ENSC M903: OSHA 10 CONSTRUCTION SAFETY

Originator
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Co-Contributor(s)

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College
Moorpark College

Attach Support Documentation (as needed)
ENSC M903_state approval letter_CCC000620439.pdf

Discipline (CB01A)
ENSC - Environmental Science

Course Number (CB01B)
M903

Course Title (CB02)
OSHA 10 Construction Safety

Banner/Short Title
OSHA 10 Construction Safety

Credit Type
Noncredit

Start Term
Spring 2021

Catalog Course Description
Examines Occupational Safety and Health Administration (OSHA) policies, procedures, and standards, as well as construction safety and health principles. Includes scope and applications of the OSHA construction standards. Emphasizes those areas that are the most hazardous, using OSHA standards as a guide.

Taxonomy of Programs (TOP) Code (CB03)
0946.10 - *Energy Systems Technology

Course Credit Status (CB04)
N (Noncredit)

Course Transfer Status (CB05) (select one only)
C (Not transferable)

Course Basic Skills Status (CB08)
N - The Course is Not a Basic Skills Course

SAM Priority Code (CB09)
C - Clearly Occupational

Course Cooperative Work Experience Education Status (CB10)
N - Is Not Part of a Cooperative Work Experience Education Program

Course Classification Status (CB11)
L - Non-Enhanced Funding

Educational Assistance Class Instruction (Approved Special Class) (CB13)
N - The Course is Not an Approved Special Class

Course Prior to Transfer Level (CB21)
Y - Not Applicable

Course Noncredit Category (CB22)
J - Workforce Preparation

Funding Agency Category (CB23)
Y - Not Applicable (Funding Not Used)

Course Program Status (CB24)
2 - Not Program Applicable

General Education Status (CB25)
Y - Not Applicable

Support Course Status (CB26)
N - Course is not a support course

Field trips
Will not be required

Grading method
Pass/No Pass Grading

Alternate grading methods
Student Option- Letter/Pass

Does this course require an instructional materials fee?
No

Repeatable for Credit
Yes
Number of times a student may enroll in this course
Unlimited

Maximum units a student may earn in this course
99

Units and Hours

Carnegie Unit Override
No

Total in-Class (full semester or term)
Total Minimum Contact/In-Class Hours (for full semester or term; not weekly)
17.5
Total Maximum Contact/In-Class Hours (for full semester or term; not weekly)
17.5

Total Student Learning

Total Student Learning
Total Minimum Student Learning Hours
17.5
Total Maximum Student Learning Hours
17.5

Prerequisites
None

Corequisites
None

Student Learning Outcomes (CSLOs)

	Upon satisfactory completion of the course, students will be able to:
1	recognize, communicate, avoid, abate, and prevent safety and health hazards in workplaces in the construction industry.
2	understand the causes of heat stress, symptoms and appropriate responses
3	understand workers' rights, employer responsibilities, and how to file a complaint.

Course Objectives

	Upon satisfactory completion of the course, students will be able to:
1	locate and describe OSHA Standards Code of Federal Regulations (CFR) Section 1926
2	discuss top ten causes of the most serious construction workplace injuries including fatalities, rank them by their direct cost to employers, including medical and lost-wage payments.
3	demonstrate a comprehensive and detailed understanding of OSHA by applying OSHA regulations as they apply to worker safety and health; hazard communication and avoidance.

Course Content

Lecture/Course Content

1. (5%) Introduction to OSHA
a. Origin of OSHA Standards
b. Importance of Safety
c. Safety Culture

2. (15%) Accidents: Causes and Results
a. Accident Costs
b. What Causes Accidents?
- Failure to Communicate
- Poor Work Habits
- Alcohol and Drug Abuse
- Lack of Skill
- Intentional Acts
- Unsafe Acts
- Rationalizing Risk
- Unsafe Conditions
- Management System Failures

c. Housekeeping
d. Company Safe Policies and OSHA Regulations
- The Code of Federal Regulations
- The General Duty Clause
- Employee Rights and Responsibilities
- Inspections
- Violations
- Compliance
- Record Keeping

e. Reporting Injuries, Accidents, and Incidents
f. The Four-Hazard Areas
g. Evacuation Procedures

3. (5%) Scaffolds
a. Types of Scaffolds
- Manufacture
- Rolling Scaffolds

b. Inspecting Scaffolds
c. Using Scaffolds

4. (10%) Hazard Recognition, Evaluation, and Control

a. Hazard Recognition
b. Job Safety Analysis (JSA) and Task Safety Analysis (TSA)
c. Risk Assessment

5. (10%) Electrical Hazards
a. Basics of Electricity
b. Electrical Safety Guidelines
c. Electrical Power Systems
- Assured Equipment Grounding Conductor Programs
- Ground Fault Circuit Interrupters

d. Lock-out/Tagout
e. Working Near Energized Electrical Equipment
f. What to do if someone is shocked

6. (5%) Working in Extreme Environments
a. The causes of heat stress
b. The Hot, Dry Climate
• Dehydration: symptoms and responses
- Heat exhaustion: symptoms and responses
- Heat stroke: symptoms and responses
e. The Cold, Damp Climate
- Hypothermia: symptoms and responses
- Frostbite: symptoms and responses

