



**QUINSIGAMOND**  
Community College

# **MNT 100: Manufacturing Safety – Course Description, Topics, and Learning Objectives**

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**2012-2013**  
**QUINSIGAMOND COMMUNITY COLLEGE**

**NEW COURSE PROPOSAL**

Course Discipline/Division: <b>Manufacturing Technology – Associate In Science</b>	
Course Number: <b>MNT 100</b>	
Course Name: <b>Manufacturing Safety</b>	
Prerequisites and/or corequisites (confer with affected department coordinator):	
CIP code (check with IRaP Office):  15.0613	
Effective Term/year:  Fall 2013	
Give a rationale for the new course. Be sure to indicate whether this course replaces another course.  This course introduces students to safety practices in the manufacturing industry. Students will also study the OSHA regulations in preparation for earning a 10 hour general industry OSHA card. This represents curriculum design that supports national and state wide skills standards from MSSC-CPT (Manufacturing Skill Standards Council- Certified Production Technician) and MACWIC (Massachusetts Career Workforce Innovation Collaborative – Applied Manufacturing Technology Certification).	
Is the course content similar to other courses now offered? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> If yes, attach a statement for the coordinator of the department offering the similar course.  MNT 100 Manufacturing Safety is similar to EUT 120 Industrial Safety. Both programs cover the basics of occupational health and safety as it applies to a range of industries. Beyond this, EUT 120 identifies specific areas of health and safety that directly affect the energy utilities industry. MNT 100 is designed to specifically address issues faced in a manufacturing environment.	
Please indicate if this course will serve as any of the following types of electives <input checked="" type="checkbox"/> Elective <input type="checkbox"/> Discipline specific (name the discipline) <input checked="" type="checkbox"/> Program specific (Manufacturing Technology) <input type="checkbox"/> Multiple perspective (confer with the Liberal Arts Coordinator)	
Is this course required for a program? If yes, submit a separate Program Revision Proposal or New Program Proposal.  <b>Yes</b>	
Expected enrollment per term: 20	Expected enrollment per year: 20

Will any of the following be required:

Additional staff No Additional space No Additional equipment No

Provide a rationale for any needs indicated above and include approximate cost of equipment.

Library print and non-print resources in support of this course: \$500

## Course Materials

Course number: **MNT 100**

Course name: **MANUFACTURING SAFETY**

Credits: 3

Lecture Hours: **45**

Lab hours:

Clinic Hours:

General course description and prerequisites (as it will appear in the catalog):

This course provides an introduction to the principles of safety, guidelines for the design of equipment, and explanations of why certain practices should or should not be followed in the manufacturing environment. Students evaluate human reactions in normal and abnormal conditions, and compare features required for safe working conditions to industry standards.

F/S

All required texts and paperbacks, including information on publisher and edition used (provide a suggested text):

Manufacturing Essentials: Unit 2 Safety Awareness - Second Edition

<http://www.lulu.com/content/paperback-book/manufacturing-fundamentals-unit-2-safety-awareness-sw-ise-v2/10464821>

Instructional Objectives (list):

Through a combination of lectures, demonstrations, weekly assignments, and student projects, students:

1. Are introduced to the fundamentals of OSHA standards and safety inspections.
2. Gain proficiency in recognizing hazards and address the root cause of the hazards.
3. Demonstrate the correct use of personal protective equipment (PPE).
4. Apply awareness of fire safety requirements and emergency response.
5. Define electrical hazards and identify electrical tool safety.
6. Demonstrate lockout / tagout safety in order to disable electrical equipment.
7. Demonstrate and utilize the use of appropriate tools, and justify tool ergonomics as it relates to personal safety.
8. Identify bloodborne pathogens and explain the potential hazards associates with them.
9. Interpret and explain the need for machine guarding.
10. Recognize appropriate handling and labeling of hazardous materials.
11. Analyze the need for proper fall protection design for elevated work areas.
12. Demonstrate an understanding of the hazards and elimination of slips, trips, and falls.

Teaching procedures:

A blend of lectures, demonstrations, weekly assignments, and student projects are utilized to aid student success.

