

**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:** TE 272- Industrial Safety

**Course Description:** 2 credit, 2 contact hour course

**Date Created:** 2014

**Faculty Developer(s)/Instructional Designers(s):** John Larson, John Donneth

**Employer/Industry Partner:** Pioneer Steel, Lincoln Electric, Steelcase, Shape Corp.

**College Contact:** David Lovell

**Phone:** 616-234-3168

**Email:** davidlovell@grcc.edu

**Additional Information/Comments:**

This hybrid course was developed through M-CAM to offer a different delivery method of the Industrial Safety course currently offered at GRCC to satisfy M-CAM deliverables in the welding program area. This course, like the standard Industrial Safety course at GRCC, was aligned with AWS testing so that students completing the one-year welding certificate would be prepared to complete the AWS Sense level 1.

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, timeliness, usefulness, adequacy, continued availability, or ownership.

The eight community colleges and MCAM is an equal opportunity employer/program provider. Auxiliary aids and services are available upon request to individuals with disabilities. TTY users please call 1-877-878-8464 or visit [www.michigan.gov/mdcr](http://www.michigan.gov/mdcr).

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## TE 272 - Industrial Safety

Credits: 2

Contact Hours: 2

**Prerequisites:** None

**Corequisites:** None

**College Level Prerequisites:** None

**Description:** Students learn accepted good practice in safety and its application to technology. Included are safety laws, personal protective equipment, tool safety; chemical, electrical, fire, materials handling, and machine safety; lifting and elevated working procedures; machine guarding, as well as current health related concerns.

**Department Consent:** None

**General Education Distribution Category Met:** None



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**TE-272**  
**Industrial Safety**  
**2 credits**

**Instructor:**

**Contact Information:** office phone  
Email

**Office Hours:**

**Office Location:**

**About the Course**

This class trains industrial workers and managers in safety and its application to technology. Included are safety laws, personal protective equipment, and tool safety; chemical, electrical, fire, materials handling, and machine safety; lifting and elevated working procedures; machine guarding and current health related concerns. Assignments will include practical applications for each of the topics.

**Taking an On-Line Course**

Perhaps this is your first on-line course. You may have already considered many of the advantages: time and money saved commuting to class, no parking hassles, no inconvenient class meeting times, and not having to sit through that boring lecture! However, you still need to set aside several hours each week to stay current with your coursework. If you get behind you will lose points due to late penalties and may not be able to finish the course at the appropriate time. Begin your assignments early in the week and contact your instructor if you are experiencing difficulty.

**Prerequisites**

Prerequisite classes are not required.

**Academic Policies**

GRCC holds to high ideals of academic and personal honesty and expects every student to do likewise. Dishonest acts like cheating, lying and plagiarism will not be tolerated. Check with your instructor ahead of time if you have any questions regarding academic honesty. Academic dishonesty could involve, but is not limited to, having someone assist you in answering examination questions or cases, having someone see/review/critique your answers prior to submitting those answers to the class, or obtaining or copying answers to an examination from someone else.

**Assignments**

Following the "Course Schedule" as seen below, you will be required to submit assignments. Each assignment can be found in the "Assignments" area of your Blackboard course and is due by Sunday at midnight (EST). **One assignment is due each week in the fall and winter semesters. In the summer 7 week session two assignments are due each week. A late penalty of 10% per week will be applied to late assignments.** The assignment grades are posted in Blackboard. You may view your grade in the Blackboard grade book. Please follow the instructions in Blackboard (Announcements) for submitting your assignments.

## Final Exam

The final exam is comprehensive (it covers the whole course) and must be taken at the Testing Center located in room 325 of the Student Center. This exam is taken without use of reference material. To find out the current testing hours call 234-3413.

## Text Book

Safety and Health (Basic Foundation Series 719), Schoolcraft Publishing (schoolcraftpublishing.com). It should be available at the bookstore or it can be ordered online or by calling 1-800-837-1255. Make sure you get the student price.

## Communication

When you e-mail me, **please include a proper reference (TE272) in the "subject" field and your name.** I will try to respond to your e-mail within 24 hours. Ensure that you regularly check the e-mail account listed for you in Blackboard.

