



Basic Course Information

Semester:	Spring 2025	Instructor Name:	Alfredo Estrada
Course Title & #:	Fire 103 Brannigan's Building Construction for the Fire Service	Email:	Alfredo.estradajr@imperial.edu
CRN #:	20547	Webpage (optional):	
Classroom:	No Class; completely online	Office #:	626-497-4438
Class Dates:	Feb. 10th – June 6th, 2025	Office Hours:	08:00-17:00 Mon-Sun
Class Days:		Office Phone #:	626-479-4438
Class Times:		Emergency Contact:	626-479-4438
Units:	3	Class Format/Modality:	Distance Education/Online

Course Description

- This course is the study of the components of building that relates to fire safety. The elements of construction and design of structures are shown to be key factors when inspecting buildings, preplanning fire operations, and operating at fires. The development and evolution of building and fire codes will be studied in relationship to past fires in residential, commercial, and industrial occupancies. This is one of six CORE courses required for an associate degree in Fire Technology. (CSU)

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

None

Student Learning Outcomes

- Identify major types of building construction. (ILO2)
- Analyze the hazards and tactical considerations associated with the various types of building construction. (ILO1, ILO2)
- Demonstrate proficiency in building occupancy and code enforcement. (ILO2)

Course Objectives

Chapter 1

1. Recognize the significance of methods and materials historically used in building construction, as well as the importance of the age of the building itself.
2. Discuss building variables as they relate to the work of firefighters.
3. Explain communication of fire and the ways in which it occurs.
4. Describe factors that affect communication of fire and methods used to protect buildings from exposing fires.
5. Discuss building failure, structural integrity, building systems, and design deficiencies as building design considerations.
6. Explain the principles of design and why buildings are built.
7. Discuss design considerations.
8. Describe the design and construction process.
9. Recognize the role of the building permit process and preincident planning in the construction of a building.

Chapter 2

1. Define fire resistance.
2. Discuss methods of determining fire resistance and the limitations of each method.
3. Identify fire testing organizations and discuss the significance of fire test results.
4. Recognize the role of analysis in determining fire resistance.
5. Discuss the basic building classifications as they relate to fire resistance.
6. Discuss the concept of fire load and its impact on building construction types.
7. Explain occupancy classifications as they relate to fire risks.

Chapter 3

1. Explain the various loads exerted on a building resulting from environmental sources.
2. Distinguish between the classifications of loads based on origin and movement.

3. Recognize and discuss the internal forces resulting from the loads and forces applied to a structural member.
4. Describe the basic structural components.
5. Describe the basic structural systems.

Chapter 4

1. Discuss the various types of stairs and the structural requirements related to each.
2. Describe the various types of elevators and their safety features.
3. Discuss moving stairways, walkways, and conveyors as they relate to firefighting concerns.
4. Describe the uses of vertical shafts and utility chases and their impact on firefighting.
5. Describe the functions and components of HVAC systems and how they impact firefighting.
6. Distinguish between various smoke control methods.
7. Discuss the various types of electrical equipment found in building structures and the hazards posed by each.

Chapter 5

1. Discuss the factors affecting combustibility of various interior finishes and their effects on fire behavior.
2. Explain the methods used to evaluate the surface burning characteristics of interior finish materials.
3. Discuss compartmentation as it relates to fire and smoke containment.
4. Describe the types of walls used to prevent fire spread and their effectiveness in providing fire and smoke containment.
5. Describe the requirements for fire doors and their contribution to fire and smoke containment.

Chapter 6

1. Explain how different types of surface material affect the types of foundations and the types of buildings that can be built on them.

2. Describe the types of foundations and the conditions that determine which type is used.
3. Describe the construction of foundation walls and the concerns related to cracking.
4. Explain the differences between uniform and differential settlement.
5. Discuss shoring and underpinning and their potential impact on fire department operations.

Chapter 7

1. Discuss the material properties of the wood products used in construction.
2. Explain the variables that affect the combustibility of wood used as a construction material.
3. Describe the methods of treating wood with a fire retardant.
4. Describe the framing systems constructed of wood and the purpose of fire stops in those framing systems.
5. Describe the materials used to construct the exterior and interior walls of a wood-frame building.
6. Discuss the considerations related to collapse, ignition-resistance, and deterioration as they relate to woodframe construction.

