

FLORIDA STATE COLLEGE AT JACKSONVILLE

COLLEGE CREDIT COURSE OUTLINE

COURSE NUMBER:	FFP 2120
COURSE TITLE:	Building Construction for the Fire Service
PREREQUISITE(S):	None
COREQUISITE(S):	None
CREDIT HOURS:	3
CONTACT HOURS/WEEK:	3
CONTACT HOUR BREAKDOWN:	
Lecture/Discussion:	3
Laboratory:	
Other _____:	
FACULTY WORKLOAD POINTS:	3
STANDARDIZED CLASS SIZE ALLOCATION:	25
<p>CATALOG COURSE DESCRIPTION: This course provides credit/contact hours toward the pursuit of the Fire Prevention Inspection Certificate Program as well as hours toward the Fire Science Technology Degree Program. This course deals with building construction as it relates to assault by fire and gravity. Considerable study and discussion will focus on how construction and the enforcement of codes and standards can influence fire spread, fire, confinement, and building collapse. Other areas of study include those of federal, state, and local laws applicable to the fire service; review of Fire Codes and Standards of the National Fire Protection Association; the Fire Prevention Code of the American Insurance Association; and the role of the State Fire Marshal.</p>	
SUGGESTED TEXT(S):	<p><u>Building Construction for the Fire Service</u>, 3rd edition, 1992, Francis Brannigan, NFPA</p> <p><u>NFPA Fire Protection Handbook</u>, 18th Edition, NFPA, 1999.</p>
IMPLEMENTATION DATE:	November 14, 1987
REVIEW OR MODIFICATION DATE:	<p>May 1, 1990</p> <p>Fall Term, 2003 (20041) - was FFP 2300</p> <p>Fall Term, 2008 (20091) - Outline Review 2007</p>

COURSE TOPICS	CONTACT HOURS <u>PER TOPIC</u>
I. Initial Thoughts and Recommendations	4
A. Watch Your Language	
B. Overhauling and Safety	
C. Pre-fire Planning	
II. Principles of Construction	4
A. Why Study of Building Construction	
B. Definition of Loads	
C. Fire Load	
D. The Characteristics of Materials	
E. The Meanings of "Combustible"	
F. Applying forces of Materials	
G. Composites	
H. Structural Elements	
I. Columns	
J. Walls	
K. Roofs	
L. Connections	
III. Wood Construction	4
A. Types	
B. Wood in Non-Combustible and Fire-Resistive Buildings	
C. Exposure to Fire-Resistive Buildings	
D. Firestopping	
E. Wood as a Building Material	
F. Ignition	
G. Treated Wood	
H. Engineering Wood	
I. Sheathing	
J. Wood Shingle Roof	
K. Making Wood Construction Safe	
IV. Ordinary Construction	4
A. Construction Characteristics	
B. Problems	
C. Structural Stability of Masonry Walls	
D. Interior Structural Stability	
E. Void Spaces	
F. Masonry Bearing Walls as Fire Barriers	
G. Risk Analysis	

COURSE TOPICS (CONTINUED)

CONTACT HOURS
PER TOPIC

	H. Mill Construction	
	I. Case Studies	
V.	Garden Apartments and Other Protected Structures	4
	A. Fire Department Problems	
	B. Protected Combustible Construction	
	C. Fire Walls/Barriers - Draft Stops	
	D. A Word About Sprinklers	
	E. Serving the Citizens/Case Studies	
VI.	Steel Construction	4
	A. Fire Characteristics	
	B. Definitions	
	C. More on the Fire Characteristics of Steel	
	D. Overcoming the Negative Fire Characteristics of Steel	
	E. Insulated Metal Deck Roof Fire Problem	
	F. Fire Walls	
	G. Fire Doors	
	H. Types of Protection of Steel Structures	
	I. Water Damage	
	J. Passive/Dynamic Protection	
	K. An Idea is Adopted	
VII.	Concrete Construction	3
	A. Steel vs. Concrete Framing	
	B. Fire Department Problems	
	C. Concrete Structural Elements	
	D. Collapse During Construction	
	E. Fire Problems During Construction	
	F. Fire Problems in Finished Buildings	
VIII.	Fire Growth	3
	A. Example of Fire Growth	
	B. Industry Opposition	
	C. Remodeled Ceiling Hazards	
	D. Alterations	
	E. Regulations	
	F. Control of Rapid Fire Growth	
	G. Testing and Rating Materials	
	H. Faked Tests/Don't Be Mousetrapped	

