

ITT Technical Institute

CM340T

Building Codes

Onsite Course

SYLLABUS

Credit hours: 4

Contact/Instructional hours: 60 (36 Theory Hours, 24 Lab Hours)

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

Prerequisites: CD230T Architectural Drafting II, CM310T Commercial Construction
Methods

Course Description:

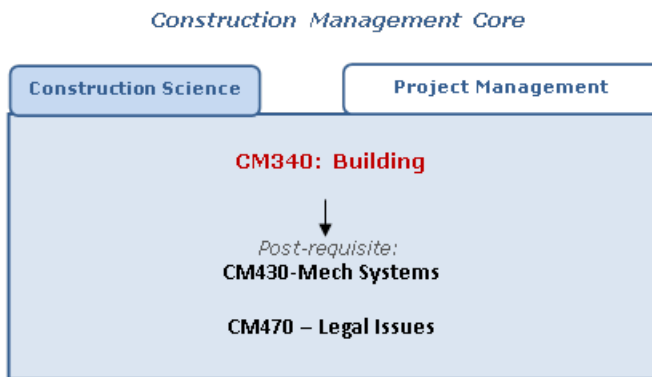
This course familiarizes students with structural, mechanical, electrical, and plumbing building codes. Organizations responsible for developing building codes and zoning ordinances are referenced. The role of inspections in ensuring compliance with building codes is discussed.

Where Does This Course Belong?

Building Codes is a course required to obtain a bachelor's degree in the Project Management-Construction program. This course introduces the student to the International Building Codes and their impact on construction.

The goal of the program is to help the student acquire the necessary skills to become a versatile member of a construction team. Graduates may begin their careers in a variety of entry-level positions involving construction estimating, construction project management, or building code compliance.

The following diagram demonstrates how this course fits in the program:



NOTE: Refer to the catalog for the state-specific course and program information, if applicable.

Course Summary

Major Instructional Areas

1. The History and Classification of Building Codes
2. Use and Occupancy
3. Types of Construction
4. Fire Safety
5. Means of Egress
6. Accessibility
7. Interior Environment
8. Energy Efficiency
9. Roof Assemblies
10. Structural Building Materials

Course Objectives

1. Evaluate the importance of building codes in reducing property damage, personal injury, and human fatality.
2. Assess the reliability of individual protection systems and strategies in achieving the design performance level for a given building or structure.
3. Analyze the design performance levels to which a structure should perform when subjected to events such as fires and natural hazards.
4. Assess the installation processes of equipment and appliances for potential ignition hazard.
5. Examine the interior environment in terms of air quality, human health, and building durability.
6. Explore the means of egress of a structure for compliance of design and construction with the design performance level.
7. Analyze the requirements for an energy-efficient design based on the International Energy Conservation Code (IECC) to achieve a maximum sustainable design.
8. Evaluate the forces acting on a structure to achieve a particular performance level.
9. Compare the drainage of a structure for compliance with local building and performance codes to ensure structural safety.
10. Explore the user safety requirements of a construction site, structure, or facility for quality materials and accessibility.

Learning Materials and References

Required Resources

Complete Textbook Package	New to this Course	Carried over from Previous Course(s)	Required for Subsequent Course(s)
Ching, F. D. K., & Winkel, S. R. (2012). <i>Building codes illustrated: A guide to understanding the 2012 international building codes</i> (4th ed.). Hoboken, NJ: John Wiley & Sons, Inc.	■		■

Recommended Resources

Books, Professional Journals

- Merritt, F. S., & Ricketts, J. T. (2000). *Building design and construction handbook* (6th ed.). New York, NY: McGraw-Hill Professional.
This book is a reference guide for design and construction.
- Benator, B., & Thumann, A. (2003). *Project management and leadership skills for engineering and construction projects*. New York, NY: Fairmont Press, Inc.
This reference guide provides extensive information on construction projects from an engineering perspective.

Professional Associations

- Project Management Institute (PMI)
This Web site provides information about project management standards.
<http://www.pmi.org/> (accessed May 13, 2011)
- The Associated General Contractors of America (AGC)
AGC is the leading association for the construction industry. This Web site provides the opportunity to interact with a community of privacy professionals and to learn from their experiences.
<http://www.agc.org/> (accessed May 13, 2011)

Information Search

Use the following keywords to search for additional online resources that may be used for supporting your work on the course assignments:

- International Building Code

- Occupancy Groups
- Noncombustible Building Materials
- Combustible Materials
- Fire Protection Systems
- Maintaining Interior Air Quality
- Means of Egress
- Americans with Disabilities Act (ADA)
- Structural Requirements for Building Materials
- Waterproofing

Suggested Learning Approach

In this course, you will be studying individually and within a group of your peers. As you work on the course deliverables, you are encouraged to share ideas with your peers and instructor, work collaboratively on projects and team assignments, raise critical questions, and provide constructive feedback.