If an e-mail doesn't work, you may call me at (phone number). You may want to indicate the times you can best be reached. Another possibility is to schedule an office appointment with me.

Most students e-mail the assignments but you may also mail them or drop them off in my office or our department office.

Email communication for this class should be done using your GRCC email account. You are responsible for checking your email in this account and email you send from other accounts may end up in our spam filter.

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>) and Blackboard at Blackboard (<http://bb.grcc.edu>).

## Course Organization

Here's a list of the navigation links (left side of the course website) and what you'll see:

**Announcements** - this is where I'll post short messages about what's new or due!

**Syllabus** - the syllabus is found here

**Resources** - other information related to this course

**Assignments** - all assignments and learning activities - such as videos and quizzes - are found here.

**Web Links** - some of your activities may require you to surf to other sites.

**Instructor** - this is where you'll find information about your instructor.

**Grades** - here's where the grade book is located

**Tools** - useful Blackboard tools and links

## Frequently Asked Questions

Q. Where do I find my assignments?

A. All of your assignments will show up under the "Assignments" area.

A. Anything received after the week is over (Sunday at midnight) will be considered late. One late assignment is permissible. Additional late assignments will be penalized 1 point per week (of 10 points possible).

A. I will usually post grades and provide feedback by the Friday after the completion of each virtual week. If you have a question about your grade, please contact me.

The following activities will be graded:

**Final Exam** 40% of final grade

A = 93%	C = 73%
A- = 90%	C- = 70%
B+ = 87%	D+ = 67%
B = 83%	D = 63%
B- = 80%	E = below 63%
C+ = 77%	

The Student Technology Help Desk can assist with Blackboard, password resets, Novell and student e-mail accounts. For assistance, go to the Open Computer Lab, Room 215 in the Applied Technology Center (ATC), contact them by phone at (616) 234-3123 or e-mail at [sthd@grcc.edu](mailto:sthd@grcc.edu).

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.

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](#).

## 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.

## Course Schedule

Each week of this course ends on Sunday at midnight (EST). Assignments are due at the end of the week. All assignments are located under the "Assignments" menu in Blackboard.

Note: the term "Session" is used for the normal 14 week semester. You may complete this course in much less than 14 weeks. The early summer term lasts only 7 weeks, meaning that two assignments are due weekly.

To track your progress, print the following schedule and check off the activities as you complete them:

<i>Session</i>	<i>Topics / Readings</i>	<i>Assignments</i>
1	Course orientation Introduction to class Review the course web site	Log on to Blackboard Complete introductory assignment
2	Introduction to Safety	Assignment #1
3	Safety Laws	Assignment #2
4	Personal Protective Equipment	Assignment #3
5	Chemical Safety	Assignment #4
6	Tool Safety	Assignment #5
7	Safe Materials Handling	Assignment #6
8	Machine Safety	Assignment #7
9	Electrical Safety	Assignment #8
10	Electrical Protection	Assignment #9
11	Fire Protection	Assignment #10
12	Health Protection	Assignment #11
13	Safe Work Practices	Assignment #12
14	Prepare for exam	
15	Final Exam	Go to testing center to take exam

## **Student Learning Outcomes**

- a. Describe a safety program
- b. Identify work hazards
- c. Classify industrial work accidents
- d. Describe the hazard communication process
- e. Describe OSHA health and safety laws, functions, and lockout procedures
- f. Identify personal protective equipment and their uses
- g. Identify chemical hazards and handling procedures
- h. Explain proper tool use procedures
- i. List material handling hazards
- j. Describe industrial truck safety procedures
- k. List machine guard types, and their applications
- l. Identify electrical hazards
- m. Identify National Electric Code standards
- n. Describe fire hazards
- o. Choose the correct fire-fighting equipment
- p. Explain common physical injuries and their treatments

