

# Part I



**North Central**  
**MICHIGAN COLLEGE**  
*Your growth. Our mission.*

## *Master Course* *Syllabus*

Course Name: Intermediate Welding Techniques

Course Number: WLD 120

Credit Hrs.   2        Lecture Hrs.   1        Lab Hrs.   2        Clinical Hrs.             Variable Hrs.       

Total Hours of Instruction:   48        Total Contact Hours:  52.8    
*(Total Contact Hours Formula: (lecture hrs. + lab hrs. + clinical hrs.) x 17.6)*

### Course Description:

Designed to be flexible according to the skills and interests of the participants and continues the application of various welding techniques to more advanced projects including thermal cutting processes (oxyacetylene or oxy fuel cutting, plasma arc cutting, air carbon arc cutting, braze welding), shielded metal arc welding, gas tungsten arc welding, and continuous wire feed welding processes.

**PREREQUISITE:** WLD 100

### Course Objectives and Outcomes:

- demonstrate ability to work safely in a welding environment;
- recognize welding symbols for joint design, welding position, weld size, length, and process;
- recognize proper orientation of welding prints, dimensions, angles, and circles;
- perform accurate measurement conversions;
- safely and correctly handle equipment for oxyacetylene or oxy fuel cutting and produce a satisfactory cut;
- safely and correctly handle equipment for shielded metal arc welding (SMAW) and produce satisfactory fillet welds in the flat and horizontal positions;
- safely and correctly handle equipment for gas tungsten arc welding (GTAW) and flux-cored arc welding (FCAW) and to produce satisfactory welds in multiple positions with either the GTAW or FCAW process;
- safely and correctly handle equipment for continuous wire feed welding processes (GMAW, spray-transfer arc welding, pulse arc transfer arc welding, and metal core arc welding);
- successfully complete welder certification (AWS D1.1 Structural Welding Code)

Lumina Objectives: 1, 2, 3, 7, 10, 13

Reasonable accommodations can be provided for students with documented disabilities. Please contact Learning Support Services to arrange for these — (231) 348-6687 or (231) 348-6817, [kflewelling@ncmich.edu](mailto:kflewelling@ncmich.edu), Room 533 SCRC.



Suggested Methods of Instruction: lecture, powerpoint, and video as well as hands-on instruction in welding lab

Suggested Methods of Evaluation: quizzes, exams, successful production of cuts and welds in various positions using various materials.

Adopted Text at Time of Course Adoption/Revision: TBD

Topics Covered During the Semester:

*Sequence of topics and time allowance are at the discretion of the instructor.*

Week 1	Shop Safety/Advanced Weld Symbols	Week 9	Gas Tungsten Arc Welding
Week 2	Advanced Weld Symbols and Print Interpretation	Week 10	Gas Metal Arc Welding
Week 3	Print Interpretation and Thermal Cutting Processes	Week 11	Gas Metal Arc Welding
Week 4	Thermal Cutting Processes	Week 12	Spray and Transfer Arc Welding and Flux-Cored Arc Welding
Week 5	Thermal Cutting Processes and Shielded Metal Arc Welding	Week 13	Flux-Cored Arc Welding and Metal Core Arc Welding
Week 6	Shielded Metal Arc Welding	Week 14	Flux-Cored Arc Welding and Metal Core Arc Welding
Week 7	Shielded Metal Arc Welding	Week 15	Flux-Cored Arc Welding and Metal Core Arc Welding
Week 8	Shielded Metal Arc Welding	Week 16	Flux-Cored Arc Welding and Metal Core Arc Welding Welder Certification

CRDAP Approved: May 1, 2013

**Specialized Knowledge**

1. Describes the scope and principal features of the field of study, citing at least some of its core theories and practices, and offers a similar explication of at least one related field.
2. Illustrates contemporary terminology used in the field.
3. Generates substantially error-free products, reconstructions, data, juried exhibits or performances as appropriate to the field.

**Broad Integrative Knowledge**

4. Describes how existing knowledge or practice is advanced, tested and revised
5. Describes and examines a range of perspectives on key debates and their significance both within the field and in society.
6. Illustrates core concepts of the field while executing analytical, practical or creative tasks.
7. Selects and applies recognized methods of the field in interpreting characteristic discipline-based problems.
8. Assembles evidence relevant to characteristic problems in the field, describes the significance of the evidence, and uses the evidence in analysis of these problems.
9. Describes the ways in which at least two disciplines define, address and interpret the importance of a contemporary challenge or problem in science, the arts, society, human services, economic life or technology.

**Intellectual Skills – Analytic Inquiry**

10. Identifies, categorizes and distinguishes among elements of ideas, concepts, theories and/or practical approaches to standard problems.

**Intellectual Skills – Use of Information Resources**

11. Identifies, categorizes, evaluates and cites multiple information resources necessary to engage in projects, papers or performance in his or her program.

**Intellectual Skills – Engaging Diverse Perspectives**

12. Describes how knowledge from different cultural perspectives would affect his or her interpretations of prominent problems in politics, society, the arts and/or global relations.

**Intellectual Skills – Communication Fluency**

13. Presents accurate calculations and symbolic operations, and explains how such calculations and operations are used in either his or her specific field of study or in interpreting social and economic trends.
14. Presents substantially error-free prose in both argumentative and narrative forms to general and specialized audiences.

**Applied Learning**

15. Describes in writing at least one substantial case in which knowledge and skills acquired in academic settings are applied to a challenge in a non-academic setting; applies that learning to the question; and analyzes at least one significant concept or method related to his or her course of study in light of learning outside the classroom.
16. Locates, gathers and organizes evidence on an assigned research topic addressing a course-related question or a question of practice in a work or community setting; offers and examines competing hypotheses in answering the question.

**Civic Learning**

17. Describes his or her own civic and cultural background, including its origins and development, assumptions, and predispositions.
18. Describes diverse positions, historical and contemporary, on selected democratic values or practices, and presents his or her own position on a specific problem where one or more of these values or practices are involved.
19. Takes an active role in a community context (work, service, co-curricular activities, etc.), and examines the civic issues encountered and the insights gained from the community experience.

Adopted by CRDAP: April 11, 2012