Use the following advice to receive maximum learning benefits from your participation in this course:

DO	DON'T
<ul style="list-style-type: none">▪ Do take a proactive learning approach▪ Do share your thoughts on critical issues and potential problem solutions▪ Do plan your course work in advance▪ Do explore a variety of learning resources in addition to the textbook▪ Do offer relevant examples from your experience▪ Do make an effort to understand different points of view▪ Do connect concepts explored in this course to real-life professional situations and your own experiences	<ul style="list-style-type: none">▪ Don't assume there is only one correct answer to a question▪ Don't be afraid to share your perspective on the issues analyzed in the course▪ Don't be negative about the points of view that are different from yours▪ Don't underestimate the impact of collaboration on your learning▪ Don't limit your course experience to reading the textbook▪ Don't postpone your work on the course deliverables – work on small assignment components every day

Course Outline

<p>Unit 1: HISTORY AND CLASSIFICATION OF BUILDING CODES</p> <p>Upon completion of this unit, students are expected to:</p> <ul style="list-style-type: none"> • Describe the history of building codes. • Explain the importance of building codes to society. • Describe the 3 model codes used prior to the IBC. • Explain the reconciliation process. • Navigate the IBC. • Evaluate the different roles in construction. • Explain the importance of separating building codes based on region, performance type, and safety. • Analyze a federal building code. • Explain the importance of building codes. • Identify proper building code usage. • Differentiate prescriptive and performance codes. 		<p>Total outside work: 6 hours</p>	
READING ASSIGNMENT	<ul style="list-style-type: none"> • Ching, Chapters 1-2 		
OUTSIDE WORK	Activity	Estimated Time	
	Complete the reading assignment	2 hours	
	Work on the Exercise	2 hours	
	Work on the Assignment	2 hours	
GRADED ACTIVITIES / DELIVERABLES	Grading Category	Activity/Deliverable Title	Grade Allocation (% of all graded work)
	Exercise	Unit 1 Exercise 1: Building Codes Research	3%
	Assignment	Unit 1 Assignment 1: Navigating the IBC	3%

<p>Unit 2: USE AND OCCUPANCY</p> <p>Upon completion of this unit, students are expected to:</p> <ul style="list-style-type: none"> Identify the various occupancy groups. Determine an occupancy group for special use construction. Describe the role that designers and engineers play in following codes. Explain the importance of occupancy groups. Explain how to achieve the maximum performance level through design. Assess a building according to IBC requirements. 			<p>Total outside work: 9 hours</p>
<p>READING ASSIGNMENT</p>	<ul style="list-style-type: none"> Ching, Chapters 3-4 		
<p>OUTSIDE WORK</p>	<p>Activity</p>		<p>Estimated Time</p>
	<p>Complete the reading assignment</p>		<p>2 hours</p>
	<p>Work on the Assignment</p>		<p>3 hours</p>
	<p>Prepare for next week's quiz</p>		<p>3 hours</p>
		<p>Work on the course project</p>	<p>1 hour</p>
<p>GRADED ACTIVITIES / DELIVERABLES</p>	<p>Grading Category</p>	<p>Activity/Deliverable Title</p>	<p>Grade Allocation (% of all graded work)</p>
	<p>Assignment</p>	<p>Unit 2 Assignment 1: Filling the Floor Plan</p>	<p>3%</p>

<p>Unit 3: TYPES OF CONSTRUCTION</p> <p>Upon completion of this unit, students are expected to:</p> <ul style="list-style-type: none"> Identify examples of combustible and noncombustible materials. Differentiate the types of construction. Apply heights and appropriate square footage based on a building's classification. Illustrate story height, grade plane and basement. Explain the importance of having a fire resistance rating system. Identify fire-ignited materials. 			<p>Total outside work: 9 hours</p>
<p>READING ASSIGNMENT</p>	<ul style="list-style-type: none"> Ching, Chapters 5-6 		
<p>OUTSIDE WORK</p>	<p>Activity</p>		<p>Estimated Time</p>
	<p>Complete the reading assignment</p>		<p>2 hours</p>
	<p>Work on the Assignment</p>		<p>3 hours</p>
	<p>Prepare for next week's quiz</p>		<p>3 hours</p>
		<p>Work on the course project</p>	<p>1 hour</p>
<p>GRADED ACTIVITIES / DELIVERABLES</p>	<p>Grading Category</p>	<p>Activity/Deliverable Title</p>	<p>Grade Allocation (% of all graded work)</p>
	<p>Assignment</p>	<p>Unit 3 Assignment 1: Case Study: Identifying Fire-Ignited Materials</p>	<p>3%</p>
	<p>Quiz</p>	<p>Unit 3 Quiz 1</p>	<p>3%</p>

