Modesto Junior College
Course Outline of Record

FSCI 362

I. OVERVIEW
The following information will appear in the 2010 - 2011 catalog

FSCI 362 Basic Fire Academy 8 Units

Prerequisite: Satisfactory completion of FSCI 301.
Limitations on Enrollment: Students must possess CPAT certification because they wear self-contained breathing apparatus equipment, so they must meet physical and medical requirements in order to ensure safety, per NFPA 1582 regulation. Acceptance into program by Fire Academy Selection Committee; consideration of acceptance based upon completion of application process.

Basic knowledge and skills of a fire fighter as set by the State Fire Marshal. Successful completion of the course fulfills the educational requirement for Fire Fighter I.

Materials Fee Required

Field trips are required. (A-F Only) Lecture / Lab

II. LEARNING CONTEXT
Given the following learning context, the student who satisfactorily completes this course should be able to achieve the goals specified in Section III, Desired Learning:

A. COURSE CONTENT

1. Required Content:

a. Fire Department Organization
   i. Relationship with other governmental agencies
   ii. Introduction to fire prevention
   iii. Agency rules and regulations
   iv. Obedience and obligation of work sites
   v. Labor organizations
   vi. Health and safety legislation

b. Behavior and Extinguishment Theory
   i. Classification of fires
   ii. Sources of heat energy
   iii. Combustion process
   iv. Phases of fire
   v. Flashover, backdraft and pyrolysis
   vi. Theory of heat transfer
   vii. Products of combustion
viii. Protective measures

ix. Command and Control Procedures

c. Extinguishers
   i. Classification and numbering system on portable extinguishers
   ii. Extinguishing agents
   iii. Characteristics of foam extinguishers
   iv. Safety precautions
   v. Backpack extinguishers

d. Protective Equipment and Safety
   i. Reasons for protective clothing
   ii. How protective clothing can fail
   iii. Personal alarm devices
   iv. Safety precautions to be used in all emergency situations
   v. Safety precautions in structure fires
   vi. Safety precautions in vehicle fires
   vii. Traffic controls, flares, cones, barricades
   viii. Self contained breathing apparatus
   ix. Inspection of apparatus

e. Ropes and Knots
   i. Fibers used in rope construction
   ii. Construction of ropes
   iii. Applications of ropes
   iv. How to tie various knots used in the Fire Service
   v. Equipment used in hoisting
   vi. Storage of ropes

f. Ground Ladders
   i. Ladder safety practices
   ii. Termology of ladders
   iii. Design and construction
   iv. Testing of ladders
v. Maintenance  
vi. Handling and carrying  
vii. Ladder uses  
viii. Types and size selection criteria  
ix. Ladder placement  
g. Hose, Nozzles, Fittings and Evolutions  
i. Spanners and wrenches  
ii. Coupling  
iii. Hose construction  
iv. Hose care  
v. How to carry hose  
vi. Hose to reel and hard line hoses  
vii. Moving working line(hose that charged)  
viii. Fog and straight stream nozzles  
ix. Special purpose nozzles  
x. Hose and nozzles tools  
xi. Small charged lines (3/4" to 1 3/4")  
xii. Medium charged lines (2 1/2" to 3 1/2")  
xiii. Large charged lines (4" to 6")  
xiv. Loading methods  
xv. Hose lays  
xvi. Stand pipes  
xvii. Hydrants  
xviii. Multiple hose connections  
xix. Advancing hose methods  
h. Fire Steams  
i. Characteristics  
ii. Selection criteria  
iii. Fixed and portable  
iv. Stream patterns  

2. Required Lab Content:
a. Fire Behavior
   i. Explanation of how the physical states of fuel affect the combustion process.
   ii. Explanation of how oxygen concentration affects the combustion process.
   iii. Description of common products of combustion.
   iv. Description of the stages of fire development within a compartment.
   v. Summary of factors that affect fire development with a compartment.

b. Firefighter Personal Protective Equipment (PPE)
   i. How to don PPE and SCBA for use at an emergency.
   ii. How to doff PPE and SCBA and prepare for reuse.
   iii. Inspection of PPE and SCBA for use at an emergency incident.
   iv. Cleaning and sanitization of PPE and SCBA.
   v. How to fill an SCBA cylinder from a cascade system.
   vi. How to fill an SCBA cylinder from a compressor/purifier.

