

ITT Technical Institute  
**DT1440**  
**Residential Construction**  
**Onsite and Online Course**

# **SYLLABUS**

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**Credit hours:** 4.5


**Contact/Instructional hours:** 56 (34 Theory Hours, 22 Lab Hours)

**Prerequisite(s) and/or Corequisite(s):**

Prerequisites or Corequisites: DT1230 CAD Methods or equivalent, DT1410 Materials and Processes in Design or equivalent

**Course Description:**

This course examines the design, detailing, and construction of residential buildings. Students will be introduced to different building materials and systems. Simulations of design and construction methods will be conducted using computer-aided drafting (CAD) equipment.



## COURSE SUMMARY

### COURSE DESCRIPTION

This course examines the design, detailing, and construction of residential buildings. Students will be introduced to different building materials and systems. Simulations of design and construction methods will be conducted using computer-aided drafting (CAD) equipment.

### MAJOR INSTRUCTIONAL AREAS

1. Residential Design
2. Residential Construction Methods
3. Residential Construction Systems
4. Residential Construction Detailing
5. Building Materials

### COURSE LEARNING OBJECTIVES

By the end of this course, you should be able to:

1. Identify building systems and their applications.
2. Describe the various construction methods used in residential buildings.
3. Describe residential construction frame components, connection methods, and materials.
4. Identify and draw architectural details related to residential construction.
5. Identify and select fire protection requirements for a residential structure.
6. Identify and select insulation for a residential building.
7. Identify and select residential mechanical systems.
8. Design a residential electrical plan.
9. Graphically represent the typical construction materials.
10. Design a basic residential plan.

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## MODULE 1: RESIDENTIAL BUILDING METHODS

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**COURSE LEARNING OBJECTIVES COVERED**

- Identify building systems and their applications.
  - Describe the various construction methods used in residential buildings.
  - Identify and select insulation for a residential building.
  - Design a basic residential plan.
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**TOPICS COVERED**

- Residential Design
- Residential Construction Methods
- Residential Construction Systems

MODULE LEARNING ACTIVITIES	GRADED	OUT-OF-CLASS TIME
<b>Reading:</b> <i>Architectural Drawing and Light Construction, Chapter Sections: 12.1, 12.2, 12.4, 12.5, 12.7, 12.9, 12.10, 12.16, 14.8, 5.4, 15.5.4, and 15.8</i>	No	6 hrs
<b>Reading:</b> ITT Tech Virtual Library> Basic Search> <ul style="list-style-type: none"> <li>○ “House and Home”</li> <li>○ “Passive Solar Design Basics”</li> </ul>	No	1.5 hrs
<b>Lesson:</b> Study the lesson for this module.	No	1 hr
<b>Discussion:</b> Participate in the discussion titled “House Design Considerations.”	Yes	N/A
<b>Lab:</b> Complete the lab titled “Bubble Diagram Sketch.”	Yes	1.5 hrs

Total Out-Of-Class Activities: 10 Hours

## MODULE 2: READING PLANS FOR FRAME, ROOF, AND FOUNDATION

### COURSE LEARNING OBJECTIVES COVERED

- Describe the various construction methods used in residential buildings.
- Identify and select insulation for a residential building.
- Design a basic residential plan.

### TOPICS COVERED

- House Design
- Residential Floor Plan Layout

MODULE LEARNING ACTIVITIES	GRADED	OUT-OF-CLASS TIME
<b>Reading:</b> <i>Architectural Drawing and Light Construction, Chapter Sections: 15.7, 15.9, 15.11, 18.1-18.3</i>	No	5 hrs
<b>Reading:</b> ITT Tech Virtual Library> Basic Search> <ul style="list-style-type: none"> <li>○ “Green Remodeling: Make Your Home More Energy-Efficient”</li> <li>○ <b>“Art and Architecture”</b></li> </ul>	No	1.5 hrs
<b>Lesson:</b> Study the lesson for this module.	No	2 hrs
<b>Discussion:</b> Participate in the discussion titled “Interior Layout Considerations.”	Yes	N/A
<b>Exercise:</b> Submit the exercise titled “Energy Efficiency.”	Yes	3 hrs
<b>Analysis:</b> Submit the analysis titled “Natural Lighting and Heating.”	Yes	5 hrs
<b>Lab:</b> Complete the lab titled “Floor Plan Design.”	Yes	1.5 hrs
<b>Project:</b> Read and begin Project Part 1.	No	1 hr

Total Out-Of-Class Activities: 19 Hours

## MODULE 3: RESIDENTIAL ELEVATIONS

### COURSE LEARNING OBJECTIVES COVERED

- Identify building systems and their applications.
- Describe the various construction methods used in residential buildings.
- Identify and draw architectural details related to residential construction.
- Graphically represent the typical construction materials.
- Design a basic residential plan.

