Basic Course Information

Semester	**Spring 2018**	Instructor Name	**Alfredo Estrada**
Course Title & #	*Building Construction Related to the Fire Service 3rd Edition.*	Email	**Alfredo.estradajr@imperial.edu**
CRN #		Webpage (optional)	
Room	**Online**	Office	**Room 809**
Class Dates	**Online**	Office Hours	**n/a for part-time faculty**
Class Days	**Online**	Office Phone #	**760 222-0177**
Class Times Units 3	**Online**	Office contact if student will be out or emergency	**Sara Wheat 760 355-6483**

Course Description

- This course is based on the content in the IFSTA manual *Building Construction Related to the Fire Service 3rd Edition.*
- The course meets or exceeds the requirements of the Fire and Emergency Services Higher Education (FESHE) *Building Construction for Fire Protection* standard.

Student Learning Outcomes

1. Identify major types of building construction. (ILO2)
2. Analyze the hazards and tactical considerations associated with the various types of building construction. (ILO1, ILO2)
3. Demonstrate proficiency in building occupancy and code enforcement. (ILO2)
4. Define basic terms and concepts related to fire behavior and chemistry. (ILO2)
5. Identify states of matter and describe chemical processes associated with combustion. (ILO2, ILO4)
6. Analyze physical conditions which determine states of matter and influence fire behavior. (ILO2, ILO4)
7. Describe fire suppression agents and their properties. (ILO2)
8. Compare and contrast methods and techniques of fire extinguishment. (ILO2, ILO4)

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 pre-incident 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 wood-frame 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.

Chapter 11

1. Identify the ways roofs can affect structural fire fighting.
2. Describe the characteristics of the different architectural styles of roofs.
3. Describe the systems used to support roofs.
4. Explain the functions of the roof deck and describe the materials used to construct it.
5. Describe the types and materials used as roof coverings for the different types of roofs.
6. Describe the testing process used to determine the fire rating of roof coverings.
7. Describe the characteristics of roofs installed for specific purposes.

8. Discuss the purpose of penthouses and skylights and their impact on fire fighting tactics.
9. Describe the impact ceilings have on fire spread to roofs.

Chapter 12

1. Describe the characteristics of high-rise buildings and their impact on fire fighting tactics.
2. Describe the fire protection systems in high-rise buildings and their integration into fire fighting tactics.
3. Explain the emergency use of elevators in high-rise buildings during a fire event.
4. Discuss the unique aspects of underground buildings and how they affect fire fighting.
5. Identify the usual code requirements for buildings with limited access.
6. Describe the characteristics of membrane structures and their impact on fire fighting tactics.
7. Describe the characteristics and construction of covered malls.
8. Identify the primary concerns when managing a fire event in a detention/correctional facility.
9. Discuss the building codes that apply to atriums from a fire safety standpoint.
10. Describe the forces involved in an explosion and the methods to reduce the resultant structural damage.
11. Identify the requirements for areas of refuge for individuals with disabilities.
12. Describe the characteristics of rack storage as it relates to fire spread and fire fighting tactics.

Chapter 13

1. Describe the impact of conditions found at construction sites on fire fighting tactics.
2. Discuss the methods of providing fire protection at construction sites.
3. Identify and discuss the hazards associated with building remodeling and renovation as they impact fire fighting.
4. Describe the impact building expansion projects have on life safety systems in the existing building.
5. Describe the hazards presented by buildings being demolished as they relate to fire fighting tactics.

The objectives in this course align with the Fire and Emergency Services Higher Education (FESHE) Initiatives, as well as FESHE course objectives; What is FESHE? Working with coordinators of two- and four-year academic fire and emergency medical services (EMS) degree programs, the U. S. Fire Administration's National Fire Academy (NFA) has established the FESHE network of emergency services-related education and training providers. The FESHE mission is to:

Establish an organization of post-secondary institutions to promote higher education and to enhance the recognition of the fire and emergency services as profession to reduce loss of life and property from fire and other hazards.

The initiatives are supported by solutions identified from other industries that could be applied to fire and emergency services.

Textbooks & Other Resources or Links

Text Book: Building Construction Related to the Fire Service Third Edition (Author IFSTA)
ISBN- 978-0-87939-471-4

-U.S. Fire Administration: https://www.usfa.fema.gov/

-NFPA 220: Standard on Types of Building Construction
http://www.nfpa.org/codes-and-standards/document-information-pages?mode=code&code=220

-Title 24, Part 2, Vol. 1, 2010 California Building Code (2010)
https://archive.org/details/gov.ca.bsc.title24.2010.part02.1

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 BB site and do NOT get course messaged to me. I do not want a "backup" copy sent to me. Use Blackboard only – thanks!

Research Paper 1: **100 Points**
DUE DATE: 04/01
(Found in tab labeled Assignments)

Prepare a 3-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 one text citations and two citations from other sources to support the discussion of the topic. Use headers to break up the various section of this assignment is MANDATORY.

Mid-term Exam (Chapter 1 - 5) **100 Points**
DUE DATE: No later than 03/26-04/01/18

(Found in tab labeled Modules & Quizzes)
Complete the multiple choice, true/ false, and essay mid-term exam.

Final Exam (Chapters 1 - 10): 100 Points
DUE DATE: 06/04/18- 06/8/18
Complete the multiple choice, true/ false, and essay final exam.
(Found in the tab labeled Tests and Quizzes)

Discussion Forums (13 Discussions@ 30 points each) 390 Points
(Found in the tab labeled Discussion Board)
This is a two 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 missed 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.**

YouTube Research Summary (Chapters 1-10= 5 points each) 50 Points

Quizzes (Chapter 1-13= 10 points each) 130 Points

One page chapter written chapter journal summary (Chapter 1-13= 5 points each) 65 Points

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.