Chapter 8

1. Describe the properties of the masonry products used as building material.
2. Describe the construction techniques and characteristics of masonry walls.
3. Describe the characteristics of the interior structural framing used in masonry buildings.
4. Discuss the factors that affect fire behavior in masonry structures.
5. Explain the differences between mill construction and ordinary masonry construction.

Chapter 9

1. Describe and differentiate the properties of steel and iron used as building material.
2. Describe the types of steel frame structures and their applications.

3. Identify the types and uses of steel frames in flooring systems.
4. Discuss how connections and lighter weight construction affect the potential for collapse of steel structures.
5. Describe the materials used to provide fire resistance to steel members and their effectiveness.
6. Discuss the importance of code modifications as they relate to firefighting.

Chapter 10

1. Describe the production process of concrete.
2. Describe the methods used to reinforce concrete used in building structures.
3. Discuss the methods of ensuring the quality of concrete.
4. Describe the concrete framing systems used in building structures.
5. Discuss the factors that affect the performance of concrete under fire conditions.

Textbooks & Other Resources or Links

- Brannigan's Building Construction for the Fire Service 6th Edition

Print ISBN (Hard Copy)

9781284177312, 1284177319

- e-text ISBN (Digital Copy)

9781284204834, 1284204839

Course Requirements and Instructional Methods

Assignments



Students will complete the following assignment activities. When completing your written assignments in either Microsoft Word or rich text format (using Times New Roman size 12 font ONLY) – not Word Perfect, use APA CITED textbook concepts to analyze the disaster response issues. If you just complete the assignments in broad terms without applying text concepts using APA citations, your grade will be significantly lower. While older sources are fine, students must include the required number of citations from the textbook and more current sources.

APA Citations: APA citations are required for assignments. Please ensure you're familiar with the process for correctly citing sources in your course submissions.

I strongly recommend students review a grammar/writing guide prior to submitting assignments. My goal is assignments will be reviewed and grades posted within 24 hours of their submission. Assignments submitted late will have a 10 % penalty assessed for each week late. Cover, reference, appendix, and table pages DO NOT count towards the page length requirements. There is NO extra credit or makeup assignments offered in the course, so every assignment contributes to students' final course grades. Assignments MUST be posted to the Canvas site and do NOT get course messaged to me. I do not want a "backup" copy sent to me. Use Canvas site only – thanks!



Research Paper:**Due 06/06/2025 100 Points**

Prepare a 4-page (double-spaced) paper on World Trade Center Towers. Describe how the towers were constructed and what materials were used. In addition, describe the types of fire suppression systems and fire-resistant materials that composed the building. Please utilize at least five text citations and seven citations from other sources to support the discussion of the topic. Use headers to break up the various section of this assignment is MANDATORY.

Discussion Forums (# = 10 @ 30 points each)**300 Points****(Found in the tab labeled Discussion Board)**

This is a three (3) paragraph (using CITED text concepts) reply to the discussion topic. The objective is increased student interaction/ communication discussing about Building Construction, as it relates the fire service. Discussion forum deadlines will be posted, and there will be zero credit for replying once the discussion session has ended. There are two extra Discussion Boards in case you miss a discussion and don't want to miss out on points. **The first Discussion Board includes a self-introduction component so that students get to know each other.**

Mid-term Exam (Chapter 1 - 5)**Due 04/13/2025 100 Points****Complete multiple choice, true/false, and essay type questions****Quizzes (Chapter 1-10) 10 points each****100 Points****Complete multiple choice, true/false, and essay type questions****Journal Chapter Summary (Chapters 1-10) (1 page summary) 10 points each****100 Points****YouTube Review: (Chapter 1-10) (1 page summary) 10 points each****100 Points****Final Exam (Chapter 1 - 10)****Due 06/04/2025-06/06/2025 100 Points****Complete multiple choice, true/false, and essay type questions**

Course Grading Based on Course Objectives



Grading scale: A = 900 to 950 points; B = 949 to 899 points; C = 898 to 848 points; D = 847 to 797 points; F= 796 to 0 points

Academic Honesty (Artificial Intelligence -AI)

IVC values critical thinking and communication skills and considers academic integrity essential to learning. Using AI tools as a replacement for your own thinking, writing, or quantitative reasoning goes against both our mission and academic honesty policy and will be considered academic dishonesty, or plagiarism unless you have been instructed to do so by your instructor. In case of any uncertainty regarding the ethical use of AI tools, students are encouraged to reach out to their instructors for clarification.

