		т	ECNNO	LOGY AND	HEALTH DIV	VISION	
Program:	Fire Technology (AS degree and Cert.)	# Courses: (if applicable)	17	Updated:	5/28/15	Submitted by:	S. Shull / J. Hirsch

	Institutional Level Outc	omes (	ILOs): As a result of an educational following knowledge, ski	experience with any aspect of the cills, abilities, and attitudes:	ollege, studen	ts wil	l deve	lop the	9
	1. Communication		2. Critical Thinking	3. Information and Technology Literacy	4: Person Environme	•			
	nect PLOs with an I, P, or M (se ram or educational experience.	e Key in F	Footer) identifying the level to which knowledge of	or a skill can be demonstrated following the com	pletion of the		PLO 1 Align	to ILC ment	
PL	O Name	PLO E	Defined: Upon successful completion of	f this program, students will be able to:		1	2	3	4
1.	Fire Department Organization and communication		fire department organization, culture, a ment personnel.	nd methods of communication of entry	level fire	Р	Р	Р	Р
2.	Occupational health and safety	_	re and assess firefighter hazards, and de ard safety procedures.	emonstrate safe practices by using mini	mum	Р	Р		
3.	Analysis of fire prevention techniques	Demoi	nstrate knowledge of fire preventions eff	forts and a resulting reduction of life an	d property	Р	Р	I	I
4.	Apply the selection and use of basic tools and equipment		edge of strategy and tactics required for ds, techniques, tools and equipment.	r the proper selection and safe use of fir	efighting	Р	Р		
5.	Fire chemistry and behavior		y fire chemistry and behavior for the purteristics.	rpose of predicting fire dynamics and fla	ame spread	Р	Р		
6.	Fire protection systems and alarms	Identif devise	y components of built-in and portable fi	re protections systems and alarm and n	otification	Р	Р		
7.	Building Construction relating to firefighter safety		nstrate knowledge of the 5 basic types of the 5 basic types of to each type.	of construction. Identify the component	s and hazards	Р	Р		
8.	Leadership and Management concepts		edge of Leadership and Management co ency situations.	oncepts as they relate to emergency and	non-	Р	Р		
9.									
10.									

See the Outcomes Assessment website for definitions and examples of Mt. SAC's ILOs: http://www.mtsac.edu/instruction/outcomes/ilos.html Key for Level of Learning

(Use for Mapping SLOs/MOs to PLOs to ILOs)
I = Knowledge/Skill Introduced

P = Knowledge/Skill Practiced/Applied

M = Knowledge/Skill Mastered

#### Student Learning Objectives (SLOs), Measureable Objectives (MOs), Administrative Unit Objectives (AUOs)

Course: Fire 1	Connec	t Outcom trated in	es with a that porti	n I, P, or on of the	M (see Ke course or	ey in Foot service.	ter) identi	fying the I	level to w	hich knov	vledge or	a skill car	n be	
SLOs, MOs, AUOs	PLO 1	PLO 2	PLO 3	PLO 4	PLO 5	PLO 6	PLO 7	PLO 8	PLO 9	PLO 10	ILO 1	ILO 2	ILO 3	ILO 4
List the educational requirements, duties, and information sources for various occupations in fire protection. (SLO)	1										1			
Identify the types of common fire department apparatus, equipment, and personal safety equipment used for firefighting. (SLO)		I									ı			
Define the field of fire protection technology.	1										- 1			
Describe career opportunities in fire protection and related fields. (MO)	I										I			
Describe the overall problems of fire in the United States compared to other countries. (MO)		- 1	- 1								-1	I		
Explain the importance of fire behavior (chemistry) and how it relates to fire extinguishment. (MO)					I						ı			
Compare and contrast the relative effectiveness of positions in the fire department and their function using paramilitary structure.	1										1			

Student Learning Objectives (SLC	Os), M	leasur	eable	Objec	ctives	(MOs	), Adm	ninistr	ative (	Unit O	bjecti	ves (A	(UOs	
Course: Fire 2	Connec	t Outcom strated in	es with a that porti	n I, P, or on of the	M (see Ke	ey in Foot service.	ter) identi	fying the I	evel to w	hich knov	vledge or	a skill ca	n be	
SLOs, MOs, AUOs	PLO 1	PLO 2	PLO 3	PLO 4	PLO 5	PLO 6	PLO 7	PLO 8	PLO 9	PLO 10	ILO 1	ILO 2	ILO 3	ILO 4
Identify the model codes, standards, and regulations related to fire prevention. (SLO)			ı								-1			
Define the national fire problem, and functions of fire prevention organizations and associations. (SLO)			I								ı			
Define the principal functions of a fire prevention bureau. (MO)														
Correlate the relationship between fire prevention efforts and the resulting reduction of life and property loss. (MO)		I									ı			
Classify the major types of fire hazards that could be found on a commercial fire inspection. (MO)			- 1								1			
Describe the hazard correction process used by a fire prevention bureau. (MO)			ı								ı			
Determine which fire codes would be applied based on different occupancy types. (MO)		- 1									1	1		
Describe the common fire detection signaling systems found in commercial buildings. (MO)	ı					I					ı			

