

**ITT Technical Institute**

**PM3450**

**Building Codes**

**Onsite Course**

# **SYLLABUS**

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**Credit hours:** 4.5

**Contact/Instructional hours:** 45 (45 Theory Hours)

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

Prerequisite: PM3150 Construction Techniques or equivalent

**Course Description:**

This course explores structural, mechanical, electrical and plumbing building codes. Topics include references to organizations responsible for developing building codes and zoning ordinances, and the role of inspections in ensuring compliance with building codes

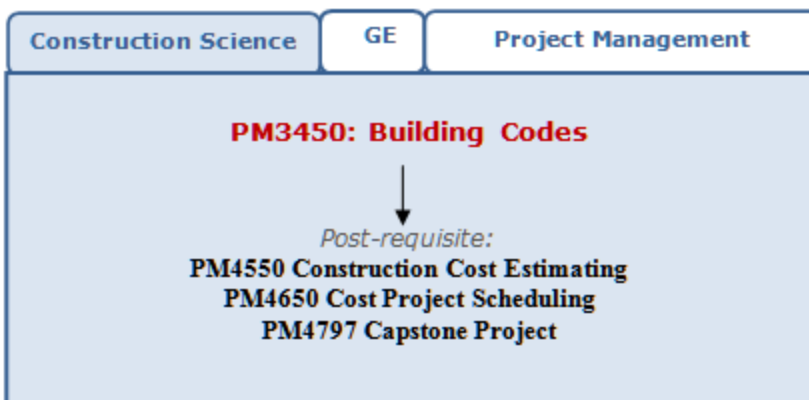
## Where Does This Course Belong?

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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.

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## Course Summary

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### 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

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### 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. (2009). <i>Building codes illustrated: A guide to understanding the 2009 international building code</i> (3rd 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

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

**Course Outline**

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

<p><b>Unit 2: Use and Occupancy</b></p> <p>Upon completion of this unit, students are expected to:</p> <ul style="list-style-type: none"> <li>• Identify the various occupancy groups</li> <li>• Determine an occupancy group for special use construction</li> <li>• Describe the role that designers and engineers play in following codes.</li> <li>• Explain the importance of occupancy groups.</li> <li>• Explain how to achieve the maximum performance level through design</li> <li>• Assess a building according to IBC requirements</li> </ul>			<p><b>Out-of-class work:</b> 7 hours</p>
<p><b>READING ASSIGNMENT</b></p>	<p><b>GRADED ACTIVITIES / DELIVERABLES</b></p>		
	<p><b>Grading Category</b></p>	<p><b>Activity/Deliverable Title</b></p>	<p><b>Grade Allocation</b> (% of all graded work)</p>
<p>• Ching, Chapters 3-4</p>	<p>Assignment</p>	<p>Unit 2 Assignment 1: Filling the Floor Plan</p>	<p>3%</p>

<p><b>Unit 3: Types of Construction</b></p> <p>Upon completion of this unit, students are expected to:</p> <ul style="list-style-type: none"> <li>▪ Identify examples of combustible and noncombustible materials</li> <li>▪ Differentiate the types of construction</li> <li>▪ Apply heights and appropriate square footage based on a building's classification</li> <li>▪ Illustrate story height, grade plane and basement</li> <li>▪ Explain the importance of having a fire resistance rating system</li> <li>▪ Identify fire-ignited materials</li> </ul>			<p><b>Out-of-class work:</b> 7 hours</p>
<b>READING ASSIGNMENT</b>	<b>GRADED ACTIVITIES / DELIVERABLES</b>		
	<b>Grading Category</b>	<b>Activity/Deliverable Title</b>	<b>Grade Allocation (% of all graded work)</b>
<ul style="list-style-type: none"> <li>• Ching, Chapters 5-6</li> </ul>	Assignment	Unit 3 Assignment 1: Case Study: Identifying Fire-Ignited Materials	3%
	Quiz	Unit 3 Quiz 1	3%