1. Complete work accurately, with attention to detail. (PR3)
  2. Make informed decisions about personal wellness.
  3. Identify ethical dilemmas associated with environmental, social, or cultural issues.
  4. Identify work hazards.
  5. Classify industrial work accidents.
  6. Describe the hazard communication process.
  7. Identify personal protective equipment and their uses.
  8. Explain proper tool use procedures.
  9. List material handling hazards.
  10. Describe industrial truck safety procedures.
  11. List machine guard types, and their applications.
  12. Identify electrical hazards.
  13. Describe a safety program.
- 

#### **Course Outline:**

- I. Definition of a safety program
  - II. Identification of work hazards
  - III. Classification of industrial work accidents
  - IV. Review of the hazard communication process
  - V. Describe OSHA health and safety laws, functions, and lockout procedures
  - VI. Identify personal protective equipment and their uses
  - VII. Review chemical hazards and handling procedures
  - VIII. Explain proper tool use procedures
  - IX. Demonstrate material handling hazards
  - X. Review industrial truck safety procedures
  - XI. Presentation of machine guard types, and their applications
  - XII. Identification of electrical hazards
- 

#### **Mandatory CLO/ILO Competency Assessment Measures:**

Four quizzes Final exam

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**Upon completion of this course, will students be qualified to seek an external certification?: No**

**If yes, please list certifications: NA**

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#### **Instructional Strategies:**

Textbook Assignments: 55-60% of final grade



Video presentations: 10-15% of final grade

Facilitated discussion: 30-40% of final grade

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**Expected Course Components:**

Read the textbook and complete chapter assignments. Watch the four videos: 1. General Safety 2. First Aid 3. Hand and Power Tool Safety 4. Electrical Safety Complete the proctored final exam.

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**Academic Program Prerequisite:** None

**Course Prerequisites:** None

**Course Corerequisite(s):** None

**College Level Prerequisites:** None

**Course Antirequisite:**

**Course-Specific Placement Test:** None

**Consent to Enroll in Course:** No Consent

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**Is this course offered in Modules?:** No

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**Faculty Credential Requirements:**

Professionally qualified through work experience in field (Perkins Act or Other) (list below)

**Faculty Credential Requirement Details:** Bachelor's Degree in related field with a minimum of 4000 hours of work experience.

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**Required Room Characteristics:** General Purpose (lecture)

**Specific Room Request:** -

**Other Room Request:** None

**Room Description:** None

**Room Request Rationale:**

NA

**Room Number:** None

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**Most Common Section Size:** 22

**Maximum Course Enrollment:** 22

**Equivalent Courses:** None

**Dual Enrollment Allowed?:** Yes

**Number of Times Course can be taken for credit: 1**

**First Term Valid: -**

**1st Catalog Year: -**

**Fees: \$5.00**

**People Soft Course ID Number: 101399**

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**High School Articulation Agreements exist?: No**

