

PELLISSIPPI STATE TECHNICAL COMMUNITY COLLEGE
MASTER SYLLABUS

APPLIED STATICS
MET 1040

Class Hours: 3.0

Credit Hours: 3.0

Laboratory Hours: 0.0

Revised: Fall 06

Catalog Course Description:

A study of the effects of forces acting on rigid bodies at rest. Topics include moments, equilibrium, simple trusses friction, centroids, center of gravity and moments of inertia.

Entry Level Standards:

Students entering this course must have a working knowledge of geometry, advanced algebra, and trigonometry.

Prerequisites:

MATH 1730

Textbook(s) and Other Course Materials:

Textbook: *Statics and Strength of Materials*: Cheng, Glenco/McGraw Hill, Latest Edition, 1997.

References: *Statics and Strengths of Materials*: Bassin, Brodsky, & Wolkoff, McGraw-Hill, 4th Edition, 1988.

Statics and Strength of Materials: Morrow, Prentice-Hall, 1981.

Statics and Strength of Materials: Wolf, Merrill Publishing Company, 1988.

I. Week/Unit/Topic Basis:

Week	Topic
1	Fundamental Concepts and Principles
2-3	Resultant of Coplanar Force System
4-8	Equilibrium of Coplanar Force Systems
9-10	Analysis of Structures
11-12	Friction
13	Center of Gravity

- 14 Moments of Inertia
- 15 Final Exam

II. MET Program Objectives & Outcomes:

Objectives:

- I. Apply basic engineering theories and concepts.
- II. Apply basic engineering theories and concepts.
- III. Identify and solve work related problems with minimum assistance.
- IV. Operate equipment and instruments with a high degree of skill.
- V. Communicate effectively, including verbal, writing, and graphical skills.
- VI. Apply the principles of good work ethics.
- VII. Obtain gainful employment in the MET discipline or matriculate to a 4-year program in engineering technology.

Outcomes:

- A. apply the knowledge of mathematics, science, and engineering technology. (I, II, IV, VI)
- B. use the techniques and modern engineering tools needed for engineering technology practices. (I – IV, VI)
- C. identify, formulate, and solve engineering technology-based problems. (I, II, VI)
- D. design and conduct experiments, as well as analyze and interpret collected data. (I– IV, VI)
- E. create or fabricate a system, subsystem, component, or process to meet specified needs. (I – IV, VI)
- F. read and extract information from manuals, journals, and other discipline related literature. (I –IV, VI)
- G. communicate effectively, including verbal, writing, and graphical skills. (IV, V, VI)
- H. function and contribute positively in team situations. (II, IV- VI)
- I. comprehend social, professional, and ethical responsibilities, including development of a respect for diversity and other contemporary issues.(II, V, VI)
- J. realize the impact of engineering technology solutions in a global and societal context. (V, VI)
- K. realize the importance of a commitment to quality, timeliness, and continuous improvement. (V, VI)
- L. recognize the importance of life-long learning.(I – VI)

III. Course Objectives*:

- A. Understand the basic concepts of statics. (A, C)
- B. Independently apply problem solving techniques to statics problems. (A, C)
- C. Use outside resources, including computer software, to supplement the course. (F, G)
- D. Relate topics covered during the course to the field of engineering technology. (I, J)

*Letters after course objectives reference MET Program Outcomes (as required by ABET).

IV. Instructional Processes*:

Students will:

1. Actively listen to class lectures and participate in class discussions that develop and reinforce an understanding of the theories, concepts, principles, and applications of statics. *Communication Outcome, Mathematics Outcome, Technological Literacy Outcome, Active Learning Strategies*
2. Use critical thinking to solve problems presented in the book, class projects, and class exams. *Communication Outcome, Mathematics Outcome, Technological Literacy Outcome, Active Learning Strategies*
3. Participate in team oriented, hands-on projects on trigonometry, static equilibrium, friction, and center of gravity to facilitate cooperative learning. *Communication Outcome, Mathematics Outcome, Technological Literacy Outcome, Active Learning Strategies*
4. Use technology available to expand upon or solve problems in the text; examples may include software packages such as Beam Analysis, Working Model, and MD Solids. *Mathematics Outcome, Technological Literacy Outcome*

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

V. Expectations for Student Performance*:

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

1. Construct free body diagrams. A, B
2. Solve for resultant forces. A, B
3. Calculate moments. A, B
4. Associate and apply force analysis to system equilibrium. A, B
5. Solve for forces in truss members using method of joints and method of sections. A, B
6. Solve for the frictional forces due to sliding friction, belt friction, disk friction, and rolling resistance. A, B
7. Locate the centroid or center of gravity of both a homogeneous and non-homogeneous body. A, B

8. Calculate the moment of inertia of both two and three dimensional bodies. A, B
9. Prepare and give an oral presentation on statics that meets professional standards D
10. Use the software available to solve specific types of statics problems. C

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

VI. Evaluation:

A. Testing Procedures:

Total evaluation will be based on the following point distribution.

Unit Exams (65 Points)

There will be 4-6 unit exams administered during the course.

Final Exam (20 Points)

There will be a comprehensive final exam administered at the end of the course.

B. Laboratory Expectations:

Homework/Presentation (10 Points)

Homework will be assigned throughout the semester and turned in the day of the unit exam. Late homework will not be accepted. Informal laboratories and demonstrations will be completed in class. Those requiring calculations will be taken up and count toward the homework grade. The presentation to the class will count towards three of the ten points.

C. Field Work:

N/A

D. Other Evaluation Methods:

Participation (5 Points)

Based on instructor observation during the course, each student will be evaluated on participation activities. Evaluation parameters to include active participation in class discussions, response to verbal questions, and regular attendance.

E. Grading Scale:

A 92-100
B+ 88-91
B 83-87
C+ 79-82
C 74-78
D 65-73
F Below 65

VII. 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 instructors may have requirements that are more stringent.

B. Academic Dishonesty:

Refer to the Pellissippi State Catalog & Handbook.

C. Accommodations for disabilities:

If you need accommodations because of a disability, if you have emergency medical information to share, or if you need special arrangements in case the building must be evacuated, please inform the instructor immediately. Please see the instructor privately after class or in his/her office. Students must present a current accommodation plan from a staff member in Services for Students with Disabilities (SSWD) in order to receive accommodations in this course. Services for Students with Disabilities may be contacted by going to Goins 127 or 131 or by phone: 694-6751(Voice/TTY) or 539-7153.

D. Other Policies:

Make-Up Exams: As a general rule, no make-up exams will be administered during the course.

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 will result in automatic failure of the course.

Counseling: Counseling is available during posted office hours or by appointment.