

## COURSE SYLLABUS

<b>LAST REVIEW</b>	Fall 2022
<b>COURSE TITLE</b>	Safety (OSHA)
<b>COURSE NUMBER</b>	ELET 0100
<b>DIVISION</b>	Career and Technical Education
<b>DEPARTMENT</b>	ELET
<b>CIP CODE</b>	46.0302
<b>CREDIT HOURS</b>	2
<b>CONTACT HOURS/WEEK</b>	Class: 2      Lab:
<b>PREREQUISITES</b>	None

### COURSE DESCRIPTION

This course is an introduction to various industrial safety and health considerations in the area of Electricity and its use. This course will cover basic safety rules and OSHA standards, identify the proper personal protective equipment needed for common industrial tasks and recognize the need for an ongoing safety program.

### PROGRAM ALIGNMENT

This course is part of a program aligned through the Kansas Board of Regents and Technical Education Authority. For more information, please visit:

[https://kansasregents.org/workforce\\_development/program-alignment](https://kansasregents.org/workforce_development/program-alignment)

### PROGRAM LEARNING OUTCOMES

1. The Student will be able to identify workplace safety issues in accordance with OSHA standards.
2. Upon successful completion of this course, the student should be able to identify the job skills necessary to have a successful career in the Electrical Profession.
3. Inspect electrical circuit connections in accordance with the N.E.C. standards of compliance.

### TEXTBOOKS

<http://kckccbookstore.com/>

### METHOD OF INSTRUCTION

A variety of instructional methods may be used depending on content area. These include but are not limited to lecture, multimedia, cooperative/collaborative learning,

labs and demonstrations, projects and presentations, speeches, debates, panels, conferencing, performances, and learning experiences outside the classroom. Methodology will be selected to best meet student needs.

## **COURSE OUTLINE**

- I. Organizations of the Safety Network
  - A. Discuss the actions that led to the passing of the Occupational Safety & Health Act
  - B. Explain the major functions of OSHA-30
  - C. Identify the major functions of ANSI
  - D. Identify the major functions of NFPA
  - E. Identify the major functions of EPA
- II. Types of Hazards
  - A. Health Hazards
    1. Identify safe work environment
    2. Explain problem with repetitive ergonomics
  - B. Chemical Hazards
    1. Identify the types of airborne materials
    2. Explain how chemicals may be absorbed by the body
    3. Explain how chemicals may enter the body by ingestion
  - C. Physical Hazards
    1. Define radiation
    2. Differentiate between ionizing and non-ionizing radiation
    3. Explain the dangers of temperature extremes
    4. Explain the dangers of pressure extremes
  - D. Biological Hazards
    1. Define virus
    2. Define bacteria
    3. Define fungus
- III. Material Safety Data Sheet (MSDS)
  - A. Describe the purpose of a MSDS
  - B. List the major components of a MSDS
  - C. Analyze a sample MSDS
- IV. Personal Protective Equipment (PPE)
  - A. Explain the term PPE
  - B. List potential hazards for the eyes
  - C. Describe PPE to protect the face
  - D. Describe types of hearing protection
  - E. Describe types of protection for the respiratory system
  - F. Describe PPE to protect the hands, arms, and palms
- V. Fire Safety
  - A. Define the fire triangle
  - B. Identify special fire-hazard materials

- C. Explain fire-safety housekeeping
- D. List four types of fire extinguishers
- E. Match the correct fire extinguisher to the type of fire listed
- VI. Lock out and Tag out (LO/TO)
  - A. Explain the need for a "Lock out-Tag out" Program
  - B. Define an Energy Control Program (ECP)
  - C. Identify LO/TO equipment
- VII. Electrical Safety
  - A. Identify electric current danger levels (lethal)
  - B. Describe factors that enhance electrical shock
  - C. Explain grounding concepts of electricity
  - D. Describe polarized plug and cord-connected equipment
  - E. Describe how to check for electrical hazards on power tools
- VIII. Hand and Power Tool Safety
  - A. Identify the hazards of metal cutting tools
  - B. Identify the hazards of miscellaneous cutting tools
  - C. Identify the hazards of electrical tools
  - D. Identify the hazards of air-powered tools
  - E. Identify the hazards of powder-actuated tools
  - F. Identify the hazards of manual lifting
  - G. Identify the hazards of using ladders
  - H. Identify the hazards of rigging and trenching

## **COURSE LEARNING OUTCOMES AND COMPETENCIES**

Upon successful completion of this course, the student will:

- A. Explain the role of OSHA in job-site safety.
  1. Name and explain the major functions of OSHA, ANSI, NFPA and EPA in each safety network.
  2. Explain the reason why OSHA was created.
  3. Explain the employer's responsibilities for a safe work environment.
  4. Explain the documentation required by employers for worker safety.
- B. Explain OSHA'S General Duty Clause and 1926 CFR Subpart C.
  5. Explain the employer's duty to each employee with regards to a free from hazards workplace.
  6. Explain the employer's duty to comply with OSHA'S safety and health standards.
  7. Explain OSHA'S 1926 CFR Subpart C.
- C. Describe the impact of accidents.
  8. Explain lost production time related to accidents.
  9. Describe the importance of PPE.
  10. Describe being alert and focus while on the job.
  11. Describe the importance of reading and using OSHA standards.

- D. Identify four high-hazard areas.
  - 12. Identify physical hazards.
  - 13. Identify health hazards.
  - 14. Identify explosion hazards.
  - 15. Identify reactive hazards.
  