**If yes, with which high schools?: None**

**Non-Credit GRCC Agreement exist?: No**

**If yes, with which Departments?: NA**

**Corporate Articulation Agreement exist? No**

**If yes, with which Companies?: NA**

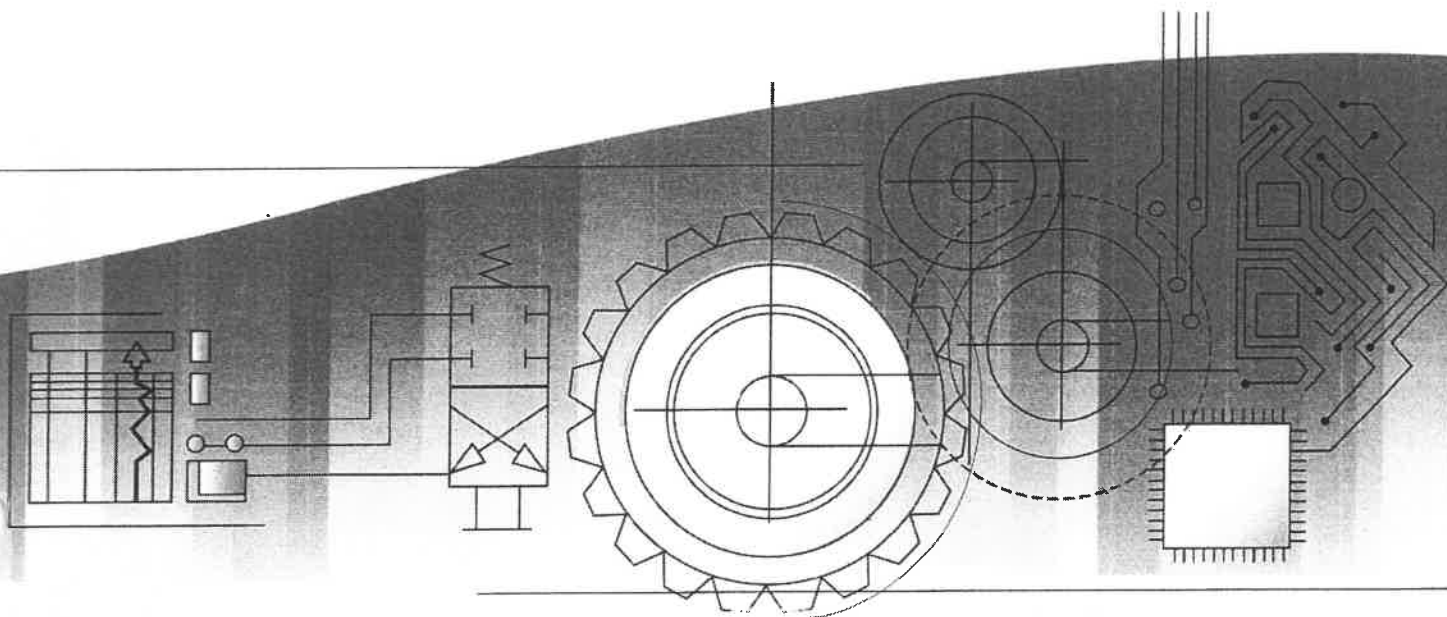
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# *Safety and Health*

Basic Foundation Series 719



**TE-272**  
**Industrial Safety**

***Instructions***

Here are the files for this course. They could be uploaded to Blackboard or any other on-line course management software.

Syllabus – this file can be modified to suit the conditions under which this class is offered. The textbook is specified here as well.

Introduction – A brief overview of my experience with industrial safety. What you might talk about during day 1 of a face to face class.

Assignments – The introductory assignment is an opportunity to get to know the on-line students and to be sure they have read the syllabus and understand how the course is structured. The other assignments (1-12) correspond to the chapters in the text book.

Test – A 50 question multiple choice test is also included.

An optional discussion group could also be formed depending on the nature of the class.

*Do you have any other questions about this class?*

**TE-272  
Industrial Safety**

***Introductory Assignment***

During the next semester we will be working together as you complete this course on-line. Because we will not have the typical "face to face" classroom experience, I would like to take this opportunity to get to know better. I also want to make sure that you are actively working on this class and communicating with me. The semester moves along rather quickly and we need to begin working through the textbook and completing the assignments.

**About you**

Please answer the following questions. Several sentences for each question should help me get to know you better and understand your reasons for taking the class.

*Why are you taking classes at GRCC? Are you an apprentice, working on an associate degree, transferring to another college, or just exploring various career opportunities?*

*What school did you attend prior to GRCC? (High school or other college)*

*What type of work do you do? What type of career are you preparing for?*

*What are some of your favorite recreational activities?*

*Is there any other information you want to share that will help me assist you in this course?*

**About me**

After a brief stint as a mechanic I found work in a machine shop and later became a journeyman tool and die maker. Upon finishing my engineering degree (night school) I worked as a manufacturing engineer before joining the faculty at GRCC. I enjoy sailing, salmon fishing, and hanging out with my grandkids. I have a 1950's Harley that I bought in high school. I still enjoy working on that in the winter and traveling on it in the summer.

**About the course**

Please make sure you have the textbook and carefully review the syllabus so that you are ready to begin this class. Answer the following questions about the course.

*When are the assignments due and what is the late penalty?*

*Where and when do you take the exam?*

*What percentage of your final grade is determined by the assignments?*

**TE-272  
Industrial Safety**

**ASSIGNMENT #1  
Chapter 1: Introduction to Safety**

Instructions:

Read the chapter carefully and answer the following questions. In most cases a few words or a short sentence will suffice. Please submit the questions with the answers – you may want to copy and paste the questions into a text editor to begin the assignment.

