

ILLINOIS VALLEY COMMUNITY COLLEGE



COURSE OUTLINE

DIVISION: Workforce Development

COURSE: MET 1209; Welding Metallurgy

Date: Spring 2014

Credit Hours: 3

Prerequisite(s): None

Delivery Method:

<input checked="" type="checkbox"/> Lecture	2 Contact Hours (1 contact = 1 credit hour)
<input type="checkbox"/> Seminar	0 Contact Hours (1 contact = 1 credit hour)
<input checked="" type="checkbox"/> Lab	2 Contact Hours (2 contact = 1 credit hour)
<input type="checkbox"/> Clinical	0 Contact Hours (3 contact = 1 credit hour)
<input type="checkbox"/> Online	
<input type="checkbox"/> Blended	

Offered: Fall Spring Summer

IAI Equivalent – **Only for Transfer Courses**–go to <http://www.itransfer.org>:

CATALOG DESCRIPTION:

Basic introduction to ferrous and nonferrous material and alloys, and their molecular activity during processing from raw material to finished product. The composition and changes of the metal are analyzed under laboratory testing to heat treatment, destructive and nondestructive testing, and various fabrication processes.

GENERAL EDUCATION GOALS ADDRESSED

[See the last page of this form for more information.]

Upon completion of the course, the student will be able:

[Choose those goals that apply to this course.]

- To apply analytical and problem solving skills to personal, social and professional issues and situations.
- To communicate orally and in writing, socially and interpersonally.
- To develop an awareness of the contributions made to civilization by the diverse cultures of the world.
- To understand and use contemporary technology effectively and to understand its impact on the individual and society.
- To work and study effectively both individually and in collaboration with others.
- To understand what it means to act ethically and responsibly as an individual in one's career and as a member of society.
- To develop and maintain a healthy lifestyle physically, mentally, and spiritually.
- To appreciate the ongoing values of learning, self-improvement, and career planning.

EXPECTED LEARNING OUTCOMES AND RELATED COMPETENCIES:

[Outcomes related to course specific goals.]

Upon completion of the course, the student will be able to:

1. Identify and apply process and physical metallurgy
2. Know and apply terminology and testing for various mechanical properties
3. Display proficiency with both the ferrous and nonferrous coding system
4. Understand and perform the heat treating process
5. Know and perform various non-destructive testing methods

COURSE TOPICS AND CONTENT REQUIREMENTS:

- 1.0 Metallurgy Basics
- 2.0 Physical and Mechanical Properties of Metals
- 3.0 Material Coding Systems
- 4.0 Heat Treating
- 5.0 Non-Destructive Testing
- 6.0 Fabrication Metallurgy
- 7.0 Hardness Testing
- 8.0 Analyzing Metal and Process Failures

INSTRUCTIONAL METHODS:

Lecture
Demonstrations
Labs
Observations

INSTRUCTIONAL MATERIALS:

Practical Metallurgy and Materials of Industry, 6th edition, Neely and Bertone, ISBN 0-13-094580-3

STUDENT REQUIREMENTS AND METHODS OF EVALUATION:

Quizzes

Tests

Comprehensive final

Labs

Demonstrations/Observations

OTHER REFERENCES

“This workforce solution was funded by a grant awarded by the U.S. Department of Labor’s Employment and Training Administration. The solution was created by the grantee and does not necessarily reflect the official position of the U.S. Department of Labor. The Department of Labor makes no guarantees, warranties, or assurances of any kind, express or implied, with respect to such information, including any information on linked sites and including, but not limited to, accuracy of the information or its completeness, timelines, usefulness, adequacy, continued availability, or ownership. This solution is copyrighted by the institution that created it. Internal use, by an organization and/or personal use by an individual for non-commercial purposes, is permissible. All other uses require the prior authorization of the copyright holder.”

Course Competency/Assessment Methods Matrix

MET 1209; Welding Metallurgy		Assessment Options																																
For each competency/outcome place an "X" below the method of assessment to be used.	Assessment of Student Learning	Article Review	Case Studies	Group Projects	Lab Work	Oral Presentations	Pre-Post Tests	Quizzes	Written Exams	Artifact Self Reflection of Growth	Capstone Projects	Comprehensive Written Exit Exam	Course Embedded Questions	Multi-Media Projects	Observation	Writing Samples	Portfolio Evaluation	Real World Projects	Reflective Journals	Applied Application (skills) Test	Oral Exit Interviews	Accreditation Reviews/Reports	Advisory Council Feedback	Employer Surveys	Graduate Surveys	Internship/Practicum /Site Supervisor Evaluation	Licensing Exam	In Class Feedback	Simulation	Interview	Written Report	Assignment		
	Direct/ Indirect	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	I	I	I	I	D	D								
1.0 Metallurgy Basics								X	X			X																						
2.0 Physical and Mechanical Properties of Metals				X	X			X	X			X																						
3.0 Material Coding Systems					X			X	X			X																						
4.0 Heat Treating					X			X	X			X	X		X																			
5.0 Non-Destructive Testing				X	X			X	X			X			X	X															X			
6.0 Fabrication Metallurgy				X	X			X	X			X			X	X																		
7.0 Hardness Testing				X	X			X	X			X			X	X																		
8.0 Analyzing Metal and Process Failures					X			X	X			X			X																			