<p><b>Unit 4: Fire Protection</b></p> <p>Upon completion of this unit, students are expected to:</p> <ul style="list-style-type: none"> <li>• Identify blocks in a series of sample scenarios</li> <li>• Recommend blockbuster techniques for identified blocks</li> </ul>			<p><b>Out-of-class work:</b> 11 hours</p>
<b>READING ASSIGNMENT</b>	<b>GRADED ACTIVITIES / DELIVERABLES</b>		
	<b>Grading Category</b>	<b>Activity/Deliverable Title</b>	<b>Grade Allocation (% of all graded work)</b>
<ul style="list-style-type: none"> <li>• Ching, Chapters 7 and 9</li> </ul>	Assignment	Unit 4 Assignment 1: Case Study: Choosing Fire Ratings	3%
	Quiz	Unit 4 Quiz 2	3%



<p><b>Unit 5: Interior Quality</b></p> <p>Upon completion of this unit, students are expected to:</p> <ul style="list-style-type: none"> <li>• Define common problematic situations in regards to the indoor environment.</li> <li>• Explain how indoor materials are tested.</li> <li>• Differentiate the American Society for Testing and Materials standards classes.</li> <li>• Identify the effect of ventilation, lighting, and sound on the interior quality of a building.</li> <li>• Identify the effect of ventilation, lighting, and sound on the interior quality of a building.</li> </ul>			<p><b>Out-of-class work:</b> 11 hours</p>
<b>READING ASSIGNMENT</b>	<b>GRADED ACTIVITIES / DELIVERABLES</b>		
	<b>Grading Category</b>	<b>Activity/Deliverable Title</b>	<b>Grade Allocation</b> (% of all graded work)
<ul style="list-style-type: none"> <li>• Ching, Chapters 8 and 12</li> </ul>	Exercise	Unit 5 Exercise 1: Replacement for Smoke-Generated Materials	3%
	Assignment	Unit 5 Assignment 1: Improving the Indoor Quality	3%

<p><b>Unit 6: Maintenance of Accessibility</b></p> <p>Upon completion of this unit, students are expected to:</p> <ul style="list-style-type: none"> <li>• Define egress.</li> <li>• Identify the various means of egress and design concepts to prevent obstructed paths.</li> <li>• Examine the Americans with Disabilities Act (ADA) as a guide for accessible design.</li> <li>• Examine egress components</li> <li>• Identify the process of providing accessibility for buildings through entrances, exits, and communication.</li> </ul>			<p><b>Out-of-class work:</b> 11 hours</p>
<b>READING ASSIGNMENT</b>	<b>GRADED ACTIVITIES / DELIVERABLES</b>		
	<b>Grading Category</b>	<b>Activity/Deliverable Title</b>	<b>Grade Allocation</b> (% of all graded work)
<ul style="list-style-type: none"> <li>• Ching, Chapters 10-11</li> </ul>	Exercise	Unit 6 Exercise 1: Accessibility in Buildings	3%
	Assignment	Unit 6 Assignment 1: Accessibility in Historical Structures	3%

<p><b>Unit 7: Energy-Efficient Design</b></p> <p>Upon completion of this unit, students are expected to:</p> <ul style="list-style-type: none"> <li>• Explain energy efficiency.</li> <li>• Describe how exterior walls are constructed to offer protection.</li> <li>• Explain the LEED rating system.</li> <li>• Identify the compliance needs for residential and commercial energy to address the allowable energy use.</li> <li>• Evaluate sustainability projects.</li> <li>• Explore energy-efficient designs using the IECC to prevent unnecessary use of materials and to ensure good interior quality and optimum occupancy space.</li> </ul>			<p><b>Out-of-class work:</b> 11 hours</p>
<p><b>READING ASSIGNMENT</b></p>	<p><b>GRADED ACTIVITIES / DELIVERABLES</b></p>		
	<p><b>Grading Category</b></p>	<p><b>Activity/Deliverable Title</b></p>	<p><b>Grade Allocation</b> (% of all graded work)</p>
<ul style="list-style-type: none"> <li>• Ching, Chapters 13-14</li> </ul>	<p>Assignment</p>	<p>Unit 7 Assignment 1: Case Studies Review</p>	<p>3%</p>
		<p>Unit 7 Assignment 2: Summarizing Sustainability Options</p>	<p>3%</p>