Questions:

1. *By law, who is responsible for your safety on the job?*
2. *When must you follow your company's safety rules?*
3. *What is an accident?*
4. *Are most on-the-job injuries the result of unsafe acts or unsafe conditions?*
5. *What should you do if you see an unsafe condition in your workplace?*
6. *What is a hazard?*
7. *What are four main types of hazards?*
8. *What are the three common ways in which toxic substances can enter your body? Which is the most common?*
9. *What is the ideal way to control exposure to health hazards?*
10. *To what parts of the body do repetitive motion injuries usually occur?*
11. *A wrench falls from a ladder onto a worker below. This is an example of what kind of accident?*
12. *What is the main reason for conducting an accident investigation?*
13. *What should you do if you are unsure of the location of fire extinguishers and emergency exits?*
14. *Which of the following locations is more dangerous, your workplace or your automobile?*

**TE-272  
Industrial Safety**

**Assignment #2  
Chapter 2: Safety Laws**

Instructions:

Read the chapter carefully and answer the following questions. In most cases a few words or a short sentence will suffice. Please submit the questions with the answers – you may want to copy and paste the questions into a text editor to begin the assignment.

Questions:

1. *Simply stated, what is the purpose of the Occupational Safety and Health Act?*
2. *If you disregard safety rules, what can OSHA do to you?*
3. *How can OSHA enforce its standards?*
4. *What are the three main groups into which OSHA standards are divided?*
5. *How should you best call a matter to the attention of a CSHO during an inspection?*
6. *Can you be fired as a result of exercising your rights under the OSHA Act?*
7. *If you are exposed to a serious hazard on the job, what should your first move be?*
8. *What will happen if an OSHA inspection reveals a violation?*
9. *What is the OSHA requirement concerning the OSHA poster?*
10. *Employers must maintain records of occupational injuries and illnesses if they have at least how many employees?*
11. *If you see a way to make your job safer, what should you do?*
12. *What is the purpose of OSHA's Hazard Communication Standard?*
13. *According to OSHA's HazCom Standard, what must be made available to employers by chemical manufacturers?*
14. *What are the two separate types of chemical hazards?*
15. *What is the purpose of NIOSH?*



**TE-272  
Industrial Safety**

**Assignment #3  
Chapter 3: Personal Protective Equipment**

Instructions:

Read the chapter carefully and answer the following questions. In most cases a few words or a short sentence will suffice. Please submit the questions with the answers – you may want to copy and paste the questions into a text editor to begin the assignment.

Questions:

1. *What term describes the combination of head, body, hand, and foot protection required to do your job?*
2. *What must your employer provide in addition to the appropriate PPE?*
3. *What is your responsibility before using PPE?*
4. *Why should you avoid loose-fitting clothing in the plant?*
5. *What determines the special body protection required for a job?*
6. *What should you do if you accidentally come in contact with a dangerous chemical?*
7. *How much clearance should hard hat webbing provide between your head and the top of the shell?*
8. *How can you keep dust and liquids from reaching your eyes from any direction?*
9. *What units are used to measure noise?*
10. *At what noise level does hearing protection become a requirement?*
11. *In what areas should you not use disposable earplugs?*
12. *What must be attached to your safety harness before entering a confined space?*
13. *What conditions must be met before wearing any respirator?*
14. *What kind of respirator must be worn in an area that contains too little oxygen to support life?*

**TE-272  
Industrial Safety**

***Assignment #4  
Chapter 4: Chemical Safety***

Instructions:

Read the chapter carefully and answer the following questions. In most cases a few words or a short sentence will suffice. Please submit the questions with the answers – you may want to copy and paste the questions into a text editor to begin the assignment.

