



Purpose: It is the intention of this Administrative-Master Syllabus to provide a general description of the course, outline the required elements of the course and to lay the foundation for course assessment for the improvement of student learning, as specified by the faculty of Wharton County Junior College, regardless of who teaches the course, the timeframe by which it is instructed, or the instructional method by which the course is delivered. It is not intended to restrict the manner by which an individual faculty member teaches the course but to be an administrative tool to aid in the improvement of instruction.

Course Title - Advance Shielded Metal Arc Welding (SMAW)

Course Prefix and Number - WLDG 1457

Department - Welding Technology

Division - Continuing

Course Type: (check one)

- Academic General Education Course (from ACGM – but not in WCJC Core)
- Academic WCJC Core Course
- WECM course (This course is a Special Topics or Unique Needs Course: Y or N)

Semester Credit Hours # : Lecture hours# : Lab/other hours # 4:3:4

Equated Pay hours for course - 5

Course Catalog Description - A study of the production of various fillets and groove welds. Preparation of specimens for testing in all test positions.

Identify principles of arc welding; describe arc welding operations of fillet and groove joints; explain heat treatments of low alloy steels; and explain weld size and profiles. Prepare test plates; perform fillet welds in the overhead position; perform air carbon arc weld removal; perform bevel groove welds with backing plates in various positions; and demonstrate use of tools and equipment.

List Lab/ Other Hours
Lab Hours 4
Clinical Hours
Practicum Hours
Other (list)

Prerequisites/Co requisites - WLDG 1434 or consent of Department Head

Approvals – the contents of this document have been reviewed and are found to be accurate.

Prepared by Roy R. Jones	Signature 	Date 7/14/10
Department Head Roy R. Jones	Signature 	Date 7/14/10
Division Chair David Clayton	Signature 	Date 7/13/10
Vice President of Instruction or Dean of Vocational Instruction Leigh Ann Collins	Signature 	Date 7/14/11



I. Topical Outline – Each offering of this course must include the following topics (be sure to include information regarding lab, practicum, clinical or other non-lecture instruction):

Is a required course leading to an Associate of Applied Science Degree, Certificate of Technology, or Occupational Certificate in instructional welding. Course Description: Advanced topics based on accepted welding codes. Training provided with various electrodes in shielded metal arc welding processes with open Vee butts. 1G, 2G, 3G, and 4G. The course meets for 1:30 hours of lectures and 2:30 hours of laboratory each week. Upon successful completion of this course, a student is awarded four semester credit hours.

II. Course Learning Outcomes

Course Learning Outcome	Method of Assessment
<p>Upon completion of WLDG 1457, the student should be able to:</p> <ol style="list-style-type: none"> 1. Explain shop safety rules, safety rules for tools and equipment, and personal safety. *1,2,4,5,6 2. Explain the importance of a Material Safety Data sheet (MSDS). *1,2,4 3. Understand and perform proper joint preparation and fit-up. *4,5,6,7 4. Describe effects of preheating and post weld heating. *2,4,5 5. Explain cautions used when welding various metals and alloys. *2,4,5,7 6. Distinguish between qualification and certification procedures. *5,7 7. Discuss problems of welding discontinues. *1,4,5,7 8. Perform 1G, 2G, 3G, and 4G welds with mild steel and low alloy electrodes in all positions. *7 9. Pass a bend and exray test as required by AWS Procedures, and Standards. <p>The welding Technology Department does not guarantee that each student will acquire each of the Student Learning Outcomes as listed above.</p>	<p>The student learning activities are designed to lead the student to the successful acquisition of the student learning outcomes. The student will:</p> <ol style="list-style-type: none"> 1. Attend demonstrations of how to safely plan laboratory activities before starting work. 2. Make oxyacetylene cutting and beveling operations using gas equipment in preparation for arc welding. 3. Apply industry standards toward becoming familiar with certification welds. Understand shrinking and distortion problems that occur with certain metals. 4. Prepare coupons, perform F1 (flat) open V-butt root pass, hot pass, filler and cover pass. Select proper electrode for each procedure. 5. Prepare coupons, perform F2 (horizontal) open butt with 1/8" E6010 electrode root pass, hot pass, 3/32" E7018 electrode fill and cap. 6. Perform F3 (vertical) Tee joint 1/8" E6010 electrode root and hot pass welds uphill. 7. Perform F3 (vertical) open butt welds downhill. Select proper electrode for each pass. 8. Perform F4 (overhead) open V-butt. Prepare specimens and test welds. 9. Demonstrate acquire skill of all laboratory assignments through a practical final examination.

III. Required Text(s), Optional Text(s) and/or Materials to be Supplied by Student.

“Welding – Trainee guide level 1” by Nccer

IV. Suggested Course Maximum - The maximum continuing hours is 160. The maximum number of students per class is 15.

V. List any specific spatial or physical requirements beyond a typical classroom required to teach the course.

Weekly Lecture

Week 1 Shop Safety

1. Electrodes Selections
2. Striking and Arc Flat

Week 2 F1 Fillet Weld E6010 1/8" root pass, cover pass, F2 Horizontal prepare 7" Long 2x1 plate.

- Week 4-6 Root pass E6010 electrodes
 Hot pass E6010 electrodes
 Two passes showing
- Week 7-9 F3 Vertical E6010 electrodes 1/8"
 Root pass, hot pass, and cap uphill
- Week 10-12 F4 Overhead E6010 electrodes
 Weld root pass and cover pass
 Two passes showing
- Week 13-16 E7018 repeat the same process

Supplemental Reading: Welding Skills, by R.T. Miller, Published by American Technical Publishers, Inc., Illinois, 1985.
 Modern Welding Technology, by Howard B. Cary, Published by Prentice Hall, 2nd Edition, 1989.
 Welding Principles and Applications, by Larry Jeffus and Harold V. Johnson, Published by Delmar Publishers, Inc., 2nd Edition, 1988.

Trade Magazines and Journals
 Welding Design and Fabrication Magazines
 American Welding Society Journals
 Hobart Institute of Welding Technology Video Library

VI. Course Requirements/Grading System – Describe any course specific requirements such as research papers or reading assignments and the generalized grading format for the course

Department Assignments	30%
Laboratory Assignments	50%
Final Exam	20%
	100%

- 100-90 = A
 89-80 = B
 79-70 = C
 69-60 = D

Below 60 = F

I = Incomplete (to be used for emergencies or illness)
 W = Student Withdrawal (either by student or instructor)

VII. Curriculum Checklist

- **Academic General Education Course** (from ACGM – but not in WCJC Core)
 No additional documentation needed
- **Academic WCJC Core Course**
 Attach the Core Curriculum Checklist, including the following:
- Basic Intellectual Competencies
 - Perspectives
 - Exemplary Educational Objectives
- **WECM Courses**
 If needed, revise the Program SCANS Matrix & Competencies Checklist.