- E. Demonstrate hazard recognition and risk assessment techniques.
  - 16. Define fire triangle, identify different types of fire hazard materials and list four types of fire extinguishers for different types of fires.
  - 17. Recognize health hazards.
  - 18. Recognize explosive hazards.
  - 19. Demonstrate reactive hazards.
  
- F. Explain the basics of construction health.
  - 20. Explain ergonomic hazards.
  - 21. Explain Industrial hygiene hazards.
  - 22. Explain Chemical hazards.
  - 23. Explain Biological hazards.
  - 24. Explain the importance of PPE.
  
- G. Identify basic fall, electrical, fire, trenching, materials handling, and heavy equipment hazards, and explain the general safety procedures associated with them.
  - 25. Identify lethal electric current, describe factors that enhance electric shock, understand grounding procedures, check polarized plug and demonstrate how to check for electric hazards on power tools.
  - 26. Identify special fire-hazard materials.
  - 27. Identify hazards of powder actuated tools
  - 28. Identify hazard of operating heavy equipment
  - 29. Explain general safety procedures on the job.
  
- H. Explain and demonstrate the use of appropriate personal protective equipment.
  - 30. Explain the term PPE.
  - 31. List potential hazards for the eyes.
  - 32. Explain and demonstrate protection for the respiratory system.
  - 33. Explain and demonstrate types of hearing protection.
  - 34. Explain and demonstrate PPE to protect hand, arms, and palms.
  - 35. Explain and demonstrate PPE to protect the face.
  
- I. Explain and identify the various signs, signals, barricades, markers, and tags used on a job site.
  - 36. Explain and identify signs for danger and hazards.
  - 37. Explain and identify signals to lift, lower, or stop an operation.

- 38. Explain and identify barricades for safety hazards.
- 39. Explain and identify markers and tags to identify safety hazards and their location.
  
- J. Demonstrate proper housekeeping procedures.
  - 40. Demonstrate proper storage of tools.
  - 41. Demonstrate clearing worksites of oil and tripping items on the floor.
  - 42. Demonstrate clearing the worksite of obstructions.
  
- K. Demonstrate an understanding of assured equipment grounding conductor programs and the use of GCFIs.
  - 43. Explain and demonstrate the continuity of grounding.
  - 44. Explain and demonstrate the proper use of GCFIs.
  
- L. Demonstrate and explain hand and power tool safety guidelines.
  - 45. Demonstrate and explain what to examine on hand tools before using.
  - 46. Demonstrate and explain power tools with proper grounding.
  
- M. Explain your company or site-specific fall protection procedures and requirements.
  - 47. Explain proper fall protection gear to be worn.
  - 48. Explain proper netting or restraints for fall protection.
  - 49. Explain proper procedures and requirements for fall protection.
  
- N. Demonstrate and explain the proper use of ladders and scaffolding.
  - 50. Explain the proper inspection for ladder use.
  - 51. Demonstrate and explain ladder distance from building.
  - 52. Demonstrate and explain the stability of scaffolding.
  
- O. Explain the use of work permits and lockout/tag out procedures.
  - 53. Explain the need for work permits.
  - 54. Explain the need for lockout and tag out procedures.
  - 55. Identify lockout and tag out equipment.
  
- P. Demonstrate and explain the emergency procedures for trenching accidents.
  - 56. Demonstrate and explain who to contact for trenching accidents.
  - 57. Demonstrate and explain shoring up the trench.
  - 58. Demonstrate and explain sloping the walls of trench
  - 59. Demonstrate and explain the need for competent inspector.
  - 60. Demonstrate and explain the need for an exit.
  
- Q. Demonstrate proper manual lifting procedures.
  - 61. Demonstrate proper lifting with legs and back straight.
  - 62. Demonstrate getting help for heavy lifting.
  - 63. Demonstrate to never lift while twisting.

- 64. Demonstrate to not lift when fatigue has set in.
- 65. Demonstrate to not lift when floor is wet
- 66. Demonstrate to not lift while reaching.
  
- R. Identify the hazards of working around or on heavy equipment.
  - 67. Identify the hazards of falls on heavy equipment.
  - 68. Identify the hazards of electrocution around heavy equipment.
  - 69. Identify the hazards of being caught-in heavy equipment.
  - 70. Identify the hazards of being struck by heavy equipment.
  
- S. Describe proper rigging safety procedures.
  - 71. Describe how to identify safe working loads.
  - 72. Describe the requirement to remove rigging when not in use.
  - 73. Describe the requirement to have inspections on rigging.
  - 74. Describe the slings being protected from sharp objects.
  
- T. Demonstrate the use of hand signals.
  - 75. Demonstrate proper highly visible clothing.
  - 76. Demonstrate how the hand signal is used to stop traffic
  - 77. Demonstrate how the hand signal is used to slow down traffic.

## **ASSESSMENT OF COURSE LEARNING OUTCOMES AND COMPETENCIES**

Student progress is evaluated through both formative and summative assessment methods. Specific details may be found in the instructor's course information document.

## **COLLEGE POLICIES AND PROCEDURES**

*Student Handbook*

<https://www.kckcc.edu/files/docs/student-resources/student-handbook-and-code-of-conduct.pdf>

*College Catalog*

<https://www.kckcc.edu/academics/catalog/index.html>

*College Policies and Statements*

<https://www.kckcc.edu/about/policies-statements/index.html>

*Accessibility and Accommodations*

<https://www.kckcc.edu/academics/resources/student-accessibility-support-services/index.html>.