PELLISSIPPI STATE COMMUNITY COLLEGE  
MASTER SYLLABUS  

SHIELDED METAL ARC WELDING (SMAW)  
WELD 1070

Class Hours: 3.0       Credit Hours: 3
Laboratory Hours: 3.0   Revised: Fall 2015

Catalog Course Description:

Course includes vertical and overhead positions using E6010 and E7018 welding electrodes and requirements for meeting American Welding Society structural steel and bridge code specifications.

Entry Level Standards:

Students entering this course must have completed basic skills in mathematics.

Prerequisites: MET 2111

Corequisites: WELD 2310

Textbook(s) and Other Course Materials:


Other TOOL LIST:

安全管理镜片
安全焊接头盔
氧气燃料焊接护目镜
焊接手套
敲击锤
手丝刷
打火机
6-10英尺卷尺
喷嘴清洁工具
活动扳手或Vise Grip
线型工具或肥皂条
长袖衬衫（蓝色牛仔）非法兰
皮鞋
针织帽
焊接皮夹克

I. Week/Unit/Topic Basis:

Week  Chapter  Topic
Lecture: Orientation, Joint Preparation, 2G Butt Welds
Lab: Prepare & weld joints in the 2G position using 1/8” E-6010 and 1/8” E-7018.

Lecture: Vertical Position, SMAW Welding Techniques, 3F Fillet Welds
Lab: Perform 3F fillet welds with 35% accuracy.

Lecture: 3F Fillet Welds
Lab: Perform 3F fillet welds with 25% accuracy using 1/8” E-6010.

Lecture: 3F Vertical Groove, 3G Vertical Groove
Lab: Perform 3G fillet welds with 25% accuracy using 1/8” E-6010.

Lecture: Inspection & Quality Control, 3G Vertical Groove
Lab: Begin inspection of student work, Perform 3G welds.

Lecture: Welding Problems – Causes & Cures, 3G Vertical Groove
Lab: Causes & cures of welding problems. Performs 3G welds using E-6010 with 90% accuracy.

Lecture: Open
Lab: Open

Lecture: 4G Groove
Lab: Perform basic groove welds in the 4G position.

Lecture: 4G Groove
Lab: Perform groove welds in the 4G position with 25% accuracy.

Review / Final Exam

II. Welding Technology General Outcomes (Educational objectives)

I. Reach their full potential in the welding field.

II. Use the correct procedure in setting up equipment, and the skills used in welding.

III. Use Shielded Metal Arc Welding, Gas Metal Arc Welding, and Gas Tungsten Arc Welding machines in both pipe and plate welding.

IV. Explain the physical characteristics of different metals

V. Develop the cognitive and physical skills necessary to pass certification tests.

VI. Apply welding knowledge to effectively utilize problem solving skills as it relates to the operation of equipment in the industry.

VII. Demonstrate the ability to identify, analyze, and synthesize relevant data from multiple information sources in order to develop acceptable conclusions.

III. Welding Technology Competencies

Students will:

A. Demonstrate knowledge to pass a practical examination such as AWS code. I, II, III,
B. Demonstrate basic welding techniques for a variety of welding positions and various joint designs related to principals, policies and procedures in the welding industry. I, II, III, V, VI, VII.

C. Perform metal layout processes and prepare metals. I, II, III, V, VI, VII.

D. Examine work pieces for defects and measure work pieces with straightedges or templates to ensure conformance with specifications. I, III, V, VI, VII.

E. Apply the principles of metallurgy toward the metalworking trades. I, III, IV, V, VI, VII.

F. Read and interpret blueprints and welding symbols to fabricate components. I, III, V, VI, VII.

G. Apply math and measurement skills to perform specific tasks. I, II, III, V, VI, VII.

H. Follow industry safety practices. I, II, III, V, VI, VII.

I. Apply written, oral and graphical communication skill in both technical and non-technical environments; identify and use appropriate tech literature. I, II, IV, V, VI, VII.

J. Demonstrate a commitment to quality, timeliness, and continuous improvement. I, II, III, V, VI, VII.

K. Engage and interact as a team in a learning environment. I, V, VI, VII.

* Roman numerals after program competencies reference the Welding Technology General Outcomes (Educational objectives) listed above.

IV. Course Goals*:

The course will

1. Foster student’s skills and knowledge to weld in vertical and overhead positions using E6010 and E7018 welding electrodes. (A, B, C, H,F,G, J)

2. Enhance student’s working knowledge to perform the guided bend test in accordance with AWS D1.1 latest edition. (A, D, G, I, J)

3. Expand student’s understanding of the requirements needed for meeting American Welding Society structural steel code specifications. (A, B, C, D, G, I)

* Capital letters after course goals reference the competencies of the Engineering Technology concentrations listed above.

V. Expected Student Learning Outcomes*:
Students will:

a. Weld in 1F, 2F, 3F, and 4F positions with E-6010 1/8" and E-7018 1/8" electrodes. 1

b. Burn and fit-up weld joints, laps and tees; butt joints, open and closed; and V-groove, open and backed. 1

c. Weld in the 1G, 2G, 3G, and 4G positions, with E-6010 and E-7018 electrodes. 1

d. Successfully pass the AWS D1.1 structural welding code certification tests (sections 5.15 - 5.29). 2, 3

e. Calculate tolerances and strengths of welds by the AWS D1.1 Welding Codes. 1, 3

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

VI. Evaluation:

A. Testing Procedures:

   Unit tests
   Final comprehensive exam

B. Laboratory Expectations:

   Homework
   Lab work

C. Field Work:

   n/a

D. Other Evaluation Methods:

   n/a

E. Grading Scale:

   90-100 A
   86-89 B+
   80-85 B
   76-79 C+
   70-75 C
   60-69 D
   0-59 F

VII. 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 95 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.

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.

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

C. 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 may be contacted by sending email to disabilityservices@pstcc.edu, or by visiting Alexander 130. More information is available at http://www.pstcc.edu/sswd/.