

Grand Rapids Community College

Course Cover Sheet



**M-CAM Training Area:**

CNC/Machining  Multi-Skilled/Mechatronics  Production Operation  Welding/Fabrications

**Program(s):** Welding Technology

**Course:** MN 203

**Course Description:** Fundamentals of TIG Gas Tungsten Arc Welding | 3 credit, 4 contact hour course

**Date Created:** Previously Existed

**Faculty Developer(s)/Instructional Designers(s):** John Doneth

**Employer/Industry Partner:** American Welding Society, Lincoln Electric, Steelcase, Shape Corp, Praxair

**College Contact:** David Lovell

**Phone:** 616-234-3168

**Email:** davidlovell@grcc.edu

**Additional Information/Comments:**

The one-year Welding Technology Certificate Program at GRCC was adjusted through M-CAM to align with the AWS SENSE level 1 industry-recognized credential per feedback from GRCC's welding advisory committee members, who communicated that the AWS certificate was the industry standard. Employers contributing to this change were Steelcase, Shape Corp, Praxair, and others.

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## MN 203 - TIG / Gas Tungsten Arc Welding

Credits: 3

Contact Hours: 4

**Prerequisites:** None

**Corequisites:** None

**College Level Prerequisites:** None

**Description:** This course emphasizes proper usage and assembly of the equipment used in the TIG (GTAW) welding process. The course content includes the theory behind the process, safe operation, proper welding procedures and techniques used in welding steel, Aluminum, and stainless steel. Student performances will be held to the American Welding Society standards of performance in the welding of coupons and testing.

This course is also delivered in Modules. You must complete each of the modules listed below in order to receive credit for the course.

MN 203A TIG (GTAW) TIG STEEL. Emphasizes proper assembly of the equipment used in TIG welding and includes safe operation, proper welding procedures and techniques used in welding steel.

MN 203B TIG (GTAW) TIG Aluminum and Stainless Steel. Emphasizes proper assembly of the equipment used in TIG welding and includes safe operation, proper welding procedures and techniques used in welding steel, aluminum, and Stainless steel.

**Department Consent:** No Consent

**General Education Distribution Category Met:** None



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## **MN 203, Syllabus**

### **Fundamentals of TIG (GTAW) Gas Tungsten Arc Welding,**

#### **General Information**

##### **Instructor Name**

##### **Contact Information and Availability**

Room

Office Hours

Phone

E-mail Address:

##### **Course Information**

TIG (GTAW) MN 203

Course description (Emphasizes proper assembly of the equipment used in GTAW welding and includes safe operation, proper welding procedures and techniques used in welding steel, aluminum, and stainless steel. This is an advanced course as all students performances will be held to the American Welding Society standards of performance in the welding of coupons and testing.)

##### **Student Learning Outcomes**

1. Assemble a TIG torch for welding
2. Demonstrate proper shop safety techniques
3. Properly set up and weld the five basic welding joints on aluminum, in all positions using Gas Tungsten Arc Welding
4. Troubleshoot GTAW equipment
5. Explain how the Arc welding processes function
6. Understand the functions of shielding gases
7. Identify the different Tungsten types used in industry
8. Identify the AWS numbering system for aluminum filler metals
9. Identify the AWS numbering system for mild steel electrodes
10. Identify the AWS numbering system for stainless steel filler metals
12. Properly set up and weld the five basic welding joints in all positions using (GTAW)

##### **Required Materials**

Welding Principles and Applications

By Larry Jeffus; Seventh Edition  
Delmar Publishers  
ISBN -10:1-1110-3917-8

## **Course-Specific Requirements**

Safety glasses, proper foot wear, proper work clothing, text book, marking pen for steel, and welding gloves.

## **Section Policies**

### **Attendance Policy**

Students who miss three (3) or more classes will lose 10% of their grade student that miss 4 or more classes will lose 25% of their grade.

### **Grading Procedure**

50% Weld practice

10% Attendance

40% Tests, one midterm practical and written exam, one final practical and written exam, and between 10-15 welding tests

### **Grading Policy**

100-96=A	95-91=A-
90-86=B+	85-81=B
80-76=B-	75-71=C+
70-66=C	65-61=C-
60-56=D	55 and below E

### **Late Assignment Policy**

All work is done in class all test are due on test day.