### TOPICS COVERED

- Residential House Plan Elevations
- Roof Design
- Windows and Doors
- Exterior Finishes

MODULE LEARNING ACTIVITIES	GRADED	OUT-OF-CLASS TIME
<b>Reading:</b> <i>Architectural Drawing and Light Construction, Chapter Sections: 12.1-12.3, 12.6, 14.3-14.5, 15.10, and 18.4</i>	No	5.5 hrs
<b>Lesson:</b> Study the lesson for this module.	No	2 hrs
<b>Discussion:</b> Participate in the discussion titled "Elevation Drawings."	Yes	N/A
<b>Exercise:</b> Submit the exercise titled "Window Selection."	Yes	3 hrs
<b>Lab:</b> Complete the lab titled "Wall Elevations."	Yes	N/A
<b>Project:</b> Submit Project Part 1.	Yes	7 hrs

Total Out-Of-Class Activities: 17.5 Hours

## MODULE 4: ARCHITECTURAL DETAILS

### COURSE LEARNING OBJECTIVES COVERED

- Identify building systems and their applications.
- Describe the various construction methods used in residential buildings.
- Describe residential construction frame components, connection methods, and materials.
- Identify and draw architectural details related to residential construction.
- Graphically represent the typical construction materials.
- Design a basic residential plan.

### TOPICS COVERED

- Residential Construction Details
- Typical Construction Framing

MODULE LEARNING ACTIVITIES	GRADED	OUT-OF-CLASS TIME
<b>Reading:</b> <i>Architectural Drawing and Light Construction, Chapter Sections: 12.15, 14.1, 14.2, 14.6, 14.7, 15.1-15.6, and 18.5-18.9</i>	No	5.5 hrs
<b>Reading:</b> ITT Tech Virtual Library> Basic Search> <ul style="list-style-type: none"> <li>○ “In What Style Shall We Build?”</li> <li>○ “Let There Be Light”</li> </ul>	No	4 hrs
<b>Lesson:</b> Study the lesson for this module.	No	2 hrs
<b>Discussion:</b> Participate in the discussion titled “Architectural Details.”	Yes	N/A
<b>Exercise:</b> Submit the exercise titled “Windows and Doors Schedule.”	Yes	3 hrs
<b>Analysis:</b> Submit the analysis titled “Level the Land.”	Yes	5 hrs
<b>Lab:</b> Complete the lab titled “Construction Section and Details.”	Yes	N/A

Total Out-Of-Class Activities: 19.5 Hours

## MODULE 5: ELECTRICAL AND MECHANICAL PLANS

### COURSE LEARNING OBJECTIVES COVERED

- Identify building systems and their applications.
- Describe the various construction methods used in residential buildings.
- Identify and select fire protection requirements for a residential structure.
- Identify and select residential mechanical systems.
- Design a residential electrical plan.
- Design a basic residential plan.

### TOPICS COVERED

- Residential Electrical Systems
- Residential Mechanical Systems

MODULE LEARNING ACTIVITIES	GRADED	OUT-OF-CLASS TIME
<b>Reading:</b> <i>Architectural Drawing and Light Construction, Chapter 19</i>	No	4.5 hrs
<b>Reading:</b> ITT Tech Virtual Library> Basic Search> “Dark Side of the Sun”	No	0.5 hr
<b>Lesson:</b> Study the lesson for this module.	No	2 hrs
<b>Discussion:</b> Participate in the discussion titled “Electrical and Mechanical Plans.”	Yes	N/A
<b>Analysis:</b> Submit the analysis titled “Electrical Needs Calculation.”	Yes	5 hrs
<b>Lab:</b> Complete the lab titled “Electrical Plan.”	Yes	N/A
<b>Project:</b> Read and begin Project Part 2.	No	2 hrs

Total Out-Of-Class Activities: 14 Hours

## MODULE 6: COMPLETE RESIDENTIAL HOUSE PLANS

### COURSE LEARNING OBJECTIVES COVERED

- Identify building systems and their applications.
- Describe the various construction methods used in residential buildings.
- Describe residential construction frame components, connection methods, and materials.
- Identify and draw architectural details related to residential construction.
- Identify and select fire protection requirements for a residential structure.
- Identify and select insulation for a residential building.
- Identify and select residential mechanical systems.
- Design a residential electrical plan.
- Graphically represent the typical construction materials.
- Design a basic residential plan.

### TOPICS COVERED

- Basic Residential Plan
- Building Permits

MODULE LEARNING ACTIVITIES	GRADED	OUT-OF-CLASS TIME
<b>Reading:</b> <i>Architectural Drawing and Light Construction, Chapter Sections: 12.3, 13.3, and 18.10</i>	No	1.5 hrs
<b>Lesson:</b> Study the lesson for this module.	No	1.5 hrs
<b>Exercise:</b> Submit the exercise titled "Building Permit Application."	Yes	3 hrs
<b>Lab:</b> Complete the lab titled "Basement Plan."	Yes	N/A
<b>Project:</b> Submit Project Part 2.	Yes	5 hrs

Total Out-Of-Class Activities: 11 Hours



## EVALUATION AND GRADING

### EVALUATION CRITERIA

The graded assignments will be evaluated using the following weighted categories:

CATEGORY	WEIGHT
Exercise	15%
Discussion	10%
Lab	25%
Analysis	20%
Project	30%
TOTAL	100%

### GRADE CONVERSION

The final grades will be calculated from the percentages earned in the course, as follows:

GRADE	PERCENTAGE
A (4.0)	90-100%
B+ (3.5)	85-89%
B (3.0)	80-84%
C+ (2.5)	75-79%
C (2.0)	70-74%
D+ (1.5)	65-69%
D (1.0)	60-64%
F (0.0)	<60%

## REQUIRED RESOURCES

### COMPLETE TEXTBOOK PACKAGE

- Grau, P. A., Muller, E. & Fausett, J. (2009). *Architectural Drawing and Light Construction* (8th ed.). Upper Saddle River, NJ: Pearson.