7. (10%) Ladders and Stairs
a. Straight Ladders
- Inspecting Straight Ladders
- Using Straight Ladders

b. Extension Ladders
- Inspecting Extension Ladders
- Using Extension Ladders

c. Stepladders
- Inspecting Stepladders
- Using Stepladders

d. Stairways Maintenance and Housekeeping

8. (5%) Struck-By Hazards
a. Vehicle and Roadway Hazards
b. Falling Objects
c. Flying Objects

9. (15%) Personal Protective Equipment
a. Personal Protective Equipment Needs
b. Personal Protective Equipment Use and Care
c. Clothing and Jewelry
d. Hard Hat
e. Eye and Face Protection
f. Gloves
g. Leg Protection
h. Foot Protection
i. Skin Protection
j. Hearing Protection
k. Respiratory Protection
- Respirator Requirements
- Selecting Respirators
- Testing Respirators
- Inspecting Respirators
- Maintaining Respirators

10. (10%) Elevated Work and Fall Protection
a. Fall Hazards
b. Walking and Working Services
c. Unprotected Sides, Wall Openings, and Floor Holes
d. Personal Fall Arrest Systems (PFAS)
- Components: anchorage, connecting device, fall arrest, harness, suspension trauma safety straps
- PFAS Inspections

e. Rescue Plan

11. (5%) Caught-In-Between Hazards
a. Trenching and Excavations

- Cave-Ins
- Inspections
- Protective Systems
- Spoil Pile and Material Hazards
- Access and Egress
- Emergency Response

b. Tool and Machine Guarding

12. (5%) Hazard Communication Standard

a. Material Safety Data Sheets
b. Your Responsibilities Under Hazard Communication Standards (HAZCOM)

Methods of Evaluation

Which of these methods will students use to demonstrate proficiency in the subject matter of this course? (Check all that apply):

Problem solving exercises
Skills demonstrations
Written expression

Methods of Evaluation may include, but are not limited to, the following typical classroom assessment techniques/required assignments (check as many as are deemed appropriate):

Essay exams
Group projects
Objective exams
Other (specify)
Problem-solving exams
Quizzes
Reports/papers

Other

Classroom: live (chat) discussion on such topics as common causes of accidents, statistics, and their direct and indirect costs

Instructional Methodology

Specify the methods of instruction that may be employed in this course

Class discussions
Case studies
Distance Education
Group discussions
Instructor-guided interpretation and analysis
Internet research
Lecture
Other (specify)

Specify other method of instruction

PowerPoint Slide Decks
Videos
Class discussions
Case Studies
Instructor Demonstrations

Describe specific examples of the methods the instructor will use:

1. Group discussions based on reading assignment
   - Instructor initiates questions
   - Students are required to answer (thereby being assessed)
   - Mandatory participation
2. Lecture: "Fall Prevention"
   - Typical fall hazards
   - Fall protection systems: guardrails, safety nets, fall arrest
   - Floor hole coverings
   - Ladder safety: inspection, proper positioning, loading, securing
3. Instructor demonstrations of personal protective equipment (PPE)
   - Eye and face protection: safety glasses, goggles, face shield
   - Gloves: general purpose and electrical

- Hard hats: types and classes
- Ear plugs
- Fall arrest: anchors, connection devices, harnesses, suspension trauma safety straps

4. Instructor demonstration of Lock-out Tag-out (LOTO) best practices
   - Deactivate electrical controls: e.g. lock-out circuit breakers main panel / electrical service entrance, not at sub-panel
   - Deactivate electrical equipment: e.g. plug lock-out
   - Post tags, with photo and contact information of construction supervisor
   - Discussion of "OSHA Fatal Fact Accident Report" case study

Representative Course Assignments

Writing Assignments

1. Analyze instructor-provided scenarios and complete required OSHA sample forms
2. Discuss the relationship between OSHA requirements and certifications from bodies such as the American National Standards Institute (ANSI)

Critical Thinking Assignments

1. Research three work-related fatalities in California during the past 12 months due to a fall (www.osha.gov/dep/fatcat/dep_fatcat.html); analyze cause(s) of the accident; assess abatement techniques for each of the hazards identified.
2. Participate in classroom discussions about current OSHA rules and rule updates, about recent events and accidents, and about how they might be avoided or eliminated on construction sites.

Reading Assignments

1. OSHA "Fatal Fact Accident reports"
2. "Electrical Safety - Safety and Health for the Electrical Trades - Student Manual". National Institute for Occupational Safety and Health (NIOSH). April 2009.
3. OSHA Construction Focus Four: "Fall Hazards", "Electrical Safety", "Struck By", "Caught In or Between".
4. OSHA "Most Frequently Cited Serious Violations -- Construction Industry". Fiscal Year 2018.

Skills Demonstrations

Class Presentation on "Signs, Signals & Barricades". Compare and contrast signage and tags for Accident Prevention, Danger, Caution, Exit, Safety Instruction, Directional, Traffic, and Accident Prevention.

