Reedley College

CREDIT COURSE OUTLINE

I. COVER PAGE

(1) MFGT 61	(2) Intermediate Welding	(3) 4
Number	Title	Units

(4)	Lecture / Lab Hours:			(8)Classification:			
	Course Hours						
		Weekly Lec hours:	1.50			Degree applicable:	X
		Weekly Lab hours:	8.00			Non-degree applicable:	
		Total Contact hours:	171.00			Basic skills:	
	Lec will generate __ hour(s) outside work.			(9)RC	Fulfills AS/AA degree requirement: (area)		
	Lab will generate __ hour(s) outside work.				General education category:		
(5)	Grading Basis:	Grading Scale Only			Major:		
		Pass/No Pass option	X		Certificate of:		
		Pass/No Pass only			Certificate in:		
(6)	Advisories: • Eligibility for Engl 126 Eligibility for Math 101			(10)CSU	Baccalaureate:		X
(7)	Pre-requisites (requires C grade or better): • Mfgt 60, or equivalent course or verified work eperience in the field			(11)Repeatable: (A course may be repeated three times)			0
	Corequisites: •			(12)C-ID:			
				Proposed Start Date:			Fall 2012

(12) Catalog Description:
Continuation of SMAW and GMAW processes as well as a more in-depth introduction to the FCAW (flux cored), and GTAW (Tig) processes. Welding will be done in all positions and with steel, stainless steel, and aluminum. Continuation of OFC (oxy-fuel cutting), plasma cutting, and carbon air arc gouging. Students will also discuss résumés, job applications, interviewing skills, and employer expectations.

II. COURSE OUTCOMES:

(Specify the learning skills the student demonstrates through completing the course and link critical thinking skills to specific course content and objectives.)

Upon completion of this course, students will be able to:

I. Perform fusion welds on plate and pipe with SMAW, GMAW, GTAW, and FCAW in the flat horizontal, vertical, and overhead positions.
II. Practice setup and procedures for welding of aluminum and stainless steel with GMAW and GTAW processes.
III. Apply correct cutting procedures for the oxy-fuel, plasma, and carbon air arc processes.

III. COURSE OBJECTIVES:

(Specify major objectives in terms of the observable knowledge and/or skills to be attained.)

In the process of completing this course, students will:

I. Demonstrate safe procedures for using hand and power tools
II. Understand the benefits of each welding process used.
III. Identify the proper electrodes, fillers, and equipment for each process and metal type used.
IV. List the parts of the SMAW, GMAW, GTAW, and FCAW welding machines.
V. Employ repair procedures using plasma and carbon air arc processes.
VI. Participate in shop maintenance and repair activities.

IV. COURSE OUTLINE:

Lecture Content:

A. Introduction
1. Orientation to shop and program
2. Safety
3. Welding terms and joint designs

B. Tools in the Welding Industry
1. Hand tools
2. Power tools

3. Welding power sources
4. Related equipment

C. Shielded Metal Arc Welding (SMAW)
1. Safety
2. Equipment
3. Set up and operation
4. Welding out of position

D. Gas Metal Gas Welding (GMAW) and Flux Cored Arc Welding (FCAW)
1. Safety
2. Equipment
3. Electrodes and shielding gasses
4. Applications and techniques for various positions
5. Welding steel, stainless steel, and aluminum

E. Gas Tungsten Arc Welding (GTAW)
1. Safety
2. Equipment
3. Electrodes and shielding gasses
4. Applications and techniques for various positions

F. Evaluation and Testing of Welds
1. Discontinuities
2. Certification

G. Employment Opportunities
1. Résumés
2. Job applications
3. Interviewing

Lab Content:

A. Introduction
1. Orientation to shop and program
2. Safety
3. Joint designs

B. Tools in the Welding Industry
1. Hand tools
2. Power tools
3. Welding power sources
4. Related equipment

C. Shielded Metal Arc Welding (SMAW)
1. Safety
2. Equipment
3. Set up and operation
4. Welding out of position

D. Gas Metal Gas Welding (GMAW) and Flux Cored Arc Welding (FCAW)
1. Safety
2. Equipment
3. Electrodes and shielding gasses
4. Applications and techniques for various positions
5. Welding steel, stainless steel, and aluminum