Course topics and/or assignments and/or required and/or supplemental reading (provide a list of suggested course topics):

### COURSE TOPICS

#### INTRODUCTION TO OSHA:

THE OSHA ACT, GENERAL DUTY CLAUSE, EMPLOYER AND EMPLOYEE RIGHTS AND RESPONSIBILITIES.

THE WHISTLEBLOWER RIGHTS AND RECORDKEEPING BASICS.

INSPECTIONS, CITATIONS, AND PENALTIES.

VALUE OF SAFETY AND HEALTH.

OSHA WEBSITE AND RESOURCES.

#### **TEXT:**

MODULE 1: OSHA STANDARDS AND SAFETY INSPECTIONS

#### HAZARD COMMUNICATION:

OVERVIEW OF THE STANDARD WHICH REQUIRES EMPLOYERS TO TRAIN, EXPLAIN AND PROTECT EMPLOYEES ON THE HAZARDS AND HOW TO GET INFORMATION ON ALL CHEMICALS IN THE WORKPLACE.

#### **TEXT:**

MODULE 2: HAZARD AWARENESS AND COMMUNICATION

#### PERSONAL PROTECTIVE EQUIPMENT:

OVERVIEW OF THE STANDARD WHICH REQUIRES EMPLOYERS TO PROTECT THEIR WORKERS FROM WORKPLACE HAZARDS WHEN THEY CANNOT BE PROTECTED FROM HAZARDS USING ENGINEERING OR WORK PRACTICE CONTROLS.

#### **TEXT:**

MODULE 3: PERSONAL PROTECTIVE EQUIPMENT AND PROGRAMS

#### EXIT ROUTES, EMERGENCY ACTION PLANS, FIRE PREVENTION PLANS, AND FIRE PROTECTION:

DISCUSS REQUIREMENTS FOR SAFE MEANS OF ESCAPE FROM FIRE AND OTHER EMERGENCIES THROUGH PROPER EMERGENCY PLANS, EXIT ROUTES, AND FIRE PREVENTION PLANS.

#### **TEXT:**

MODULE 4: FIRE SAFETY AND EMERGENCY RESPONSE

#### ELECTRICAL STANDARD:

OVERVIEW OF ELECTRICAL HAZARDS IN THE WORKPLACE AND EMPLOYEE DANGERS SUCH AS ELECTRIC SHOCK, ELECTROCUTION, FIRES, AND EXPLOSIONS.

IDENTIFY AND MINIMIZE POTENTIAL ELECTRICAL HAZARDS.

**TEXT:**

MODULE 5: ELECTRICAL AND TOOL SAFETY

**TEXT:**

MODULE 6: LOCKOUT/TAGOUT SAFETY

**ERGONOMICS:**

DISCUSS THE STANDARD WHICH ADDRESSES THE NEED FOR PROPER TOOLS, WORK STATIONS, AND WHAT EMPLOYERS AND EMPLOYEES CAN DO TO ELIMINATE INJURIES FROM REPETITIVE TASKS AND POSITIONING.

**TEXT:**

MODULE 7: ERGONOMICS

**BLOODBORNE PATHOGENS:**

OVERVIEW OF THE STANDARD THAT LIMITS EXPOSURE TO BLOOD AND OTHER POTENTIALLY INFECTIOUS MATERIAL THAT COULD LEAD TO TRANSMISSION OF BLOODBORNE PATHOGENS LEADING TO DISEASE OR DEATH.

**TEXT:**

MODULE 8: BLOODBORNE PATHOGENS

**WALKING AND WORKING SURFACES:**

OVERVIEW OF THE STANDARD AS IT APPLIES TO ALL PERMANENT PLACES OF EMPLOYMENT. DISCUSS THE HAZARDS AND ELIMINATION OF SLIPS, TRIPS, AND FALLS.

**HAZARDOUS MATERIALS:**

DISCUSS THE STANDARD WHICH COVERS FLAMMABLE AND COMBUSTIBLE LIQUIDS, COMPRESSED GASSES, DIPPING AND COATING.

**MATERIAL HANDLING:**

OVERVIEW OF PROPER HANDLING, STORAGE, AND LABELING OF MATERIALS.

ALSO PROPER BUNDLING OF MATERIAL FOR TRANSPORTATION.

