SYLLABUS

DATE OF LAST REVIEW: 02/2013
CIP CODE: 46.0201
SEMESTER: Departmental Syllabus
COURSE TITLE: Sprinkler Fitting (Level 2)
COURSE NUMBER: CONS0259
CREDIT HOURS: 2
INSTRUCTOR: Departmental Syllabus
OFFICE LOCATION: Departmental Syllabus
OFFICE HOURS: Departmental Syllabus
TELEPHONE: Departmental Syllabus
EMAIL: KCKCC issued email accounts are the official means for electronically communicating with our students.

PREREQUISITES: KBOR approved Core Curriculum.
OSHA 10. Sprinkler Fitting 1.
Math Level 3 Recommended.

REQUIRED TEXT AND MATERIALS: Please check with the KCKCC bookstore, http://www.kckccbookstore.com/, for the required tests for your particular class.

COURSE DESCRIPTION:
This is the advanced course in Sprinkler Fitting. It is in alignment with NCCER (selected modules) and the Kansas Board of Regents. The course topics include: Environmental sustainability, Hangers, Supports, Restraints, and Guides, General Purpose Valves, General Trade Math, Shop Drawings, Standard Spray Fire Sprinklers, Wet Pipe Fire Sprinkler Systems and Dry-Pipe Systems.

METHOD OF INSTRUCTION: A variety of instructional methods may be used depending on content area. They may include but are not limited to lecture, multimedia, cooperative/collaborative learning, demonstrations, labs, on-the-job, internships, performance tests, and other learning experiences outside the classroom. Methodology will be selected to best meet student needs.
COURSE OUTLINE:

I. MODULE 18201-07 - HANGERS, SUPPORTS, RESTRAINTS, AND GUIDES
   A. Strength requirements.
   B. Spacing requirements.
   C. Types of pipe hangers, supports, restraints, and guides.
   D. Installing pipe hangers, supports, restraints, guides, and anchors.
   E. Types of earthquake bracing.
   F. Installing earthquake bracing.
   G. Sleeving and firestopping.
   H. Hanger rods.

II. MODULE 18202-07 - GENERAL PURPOSE VALVES
   A. Types of valves.
   B. Servicing valves.
   C. Backflow preventer.
   D. Stem and yoke (OS&Y) valves.
   E. Tamper switch.
   F. Butterfly grooved valves.
   G. Check valves.

III. MODULE 18203-07 – GENERAL TRADE MATH
    A. Math principles.
    B. English to metric system, and vice versa.
    C. Temperature on sprinkler systems.
    D. Temperature scales.
    E. 45-degree offsets.
    F. Centering sprinkler heads.
    G. Sprinkler systems problems.

IV. MODULE 18204-07 - SHOP DRAWINGS
    A. Structural symbols.
    B. Sizes of pipe.
    C. Identifying materials.
    D. Sprinkler system symbols.
    E. Interpreting a legend.
    F. Orifice sizing.
    G. Temperature rating.
    H. Square footage.
    I. NFPA standards.

V. MODULE 18205-07 - STANDARD SPRAY FIRE SPRINKLERS
   A. Unobstructed and obstructed construction.
B. Maximum coverage.
C. Spacing using the small room rule.

D. Sprinkler temperatures.
E. Maximum spacing.
F. Manufacturer and sprinkler types.

VI. MODULE 18206-07 - WET FIRE SPRINKLER SYSTEMS
A. Riser check, alarm check valves, and trim.
B. Alarm check valves.
C. Flow switches, tamper switches, and pressure switches.
D. Tamper switches and a flow switches.
E. Fire department connections.
F. Test connections.
G. Hydrostatic testing.
H. Hydrostatic testing using a pump.
I. Antifreeze systems.
J. Specific gravity.
K. Contractor’s material and test certificate.

VII. MODULE 18207-07 - DRY-PIPE SYSTEMS
A. Dry-pipe systems.
B. Dry-pipe valves and trim.
C. Pressure gauges.
D. Air supplies.
E. Accelerators and exhausters.
F. Installing an accelerator.
G. Quick-opening devices (QOD).
H. Sprinkler piping and auxiliary drains.
I. Calculate pitch.
J. Fire department connections.
K. Air maintenance devices.
L. Troubleshooting a dry-pipe system.
M. Face plates.