### RECOMMENDED RESOURCES

- Books and Professional Journals
  - Dimensions: <https://taubmancollege.umich.edu/architecture/publications/dimensions>
  - Perspecta: <http://architecture.yale.edu/school/publications/perspecta>
- Professional Associations
  - The American Institute of Architectures: <http://www.aia.org/>
  - The Association of Architecture Organizations: <http://www.aaonetwork.org/>

ITT Tech Virtual Library (accessed via Student Portal | <https://studentportal.itt-tech.edu>)

- Basic Search>
  - Baker, H. (1998). CAD: The wave flows on. *Architecture Australia*, 87(3), 76.
  - GaggenauHausgerate GmbH. (2014). House and Home. *Architectural Review*, 236(1413), 126-130.
  - Jencks, C. (2015). In What Style Shall We Build? *Architectural Review*, 237(1417), 90-101.
  - Lawson, B. (2002). **CAD and Creativity: Does the Computer Really Help?** *Leonardo*, 35(3), 327-331.
  - McDonnell, T. (2015). Dark Side of the Sun. *Mother Jones*, 40(2), 66.
  - Phelps M.E. (2013). Green Remodeling: Make Your Home More Energy-Efficient. *Mother Earth News*, (258), 60-64.
  - Powers, S. (2015). Let There Be Light. *Rodale's Organic Life*, 1(1), 128-136.
  - Wright, D. (2012). Passive Solar Design Basics. *Mother Earth News*, (252), 57-63.
  - Zwimpfer, H. (2008). Art and Architecture. *Architectural Review*, 14-15.
- Other References
  - How to Calculate Energy Usage in Your Home  
<http://www.hometips.com/diy-how-to/energy-usage-home-calculate.html>

- Electrical Plan Symbols

<http://www.archtoolbox.com/representation/graphic-symbols/electsymbols.html>

- Electric Symbols on Blueprints

<http://www.houseplanshelper.com/electric-symbols.html>

## INSTRUCTIONAL METHODS AND TEACHING STRATEGIES

The curriculum employs a variety of instructional methods that support the course objectives while fostering higher cognitive skills. These methods are designed to encourage and engage you in the learning process in order to maximize learning opportunities. The instructional methods include but are not limited to lectures, collaborative learning options, use of technology, and hands-on activities.

To implement the above-mentioned instructional methods, this course uses several teaching strategies, such as such as guided discovery where you will start your information journey by being introduced to ideas and will be actively encouraged to research and reflect upon these ideas to further your own understanding. You will apply your understanding to complete the various assessments in this course to come up with practical industry-based deliverables. You can also use the discussions to share best practices, tips, and solutions with your classmates. The lessons in this course will focus on enabling you to think and reflect on your designs for the labs and the project. Your progress will be regularly assessed through a variety of assessment tools including discussions, exercises, analyses, labs, and a project.

## OUT-OF-CLASS WORK

For purposes of defining an academic credit hour for Title IV funding purposes, ITT Technical Institute considers a quarter credit hour to be the equivalent of: (a) at least 10 clock hours of classroom activities and at least 20 clock hours of outside preparation; (b) at least 20 clock hours of laboratory activities; or (c) at least 30 clock hours of externship, practicum or clinical activities. ITT Technical Institute utilizes a “time-based option” for establishing out-of-class activities which would equate to two hours of out-of-class activities for every one hour of classroom time. The procedure for determining credit hours for Title IV funding purposes is to divide the total number of classroom, laboratory, externship, practicum and clinical hours by the conversion ratios specified above. A clock hour is 50 minutes.

A credit hour is an artificial measurement of the amount of learning that can occur in a program course based on a specified amount of time spent on class activities and student preparation during the program course. In conformity with commonly accepted practice in higher education, ITT Technical Institute has institutionally established and determined that credit hours awarded for coursework in this program course (including out-of-class assignments and learning activities described in the “CourseOutline” section of this syllabus) are in accordance with the time-based option for awarding academic credit described in the immediately preceding paragraph.

**ACADEMIC INTEGRITY**

All students must comply with the policies that regulate all forms of academic dishonesty or academic misconduct. For more information on the academic honesty policies, refer to the Student Handbook and the School Catalog.

**INSTRUCTOR DETAILS**

Instructor Name	
Office Hours	
Contact Details	

*(End of Syllabus)*