## **College Policies**

### **GRCC Email and Course Communications**

Students are responsible for all communications sent via Blackboard and to their GRCC email account. GRCC student email can be accessed through [Student Email](http://email.grcc.edu) (<http://email.grcc.edu>) and Blackboard at [Blackboard](http://bb.grcc.edu) (<http://bb.grcc.edu>).

### **Disability Support Services**

Students with disabilities who wish to request accommodations must be registered with the [Disability Support Services Office \(DSS\)](#) in Room 368 of the Student Center. You may contact DSS at (616) 234-4140 for more information. Once you are registered with the DSS Office, you will receive an *Accommodations Agreement* to present to me to verify your registration. Please see me as soon as possible so we may have a private conversation to discuss accommodations.

### **Student Code of Conduct**

All GRCC students are held accountable to the Student Code of Conduct, which outlines expectations pertaining to academic honesty (including cheating and plagiarism), classroom conduct, and general conduct. The Code can be found in full at [Student Code of Conduct](#).

*\*Add course/instructor specific implications of code violations*

## **Changes to the Syllabus**

The instructor reserves the right to change the contents of this syllabus due to unforeseen circumstances. Students will be given notice of relevant changes in class, through a Blackboard Announcement, or through GRCC e-mail.

### **STUDENT EMAIL POLICY**

#### **I. Policy Section**

8.0 Students

#### **II. Policy Subsection**

8.7 Student Email

#### **III. Policy Statement**

Grand Rapids Community College (GRCC) provides an email service for all students to use. Upon enrollment, GRCC students are required to use this college issued account for all GRCC email correspondences (sending and receiving). This email account will be used for official notification by the college related to matters such as, but not limited to, financial aid, registration, and payments. The college will not respond to emails that are sent from current students' personal email accounts.

**MN 203 TIG WELDING****READING ASSIGNMENTS**

WE WILL BE COVERING THE FOLLOWING CHAPTERS, IN THE ORDER GIVEN, DURING THE SEMESTER. THE ASTERISK \* INDICATES TEST QUESTIONS FROM THESE CHAPTERS WILL BE ON THE NEXT EXAM.

CHAPTER 2	SAFETY
CHAPTER 15	GAS TUNGSTEN ARC WELDING*

CHAPTER 20 PAGES 503-508	JOINT DESIGN*
	CODES AND PROCEDURES (black board)

CHAPTER 23 PAGES 567-574	WELDING FLAWS*
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**MIDTERM EXAM**

CHAPTER 16	GTAW PROCEDURE INFORMATION*
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CHAPTER 17	GTAW PROCEDURE INFORMATION*
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**FINAL EXAM**



Subject Matter Expert (SME) Course Review Summary

College: Grand Rapids Community College

M-CAM Training Area:  CNC/Machining  Multi-Skilled/Mechatronics  Production Operation  Welding/Fabrication

Degree Program Name: \_\_\_\_\_

Title of Course: MN 203 - Fundamentals of TIG Gas Tungsten Arc Welding

Subject Matter Expert (SME) Reviewer Information

Name: Jonathan Althausen

Title: Technical Representative

Phone: 724-705-5613

Email: jalthausen@lincoln electric.com

Organization/Affiliation: Lincoln Electric

Attach Resume or provide credentials (showing years of experience and work experience that is relevant to course content):

Synopsis of Findings:

- Course looks complete and matches with industry.
- I would suggest looking into postul GTAW in the future