VIII. ENVIRONMENTAL SUSTAINABILITY
A. Environmentally safe waste disposal.
B. Life cycle analysis.
C. Recycled material.
D. Low VOC emissions.
E. New “green” materials.
F. New “green” methods and practices.
G. “Low impact” designs.
EXPECTED LEARNER OUTCOMES:

A. Module 18201-07. The student will be able to identify and describe the types of hangers, supports, restraints, and guides, strength requirements, bracing, sleeving, firestopping, and perform cutting.

B. Module 18202-07. The student will be able to identify and demonstrate the uses of general purpose valves, types of valves, backflow, and install various valves.

C. Module 18203-07. The student will be able to identify and demonstrate a knowledge of general trade math, including; conversion, temperature, offsets, centering and system problem solving.

D. Module 18204-07. The student will be able to identify and describe shop drawings, symbols, types of installations, legend reading, square footage and NFPA standards.

E. Module 18205-07. The student will be able to identify and describe standard spray fire sprinklers, obstructions, coverage, temperature ratings and identification.

F. Module 18206-07. The student will be able to identify and describe wet fire sprinkler systems, types of valves and switches, types of connections, tests and antifreeze systems.

G. Module 18207-07. The student will be able to identify and describe dry-pipe systems, their components, connections, and set-up a system.

H. The student will identify and describe sound environmental practices for Sprinkler Systems Including waste disposal, life cycle analysis, green practices and low impact.

COURSE COMPETENCIES:

Module 18201-07. The student will be able to identify and describe the types of hangers, supports, restraints, and guides, strength requirements, bracing, sleeving, firestopping, and perform cutting.

1. The student will be able to identify and describe strength requirements of pipe hangers, supports, restraints, and guides.

2. The student will be able to identify and describe spacing requirements of pipe hangers, supports, restraints, and guides.

3. The student will be able to identify and describe types of pipe hangers, supports, restraints, and guides.

4. The student will be able to identify and install pipe hangers, supports, restraints, guides, and anchors.

5. The student will be able to identify and explain types of earthquake bracing.

6. The student will be able to identify and install earthquake bracing.

7. The student will be able to identify, describe and explain sleeving and firestopping.

8. The student will be able to identify and cut a hanger rod to a specified length.
Module 18202-07. The student will be able to identify and demonstrate the uses of general purpose valves, types of valves, backflow, and install various valves.

9. The student will be able to identify and describe the basic types of valves.
10. The student will be able to identify and demonstrate the ability to service different types of valves.
11. The student will be able to identify and define the general purpose of a backflow preventer.
12. The student will be able to identify and install outside stem and yoke (OS&Y) valves.
13. The student will be able to identify and install a tamper switch.
14. The student will be able to identify and install butterfly grooved valves.
15. The student will be able to identify and disassemble, service, and reassemble a check valve.

Module 18203-07. The student will be able to identify and demonstrate a knowledge of general trade math, including; conversion, temperature, offsets, centering and system problem solving.

16. The student will be able to identify and use basic math principles to solve problems.
17. The student will be able to identify and convert fundamental measurement quantities from the English system to the metric system, and from metric to English.
18. The student will be able to identify and recognize the effects of temperature on sprinkler systems.
19. The student will be able to identify and use temperature scales to solve sprinkler rating problems.
20. The student will be able to identify and calculate 45-degree offsets and tank volume.
21. The student will be able to identify and center sprinkler heads using the target, square offset, and geometric methods.
22. The student will be able to identify and solve sprinkler systems problems relating to changes in elevation, sprinkler, discharge, and hanger sizing.

Module 18204-07. The student will be able to identify and describe shop drawings, symbols, types of installations, legend reading, square footage and NFPA standards.

23. The student will be able to identify common structural symbols on a shop drawing.
24. The student will be able to identify and describe cut lengths and sizes of pipe on an installation drawing.
25. The student will be able to identify and the materials to perform an installation from drawings.
26. The student will be able to identify and describe standard sprinkler system symbols.
27. The student will be able to identify and interpret a legend and calculate the number of sprinklers to be used in an installation.
28. The student will be able to identify and describe the orifice size of a sprinkler from drawings.
29. The student will be able to identify and describe the temperature rating of a sprinkler from a drawing.
30. The student will be able to identify and calculate the square footage and the number of sprinklers required for a given area.
31. The student will be able to identify and match the NFPA standard to the title.