Questions:

1. *What are the two kinds of chemical hazards?*
2. *Which fire hazards ignite spontaneously?*
3. *What term is used to describe chemicals that cause or support fire in other materials?*
4. *Under what conditions do reactive chemicals produce hazardous situations?*
5. *What is a health hazard?*
6. *What kind of health hazard destroys skin tissue on contact?*
7. *What name is given to chemicals that cause sterility, fetal death, and/or birth defects?*
8. *What is carcinogen?*
9. *What are the three forms in which a chemical can exist?*
10. *What are the three ways in which exposure to health hazards can occur?*
11. *Why are airborne hazards especially dangerous?*
12. *What are the most common skin contact hazards?*
13. *How does PPE protect you?*
14. *What is the best way to avoid accidental ingestion of chemicals?*
15. *Where should you look if you need information about a chemical?*
16. *What should you do if someone has ingested a hazardous chemical?*

**TE-272  
Industrial Safety**

**Assignment #5  
Chapter 5: Tool Safety**

Instructions:

Read the chapter carefully and answer the following questions. In most cases a few words or a short sentence will suffice. Please submit the questions with the answers – you may want to copy and paste the questions into a text editor to begin the assignment.

Questions:

1. *What should you do before using any tool?*
2. *When using an adjustable wrench, how should you position it properly?*
3. *When using a wrench properly, should you pull it toward you or push it away?*
4. *What wrench is best to use when a nut is frozen onto a bolt?*
5. *What are the two main kinds of pliers?*
6. *What is the correct tool to use for driving a chisel?*
7. *When should you use a mallet in place of a hammer?*
8. *What kind of knife is best to use when cutting paper or cardboard?*
9. *What must be in place before using a rotating electric tool?*
10. *What is the major electrical hazard involved with electric tools?*
11. *What kind of switch cuts off power when released?*
12. *Before changing a bit or other accessory on an electric tool, you must first do what two things?*
13. *When using an air hose to remove debris from an area, what is the maximum pressure you should use?*
14. *What should you do before performing maintenance on any gasoline-powered tool?*

**TE-272  
Industrial Safety**

**Assignment #6  
Chapter 6: Safe Materials Handling**

Instructions:

Read the chapter carefully and answer the following questions. In most cases a few words or a short sentence will suffice. Please submit the questions with the answers – you may want to copy and paste the questions into a text editor to begin the assignment.

Questions:

1. *What is the best way to avoid hurting yourself when moving materials?*
2. *Should you wear gloves when working around machinery with moving parts?*
3. *When lifting, how should you position your feet and back?*
4. *What is the best way to carry a small box or carton?*
5. *What should you use if you have to move a barrel alone?*
6. *When you are moving a loaded handtruck down a ramp of incline, should you stay in front of the truck or behind it?*
7. *To protect the operator, what should every high-lift rider or stand-up truck have?*
8. *When is it permissible to ride on the platform of a moving truck?*
9. *What must you check before entering a trailer from a shipping dock?*
10. *When do most accidents involving conveyors occur?*
11. *To prevent accidents on conveyors, what should you do before starting any repairs?*
12. *If the angle of a sling holding 1000-lb load is 60° from the vertical, what is the stress on each leg of the sling?*
13. *When is it safe to work on a suspended load?*
14. *When is the best time to clean up your receiving area?*
15. *How should flammable liquids be stored?*

**TE-272  
Industrial Safety**

**Assignment #7  
Chapter 7: Machine Safety**

Instructions:

Read the chapter carefully and answer the following questions. In most cases a few words or a short sentence will suffice. Please submit the questions with the answers – you may want to copy and paste the questions into a text editor to begin the assignment.

Questions:

1. *What term is used to describe places where moving parts meet or come near each other?*
2. *What is another name for back-and-forth motion?*
3. *What is the term point of operation?*
4. *If a bench grinder is equipped with safety guards, is it necessary for you to wear personal protective equipment?*
5. *What type of machine guard limits the operator's access to the danger zone?*
6. *What type of machine guard prevents access to the danger zone altogether?*
7. *What kind of guards cannot be moved when a machine is in operation?*
8. *What type of guard prevents a machine from operating when the guard is opened or removed?*
9. *What type of machine guard is capable of physically pulling an operator's hands out of the danger zone?*
10. *When will a presence-sensing guard stop a machine?*
11. *What kind of controls does a machine have if the operator must remove both hands from the danger zone?*
12. *What kinds of tools make it unnecessary for an operator to reach into the danger zone?*
13. *When is a machine in a zero energy state?*
14. *Under what conditions should you remove someone else's lock from a lockout device?*

**TE-272  
Industrial Safety**

***Assignment #8  
Chapter 8: Electrical Safety***

Instructions:

Read the chapter carefully and answer the following questions. In most cases a few words or a short sentence will suffice. Please submit the questions with the answers – you may want to copy and paste the questions into a text editor to begin the assignment.