Reviewers Signature: [Signature] Date: 2/3/17

**Michigan Coalition for Advanced Manufacturing  
Subject Matter Expert Course Review**

1. Course Overview and Objectives	Exceptional	Satisfactory	Ineffective
The goals and purpose of the course is clearly stated.	X		
Prerequisites and/or any required competencies are clearly stated.	X		
Learning objectives are specific and well-defined.		X	
Learning objectives describe outcomes that are measurable.	X		
Outcomes align to occupational focus (industry skills and standards).	X		
Comments or recommendations: <i>Item 12 on externals does not specify the base material whereas Item 3 specifies aluminum</i>			
2. Material and Resources	Exceptional	Satisfactory	Ineffective
The instructional materials contribute to the achievement of the course learning objectives.	X		
The materials and resources meet/reflect current industry practices and standards.	X		
The instructional materials provide options for a variety of learning styles.	X		
Resources and materials are cited appropriately. If applicable, license information is provided.	X		
Comments or recommendations: <i>In the future, possibly consider adding pulsed GTAW</i>			
3. Learning Activities	Exceptional	Satisfactory	Ineffective
Provide opportunities for interaction and active learning.	X		
Help understand fundamental concepts, and build skills useful outside of the learning object.	X		
Activities are linked to current industry practices and standards.	X		
Comments or recommendations:			



**Michigan Coalition for Advanced Manufacturing  
Subject Matter Expert Course Review**

4. Assessment Tools/Criteria for Evaluation	Exceptional	Satisfactory	Ineffective
The course evaluation criteria/course grading policy is stated clearly on syllabus.	X		
Measure stated learning objectives and link to industry standards.	X		
Align with course activities and resources.	X		
Include specific criteria for evaluation of student work and participation.	X		
Comments and recommendations:			
5. Equipment/Technology	Exceptional	Satisfactory	Ineffective
Meets industry standards and needs.	X		
Supports the course learning objectives.	X		
Provides students with easy access to the technologies required in the course/module.	X		
Comments and recommendations:			

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## Jonathan M. Althausen

### OBJECTIVE

To obtain an opportunity in Sales Engineering that utilizes a determined individual with strong interpersonal and problem solving skills

### EDUCATION

Grove City College Grove City, PA 2007-2011

#### B.S. Electrical Engineering

- 4 year ABET Accredited Electrical Engineering School
- QPA- 3.4/4.0 Major GPA 3.4/4.0 ~ *Cum Laude, Honors*
- Dean's List: Fall: 2009, 2010 Spring: 2008, 2009, 2010, 2011

### WORK

The Lincoln Electric Company Cleveland, OH June 2011 - Present

### EXPERIENCE

#### Technical Sales Representative

- Graduated first place of technical sales training program with the Lincoln Electric Company
  - Competed against other engineers in a rigorous eight month program
  - Evaluation based on written exams, welding skills, presentations, leadership, and teamwork
- Given responsibility to handle a \$6 million dollar sales territory based out of the Pittsburgh District Office
- Given responsibility to handle a \$10 million dollar sales territory based out of the Grand Rapids Office
- Interacted with large end users such as Caterpillar, General Electric, and SMS Millcraft
- Gained technical expertise on product line and industry to educate and support distributor salesmen
- Provided lectures on advanced welding technology to vocational high schools and community colleges
- Facilitated cost savings and productivity increases for customers using innovative methods and technology
- Managed and completed sales of large capital equipment up to \$230,000
- Provided cost saving reductions for end users totaling \$720,000

### INTERNSHIPS

Bechtel Plant Machinery Inc. Monroeville, PA May 2010 - August 2010

#### Electrical Engineering Intern

- Reviewed fuse evaluations to ensure the proper fuse was installed in rod position indication equipment.
- Analyzed fuse data sheets and utilized circuit analysis to aid in the selection process.
- Composed a failure analysis of power conversion equipment. Trended data using Excel spreadsheets.
- Helped create a template for a failure database and populated the database with failed components.
- Wrote an article for the company newsletter, a newsletter that is distributed to over 800 employees.

### LEADERSHIP

Skills USA Michigan State Chair October 2013 - Present

- Oversee the state of Michigan welding competition for high school students
- 80 student compete for a chance to represent the state of Michigan at the national competition
- Oversee 25 volunteers, manage non-profit budget and projects

American Welding Society-West Michigan Board Member November 2013 - Present

- Coordinated and facilitated technical meeting gathers
- Drive the future and goals for the organization
- Volunteer and aid in non-profit fundraisers for scholarships

### TECHNICAL

Languages: C++, Matlab, Assembly

### SKILLS

Software: Microsoft Office, SAP, CRM, Visual Studio, PSPICE, Mathematica

Welding: Gas Metal Arc, Shielded Metal Arc, Gas Tungsten Arc, Submerged Arc, Flux Cored Arc, and Robotic