<p>Unit 4: FIRE PROTECTION</p> <p>Upon completion of this unit, students are expected to:</p> <ul style="list-style-type: none"> ▪ Define fire protection. ▪ Compare and contrast fire walls and exterior walls. ▪ Analyze fire protection systems. ▪ Identify key roles involved in fire protection. ▪ Compare and contrast the various types of fire resistance ratings. ▪ Explain why fire resistance ratings are assigned. ▪ Explain how fire protection systems have advanced. ▪ Choose a fire rating system for a scenario. 			<p>Total outside work: 7 hours</p>
READING ASSIGNMENT	<ul style="list-style-type: none"> • Ching, Chapters 7 and 9 		
OUTSIDE WORK	Activity	Estimated Time	
	Complete the reading assignment	2 hours	
	Work on the Assignment	3 hours	
	Work on the course project	2 hours	
GRADED ACTIVITIES / DELIVERABLES	Grading Category	Activity/Deliverable Title	Grade Allocation (% of all graded work)
	Assignment	Unit 4 Assignment 1: Case Study: Choosing Fire Ratings	3%
	Quiz	Unit 4 Quiz 2	3%

<p>Unit 5: INTERIOR QUALITY</p> <p>Upon completion of this unit, students are expected to:</p> <ul style="list-style-type: none"> • Define common problematic situations in regards to the indoor environment. • Explain how indoor materials are tested. • Differentiate the American Society for Testing and Materials standards classes. • Identify the effect of ventilation, lighting, and sound on the interior quality of a building. 			<p>Total outside work: 9 hours</p>
READING ASSIGNMENT	<ul style="list-style-type: none"> • Ching, Chapters 8 and 12 		
OUTSIDE WORK	Activity	Estimated Time	
	Complete the reading assignment	2 hours	
	Work on the Exercise	3 hours	
	Work on the Assignment	3 hours	
	Work on the course project	1 hour	
GRADED ACTIVITIES / DELIVERABLES	Grading Category	Activity/Deliverable Title	Grade Allocation (% of all graded work)
	Exercise	Unit 5 Exercise 1: Replacement for Smoke-Generated Materials	3%

	Assignment	Unit 5 Assignment 1: Improving the Indoor Quality	3%
<p>Unit 6: MAINTENANCE OF ACCESSIBILITY</p> <p>Upon completion of this unit, students are expected to:</p> <ul style="list-style-type: none"> • Define egress. • Identify the various means of egress and design concepts to prevent obstructed paths. • Examine the Americans with Disabilities Act (ADA) as a guide for accessible design. • Examine egress components. • Identify the process of providing accessibility for buildings through entrances, exits, and communication. 			<p>Total outside work: 9 hours</p>
READING ASSIGNMENT	<ul style="list-style-type: none"> • Ching, Chapters 10-11 		
OUTSIDE WORK	Activity		Estimated Time
	Complete the reading assignment		2 hours
	Work on the Exercise		3 hours
	Work on the Assignment		3 hours
	Work on the course project		1 hour
GRADED ACTIVITIES / DELIVERABLES	Grading Category	Activity/Deliverable Title	Grade Allocation (% of all graded work)
	Exercise	Unit 6 Exercise 1: Accessibility in Buildings	3%
	Assignment	Unit 6 Assignment 1: Accessibility in Historical Structures	3%

<p>Unit 7: ENERGY-EFFICIENT DESIGN</p> <p>Upon completion of this unit, students are expected to:</p> <ul style="list-style-type: none"> • Explain energy efficiency. • Describe how exterior walls are constructed to offer protection. • Explain the LEED rating system. • Identify the compliance needs for residential and commercial energy to address the allowable energy use. • Evaluate sustainability projects. • Explore energy-efficient designs using the IECC to prevent unnecessary use of materials and to ensure good interior quality and optimum occupancy space. 			<p>Total outside work: 11 hours</p>
READING ASSIGNMENT	<ul style="list-style-type: none"> • Ching, Chapters 13-14 		
OUTSIDE WORK	Activity	Estimated Time	
	Complete the reading assignment	2 hours	
	Work on the Assignments	5 hours	
	Prepare for next week's quiz	3 hours	
	Work on the course project	1 hour	
GRADED ACTIVITIES / DELIVERABLES	Grading Category	Activity/Deliverable Title	Grade Allocation (% of all graded work)
	Assignment	Unit 7 Assignment 1: Case Studies Review	3%
		Unit 7 Assignment 2: Summarizing Sustainability Options	3%