Accessibility Statement

Imperial Valley College is committed to providing an accessible learning experience for all students, regardless of course modality. Every effort has been made to ensure that this course complies with all state and federal accessibility regulations, including Section 508 of the Rehabilitation Act, the Americans with Disabilities Act (ADA), and Title 5 of the California Code of Regulations. However, if you encounter any content that is not accessible, please contact your instructor or the area dean for assistance. If you have specific accommodations through **DSPS**, contact them for additional assistance.

We are here to support you and ensure that you have equal access to all course materials.

Course Policies

Welcome to the world of online courses. This may be your first experience taking web-based courses, you may have some experience, or you may have taken a number of courses previously. Online learning is a form of social interaction, and as such, it has its own rules for interacting with others. This guide is intended to be an overview of appropriate etiquette for interaction in this online environment.

Disembodied Discussions

A key distinguishing feature of online courses is that communication occurs solely via the written word. Because of this, the body language, voice tone, and instantaneous listener feedback of the traditional classroom are all absent. These facts need to be taken into account both when contributing messages to a discussion and when reading them. Keep in mind the following points:

Tone Down Your Language

Given the absence of face-to-face clues, written text can easily be misinterpreted. Avoid the use of strong or offensive language and the excessive use of exclamation points. If you feel particularly strongly about a point, it may be best to write it first as a draft and then to review it, before posting our statement.

In general, avoid humor and sarcasm. These frequently depend either on facial or tone of voice cues absent in text communication or on familiarity with the reader.

If someone states something you find offensive, mention it directly to the instructor. Remember the person may be new to online learning. What you find offensive may be an unintended and can be corrected by the instructor.

Updated 02/2025



Test For Clarity

Messages may often appear perfectly clear to you as the student but turn out to be confusing by another reader.

One way to test for clarity is to read your message aloud to see if it flows smoothly.

Be concise when possible when contributing to a discussion. If you have several points you want to make, it may be a good idea to post them individually in more focused messages rather than a single, all-encompassing message.

Think carefully about the content of your message before contributing to the discussion. Once sent to the group, there is no taking it back. Although grammar and spelling may not be graded, they do reflect on you, and your audience might not be able to decode misspelled words or poorly constructed sentences. Acronyms and Emoticons are popular to use. Remember that online courses require professional writing. Be discerning with your use of "texting" writing.

Other Course Information

Minimum technical skills expected:

As an online student you will have a much different "classroom" experience than a traditional student. In order to ensure that you are fully prepared for your online courses, following is a list of expectations and requirements: Students in a hybrid and/or on-line program should be comfortable with and possess the following skill sets:

1. Self-discipline
2. Problem solving skills
3. Critical thinking skills
4. Enjoy communication in the written word

As part of your online experience, you can expect to utilize a variety of technology mediums as part of your curriculum:

1. Communicate via email including sending attachments
2. Navigate the World Wide Web using a Web browser such as Internet Explorer
3. Use office applications such as Microsoft Office (or similar) to create documents
4. Be willing to learn how to communicate using a discussion board and upload assignments to a classroom Web site
5. Be comfortable uploading and downloading saved files
6. Have easy access to the Internet

Announcement:



In the announcement section you will my “Welcome/Self-Introduction”. All upcoming events will be posted on a weekly basis, or as needed. Please be vigilant and monitor this section.

Instructors Plan for Classroom response time and feedback on assignments:

Please note that you will receive response/feedback within 24 hours after having posted your question in the “Ask the Instructor” Discussion Board. For a faster response please feel free to text me at 626-479-4439.

Date	Activity, Assignment, and/or Topic	Quiz, Exams, Mid-term, Research Paper due dates
Feb. 3 rd -Feb. 16 th	Syllabus & Introduction mandatory Chapter 1 Reading mandatory Power-point Review mandatory Lecture Review mandatory Discussion 30 points Journal written summary assignment 10 points YouTube written summary assignment 10 points Quiz 10 points	All Chapter 1 Assignments and Quiz due Feb. 16 th 11:59 p.m.
Feb. 17- Mar. 2 nd	Chap. 2 Reading mandatory Chap. 2 Power-point Review mandatory Chap. 2 Lecture Review mandatory Chap. 2 Discussion 30 points Chap. 2 Journal written summary assignment 10 points Chap. 2 YouTube written summary assignment 10 points Chap. 2 Quiz 10 points	All Chapter 2 Assignments and Quiz due March 2 nd 11:59 p.m.