E. Gas Tungsten Arc Welding (GTAW)
1. Safety
2. Equipment
3. Electrodes and shielding gasses
4. Applications and techniques for various positions

F. Evaluation and Testing of Welds
1. Discontinuities
2. Certification

V. APPROPRIATE READINGS

Reading assignments may include but are not limited to the following:

I. Sample Text Title:
1. Recommended - Jeffus, L *Welding and Metal Fabrication,* Delmar Cengage Learning, 2012,
2. Recommended - Oberg, E *Machinery's Handbook ,* ed. 29 Industrial Press , 2012,

II. Other Readings

___ Global or international materials or concepts are appropriately included in this course
___ Multicultural materials and concepts are appropriately included in this course

If either line is checked, write a paragraph indicating specifically how global/international and/or multicultural materials and concepts relate to content outline and/or readings.

VI. METHODS TO MEASURE STUDENT ACHIEVEMENT AND DETERMINE GRADES:

Students in this course will be graded in at least one of the following four categories. Please check those appropriate. A degree applicable course must have a minimum of one response in category A, B, or C.

A. Writing Check either 1 or 2 below			
	1. Substantial writing assignments are required. Check the appropriate boxes below and provide a written description in the space provided.		
X	***2. Substantial writing assignments are NOT required. If this box is checked leave this section blank. For degree applicable courses you must complete category B and/or C.***		
	a) essay exam(s)		d) written homework
	b) term or other paper(s)		e) reading reports
	c) laboratory report(s)		f) other (specify)

Required assignments may include but are not limited to the following:

B. Problem Solving Computational or non-computational problem-solving demonstrations, including:			
X	a) exam(s)		d) laboratory reports
X	b) quizzes		e) field work
X	c) homework problems	X	f) other (specify): Laboratory assignments

Required assignments may include but are not limited to the following:
Sample question:
1. If your Mig welder was operating fine, but then began to produce porosity (small holes in the weld), what steps would you take to troubleshoot and solve this problem?

C. Skill demonstrations, including:			
X	a) class performance(s)		c) performance exams(s)
	b) field work	X	d) other (specify) Laboratory assignments

Required assignments may include but are not limited to the following:
Lab assignments include beads, tee joints, butt joints, and other welds or cuts using the GMAW, GTAW, SMAW, OFC, and carbon air arc processes.

D. Objective examinations including:			
X	a) multiple choice	X	d) completion
X	b) true/false		e) other (specify):
X	c) matching items		

COURSE GRADE DETERMINATION:
Description/explanation: Based on the categories checked in A-D, it is the recommendation of the department that the instructor's grading methods fall within the following departmental guidelines; however, the final method of grading is still at the discretion of the individual instructor. The instructor's syllabus must reflect the criteria by which the student's grade has been determined. (A minimum of five (5) grades must be recorded on the final roster.)

If several methods to measure student achievement are used, indicate here the approximate weight or percentage each has in determining student final grades.
Problem Solving 20 - 40% Skill Demonstration 40 - 60% Objective Examination 20 - 40%

VII. EDUCATIONAL MATERIALS

For degree applicable courses, the adopted texts, as listed in the college bookstore, or instructor-prepared materials have been certified to contain college-level materials.

Validation Language Level (check where applicable):	College-Level Criteria Met YES	NO
Textbook	X	
Reference materials	X	

Instructor-prepared materials	X	
Audio-visual materials	X	

Indicate Method of evaluation:

Used readability formulae (grade level 10 or higher)	
Text is used in a college-level course	X
Used grading provided by publisher	
Other: (please explain; relate to Skills Levels)	

Computation Level (Eligible for MATH 101 level or higher where applicable)		X
Content		
Breadth of ideas covered clearly meets college-level learning objectives of this course	X	
Presentation of content and/or exercises/projects:		
Requires a variety of problem-solving strategies including inductive and deductive reasoning.	X	
Requires independent thought and study	X	
Applies transferring knowledge and skills appropriately and efficiently to new situations or problems.	X	

List of Reading/Educational Materials

Recommended - Jeffus, L *Welding and Metal Fabrication,* Delmar Cengage Learning, 2012,

Recommended - Oberg, E *Machinery's Handbook ,* ed. 29 Industrial Press , 2012,

Comments:

	This course requires special or additional library materials (list attached).
X	This course requires special facilities: Welding Shop

Attached Files:

Manufacturing Pathways

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BASIC SKILLS ADVISORIES PAGE The skills listed are those needed for eligibility for English 125, 126, and Math 201. These skills are listed as the outcomes from English 252, 262, and Math 250. In the right hand column, list at least three major basic skills needed at the beginning of the target course and check off the corresponding basic skills listed at the left.