1. The student will analyze a short (3-5 minute) video of a construction workplace situation. Upon reviewing the video, the student shall identify two of the most dangerous OSHA violations. *Both the video and PPE PowerPoint will be available as a Library Resource.*
2. The student will be presented with approximately twelve examples of Personal Protective Equipment (PPE) in PowerPoint or similar format. The student will be asked the following question: “Assuming that a worker will be performing a rooftop Photovoltaic installation, which are four of the most important examples of PPE that should be used in this situation?” *Both the video and PPE PowerPoint will be available as a Library Resource.*

Outside Assignments

Representative Outside Assignments

1. Read OSHA regulations (www.osha.gov/dsg/hazcom/index.html) regarding hazard communications.
2. Read OSHA regulations (www.osha.gov/SLTC/electrical/index.html) regarding electrical safety.
3. Read "Job Hazard Analysis" OSHA Document 3071

Textbooks and Lab Manuals

Resource Type

Textbook

Description

National Center for Construction Education and Research. *Core Curriculum: Introductory Craft Skills: Trainee Guide.* 5th ed., Pearson, 2015.

Resource Type

Textbook

Description

Peter T. Parrish. *Photovoltaic Laboratory: Safety, Code-Compliance, and Commercial Off-the-Shelf Equipment.* CRC Press, 2016.

Resource Type

Manual

Description

OSHA Construction Safety Handbook. 6th ed., J. J. Keller, 2017.

Library Resources

Assignments requiring library resources

Research in preparation for discussion on recent events and accidents related to OSHA.

Sufficient Library Resources exist

Yes

Example of Assignments Requiring Library Resources

Research using the Library databases (Gale OneFile: Environmental Studies and Policy) for current OSHA rules and rule updates in preparation for classroom discussion about recent events and accidents, and how they might be avoided or eliminated on construction sites.

o Several OSHA and National Fire Protection Association (NPFA) statistical studies of serious or fatal injuries in the workplace will be available as Library Resources. These studies cover, for example, electrical injuries, injuries due to falls, and heat stress.

Distance Education Addendum

Definitions

Distance Education Modalities

100% online

Faculty Certifications

Faculty assigned to teach Hybrid or Fully Online sections of this course will receive training in how to satisfy the Federal and state regulations governing regular effective/substantive contact for distance education. The training will include common elements in the district-supported learning management system (LMS), online teaching methods, regular effective/substantive contact, and best practices.

Yes

Faculty assigned to teach Hybrid or Fully Online sections of this course will meet with the EAC Alternate Media Specialist to ensure that the course content meets the required Federal and state accessibility standards for access by students with disabilities. Common areas for discussion include accessibility of PDF files, images, captioning of videos, Power Point presentations, math and scientific notation, and ensuring the use of style mark-up in Word documents.

Yes

Regular Effective/Substantive Contact

100% online Modality:

Method of Instruction	Document typical activities or assignments for each method of instruction
Synchronous Dialog (e.g., online chat)	In order to facilitate student outcomes, on-line chat will be used by instructor to (i) encourage student comments and questions, (ii) facilitate general Q&A and general class discussion, (iii) demonstrate skills, (iv) address problems, and (v) review asynchronous lectures. Participation is strongly encouraged and students will be assessed based on their participation. Synchronous sessions will also be used for students to work on problem sets together. The platform for such sessions may include ConferZoom or any other approved medium for synchronous dialog.

Asynchronous Dialog (e.g., discussion board)	Regular Asynchronous discussion boards will be used to encourage discussion among students where they can compare and contrast/ discuss /identify and analyze elements of course outcomes. E.g. - Students will use the discussion board in Canvas to discuss the leading fatalities in the construction workplace, statistics/trends, analysis of the root causes, and recommended corrective measures.
E-mail	Email, class announcements and tools such as “Message Students Who” and “Assignment Comments” in Canvas will be used to regularly communicate with all students to clarify class content, remind of upcoming assignments, and provide immediate feedback to students on coursework to facilitate student learning outcomes. Students will be given multiple ways to email instructor through Canvas inbox and faculty provided email account through their own canvas email and school email.
Other DE (e.g., recorded lectures)	Faculty will use a variety of tools and media integrated within the LMS to help students reach SLO such as: o Recorded Lectures, Narrated and Animated Slides, Screencasts o MC Online Library Resources (Student Handbooks, OSHA bulletins, Bureau of Labor Statistics’ (BLS) Census of Fatal Occupational Injuries Report, Fatal Facts Reports) o Canvas Peer Review Tool o Canvas Student Groups (Assignments, Discussions) o Websites and Blogs o Multimedia (YouTube, Films on Demand, 3CMedia)

Primary Minimum Qualification
ENVIRONMENTAL TECHNOLOGIES

Review and Approval Dates

Department Chair
04/28/2020

Dean
04/28/2020

Technical Review
09/03/2020

Curriculum Committee
09/15/2020

DTRW-I
10/08/2020

Curriculum Committee
MM/DD/YYYY

Board
11/10/2020

CCCCO
12/04/2020

Control Number
CCC000620439

DOE/accreditation approval date
MM/DD/YYYY