COURSE TOPICS (CONTINUED)	<u>CONTACT HOURS PER TOPIC</u>
IX. Smoke and Fire Containment	3
A. Fire Containment	
B. Smoke/Gases	
C. Flammability	
D. Smoke Damage/Contaminated of Smoke	
E. Corrosion	
F. Containment of Fire	
G. Escalators	
X. High-Rise Construction	3
A. Historical Notes	
B. Parking Garages	
C. Problem and Hazards with High-Rises	
D. Smoke Movement	
E. Air Conditioning	
F. Smoke Removal Systems	
G. Compartmentation	
H. Pressurized Stairways	
I. Special Equipment	
J. Alterations to Occupied Buildings	
K. Partial Occupancy of Building Under Construction	
L. Case Studies	
XI. Trusses	3
A. The Truss	
B. Truss Principles	
C. Arena Collapses	
D. Heavy Trusses	
E. Fire Resistance Ratings	
F. Miscellaneous	
G. Wooden I-Beams	
H. Inconsistent Construction	
I. Case Studies	
XII. Automatic Sprinklers	3
A. Types of Systems	
B. Installation Incentives	
C. Opposition to Sprinklers	
D. Popular Misconceptions	
E. Fire Service Misconceptions	
F. Protection of Glass Fire Barriers	

COURSE TOPICS (CONTINUED)

CONTACT HOURS
PER TOPIC

XIII. Rack Storage

3

- A. Warehouse Problems
- B. Fire Defenses
- C. Passive Defenses
- D. Active Defenses
- E. Attitudes
- F. Fire Department Actions
- G. Protecting the Fire Department and the City Treasury
- H. Personal Safety

PROGRAM TITLE: Fire Science Technology
COURSE TITLE: Building Construction for the Fire Service
CIP NUMBER: 0743.020100

LIST PERFORMANCE STANDARD ADDRESSED:

NUMBER(S): TITLE(S):

03.0 DEMONSTRATE KNOWLEDGE OF FIRE BEHAVIOR -- The student will be able to:

- 03.01 Define the term fire, flashover, and flame-over.
- 03.02 Define the fire triangle and tetrahedron.
- 03.03 Identify two chemical, mechanical, and electrical energy heat sources.
- 03.04 Define the following potential stages of fire: (a) Incipient; (b) Flame spread; (c) Hot smoldering; (d) Flash over; (e) Steady state; (f) Clear burning.
- 03.05 Define the three methods of heat transfer.
- 03.06 Define the three physical stages of matter in which fuels are commonly found.
- 03.07 Define the hazard of finely divided fuels as they relate to the combustion process.
- 03.08 Define the terms flash point, fire point, and ignition temperature.
- 03.09 Define concentrations of oxygen in air as it affects combustion.
- 03.10 Identify three products of combustion commonly found in structural fires which create a life hazard.
- 03.11 Define the following units of heat measurements: (a) British Thermal Unit (BTU); (b) Fahrenheit (F); (c) Celsius (C); (d) Calorie (Cal); (e) Kilowatt (kw); (f) British Thermal Units/second (BTU/s); (g) Watt (w); (h) Megawatt (mw); (i) Joule (j).
- 03.12 Define the terms thermal balance and imbalance.

07.0 DISCUSS FORCIBLE ENTRY AND SALVAGE -- The student will be able to:

- 07.01 Identify procedures for forcible entry.
- 07.02 Identify conditions that may hamper fire department access to a building or premises in event of fire or other emergency.
- 07.03 Identify the purpose of salvage and its value to the public and the fire department.
- 07.04 Identify locations in buildings, objects, etc., that require special protection during salvage operations.

13.0 DEMONSTRATE SAFETY PROCEDURES -- The student will be able to:

- 13.01 Identify dangerous building conditions created by fire.
- 13.02 Demonstrate techniques for action when trapped or disoriented in a fire situation or a hostile environment.
- 13.03 Define procedures to be used in electrical emergencies.
- 13.04 Define fire service lighting equipment.
- 13.05 Identify safety procedures when using fire service lighting equipment.
- 13.06 Demonstrate use of portable power plants, lights, cords, and connectors.

LIST PERFORMANCE STANDARD ADDRESSED: (CONTINUED)

NUMBER(S):

TITLE(S):

- 13.07 Demonstrate the service and maintenance of portable power plants and lighting equipment.
- 13.08 Define safety procedures as they apply to emergency operations. The specific areas to be defined are: (a) protective equipment; (b) Team concept; (c) Portable tools and equipment; (d) Riding an apparatus; (e) Hazardous materials incidents.
- 13.09 Identify the most common causes of personal injury to the fire fighter.
- 13.10 Given specific hazards, develop an accident prevention program applicable to the officer's duty assignment.
- 13.11 Given accident and injury reports, evaluate the reports and describe appropriate prevention measures.
- 13.12 Given rules, regulations, directives, policies and laws regarding safety practices: (a) demonstrate procedures required to enforce the safety regulations, (b) demonstrate how to maintain complete and accurate records.