**MACHINE GUARDING:**

DISCUSS THE METHODS OF MACHINE GUARDING AND PROTECTION OF THE OPERATOR ALONG WITH OTHER EMPLOYEES.

DISCUSS SAFEGUARDS THAT ARE ESSENTIAL TO PREVENT INJURY IN THE WORK PLACE.

**FALL PROTECTION:**

OVERVIEW OF THE STANDARD AS IT PERTAINS TO LADDERS, STAGING, WORK PLATFORMS, AND OTHER AREAS REQUIRING PROPER FALL PROTECTION.

**SAFETY AND HEALTH PROGRAMS:**

DISCUSS THE MANY TYPES OF SAFETY AND HEALTH PROGRAMS SPONSORED BY OSHA AND OTHER ORGANIZATIONS THAT HELP INDUSTRY EVERY DAY ELIMINATE AND UNDERSTAND HAZARDS IN THE WORKPLACE.

**SAFETY PROJECT:**

EACH STUDENT WILL RESEARCH A SAFETY TOPIC PERTINENT TO THE ENERGY UTILITY INDUSTRY. THIS RESEARCH WILL BE PRESENTED IN THE FOLLOWING MANNER:

1. A SHORT PAPER (3-5 PAGES)
2. THE STUDENT WILL PRESENT A SHORT BRIEFING (NO MORE THAN 10 MINUTES) TO THE CLASS.
3. THE STUDENT WILL INCLUDE SOME TYPE OF VISUAL REPRESENTATION TO REINFORCE THE MESSAGE OF HIS PRESENTATION (POSTER, HANDOUT, DEMONSTRATION OR OTHER).

THIS PROJECT WILL BE GRADED FOR FOLLOWING CRITERIA

1. DEMONSTRATION OF KNOWLEDGE AND UNDERSTANDING OF THE TOPIC.
2. CLARITY OF THE WRITING
3. DEMONSTRATION/BRIEFING.

Other information:

- Suggested basis for student grading and criteria for evaluating student performance

1. EXAMS & QUIZ (50%)
2. CLASS PARTICIPATION (15%)
3. ATTENDANCE (15%)
4. PROJECT (20%)

- Suggested attendance policy

ALL STUDENTS ARE EXPECTED TO ATTEND EVERY SESSION. STUDENTS ARE RESPONSIBLE FOR ALL THAT TRANSPIRES IN CLASS WHETHER OR NOT THEY ARE IN ATTENDANCE. EXCESSIVE ABSENCES OR LATENESS MAY LEAD TO A FAILING GRADE OR REMOVAL FROM THE CLASS ROSTER. STUDENTS MUST NOTIFY THE INSTRUCTOR OF ANY ANTICIPATED ABSENCES. ANY STUDENT WHO MISSES A TEST DATE WITHOUT PRIOR APPROVAL WILL BE PENALIZED 10 POINTS FROM THEIR EXAM SCORE FOR EACH CLASS UNTIL A MAKEUP EXAM IS TAKEN.

- Suggested assessment methodologies

USING BOTH FORMATIVE AND SUMMATIVE ASSESSMENT THROUGH EXAMS, QUIZZES, STUDENT PROJECTS AND CLASS DISCUSSIONS AS DESCRIBED ABOVE.

Please submit a syllabus for this new course to your dean.

List the Student Learning Outcomes for this course in the table below. Recommendations for writing SLOs can be found in the *General Information for Academic Affairs Proposals* document that is available on the QCC's Intranet under Frequently Used Forms (Academic Governance Forms).

