

ATCT-2220: ROOF FRAMING II

Cuyahoga Community College

Viewing: ATCT-2220 : Roof Framing II

Board of Trustees:

May 2024

Academic Term:

Fall 2026

Subject Code

ATCT - Appld Indus Tech - Carpentry

Course Number:

2220

Title:

Roof Framing II

Catalog Description:

Introduction to construction of hip roofs and intersecting roofs to include: reading of construction working drawings; applying terminology and math concepts related to hip roof type construction; and layout, fabrication, and erection of hip roof members.

Credit Hour(s):

2

Lecture Hour(s):

2

Lab Hour(s):

0

Requisites

Prerequisite and Corequisite

ATCT-1550 Roof Framing I or departmental approval.

Outcomes

Course Outcome(s):

Interpret blueprints for various roof types and systems to determine jobsite specifications.

Objective(s):

1. Recognize symbols pertaining to roof design on blueprints.
2. Read scale references correctly.

Course Outcome(s):

Layout, cut, and erect roof components to construct hip roofs and intersecting roofs accordance with OSHA guidelines and job site specifications.

Objective(s):

1. Identify procedures for job site safety during rafter and truss installation as defined by OSHA Regulations.
2. Compute the lengths of rafters contained in the hip roof system.
3. Determine different ridge heights and lengths for hip roof.
4. Differentiate between various rafter types.
5. Differentiate between combination roof and hip roof.
6. Describe the differences in the construction of an intersecting roof with equal spans and an intersecting roof with unequal spans.
7. Calculate unit rise, length, slope to correctly compute various roof components.
8. Establish points of intersection for combination roofs.

9. Demonstrate correct layout of roof components for a hip roof.
 10. Demonstrate correct layout of roof components for an intersecting roof.
 11. Cut roof components to appropriate lengths according to jobsite specifications.
 12. Place and erect roof components according to jobsite specifications.
 13. Demonstrate proper use of safety equipment.
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Methods of Evaluation:

1. Quizzes
2. Exams
3. Classroom Participation
4. Completion of assigned projects

Course Content Outline:

1. Concepts
 - a. Theory of hip/valley roofs, steel square rafter tables
 - b. Common differences of hip/valley jack rafters
 - c. Tail rafter lengths
 - d. Definitions of various rafter types
 - e. Hip/Valley roof design
 - f. Hip/Valley rafter length calculation formula (technique?)
 - g. Ridge length calculation formula (technique)
 - h. Hip Valley roof component definitions
 - i. Layout techniques
 - j. Installation techniques
 - k. Establishing points of intersection
 - l. OSHA regulations
 - m. Job site safety procedures
 - n. Blue print symbols
 - o. Blueprint scale references
2. Skills
 - a. Calculating length of hip/valley rafters
 - b. Laying out hip/valley rafters, overhang, plumb, seat cuts, and side cuts
 - c. Laying out hip/valley jack rafters
 - d. Constructing hip roof
 - e. Intersecting roofs with equal and unequal spans
 - f. Laying out supporting and shortened valley rafters
 - g. Calculating length of valley jack rafters
 - h. Laying out valley jack rafters
 - i. Cutting valley jack rafters
 - j. Calculating length of hip valley cripple jack rafters
 - k. Laying out hip valley cripple jack rafters
 - l. Cutting hip valley cripple jack rafters
 - m. Constructing intersecting roof by locating point of intersection, calculating ridge lengths, and framing spans
3. Issues
 - a. Hip/valley material selection
 - b. Safety
 - c. Salvaging/Scrapping material

Religious Accommodation

Before reviewing the course schedule, students should carefully review the following religious accommodation policy and other required instructional policies:

Religious Accommodation:

Students seeking an accommodation for absences permitted under Ohio's Testing Your Faith Act must provide the instructor with written notice of the specific dates for which the student requires an accommodation and must do so not later than fourteen

(14) days after the first day of instruction. Please submit requests for accommodations at this link: [https://portal2.tri-c.edu/ReligiousAccommodation/Religious Accommodation Form](https://portal2.tri-c.edu/ReligiousAccommodation/ReligiousAccommodationForm). Students with questions about their religious accommodations under Ohio's Testing Your Faith Act may contact the College's Office of General Counsel and Legal Services by phone at 216.987.4856 or via email at legal@tri-c.edu.

Other Required Instructional Policies:

<https://www.tri-c.edu/student-resources/curriculum/documents/syllabus-part-b.pdf>

Weekly Schedule

	Topics
Week 1	Introduction, Safety & Blueprint Basics
Week 2	Roof Geometry Review & Rafter Type Definitions
Week 3	Theory of Hip/Valley Roofs & Steel Square Tables
Week 4	Hip & Valley Roof Design Fundamentals
Week 5	Rafter Length Formulas (Part I: Common # Hip/Valley)
Week 6	Rafter Length Formulas (Part II: Ridge Length)
Week 7	Layout Techniques for Hip/Valley Rafters
Week 8	Cutting & Fitting Hip/Valley Rafters
Week 9	Jack Rafter Theory & Layout
Week 10	Cutting Hip/Valley Jack Rafters
Week 11	Cripple Jack Rafters
Week 12	Supporting & Shortened Valley Rafters
Week 13	Intersecting Roofs: Equal & Unequal Spans
Week 14	Full Hip Roof Construction
Week 15	Full Valley/Intersecting Roof Construction
Week 16	Final Assessment & Integrated Build

The Course Schedule is subject to change due to pedagogical needs, instructor discretion, parts of term, and unexpected events.

Required/Recommended Readings

Instructor Provided Materials.

Resources for the Instructor

Koel, Leonard. *Carpentry*. 5th ed. Homewood IL: American Technical Publishers, 2009.

Carpenters International Training Fund . *Roof Framing*. Las Vegas, NV: Carpenters International Training Fund, 2017.

Herubin, Charles. *Principles of Surveying*. Englewood Cliffs. NJ: Prentice-Hall, 1991.

Hoke, Jr., John, ed. *Architectural Graphic Standards*. 10th ed. New York: Wiley, 2000.

Washington, Allyn. *Basic Technical Mathematics*. 8th ed. Menlow Park: Cummings, 2005.

Additional Resources for the Instructor

Carpenter's International Training Fund. <https://www.carpenters.org/citf-training/>. 2024

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