Mar. 3 rd - March 16 th	Chap. 3 Reading	mandatory	All Chapter 3 Assignments and Quiz due March 16nd 11:59 p.m.
	Chap. 3 Power-point Review	mandatory	
	Chap. 3 Lecture Review	mandatory	
	Chap. 3 Discussion	30 points	
	Chap. 3 Journal written summary assignment	10 points	
	Chap. 3 YouTube written summary assignment	10 points	
	Chap. 3 Quiz	10 points	

Financial Aid

Your Grades Matter! In order to continue to receive financial aid, you must meet the Satisfactory Academic Progress (SAP) requirement. Making SAP means that you are maintaining a 2.0 GPA, you have successfully completed 67% of your coursework, and you will graduate on time. If you do not maintain SAP, you may lose your financial aid. If you have questions, please contact financial aid at finaid@imperial.edu.

IVC Student Resources

IVC wants you to be successful in all aspects of your education. For help, resources, services, and an explanation of policies, visit <http://www.imperial.edu/studentresources> or click the heart icon in Canvas.

Anticipated Class Schedule/Calendar

Date	Activity, Assignment, and/or Topic	Quiz, Exams, Mid-term, Research Paper due dates
Mar. 17 th - Mar. 30 th	Chap. 4 Reading	mandatory
	Chap. 4 Power-point Review	mandatory
	Chap. 4 Lecture Review	mandatory
	Chap. 4 Discussion	30 points
	Chap. 4 Journal written summary assignment	10 points
	Chap. 4 YouTube written summary assignment	10 points
	Chap. 4 Quiz	10 points
March 31 st - April 13 th	Chap. 5 Reading	mandatory
	Chap. 5 Power-point Review	mandatory
	Chap. 5 Lecture Review	mandatory
	Chap. 5 Discussion	30 points
	Chap. 5 Journal written summary assignment	10 points
	Chap. 5 YouTube written summary assignment	10 points
	Mid-term Chap. 1-5	100 points
April 14 th – April 27 th	Chap. 6 Reading	mandatory
	Chap. 6 Power-point Review	mandatory
	Chap. 6 Lecture Review	mandatory
	Chap. 6 Discussion	30 points
	Chap. 6 Journal written summary assignment	10 points
	Chapt. 6 YouTube written summary assignment	10 points



	Chapt. 6 Quiz	10 points	
April 28 th – May 11 th	Chap. 7 Reading Chap. 7 Power-point Review Chap. 7 Lecture Review Chap. 7 Discussion Chap. 7 Journal written summary assignment Chap. 7 YouTube written summary assignment Chap. 7 Quiz	mandatory mandatory mandatory 30 points 10 points 10 points 10 points	All Chapter 7 Assignments and Quiz due May 11 th
May 12 th – May 18 th	Chap. 8 Reading Chap. 8 Power-point Review Chap. 8 Lecture Review Chap. 8 Discussion Chap. 8 Journal written summary assignment Chap. 8 YouTube written summary assignment Chap. 8 Quiz	mandatory mandatory mandatory 30 points 10 points 10 points 10 points	All Chapter 8 Assignments and Quiz due May 18 th
May 19 th -May 25 th	Chap. 9 Reading Chap. 9 Power-point Review Chap. 9 Lecture Review Chap. 9 Discussion Chap. 9 Journal written summary assignment Chap. 9 YouTube written summary assignment Chap. 9 Quiz	mandatory mandatory Chap. mandatory 30 points 10 points 10 points 10 points	All Chapter 9 Assignments and Quiz due May 25 th
May 26 th - June 6 th	Chap. 10 Reading Chap. 10 Power-point Review Chap. 10 Lecture Review Chap. 10 Discussion	mandatory mandatory mandatory 30 points	All Chapter 10 Assignments, Research Paper and Final due June 6 th (final can be taken on
Date	Activity, Assignment, and/or Topic		Quiz, Exams, Mid-term, Research Paper due dates
	Chapt. 10 Journal written summary assignment Chapt. 10 YouTube written summary assignment Final Chap. 1-10	10 points 10 points 100 points	from June 4 th to June 6 th at 5:00 p.m.)

Subject to change without prior notice