<p>Unit 8: ROOF AND BUILDING STRUCTURES</p> <p>Upon completion of this unit, students are expected to:</p> <ul style="list-style-type: none"> • Address the requirements for various types of roof coverings to adhere to the manufacturer's instructions. • Classify roof coverings according to the IBC. • Explain the different roles involved in roof design. • Compare and contrast roofing types. • Differentiate between combustible and noncombustible roof types. 			<p>Total outside work: 10 hours</p>
READING ASSIGNMENT	<ul style="list-style-type: none"> • Ching, Chapters 15-16 		
OUTSIDE WORK	Activity		Estimated Time
	Complete the reading assignment		2 hours
	Work on the Assignment		3 hours
	Prepare for next week's quiz		3 hours
Work on the course project		2 hours	
GRADED ACTIVITIES / DELIVERABLES	Grading Category	Activity/Deliverable Title	Grade Allocation (% of all graded work)
	Assignment	Unit 8 Assignment 1: Identifying Roof Coverings and Construction Types	3%
	Quiz	Unit 8 Quiz 3	3%

<p>Unit 9: STRUCTURAL FOUNDATIONS</p> <p>Upon completion of this unit, students are expected to:</p> <ul style="list-style-type: none"> • Describe the reason behind inspections. • Examine the special inspections used for structural materials for quality, workmanship, and labeling. • Describe the types of inspectors. • Explain how inspections and investigations are performed. • Explore soil and foundation investigations to determine the stability of site soils. • Compare and contrast testing requirements for different materials. • Identify the processes of waterproofing and laying deep foundations in relation to hydrostatic pressure on a site. 			<p>Total outside work: 8 hours</p>
READING ASSIGNMENT	<ul style="list-style-type: none"> • Ching, Chapters 17-18 		
OUTSIDE WORK	Activity	Estimated Time	
	Complete the reading assignment	2 hours	
	Work on the Exercise	4 hours	
	Work on the course project	2 hours	
GRADED ACTIVITIES / DELIVERABLES	Grading Category	Activity/Deliverable Title	Grade Allocation (% of all graded work)
	Exercise	Unit 9 Exercise 1: Structural Materials	3%
	Quiz	Unit 9 Quiz 4	3%

Unit 10: BUILDING MATERIALS AND EXISTING STRUCTURES			Total outside work: 10 hours
Upon completion of this unit, students are expected to: <ul style="list-style-type: none"> Identify the appropriate accessibility for existing structures through additions, provisions, or change of occupancy. Explain the process of entering a historic building in the National Register of Historic Places. Explain the role of a structural engineer. Describe the reasons for updating an existing building. Describe the factors determined by the building materials and systems. Compare a selected building to the IBC. 			
READING ASSIGNMENT	<ul style="list-style-type: none"> Ching, Chapters 19-20 		
OUTSIDE WORK	Activity		Estimated Time
	Complete the reading assignment		2 hours
	Work on the Assignment		3 hours
	Prepare for the Final Exam		3 hours
Work on the course project		2 hours	
GRADED ACTIVITIES / DELIVERABLES	Grading Category	Activity/Deliverable Title	Grade Allocation (% of all graded work)
	Assignment	Unit 10 Assignment 1: Identifying Accessibility Requirements of an Existing Structure	3%
	Project	Unit 10 Project 1: Assessing Building Codes for a Selected Building	23%

Unit 11: COURSE REVIEW AND FINAL EXAM			Total outside work: 3 hours
Review all chapters			
READING ASSIGNMENT	<ul style="list-style-type: none"> Review all chapters 		
OUTSIDE WORK	Activity		Estimated Time
	Complete the reading assignment		3 hours
GRADED ACTIVITIES / DELIVERABLES	Grading Category	Activity/Deliverable Title	Grade Allocation (% of all graded work)
	Exam	Final Exam	23%

Note: Your instructor may add a few learning activities that will change the grade allocation for each assignment in a category. The overall category percentages will not change.

Evaluation and Grading

Evaluation Criteria

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

Category	Weight
Assignment	30
Exercise	12
Project	23
Quiz	12
Exam	23
TOTAL	100%

Grade Conversion

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

Grade	Percentage	Credit
A	90–100%	4.0
B+	85–89%	3.5
B	80–84%	3.0
C+	75–79%	2.5
C	70–74%	2.0
D+	65–69%	1.5
D	60–64%	1.0
F	<60%	0.0

Academic Integrity

All students must comply with the policies that regulate all forms of academic dishonesty or academic misconduct, including plagiarism, self-plagiarism, fabrication, deception, cheating, and sabotage. For more information on the academic honesty policies, refer to the Student Handbook and the Course Catalog.

(End of Syllabus)