Prerequisite knowledge:

None

Instructors Plan for Classroom response time and feedback on assignments:

Please note that you will receive a 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 760 222-0177.

Course Grading Based on Course Objectives

Grading scale: A = 935 to 841 points; B = 840 to 748 points; C = 747 to 654 points; and F = 653 to 0 points.

Attendance

- A student who fails to attend the first meeting of a class or does not complete the first mandatory activity of an online class will be dropped by the instructor as of the first official meeting of that class. Should readmission be desired, the student's status will be the same as that of any other student who desires to add a class. It is the student's responsibility to drop or officially withdraw from the class. See General Catalog for details.
- Regular attendance in all classes is expected of all students. A student whose continuous, unexcused absences exceed the number of hours the class is scheduled to meet per week may be dropped. For online courses, students who fail to complete required activities for two consecutive weeks may be considered to have excessive absences and may be dropped.
- Absences attributed to the representation of the college at officially approved events (conferences, contests, and field trips) will be counted as 'excused' absences.

Online Classroom Etiquette

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.

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.

Academic Honesty

- Plagiarism is taking and presenting as one's own the writings or ideas of others, without citing the source. You should understand the concept of plagiarism and keep it in mind when taking exams and preparing written materials. If you do not understand how to 'cite a source' correctly, you must ask for help.
- Cheating is defined as fraud, deceit, or dishonesty in an academic assignment, or using or attempting to use materials, or assisting others in using materials that are prohibited or inappropriate in the context of the academic assignment in question.

  Anyone caught cheating or will receive a zero (0) on the exam or assignment, and the instructor may report the incident to the Campus Disciplinary Officer, who may place related documentation in a file. Repeated acts of cheating may result in an F in the course and/or disciplinary action. Please refer to the General School Catalog for more information on academic dishonesty or other misconduct. Acts of cheating include, but are not limited to, the following: (a) plagiarism; (b) copying or attempting to copy from others during an examination or on an assignment; (c) communicating test information with another person during an examination; (d) allowing others to do an assignment or portion of an assignment; (e) using a commercial term paper service.

Additional Help – Discretionary Section and Language

- CANVAS
- Learning Labs: There are several 'labs' on campus to assist you through the use of computers, tutors, or a combination. Please consult your college map for the Math Lab, Reading & Writing Lab, and Study Skills Center (library). Please speak to the instructor about labs unique to your specific program.

- Library Services: There is more to our library than just books. You have access to tutors in the Study Skills Center, study rooms for small groups, and online access to a wealth of resources.

Disabled Student Programs and Services (DSPS)

Any student with a documented disability who may need educational accommodations should notify the instructor or the Disabled Student Programs and Services (DSP&S) office as soon as possible. The DSP&S office is located in Building 2100, telephone 760-355-6313, if you feel you need to be evaluated for educational accommodations.

Student Counseling and Health Services

Students have counseling and health services available, provided by the pre-paid Student Health Fee. We now also have a fulltime mental health counselor. For information see http://www.imperial.edu/students/student-health-center/. The IVC Student Health Center is located in the Health Science building in Room 2109, telephone 760-355-6310.

Student Rights and Responsibilities

Students have the right to experience a positive learning environment and due process. For further information regarding student rights and responsibilities, please refer to the IVC General Catalog available online at http://www.imperial.edu/index.php?option=com_docman&task=doc_download&gid=4516&Itemid=762

Information Literacy

Imperial Valley College is dedicated to helping students skillfully discover, evaluate, and use information from all sources. Students can access tutorials at http://www.imperial.edu/courses-and-programs/divisions/arts-and-letters/library-department/info-lit-tutorials/

Anticipated Class Weekly Schedule

Week 1 Module 1 – Due Date: Sunday 02/18

Week 2 Module 2-Due Date: Sunday 02/25

Week 3 Module 3-Due Date: Sunday 03/04

Week 4 Module 4-**Due Date: Sunday 03/11**

Week 5 Module 5-Due Date: Sunday 03/18

Week 6 Module 6- Due Date: Sunday 03/25

Week 7 Mid-Term and Research Paper Due 04/01

Week 8 –Vacation

Week 9 Module 7 Due Date: Sunday 04/15

Week 10 Module 8 Due Date: Sunday 04/22

Week 11 Module 9 Due Date: Sunday 05/06

Week 12 Module 10 Due Date: Sunday 05/13

Week 13 Module 11 Due Date: Sunday 05/20

Week 14 Module 12 Due Date: Sunday 05/27

Week 15 Module 13 Due Date: Sunday 06/03

Week 16- Finals & Final Research Paper Due Date: 06/08

Course Readings

Chapter	Topic	Text Pre-Reading
1	Building Construction and the Fire Service	pp. 9-41
2	Structural Fire Resistance and Building Classifications	pp. 45-67
3	The Way Buildings are Built: Structural Design Features	pp. 71-103
4	Building Systems	pp. 107-146
5	Fire Behavior and Building Construction	pp. 151-179
6	Foundations	pp. 183-192
7	Wood Construction	pp. 197-228
8	Masonry and Ordinary Construction	pp. 233-253
9	Steel Construction	pp. 257-276
10	Concrete Construction	pp. 281-298
	11	Roofs	pp. 303-334

	12	Special Structures and Design Features	pp. 339-371
	13	Buildings Under Construction, Remodeling, Expansion, and Demolition	pp. 375-388
	14	Non-Fire Building Collapse	pp. 393-408