COURSE STUDENT LEARNING OUTCOMES FOR MNT 100 – MANUFACTURING SAFETY	
Upon completion of the course, students will be able to:	
1	DISCUSS AND EXPLAIN THE FUNDAMENTALS OF OSHA STANDARDS AND SAFETY INSPECTIONS.
2	RECOGNIZE AND INTERPRET HAZARDS AND ADDRESS THE ROOT CAUSE OF THE HAZARD.
3	DEMONSTRATE AND UNDERSTAND THE CORRECT USE OF PERSONAL PROTECTIVE EQUIPMENT (PPE).
4	UNDERSTAND THE NEED AND ANALYZE FIRE SAFETY REQUIREMENTS AND EMERGENCY RESPONSE.
5	EVALUATE ELECTRICAL HAZARDS AND IDENTIFY ELECTRICAL TOOL SAFETY.
6	APPLY LOCKOUT / TAGOUT SAFETY DEVICES TO DISABLE ELECTRICAL EQUIPMENT.
7	IDENTIFY AND USE APPROPRIATE TOOLS, AND JUSTIFY TOOL ERGONOMICS AS IT RELATES TO PERSONAL SAFETY.
8	IDENTIFY BLOODBORNE PATHOGENS AND EXPLAIN THE POTENTIAL HAZARDS ASSOCIATES WITH THEM.
9	ANALYZE AND DESCRIBE THE NEED FOR MACHINE GUARDING.
10	RECOGNIZE APPROPRIATE HANDLING AND LABELLING OF HAZARDOUS MATERIALS.
11	EXAMINE THE NEED FOR PROPER FALL PROTECTION DESIGN FOR ELAVATED WORK AREAS.
12	DISCUSS THE HAZARDS AND ELIMINATION OF SLIPS, TRIPS, AND FALLS.

How does the course support general education? Using the chart below, indicate the degree or level of connection between the course and outcome as indicated here.

I – Introductory/Background – There is an indirect relationship between the course and the outcome. The outcome itself is not the focus of the course but at least one element of the course serves as a building block to the achievement of the final outcome. For example, course elements may provide the knowledge, skills or attitudes necessary for the ultimate achievement of the outcome.

M – Intermediate/Transitional - There is more of a direct relationship between the course and the outcome than Introductory. A mixture of course elements supports the final achievement of the outcome, but the final integration of knowledge, skills and attitudes necessary for its achievement is not accomplished in this course. For example, knowledge, skills and/or attitudes (at least 2 of the 3) required for achievement of the outcome may be the focus of the course or course element, but the integration of all three is not.

E – Emphasized – There is a direct relationship between the course and the outcome. At least one element of the course focuses specifically on the complex integration of knowledge, skills and attitudes necessary to perform the outcome.

CONNECTION OF MNT 100 – MANUFACTURING SAFETY TO GENERAL EDUCATION STUDENT LEARNING OUTCOMES	I,M,E
Communication Skills: Students will write and speak effectively.	I
Information Literacy: Students will locate, evaluate and apply reliable and appropriate information.	I
Quantitative Reasoning: Students will apply the concepts and methods of mathematics to solve problems.	I
Scientific Reasoning: Students will relate scientific methods of inquiry to the acquisition of knowledge.	I
Technical Literacy: Students will utilize computer and emerging technologies effectively.	I
Aesthetics: Students will appreciate the variety of human experiences as expressed through the arts.	N/A
Multiple Perspectives: Students will demonstrate knowledge and appreciation of diverse cultures.	N/A
Ethics: Students will develop an awareness of personal obligations and responsibilities in one's community of influence.	I
Impact of Technology: Students will reflect on the impact of scientific and technological advances on the individual, society and the environment.	M
Civic Literacy: Students will demonstrate awareness of the responsibilities of local, national and international citizenship.	N/A

If the course is required in a program or it is an elective in a program, please indicate how the course contributes to the Program Student Learning Outcomes. List the Program Student Learning Outcomes and indicate the degree or level of connection between the course and outcome as I, M, or E. Please delete this table if it is not applicable.

CONNECTION OF MNT 100 – MANUFACTURING SAFETY TO PROGRAM STUDENT LEARNING OUTCOMES FOR MANUFACTURING TECHNOLOGY		
1	ABILITY TO UNDERSTAND, PRACTICE, AND NURTURE PROFESSIONAL AND ETHICAL RESPONSIBILITIES	M
2	ABILITY TO COMMUNICATE EFFECTIVELY IN BOTH THE WRITTEN AND SPOKEN MODES.	I
3	ABILITY TO DESIGN AND CONDUCT EXPERIMENTS, AS WELL AS TO ANALYZE AND INTERPRET DATA.	I
4	ABILITY TO APPLY KNOWLEDGE OF MATHEMATICS & SCIENCE	M
5	ABILITY TO FUNCTION PRODUCTIVELY ON MULTICULTURAL AND MULTIDISCIPLINARY TEAM	M