<p><b>Unit 8: Roof and Building Structures</b></p> <p>Upon completion of this unit, students are expected to:</p> <ul style="list-style-type: none"> <li>• Address the requirements for various types of roof coverings to adhere to the manufacturer's instructions.</li> <li>• Classify roof coverings according to the IBC.</li> <li>• Explain the different roles involved in roof design.</li> <li>• Compare and contrast roofing types.</li> <li>• Differentiate between combustible and noncombustible roof types.</li> </ul>			<p><b>Out-of-class work:</b> 11 hours</p>
<p><b>READING ASSIGNMENT</b></p>	<p><b>GRADED ACTIVITIES / DELIVERABLES</b></p>		
	<p><b>Grading Category</b></p>	<p><b>Activity/Deliverable Title</b></p>	<p><b>Grade Allocation</b> (% of all graded work)</p>
<ul style="list-style-type: none"> <li>• Ching, Chapters 15-16</li> </ul>	<p>Assignment</p>	<p>Unit 8 Assignment 1: Identifying Roof Coverings and Construction Types</p>	<p>3%</p>
	<p>Quiz</p>	<p>Unit 8 Quiz 3</p>	<p>3%</p>

<p><b>Unit 9: Structural Foundations</b></p> <p>Upon completion of this unit, students are expected to:</p> <ul style="list-style-type: none"> <li>Describe the reason behind inspections.</li> <li>Examine the special inspections used for structural materials for quality, workmanship, and labeling.</li> <li>Describe the types of inspectors.</li> <li>Explain how inspections and investigations are performed.</li> <li>Explore soil and foundation investigations to determine the stability of site soils.</li> <li>Compare and contrast testing requirements for different materials.</li> <li>Identify the processes of waterproofing and laying deep foundations in relation to hydrostatic pressure on a site.</li> </ul>			<p><b>Out-of-class work:</b> 11 hours</p>
<b>READING ASSIGNMENT</b>	<b>GRADED ACTIVITIES / DELIVERABLES</b>		
	<b>Grading Category</b>	<b>Activity/Deliverable Title</b>	<b>Grade Allocation (% of all graded work)</b>
<ul style="list-style-type: none"> <li>Ching, Chapters 17-18</li> </ul>	Assignment	Unit 9 Assignment 1: Structural Materials	3%
	Quiz	Unit 9 Quiz 4	3%

<p><b>Unit 10: Building Materials and Existing Structures</b></p> <p>Upon completion of this unit, students are expected to:</p> <ul style="list-style-type: none"> <li>Identify the appropriate accessibility for existing structures through additions, provisions, or change of occupancy.</li> <li>Explain the process of entering a historic building in the National Register of Historic Places.</li> <li>Explain the role of a structural engineer.</li> <li>Describe the reasons for updating an existing building.</li> <li>Describe the factors determined by the building materials and systems.</li> <li>Compare a selected building to the IBC.</li> </ul>			<p><b>Out-of-class work:</b> 11 hours</p>
<b>READING ASSIGNMENT</b>	<b>GRADED ACTIVITIES / DELIVERABLES</b>		
	<b>Grading Category</b>	<b>Activity/Deliverable Title</b>	<b>Grade Allocation (% of all graded work)</b>
<ul style="list-style-type: none"> <li>Ching, Chapters 19-20</li> </ul>	Assignment	Unit 10 Assignment 1: Identifying Accessibility Requirements of an Existing Structure	3%
	Project	Unit 4 Project 1: Assessing Building Codes for a Selected Building	23%

<b>Unit 11: Course Review and Final Exam</b>			<b>Out-of-class work:</b> 11 hours
<b>READING ASSIGNMENT</b>	<b>GRADED ACTIVITIES / DELIVERABLES</b>		
	<b>Grading Category</b>	<b>Activity/Deliverable Title</b>	<b>Grade Allocation</b> (% of all graded work)
Review of all chapters assigned in course	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

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### Evaluation Criteria

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

<b>Category</b>	<b>Weight</b>
Assignment	30
Exercise	12
Project	23
Quiz	12
Exam	23
<b>TOTAL</b>	<b>100%</b>

### Grade Conversion

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

<b>Grade</b>	<b>Percentage</b>	<b>Credit</b>
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**

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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)*