c. Ropes and Knots
   i. Description of characteristics of knots commonly used in the fire service.
   ii. Summary of hoisting safety consideration.
   iii. Demonstration of the inspection and maintenance of rope.
   iv. Discussion of coiling and uncoiling of ropes.
   v. Demonstration of the procedures for tying the following knots.
      a. Bowline
      b. Single overhand knot
      c. clove hitch
      d. clove hitch around an object
      e. figure eight
      f. figure eight bend
      g. figure eight on a bight
      h. becket bend
   vi. Demonstration of the hoisting of fire department equipment.
      a. Hoist an axe.
b. Hoist a pike pole.

c. Hoist a roof ladder.

d. Hoist a dry hoseling.

d. Fire Department Ground Ladders
   i. Explanation of proper procedures for positioning ground ladders
   ii. Description of the various types of ladder raises.
   iii. Demonstration of the following ladder carries.
      a. One-firefighter low-shoulder method
      b. Two-firefighter low-shoulder method
      c. Three-firefighter flat-shoulder method
      d. Explanation and demonstration of how to tie the halyard.
   iv. Demonstration of the following ladder raises
      a. One-firefighter method.
      b. Two-firefighter flat raise.
      c. Three-firefighter beam raise.
      d. Three or four-firefighter flat raise.

e. Fire Hose
   i. Discussion of procedures for inspection and maintenance of hose.
   ii. Demonstration of a straight hose roll.
   iii. Demonstration of a donut roll.
   iv. Demonstration of the accordion hose load.
   v. Demonstration of the horseshoe hose load.
   vi. Demonstration of the flat hose load.

3. **Recommended Content:**

   a. Fire Department Organizational Chart
      i. Ranks
         a. Chief
b. Assistant Chief

c. Battalion Chief

d. Captain

ii. Organization Principles
   a. Unity of Command
   b. Span of Control
   c. Division of Labor
   d. Discipline

b. Firefighter Injuries and Fatalities
   i. Line of Duty Deaths (LODD)
   ii. NFPA 1500
   iii. Fire Department Safety and Health Programs
   iv. Scene Management

c. Fire Behavior
   i. Fire Triangle
   ii. Fire Tetrahedron
   iii. Transmission of heat
      a. Conduction
      b. Convection
      c. Radiation

d. Personal Protective Equipment
   i. Breathing Apparatus
      a. Limitation of wearer
      b. Limitation of equipment
      c. Limitation of Air Supply
      d. Air management

B. ENROLLMENT RESTRICTIONS
1. **Prerequisites**

Satisfactory completion of FSCI 301.

2. **Limitations on Enrollment**

Students must possess CPAT certification because they wear self-contained breathing apparatus equipment, so they must meet physical and medical requirements in order to ensure safety, per NFPA 1582 regulation. Acceptance into program by Fire Academy Selection Committee; consideration of acceptance based upon completion of application process.

3. **Requisite Skills**

*Before entering the course, the student will be able to:*

a. Describe the history of the fire service and the evolution of both public fire protection and private fire protection

b. Differentiate between fire department functions

c. Identify fire protection career opportunities

d. Identify fire department organization

e. Explain the importance and impact of fire service on the general public

f. Enrollment limited to students who have passed a physical agility test and have a valid CPAT card. Enrollment limited to students must possess both a valid CPR card, and EMT or 40-hour First Responder card

C. **HOURS AND UNITS**

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D. **METHODS OF INSTRUCTION (TYPICAL)**

Instructors of the course might conduct the course using the following method:

1. Classroom lecture with visual aids
2. Practical demonstrations and hands on skills
3. Practical application with exercises and real fire fighting

E. **ASSIGNMENTS (TYPICAL)**

1. **EVIDENCE OF APPROPRIATE WORKLOAD FOR COURSE UNITS**

*Time spent on coursework in addition to hours of instruction (lecture hours)*

1. Prepare for daily testing on SCBA equipment.
2. Study for quizzes which will be given 3 to 4 times a week on lecture material.
3. Once per week all students will be timed for hose pulls and ladder placement.
4. Preparation for oral presentation on the uses of fire fighting equipment.
5. Daily review of fire technology terminology.
6. Write resumes and prepare for oral interviews.
7. Daily maintenance of equipment to be ready for duty (class).
8. Practice and prepare for manipulative ("hands-on") performance tests.
9. Review outline of interview questions.
10. Study for comprehensive tests for each training module.
2. **EVIDENCE OF CRITICAL THINKING**

