

## **COURSE SYLLABUS**

<b>LAST REVIEW</b>	Fall 2022
<b>COURSE TITLE</b>	Residential Roofing
<b>COURSE NUMBER</b>	BEMT 0185
<b>DIVISION</b>	Career and Technical Education
<b>DEPARTMENT</b>	BEMT
<b>CIP CODE</b>	46.0401
<b>CREDIT HOURS</b>	1
<b>CONTACT HOURS/WEEK</b>	Class: .5                      Lab: 1
<b>PREREQUISITES</b>	BEMT 0108

### **COURSE DESCRIPTION**

This is the basic course in repairing roofs and gutters. The course topics include: Environmental sustainability, types of roofing, types of roofing repairs, leak locating, repair of asphalt shingles, wood shingles, flat roof repair, flashing repair and replacement. It will also cover guttering fabrication, installation and repair, including leak sealing, tools, ladders and materials.

### **PROGRAM LEARNING OUTCOMES**

Students will demonstrate an adherence to safety standards and proficiency in the installation or repair of residential electrical, plumbing, HVAC, exterior building materials, roofing, irrigation systems, landscape/hardscape, concrete placement and finish, masonry install and repair.

### **TEXTBOOKS**

<http://kckccbookstore.com/>

### **METHODS 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. Roof Coverings
  - A. Asphalt Shingle
  - B. Wood Shingle

- II. Locating Leaks
  - A. Above Inspection
  - B. Attic Inspection
  - C. Chimneys, Plumbing, Vents
- III. Repair of Asphalt Shingles
  - A. Removed Damaged Shingles
  - B. Repair Roofing Felt
  - C. Caulk and Seal
- IV. Wood Shingle Repair
  - A. Removed Damaged Shingles
  - B. Cover Nail Heads
  - C. Size Shingles
- V. Estimating Tab Shingle Quantity
  - A. Square Shingles Formula
  - B. Area of simple surfaces
  - C. Pitch
  - D. Horizontal Area
  - E. Slope Area
- VI. Valley Treatments
  - A. Valley Definition
  - B. Square Butt Tab Shingles
    - 1. Open Valley
    - 2. Woven Valley
- VII. Flashing
  - A. Against a Vertical Wall
  - B. Simple Flashing
  - C. Step Flashing
  - D. Chimney Flashing
- VIII. Gutters
  - A. Gutter Maintenance, and install.
  - B. Making gutters from a gutter machine
  - C. Painting Gutters
  - D. Stopping Gutter Leaks
    - 1. Loose Joint
    - 2. A Hole or Crack
  - E. Repairing All or Part of Gutter
- X. 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
    - 1. "Low impact" designs

## **COURSE LEARNING OUTCOMES AND COMPETENCIES**

Upon successful completion of this course, the student will:

- A. Identify and explain roof covering repair.
  - 1. Identify the different roof coverings.
  - 2. Demonstrate proper roof inspection.
  - 3. Demonstrate proper and safe methods of asphalt shingle repair.
  - 4. Understand and demonstrate different types of roof designs.
  - 5. Understand and demonstrate uses of slate shingles.
  - 6. Demonstrate correct slate shingle installation.
  - 7. Understand and demonstrate uses of tile roofing.
  
- B. Identify and explain locating leaks.
  - 8. Demonstrate correct roof walking methods.
  - 9. Understand and demonstrate an above inspection.
  - 10. Demonstrate proper attic inspections.
  - 11. Understand and demonstrate leak tracing.
  - 12. Demonstrate correct caulking technique.
  - 13. Understand and demonstrate uses of roofing tar.
  - 14. Demonstrate proper patching technique.
  
- C. Identify and explain repair of asphalt shingles.
  - 15. Understand and demonstrate when shingles are worn.
  - 16. Demonstrate correct cutting technique.
  - 17. Understand and demonstrate what hail damage looks like.
  - 18. Demonstrate proper sealing from below.
  - 19. Understand and demonstrate splicing in methods.
  - 20. Demonstrate correct nailing on of patches.
  - 21. Demonstrate proper installation of tar paper.
  
- D. Identify and explain wood shingle repair.
  - 22. Demonstrate the proper and safe methods of wood shingles repair.
  - 23. Understand and demonstrate splitting shingles.
  - 24. Understand and demonstrate the knowledge of wood shingle types.
  - 25. Demonstrate proper underlayment of shingles.
  - 26. Understand and demonstrate nailing procedures.
  - 27. Demonstrate correct patching in technique.
  - 28. Understand and demonstrate water proofing of shingles.
  
- E. Identify and explain flat roof repair.
  - 29. Demonstrate the proper and safe methods of flat roof repair.
  - 30. Demonstrate correct surface prep.
  - 31. Understand and demonstrate felt saturation.

32. Understand and demonstrate overlap methods.
  33. Demonstrate correct removal of damaged material.
  34. Understand and demonstrate proper nailing technique.
  35. Demonstrate proper asphalt sealing technique.
- F. Identify and explain estimating tab shingle quantity.
36. Demonstrate the ability to estimate tab shingle quantity.
  37. Understand and demonstrate square feet.
  38. Demonstrate correct use of measuring tape.
  39. Understand and demonstrate Pitch.
  40. Demonstrate proper slope area.
  41. Understand and demonstrate a horizontal area.
  42. Demonstrate correct estimation of percentages.
- G. Identify and explain valley treatments.
43. Demonstrate the different valley treatments.
  44. Understand and demonstrate valley definitions.
  45. Demonstrate correct bending technique.
  46. Understand and demonstrate cutting methods.
  47. Demonstrate proper open valley closing.
  48. Understand and demonstrate a woven valley closing.
  49. Demonstrate correct valley estimation.
  50. Understand and demonstrate sealing.
  51. Demonstrate proper valley tear out.
- H. Identify and explain flashing.
52. Demonstrate the proper methods of flashing repair.
  53. Understand and demonstrate simple flashing.
  54. Demonstrate correct vertical flashing.
  55. Understand and demonstrate horizontal flashing.
  56. Demonstrate proper attachment techniques.
  57. Understand and demonstrate caulking techniques.
  58. Demonstrate correct tear out procedures.
- I. Identify and explain gutters.
59. Understand and demonstrate the types of gutters.
  60. Demonstrate correct cutting procedures.
  61. Understand and demonstrate hanging procedures.
  62. Demonstrate proper sealing of gutters.
  63. Understand and demonstrate gutter leak detection.
  64. Demonstrate correct gutter tear off.
- J. Identify and explain environmental sustainability.
65. Describe waste disposal methods for this industry according to EPA and industry guidelines.

66. Describe the process of life cycle analysis in this industry based on industry guidelines.
67. Identify recycled materials by label and industry practice.
68. Define “low emission” and give two examples.
69. Identify new “green” materials now being introduced or currently used in this industry.
70. Describe new “green” practices and methods being instituted or currently employed within this industry.
71. Identify and explain the term “low Impact” as it relates to the environment.

### **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>.