*Module 18205-07. The student will be able to identify and describe standard spray fire sprinklers, obstructions, coverage, temperature ratings and identification.*

32. The student will be able to identify and describe unobstructed and obstructed construction on a drawing and explain why these construction types are obstructed or unobstructed.
33. The student will be able to identify and calculate maximum coverage area of standard sprinklers for various occupancies.
34. The student will be able to identify and calculate spacing using the small room rule.
35. The student will be able to identify and determine sprinkler temperatures by examining different sprinklers.
36. The student will be able to identify and calculate the maximum spacing of sidewall sprinklers using the protection area rule.
37. The student will be able to identify and describe referencing a sprinkler identification number (SIN), identify the manufacturer and sprinkler type.

*Module 18206-07. The student will be able to identify and describe wet fire sprinkler systems, types of valves and switches, types of connections, tests and antifreeze systems.*

38. The student will be able to identify and describe riser check, alarm check valves, and trim.
39. The student will be able to identify and trim an alarm check valve and replace the faceplate gasket.
40. The student will be able to identify and describe flow switches, tamper switches, and pressure switches.
41. The student will be able to identify and install a tamper switch and a flow switch and set the retard device on the flow switch.
42. The student will be able to identify and explain fire department connections and hose stations.
43. The student will be able to identify and explain inspector’s test connections and auxiliary drains.
44. The student will be able to identify and explain hydrostatic testing and test pumps.
45. The student will be able to identify and perform a hydrostatic test using a pump.
46. The student will be able to identify and describe antifreeze systems.
47. The student will be able to identify and calculate the specific gravity of an antifreeze solution.
48. The student will be able to identify and complete a contractor’s material and test certificate.

*Module 18207-07. The student will be able to identify and describe dry-pipe systems, their components, connections, and set-up a system.*

49. The student will be able to identify and explain dry-pipe systems and why and where dry-pipe systems are used.

50. The student will be able to identify and describe dry-pipe valves and trim.

51. The student will be able to identify and install pressure gauges on an alarm valve.

52. The student will be able to identify and explain air supplies.

53. The student will be able to identify and explain accelerators and exhausters.

54. The student will be able to identify and perform an installation of an accelerator.

55. The student will be able to identify, explain why an exhauster is a quick-opening device (QOD) and identify possible locations where an exhauster could be installed in a dry-pipe system.

56. The student will be able to identify and explain pitching sprinkler piping and auxiliary drains in dry-pipe systems.

57. The student will be able to identify and calculate pitch for dry-pipe systems.

58. The student will be able to identify and explain fire department connections with respect to dry-pipe systems.

59. The student will be able to identify and install, set, and adjust an air maintenance device.

60. The student will be able to identify and reset and troubleshoot a dry-pipe system.

61. The student will be able to identify and remove face plate.

*The student will identify and describe sound environmental practices for Sprinkler Systems, including waste disposal, life cycle analysis, green practices and low impact.*

62. The student will be able to identify and describe waste disposal methods for this industry according to EPA and industry guidelines.

63. The student will be able to identify and describe the process of life cycle analysis in this industry based on industry guidelines.

64. The student will be able to identify and describe recycled materials by label and industry practice.

65. The student will be able to identify and define “low emission” and give two examples.

66. The student will be able to identify and describe new “green” materials now being introduced or currently used in this industry.

67. The student will be able to identify and describe new “green” practices and methods being instituted or currently employed within this industry.

68. The student will be able to identify and explain the term “low Impact” as it relates to the environment.

**ASSESSMENT OF LEARNER OUTCOMES:**
Student progress is evaluated by means that include, but not limited to, exams, written assignments, performance tests, and class participation.

**SPECIAL NOTES:**
This syllabus is subject to change at the discretion of the instructor. Material included is intended to provide an outline of the course and rules that the instructor will adhere to in evaluating the student’s progress. However, this syllabus is not intended to be a legal contract. Questions regarding the syllabus are welcome any time.

Kansas City Kansas Community College is committed to an appreciation of diversity with respect for the differences among the diverse groups comprising our students, faculty, and staff that is free of bigotry and discrimination. Kansas City Kansas Community College is committed to providing a multicultural education and environment that reflects and respects diversity and that seeks to increase understanding.

Kansas City Kansas Community College offers equal educational opportunity to all students as well as serving as an equal opportunity employer for all personnel. Various laws, including Title IX of the Educational Amendments of 1972, require the college’s policy on non-discrimination be administered without regard to race, color, age, sex, religion, national origin, physical handicap, or veteran status and that such policy be made known.

Kansas City Kansas Community College complies with the Americans with Disabilities Act. If you need accommodations due to a documented disability, please contact the Director of the Academic Resource Center in Rm. 3354 or call (913) 288-7670.