20.0 APPLY CODES AND ORDINANCES -- The student will be able to:

- 20.01 Identify and describe the fire prevention codes, building codes, and ordinances applicable to fire safety in the jurisdiction having authority.
- 20.02 Identify and describe recognized fire prevention codes and building codes.
- 20.03 Identify acceptable code enforcement procedures and sources of information for such procedures.
- 20.04 Identify jurisdictional responsibilities of federal, state, and local governments and organizations relative to code enforcement procedures.
- 20.05 Identify anticipated human behavior relative to code enforcement.
- 20.06 Identify local code enforcement procedures.
- 20.07 Identify the judicial system, particularly as it relates to code enforcement procedures.
- 20.08 Identify legal processes as they relate to code enforcement procedures.
- 20.09 Define the established procedure for modification of code requirements.
- 20.10 Identify recommended courtroom demeanor.
- 20.11 Identify the ethical and legal responsibilities associated with code enforcement procedures.
- 20.12 Identify license or permit requirements within the jurisdiction.
- 20.13 Identify the general procedures for handling complaints.

32.0 DEMONSTRATE KNOWLEDGE OF GENERAL FIRE SAFETY -- The student will be able to:

- 32.01 Identify code requirements, regulations, basic operational features, and fire hazards presented by various occupancies and, particularly, public assembly, residential, business, mercantile, office, storage, industrial, manufacturing, and utility occupancies.
- 32.02 Identify general fire-safety code requirements and regulations including but not limited to trash and debris, smoking, open burning, maintaining fire department access, housekeeping procedures, reporting of fire incidents, and limiting combustible decorations and furnishings.
- 32.03 Identify the requirements and purpose of emergency evacuation plans.
- 32.04 Identify the duties and responsibilities of a fire inspector assigned to a fire prevention detail in places of public assembly.
- 32.05 Identify the means of egress requirements for various occupancies.
- 32.06 Identify how to determine that existing egress facilities for a given building, floor, or room are adequate for the occupants involved.

LIST PERFORMANCE STANDARD ADDRESSED: (CONTINUED)

NUMBER(S):

TITLE(S):

- 32.07 Identify how to determine whether travel distances to exits are within allowable limits.
- 32.08 Identify how to determine whether there is adequate access to egress facilities.
- 32.09 Identify how to determine whether exits are properly illuminated, marked, placed, secured, operable, and equipped with hardware.
- 32.10 Identify how to distinguish between enclosed stairwells and smoke towers, and to determine whether general construction and access are properly maintained.
- 32.11 Identify how to determine whether egress paths are adequate in width and properly illuminated and maintained.
- 32.11 Identify the code requirements and regulations relative to the maintenance of means of egress from various occupancies.



NOTE: Use either the Tab key or mouse click to move from field to field. The box will expand to accommodate your entry.

Section 1	SEMESTER CREDIT HOURS (CC): <u>3</u>
COURSE PREFIX AND NUMBER: <u>FFP 2120</u>	CONTACT HOURS (NCC): _____
COURSE TITLE: <u>Building Construction for the Fire Service</u>	

Section 2
TYPE OF COURSE: (Click on the box to check all that apply)

<input type="checkbox"/> AA Elective	<input checked="" type="checkbox"/> AS Required Professional Course	<input type="checkbox"/> College Prep
<input type="checkbox"/> AS Professional Elective	<input checked="" type="checkbox"/> AAS Required Professional Course	<input type="checkbox"/> Technical Certificate
<input type="checkbox"/> Other _____	<input type="checkbox"/> PSAV	<input type="checkbox"/> Apprenticeship
<input type="checkbox"/> General Education: (For General Education courses, you must also complete Section 3 and Section 7)		

Section 3 (If applicable)
INDICATE BELOW THE DISCIPLINE AREA FOR GENERAL EDUCATION COURSES:

<input type="checkbox"/> Communications	<input type="checkbox"/> Social & Behavioral Sciences	<input type="checkbox"/> Mathematics
<input type="checkbox"/> Natural Sciences	<input type="checkbox"/> Humanities	

Section 4
INTELLECTUAL COMPETENCIES:

<input checked="" type="checkbox"/> Reading	<input checked="" type="checkbox"/> Speaking	<input checked="" type="checkbox"/> Critical Analysis	<input type="checkbox"/> Quantitative Skills	<input type="checkbox"/> Scientific Method of Inquiry
<input checked="" type="checkbox"/> Writing	<input checked="" type="checkbox"/> Listening	<input type="checkbox"/> Information Literacy	<input checked="" type="checkbox"/> Ethical Judgment	<input checked="" type="checkbox"/> Working Collaboratively

Section 5 LEARNING OUTCOMES	METHOD OF ASSESSMENT
• Define fire, flashover and flame-over	Exam
• Define the fire triangle and tetrahedron along with demonstrating knowledge of fire behavior	Exam
• Demonstrate knowledge of forcible entry and salvage	Exam
• Identify purpose of salvage and overhaul	Exam
• Identify dangerous building conditions created by fire	Exam
• Demonstrate knowledge of fire prevention, building codes and ordinances	Exam
• Demonstrate knowledge of general fire safety including hazards in various occupancies	Exam
• Demonstrate techniques for action when trapped or disoriented in a fire situation or a hostile environment	Exam

Section 6
Name of Person Completing This Form: Dr. Debra Mertz/Kenneth M. Ellison Date: 10/9/2007