catalog Course Description:

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

Entry Level Standards:

Students entering this course must have successfully completed two years of high school algebra and one half year each of high school trigonometry and geometry.

Prerequisites:

None

Corequisite:

MATH 1910

Textbook(s) and Other Reference Materials Basic to the Course:


I. Week/Unit/Topic Basis:

<table>
<thead>
<tr>
<th>Week</th>
<th>Topic</th>
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<tbody>
<tr>
<td>1-2</td>
<td>Introduction to Mechanics</td>
</tr>
<tr>
<td>3-6</td>
<td>Force Systems</td>
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<td>6-9</td>
<td>Equilibrium</td>
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<td>10-11</td>
<td>Structures</td>
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<td>12-14</td>
<td>Friction</td>
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<td>15</td>
<td>Centers of Mass, Centroids</td>
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<td>16</td>
<td>Comprehensive Final Exam</td>
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</table>
II. Course Objectives*:

A. Understand, analyze, and solve for the reactive forces and moments of a structure subjected to various forms of loading. III.1, V.1

B. Understand and analyze frictional forces developed on or by a body under load. III.1, V.1

C. Find the center of mass or centroid of geometric shapes or structural shapes. III.1, V.1

*Roman numerals after course objectives reference goals of the university parallel program.

III. Instructional Processes*:

Students will:

1. Participate in classroom discussions which challenge their abilities to think creatively and visualize complex spatial and mathematical relationships to solve problems. Problem Solving and Decision Making Outcome, Numerical Literacy Outcome, Active Learning Strategy

2. Discuss the importance of personal qualities such as personal responsibility, time management principles, self-esteem, sociability, self-management, integrity and honesty in school and in the workplace, and dynamics of change in the workplace. Personal Development Outcome, Cultural Diversity and Social Adaptation Outcome, Transitional Strategy

*Strategies and outcomes listed after instructional processes reference Pellissippi State’s goals for strengthening general education knowledge and skills, connecting coursework to experiences beyond the classroom, and encouraging students to take active and responsible roles in the educational process.

IV. Expectations for Student Performance*:

Upon successful completion of this course, the student should be able to:

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.  
   - A, B, C

6. Draw a complete free body diagram of a system.  
   - A, B, C

7. Solve for forces in the members of a truss by the method of sections and the methods of joints.  
   - A

8. Solve for frictional forces due to sliding friction on level surfaces and on an inclined plane.  
   - B

9. Solve for belt friction, rolling resistance and disk friction as they apply to forces on various pieces of machinery.  
   - B
10. Find the centroid or center of gravity of both a homogeneous and non-homogeneous body. C

*Letters after performance expectations reference the course objectives listed above.

V. Evaluation:

A. Testing Procedures:

The percentage that each of the factors count and the frequency of tests and homework is left to the discretion of the instructor, but the following is offered as a guide:

- Unit Tests: 60% of Total Grade
- Homework Problems: 10% of Total Grade
- Quizzes: 10% of Total Grade
- Final Exam: 20% of Total Grade

B. Laboratory Expectations:

N/A

C. Field Work:

Outside reading is recommended, and the Pellissippi State library will be utilized in the conduct of this course.

D. Other Evaluation Methods:

N/A

E. Grading Scale:

- A: 93 - 100
- B+: 88 - 92
- B: 83 - 87
- C+: 78 - 82
- C: 70 - 77
- D: 60 - 69
- F: Below 60

VI. Policies:

A. Attendance Policy:

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

B. Academic Dishonesty:

The policy outlined in the Student Handbook (found in the PSTCC catalog) will be followed in the event of cheating.