

# ATCT-1710: STAIRS LAYOUT

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## Cuyahoga Community College

**Viewing: ATCT-1710 : Stairs Layout**

**Board of Trustees:**

May 2024

**Academic Term:**

Fall 2024

**Subject Code**

ATCT - Appld Indus Tech - Carpentry

**Course Number:**

1710

**Title:**

Stairs Layout

**Catalog Description:**

Introduction to basic principles of stair layout, including stair terminology, print information, design, codes, and types.

**Credit Hour(s):**

2

**Lecture Hour(s):**

2

**Lab Hour(s):**

0

### Requisites

**Prerequisite and Corequisite**

Departmental approval: admission to any Applied Industrial Technology program.

### Outcomes

**Course Outcome(s):**

Interpret blueprints to determine job site specifications for the layout of various types of stairs.

**Objective(s):**

1. Recognize symbols pertaining to stair layout.
2. Correctly interpret scale references.
3. Differentiate between plan views and section views.

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**Course Outcome(s):**

Layout open stringer and closed stringer stair types in accordance with job site specifications.

**Objective(s):**

1. Define various terms related to stair construction.
2. Identify and use the three stair formulas.
3. Calculate pitch, rise, run and total stair length.
4. Demonstrate use of a framing square to layout stairs.
5. Cut and install stringers, tread, and risers.
6. List building codes that pertain to stair construction and explain how they can differ depending on the job site location.
7. Explain what types of adjustments may be needed to accommodate existing conditions.

**Methods of Evaluation:**

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

**Course Content Outline:**

1. Concepts
  - a. Plan Views
  - b. Section Views
  - c. Dimension techniques
  - d. Blueprint symbols/references
  - e. Terminology
  - f. Stair components
  - g. Building Codes
    - i. Safety
    - ii. Stair width
    - iii. Rise and run
    - iv. Handrails
    - v. Headroom
  - h. Types of stairways
    - i. Straight
    - ii. with landings
    - iii. open and closed stringers
  - i. Design Methods
    - i. Stair ratios
    - ii. Riser, tread, and pitch
  - j. Design Formulas 1, 2 and 3
  - k. Stairwell length calculations
    - i. Number of risers
    - ii. Number of treads
    - iii. Unit rise and run
    - iv. Gaining space allowance
  - l. Adjustments for existing conditions
  - m. Headroom calculations
  - n. Definition of landings
  - o. Types of landings
  - p. Definition of Stringers
  - q. Types of stringers
2. Skills
  - a. Calculating stairwell length allowing for gaining space
  - b. Calculating pitch distance
  - c. Calculating rise
  - d. Calculating run
  - e. Creating design for stairwell and determine headroom
  - f. Defining landing in straight stairs and between stairs
  - g. Cutting out stringer and build-up
  - h. Laying out stairs and pitch distance
3. Issues
  - a. Possibility of various building codes by different cities, counties, or states
  - b. Considerations of stair safety and possible adjustment of rise

**Resources**

Badzinski, Jr., Stanley. *Stair Layout*. Homewood: American Technical Publishers, 1996.

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Koel, Leonard. *Carpentry*. 4th ed. Homewood: American Technical Publishers, 2004.

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Durbahn, Walter. *Fundamentals of Carpentry*. Chicago: American Technical Publishers (most recent edition), 1977.

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Stair Framing. Las Vegas, NV: Carpenters International Training Fund, 2014.

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Badzinski, Stanley. *Stair Design and Layout*. Second Edition. Orland Park, IL: American Technical Publishers, 2010.

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

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#### **Resources Other**

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

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