Eligibility for ENGL 126
(as outcomes for ENGL 262)

__X__	apply a variety of vocabulary skills for increased comprehension during reading.
__X__	apply prereading and active reading strategies to increase success with and comprehension of unfamiliar texts.
__X__	analyze expository texts to determine explicit/implicit main ideas and logical support, leading to author's intended meaning.
_____	determine basic organizational writing pattens to increase comprehension of expository texts.
_____	distinguish between fact and opinion and determine author's tone and purpose in non-fiction writings.

__X__	Demonstrate safe procedures for using hand and power tools
__X__	Understand the benefits of each welding process used.
__X__	Identify the proper electrodes, fillers, and equipment for each process and metal type used.
_____	List the parts of the SMAW, GMAW, GTAW, and FCAW welding machines.
_____	Employ repair procedures using plasma and carbon air arc processes.
_____	Participate in shop maintenance and repair activities.

Check the appropriate spaces.

_____	Eligibility for Math 201 is advisory for the target course.
__X__	Eligibility for English 126 is advisory for the target course.
_____	Eligibility for English 125 is advisory for the target course.

If the reviewers determine that an advisory or advisories in Basic Skills are all that are necessary for success in the target course, stop here, provide the required signatures, and forward this form to the department chair, the appropriate associate dean, and the curriculum committee.

REQUISITES

Corequisite -- MFGT 60 Introduction to Welding

- Perform fusion welds, brazing and soldering, on plate, pipe, and tubing with the oxy-fuel torch.
- Apply proper fusion welding techniques on plate with the SMAW & GMAW processes in the flat & horizontal positions.
- Choose the correct welding power source, polarity, and consumables for SMAW & GMAW welding process.
- Demonstrate safe procedures for using hand and power tools
- Understand the benefits of each welding process used.
- Identify the proper electrodes, fillers, and equipment for each process and metal type used.
- List the parts of the SMAW, GMAW, GTAW, and FCAW welding machines.

ESTABLISHING PREREQUISITES OR COREQUISITES

Every prerequisite or corequisite requires content review plus justification of at least one of the seven kinds below. Prerequisite courses in communication and math outside of their disciplines require justification through statistical evidence. Kinds of justification that may establish a prerequisite are listed below.

Check one of the following that apply. Documentation may be attached.

_____Significant statistical evidence indicates that the absence of the prerequisite course is related to unsatisfactory performance in the target course.
Justification: Indicate how this is so.
_____The health or safety of the students in this course requires the prerequisite.
Justification: Indicate how this is so.
__X__The prerequisite course is part of a sequence of courses within or across a discipline.
_____The prerequisite is required in order for the course to be accepted for transfer to the UC or CSU systems.
Justification: Indicate how this is so.
_____The prerequisite/corequisite is required by law or government regulations.
Explain or cite regulation numbers:
_____The safety or equipment operation skills learned in the prerequisite course are required for the successful or safe completion of this course.
Justification: Indicate how this is so.
_____The safety or equipment operation skills learned in the prerequisite course are required for the successful or safe completion of this course.
Justification: Indicate how this is so.
_____Three CSU/UC campuses require an equivalent prerequisite or corequisite for a course equivalent to the target course:

Justification:

JUSTIFICATION OF LIMITATION ON ENROLLMENT

Enrollment in courses or blocks of courses may be limited based on performance, honors, or other performance based criteria. Be mindful of the disproportionate impact the limitation will have on specific groups of students. It is important to determine if the limitation will disproportionately keep under-represented students from enrolling in the course or block of courses.

Describe the reasons for limiting the enrollment.

Course Designator: MFGT 61

Course Title(s): Intermediate Welding

Rationale for Limiting Enrollment:
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