Questions:

1. *What is electric current?*
2. *In an electrical circuit will higher resistance cause a greater or lesser voltage drop?*
3. *What is the mathematical expression of Ohm's law?*
4. *In a simple electric circuit, electricity is delivered to a device by what color wire?*
5. *The amount of current flowing in a circuit depends on what two factors?*
6. *In an electric circuit, where will the greatest current always flow?*
7. *When do you have less resistance to electric shock, when you are wet or when you are dry?*
8. *What should you do if you come upon an electric shock victim who is still in contact with the electrical source?*
9. *Who should administer CPR?*
10. *What is the ABC of CPR?*
11. *If a victim is burned, what first aid procedures should you follow?*
12. *When does static electricity become dangerous?*
13. *What are two situations that can generate static electricity?*
14. *What is the most common method of preventing the accumulation of static electricity?*

**TE-272  
Industrial Safety**

***Assignment #9  
Chapter 9: Electrical Protection***

Instructions:

Read the chapter carefully and answer the following questions. In most cases a few words or a short sentence will suffice. Please submit the questions with the answers – you may want to copy and paste the questions into a text editor to begin the assignment.

Remember that you can e-mail this exercise to me, use regular mail, or drop it off to me at GRCC.

Questions:

1. *What is the most effective way to prevent electrical accidents?*
2. *What is a ground?*
3. *What is the most common cause of ground faults?*
4. *With what color wire is electrical equipment grounded?*
5. *How does a GFCI offer circuit protection?*
6. *What are two types of “safety valves” for electrical equipment?*
7. *Following the trip of a circuit breaker, what step must you always perform before re-energizing the circuit?*
8. *Double-insulated tools have what additional insulation to protect workers if the functional insulation fails?*
9. *The housing (or liner) of a double-insulated tool is made of what material?*
10. *What kind of electrical enclosure should be used in an area in which gasoline fumes are often present?*
11. *What kind of electrical equipment is designed to release only low levels of electrical energy?*
12. *Who is considered a qualified person?*
13. *What should you do when the insulation on wiring is damaged?*

**TE-272  
Industrial Safety**

**Assignment #10  
Chapter 10: Fire Protection**

Instructions:

Read the chapter carefully and answer the following questions. In most cases a few words or a short sentence will suffice. Please submit the questions with the answers – you may want to copy and paste the questions into a text editor to begin the assignment.

Questions:

1. *What are the two main causes of accidental fires in industrial plants?*
2. *What are the four elements of the fire pyramid?*
3. *When the temperature rises in a pile of oily rags until they ignite, what is the cause of the fire said to be?*
4. *Why should combustible liquids and gases be stored in airtight containers and in cool places?*
5. *What does a Class C fire involve?*
6. *What symbol should appear on an extinguisher used to put out an electrical fire? A fire of ordinary combustibles?*
7. *Why is gasoline an especially dangerous substance?*
8. *Which is more hazardous, 1 gallon of gasoline in a 2-gallon can or 5 gallons of gasoline in a 5-gallon can?*
9. *Because they are involved in most fires, wood, paper, rubber, and cloth are given what name?*
10. *What term is used to describe materials that stop burning when removed from a flame?*
11. *What are three important steps in the prevention of dust explosions?*
12. *How does water put out fires in ordinary combustibles?*
13. *How does sand extinguish a fire?*
14. *How often should fire hoses be tested for leaks?*
15. *How can you visually distinguish between a gas filled portable fire extinguisher and a water filled one?*



**TE-272  
Industrial Safety**

**Assignment #11  
Chapter 11: Health Protection**

Instructions:

Read the chapter carefully and answer the following questions. In most cases a few words or a short sentence will suffice. Please submit the questions with the answers – you may want to copy and paste the questions into a text editor to begin the assignment.

