

PELLISSIPPI STATE COMMUNITY COLLEGE
MASTER SYLLABUS

**DESTRUCTIVE AND NON-DESTRUCTIVE TESTING
MET 2810**

Class Hours: 2.0

Credit Hours: 3.0

Lab Hours: 3.0

Revised: Fall 2010

Catalog Course Description:

A study in the methods, procedures, and equipment associated with physical testing, both destructive and non-destructive. The course will include such topics as gauging, hardness testing, impact testing, tensile and compression testing, magnaflux testing, ultrasonic testing, and dye penetrant testing.

Entry Level Standards:

Students entering this course should have a fundamental knowledge of materials, basic metallurgy, and basic machining practices.

Prerequisites:

MET 2800

Textbook(s) and Other Course Materials:

Equipment Operation Manuals & Instructor Developed Material

I. Week/Unit/Topic Basis:

Week	Topic
1	Introduction
2-3	Hardness Testing
4-6	Tensile and Compression Testing
7-8	Impact Testing
9-10	Dye Penetrant Testing
11	Magnetic Particle Testing
12-14	Ultrasonic Testing Miscellaneous Testing Methods
15	Presentations/Final Exam

II. Course Goals*:

The course will:

- A. Guide students to demonstrate their understanding of destructive and non-destructive testing principles. (I, III, IV)
- B. Expand student understanding of preparing test samples, setting-up, and functionally operating testing equipment. (II, III, IV)
- C. Expand student understanding of data collection and analyzing the results. (I-V)
- D. Guide students to communicate technical information. (III, IV, V)

*Roman numerals after course goals reference goals of the Engineering Technology Program

III. Expected Student Learning Outcomes*:

The student will be able to:

- 1. Define, explain, and associate the terminology used in destructive and non-destructive testing. A
- 2. Select appropriate testing methods and identify equipment required for the testing process. A
- 3. Select appropriate test samples. B
- 4. Calibrate equipment as required. B
- 5. Determine material hardness using both Rockwell and Brinell testing methods. B
- 6. Perform tensile and compression tests on various types and shapes of materials. B
- 7. Determine shear strength of a material by performing a Charpy/Izod impact test. B
- 8. Perform a dye penetrant and magnetic particle test to detect surface defects. B
- 9. Perform a basic ultrasonic test to detect internal material defects. B
- 10. Select appropriate data collection method. C
- 11. Determine acceptability of data and "accept or reject" results. C
- 12. Document technical information in a neat and orderly format. D
- 13. Locate and extract needed information from ANSI standards and technical manuals. D
- 14. Complete assignments based on oral instructions. D

* Capital letters after Expected Student Learning Outcomes reference the course goals listed above.

IV. Evaluation:

Evaluation of both classroom and laboratory work is required in this course. Total evaluation will be based on the following point distribution.

- A. Quizzes: 25 Points

Approximately 6-8 quizzes will be administered during the course. They will include discussion questions, short answer questions, true/false questions, and problem solving.

B. Equipment Proficiency Evaluation: 30 Points

C. Physical Testing Proficiency: 35 Points

Guidelines and requirements for each project will be provided by the instructor.

D. Participation: 10 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, being prepared, efficient use of lab time, striving to achieve more than minimum requirements, and regular attendance.

E. Grading Scale:

Final grade for this course will be based on the following alphabetic/numerical scale.

A	93-100
B+	88-92
B	83-87
C+	79-82
C	74-78
D	65-73
F	Below 65

V. Policies:

A. 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 the Learning Division, 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 the Learning Division.

B. 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.

C. Accommodations for disabilities:

Students who 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 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, 132, 134, 135, 131 or by phone: 539-7153 or TTY 694-6429. More information is available at www.pstcc.edu/departments/swd/

D. 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 will result in automatic failure of the course.