

# INTD-2430: ARCHITECTURAL MATERIALS AND METHODS

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## Cuyahoga Community College

**Viewing: INTD-2430 : Architectural Materials and Methods**

**Board of Trustees:**

January 2024

**Academic Term:**

Fall 2024

**Subject Code**

INTD - Interior Design

**Course Number:**

2430

**Title:**

Architectural Materials and Methods

**Catalog Description:**

Emphasizes the study of building construction, environmental systems and controls, building systems, and fire and life safety codes, standards, and guidelines through field trips and research. Application of construction and building systems knowledge to functional solutions for interior environments and general knowledge and application of commercial building codes.

**Credit Hour(s):**

3

**Lecture Hour(s):**

2

**Lab Hour(s):**

3

**Other Hour(s):**

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## Requisites

**Prerequisite and Corequisite**

INTD-1120 Architectural Drafting for Interiors I or concurrent enrollment; and INTD-2330 Interior Design Materials and Sources or concurrent enrollment.

## Outcomes

**Course Outcome(s):**

Apply knowledge of sound building construction principles.

**Essential Learning Outcome Mapping:**

Critical/Creative Thinking: Analyze, evaluate, and synthesize information in order to consider problems/ideas and transform them in innovative or imaginative ways.

**Objective(s):**

1. Recognize structural and non-structural systems.
2. Recognize and research architectural building materials.
3. Identify architectural elements and use the proper construction terminology.

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**Course Outcome(s):**

Apply knowledge of environmental systems and controls to design projects.

**Essential Learning Outcome Mapping:**

Critical/Creative Thinking: Analyze, evaluate, and synthesize information in order to consider problems/ideas and transform them in innovative or imaginative ways.

**Objective(s):**

1. Explain the principles of acoustic design.
  2. Demonstrate and explain strategies for acoustical control.
  3. Discuss principles of thermal design and how thermal systems impact interior design solutions.
  4. Explain the principles of indoor air quality and how the selection and application of products and systems impact indoor air quality.
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**Course Outcome(s):**

Apply knowledge of building systems to design projects.

**Essential Learning Outcome Mapping:**

Critical/Creative Thinking: Analyze, evaluate, and synthesize information in order to consider problems/ideas and transform them in innovative or imaginative ways.

**Objective(s):**

1. Recognize and identify heating and cooling systems.
  2. Explain heating and cooling systems impact on interior environments.
  3. Recognize plumbing, water supply, and waste systems.
  4. Explain plumbing, water supply, and waste systems impact on interior environments.
  5. Demonstrate data and telecommunication system placement in an interior space.
  6. Recognize and identify electrical systems.
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**Course Outcome(s):**

Apply knowledge of fire and life safety codes, standards and guidelines to design projects.

**Essential Learning Outcome Mapping:**

Critical/Creative Thinking: Analyze, evaluate, and synthesize information in order to consider problems/ideas and transform them in innovative or imaginative ways.

**Objective(s):**

1. Explain and discuss the means of egress and how it impacts the design of interior environments.
  2. Recognize means of fire detection and suppression.
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**Course Outcome(s):**

Research Leadership in Energy and Environmental Design (LEED) rating system.

**Objective(s):**

1. Recognize and explain Leadership in Energy and Environmental Design (LEED) credits for new construction and renovation.
  2. Identify successful local LEED-certified projects.
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**Methods of Evaluation:**

1. Quizzes
2. Examinations
3. Critique of assigned projects
4. Drawing projects
5. Research paper/project

**Course Content Outline:**

1. Architectural communication skills (not received in the architectural drawing)
  - a. Graphic symbols and standard abbreviations
  - b. Building construction, finishes, and equipment
  - c. Construction and building terminology
    - i. Doors
      1. Jamb
      2. Transom
    - ii. Windows
      1. Sill
      2. Mullion
      3. Glazing
    - iii. Walls
      1. Studs
      2. Runner
      3. Bracing
    - iv. Roofs
      1. Dormer
      2. Ridge
      3. Eave
      4. Hip
    - v. Foundations
    - vi. Floors
      1. Joists
      2. Subfloor
2. Architectural materials: properties, processes, and uses
  - a. Structural concrete
  - b. Brick
  - c. Structural metal
3. Structural systems
  - a. Building envelope
  - b. Insulation
  - c. Sheathing
  - d. Vapor barrier
4. Vertical circulation
  - a. Stairs
    - i. Guardrail
    - ii. Rise/Run
    - iii. Stringer
  - b. Ramps
  - c. Elevators
5. Thermal comfort
  - a. Basic terminology
  - b. Heat transfer and radiation
  - c. Conduction, evaporation, and convection
  - d. R-Values
  - e. Types of insulation
  - f. Solar heat gain coefficient
  - g. Humidity
6. Acoustics
  - a. Basic terminology
  - b. Acoustic design
  - c. Acoustical applications
  - d. Sound waves
  - e. Reflected sound
  - f. Absorbed sound
  - g. Noise
  - h. Noise reduction
  - i. Absorptive materials

7. Indoor air quality
  - a. Basic terminology
  - b. Ventilation
  - c. Fenestration
  - d. Selection of glazing materials
  - e. Thermal transmission
  - f. Controls
  - g. Material safety data sheets
  - h. Contaminants
    - i. Chemicals
    - j. Solutions
8. Heating and cooling systems
  - a. Basic terminology
  - b. Active and passive solar designs
  - c. Air conditioning
  - d. Heating
  - e. HVAC systems
9. Water and waste systems
  - a. Waste piping networks
  - b. Treating and recycling water
  - c. Solid waste systems
10. Electrical systems
  - a. Basic terminology
  - b. Power sources
  - c. Circuits
  - d. Residential
  - e. Commercial
  - f. Power generation
  - g. Electrical wiring and distribution
  - h. Receptacles and switches
11. Data and telecommunications
  - a. Basic terminology
  - b. Wiring and outlets
  - c. Placement
  - d. Architectural symbols for data and telecommunications
12. Fire and life safety codes, standards, and guidelines
  - a. Movement
    - i. Escape routes
    - ii. Exits
  - b. Detection
    - i. Detectors
    - ii. Alarms
  - c. Suppression
    - i. Occupancy classifications
    - ii. Sprinkler systems
    - iii. Extinguishers
  - d. Fire separation
    - i. Fire-rated materials
13. LEED rating system
  - a. Point scale
  - b. Credit categories
  - c. Credits for new construction and renovations
  - d. Local projects

## Resources

Binggeli, Corky. *Building Systems for Interior Designers*. Third Ed. Hoboken: Wiley & Sons, 2016.

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Bluyssen, Philomena M. *The Healthy Indoor Environment: How to Assess Occupants' Wellbeing in Buildings*. Amsterdam: Routledge, 2013.

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Ching, Francis D.K., and Bingeli Corky. *Interior Design Illustrated*. Fourth Ed. Hoboken: Wiley & Sons, 2018.

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Ching, Francis D.K., and Steven R. Winkel. (2021) *Building Codes Illustrated: A Guide to Understanding the 2021 International Building Code*, Hoboken: Wiley & Sons.

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Ching, Francis D.K. (2020) *Building Construction Illustrated*, Hoboken: Wiley & Sons.

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Tucker, Lisa. (2021) *Sustainable Building Systems and Construction for Designers*, Fairchild Books.

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#### Resources Other

1. The Journal of Light Construction [www.jlconline.com](http://www.jlconline.com) (<http://www.jlconline.com>)

Top of page

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