Questions:

1. *Define the term "ergonomics"?*
2. *What are the usual causes of carpal tunnel syndrome?*
3. *At what level should equipment controls be located?*
4. *What unit of measure is used to express noise level?*
5. *What are three kinds of ionizing radiation?*
6. *The seriousness of a radiation injury is related to what factors?*
7. *What pen-shaped device is used to measure radiation exposure?*
8. *What is asbestosis?*
9. *What are two ways you can protect yourself from exposure to airborne particles?*
10. *What kind of vacuum units are used to capture dust during asbestos removal?*
11. *To prevent exposure to asbestos, what device is generally used during brake repair?*
12. *What organization issues rules and regulations governing the control of chemicals in the environment?*

**TE-272  
Industrial Safety**

**Assignment #12  
Chapter 12: Safe Work Practices**

Instructions:

Read the chapter carefully and answer the following questions. In most cases a few words or a short sentence will suffice. Please submit the questions with the answers – you may want to copy and paste the questions into a text editor to begin the assignment.

Questions:

1. *What is one of the simplest and most important parts of a successful safety and accident prevention program?*
2. *What color should walkway lines be?*
3. *What is the purpose of a toeboard around an elevated surface?*
4. *What should you do to protect yourself and others when working in a traffic path?*
5. *When working on a roof on which protective railings are not available, what safety measure must you take?*
6. *How far should a straight ladder extend above the top support on which it rests?*
7. *If a straight ladder has a working length of 16 ft, how far from the wall must you place its base?*
8. *How far must the planking on the working floor of a scaffold overlap?*
9. *What kind of lighting must be used in paint-spraying areas?*
10. *What are the warning signs of heatstroke?*
11. *Excessive loss of moisture and salt when working in hot areas can cause what condition?*
12. *What are ways to reduce the effects of heat on your body?*
13. *Why must the atmosphere in a confined space be tested at various levels?*
14. *What is the best method of removing welding fumes and gases?*
15. *How far away from a welding or cutting operation must you keep combustible materials?*



### 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: *Welding Technology Safety*

Title of Course: *TE 272 - Industrial Safety*

Subject Matter Expert (SME) Reviewer Information

Name: *Jonathan Althausen*

Title: *Technical Representative*

Phone: *724-705-3613*

Email: *Jalthausen@lincolnelectric.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:

*This is a great fit for industry, my organization just completed an internal training that parallels this course.*

Reviewers Signature \_\_\_\_\_

Date: *3/3/17*



# 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:			
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:			
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:			

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, timeliness, usefulness, adequacy, continued availability, or ownership.

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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

## **TE 272 - Industrial Safety**

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### **Description**

Students learn accepted good practice in safety and its application to technology. Included are safety laws, personal protective equipment, tool safety; chemical, electrical, fire, materials handling, and machine safety; lifting and elevated working procedures; machine guarding, as well as current health related concerns.

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**Credit Hours:** 2

**Contact Hours:** 2

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**School:** School of Workforce Development

**Department:** Manufacturing

**Discipline:** TE

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**Last Revision Date Effective:** 8/1/2015

**Course Review & Revision Year:** 2018-2019

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### **Course Type:**

Service- A discipline specific offering designed as a transferable prerequisite to one or more GRCC programs.

### **Course Format:**

Lecture- A course in which content is primarily delivered through presentations of facts, principles, context, or interpretation.

Instruction takes place in a traditional classroom setting or online format. (1:1)

**General Education Requirement:** None

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### **General Education Outcomes:**

NA

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### **ILO Competencies (Communication Skills):**

None

### **ILO Competencies (Critical Thinking Skills):**

None

### **ILO Competencies (Social Responsibility Skills):**

None

### **ILO Competencies (Personal Responsibility Skills):**

Complete work accurately, with attention to detail. (PR3)

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### **Course Learning Outcomes/ILO Competencies:**