Assignments require the appropriate level of critical thinking

1. Examine problem solving exercise dealing with handling fire conditions and safety on the fire ground.
2. Evaluate a scene and determine fire origins.
3. Evaluate emergency medical situations and determine the proper methods, procedures.
4. Determine the proper ladders to use on building fires and on rescue scene.
5. Determine and set scene safety for hazardous material emergency.
6. Determine the proper tactics for fire control and the best method for fire containment.
7. Determine the proper extraction procedures for victim trapped in a structure, vehicle and underground.

F. **TEXTS AND OTHER READINGS (TYPICAL)**

3. **Other**: Firefighter Protective clothing and equipment.

III. **DESIRED LEARNING**

A. **COURSE GOAL**

As a result of satisfactory completion of this course, the student should be prepared to:

enter the Fire Service as a volunteer or paid firefighter by meeting the employment requirements of most California Fire Departments. The student will use basic firefighter knowledge and skills, with an emphasis on the "hands on" approach to skills development. This course conforms to the standards for certification by the State Board of Fire Services and the Office of State Fire Training.

B. **STUDENT LEARNING GOALS**

Mastery of the following learning goals will enable the student to achieve the overall course goal.

1. **Required Learning Goals**

   Upon satisfactory completion of this course, the student will be able to:

   a. Identify phases, classifications and fire problems
   b. Identify construction, design and application of rope, hose, and ladders
   c. Identify hazardous material labeling systems and placards
   d. Demonstrate recognition and management skills relating to life threatening situations dealing with airway, breathing and circulation of the victim of illness or injury
   e. Demonstrate proper techniques of
      1. artificial ventilation
      2. control of bleeding
      3. patient assessment
      4. emergency child birth
      5. extraction from entrapment
   f. Analyze given fire ground practical exercises, determine current conditions and develop proper safety procedures to follow

2. **Lab Learning Goals**

   Upon satisfactory completion of the lab portion of this course, the student will be able to:
a. Describe physical and chemical changes of matter related to fire.
b. Explain the difference between heat and temperature.
c. Describe common products of combustion.
d. Describe the purpose of protective clothing and equipment.
e. Discuss general donning and doffing considerations for SCBA.
f. Perform emergency operations procedures for an SCBA.
g. Compare and contrast the characteristics of life-safety rope and utility rope.
h. Describe parts of a rope and considerations in tying a knot.
i. Discuss rescue rope and harness.
j. Describe types of ground ladders used in the fire service.
k. Explain proper procedures for positioning ground ladders.
l. Describe various types of ladders raises.
m. Discuss general care and maintenance of fire hose.
n. Describe types of fire hose damage and practices to prevent such damage.

3. **Recommended Learning Goals**

Upon satisfactory completion of the course (when the related recommended content is covered) the student will be able to:

a. Identify types of built in fire control systems
b. Demonstrate knowledge of building construction
c. Identify the command positions of the Incident Command System
d. Demonstrate knowledge of wildland fire control
   1. utilizing water
   2. utilizing ground cover tools
   3. direct and indirect attack

IV. **METHODS OF ASSESSMENT (TYPICAL)**

A. **FORMATIVE ASSESSMENT**

1. Quizzes on the Essentials of Fire Fighting book and on lectures
2. Face-to-face testing on rope ties and knots
3. Exam on Hazardous Material
4. Face-To-Face hose carries and advancing of multiple hose lines
5. Exam on Incident Command Systems
6. Face-To-Face testing of ladders, carries, positioning and commands used on the foreground
7. Face-To-Face testing of Personnel Protective Equipment i.e., SCBA, Turnout gear.
8. Exam on First Responder with Healthcare

B. **SUMMATIVE ASSESSMENT**

1. Final manipulative (hands-on) exam on the handling of fire hose, ladders, SCBAs, salvage, fire streams and rope ties

2. Final written exam on wildland fire control

3. Final written exam on the Essential of Fire Fighting