Student Learning Objectives (SLC	Os), M	leasur	eable	Objec	tives	(MOs)	), Adm	ninistr	ative	Unit O	bjecti	ves (A	(UOs	
Course: Fire 3				n I, P, or I on of the			ter) identi	fying the I	evel to w	hich knov	vledge or	a skill ca	n be	
SLOs, MOs, AUOs	PLO 1	PLO 2	PLO 3	PLO 4	PLO 5	PLO 6	PLO 7	PLO 8	PLO 9	PLO 10	ILO 1	ILO 2	ILO 3	ILO 4
Students will identify types of standpipe systems and water supply requirements. (SLO)						- I					Р	- I		
Students will understand the five fire protection systems. (SLO)						I					Р	ı		
Analyze, prepare, and present diagrams of fire protection systems that demonstrate complete knowledge of residential, commercial, and industrial, sprinkler systems. (MO)						I					Р	I		
Describe the required care and maintenance for portable and fixed fire protection systems. (MO)		ı				I					Р	ı		
Identify types, components, and operation of automatic and special sprinkler systems. (MO)						- I					Р	- 1		
Identify types of standpipe systems and water supply requirements. (MO)						I					Р	ı		
Compare detection, alarm, and supervisory devices and systems. (MO)						- I					Р	- 1		
Compare heat and smoke detection devices and hardware. (MO)						I					Р	ı		

Student Learning Objectives (SLC	Os), M	leasur	eable	Objec	ctives	(MOs)	), Adm	ninistr	ative (	Unit O	bjecti	ves ( <i>F</i>	(sOU)	
Course: Fire 4				n I, P, or I on of the o			ter) identi	fying the I	evel to w	hich know	vledge or	a skill ca	n be	
SLOs, MOs, AUOs	PLO 1	PLO 2	PLO 3	PLO 4	PLO 5	PLO 6	PLO 7	PLO 8	PLO 9	PLO 10	ILO 1	ILO 2	ILO 3	ILO 4
Students will understand the dangers of light- weight building construction. (SLO)		- I									Р			
Students will understand five types of building construction. (SLO)							I				Р			
Analyze, prepare, and present building construction systems that include building materials, occupancy requirements, and occupant and fire safety. (MO)		I					ı				Р			
Differentiate between the loads that are placed on a building and describe each type of load.							I				Р			
List and compare the structural members on various types of construction. (MO)							- 1				Р			
Define flame spread, its hazards, contributing factors and possible solutions. (MO)					I		I				Р			
Demonstrate fire inspection practices that are applicable to individual buildings. (MO)			I								Р			
Identify firefighting practices and procedures that have developed for different types of construction. (MO)		I			I						Р			

Student Learning Objectives (SLC	Os), M	leasur	reable	Objed	ctives	(MOs)	), Adn	ninistr	ative (	Unit O	bjecti	ves (A	(UOs	
Course: Fire 5	Connec	t Outcom strated in	nes with a that porti	n I, P, or on of the	M (see Ke course or	ey in Foot service.	ter) identi	fying the I	evel to w	hich knov	vledge or	a skill ca	n be	
SLOs, MOs, AUOs	PLO 1	PLO 2	PLO 3	PLO 4	PLO 5	PLO 6	PLO 7	PLO 8	PLO 9	PLO 10	ILO 1	ILO 2	ILO 3	ILO 4
Students will be able to explain the theory of fire and compare the applications of various extinguishing techniques. (SLO)					- I						Р			
Students will understand the four phases of fire. (SLO)					I						Р			
Identify the Department of Transportation warning placards and labeling systems. (MO)		- 1									Р			
Analyze the transportation of hazardous materials; determine the proper placarding is in place. (MO)		ı			ı						Р	Р		
Define in the physical properties of dangerous chemicals. (MO)		- 1			I						Р			
Explain the theory of fire and compare the applications of various extinguishing techniques. (MO)					ı						Р	Р		
Explain the importance of the various properties of the three physical states of matter. (MO)					I						Р	Р		

Student Learning Objectives (SLC	Os), N	leasur	eable	Objec	ctives	(MOs)	), Adm	ninistr	ative (	Unit O	bjecti	ves ( <i>P</i>	(UOs	
Course: Fire 6				n I, P, or I on of the			ter) identi	fying the I	evel to w	hich knov	vledge or	a skill ca	n be	
SLOs, MOs, AUOs	PLO 1	PLO 2	PLO 3	PLO 4	PLO 5	PLO 6	PLO 7	PLO 8	PLO 9	PLO 10	ILO 1	ILO 2	ILO 3	ILO 4
Students will be able to identify and describe the difference between flammable, combustible, and toxic materials. (SLO)		-1			-1						Р			
Students will understand the importance of the three haz mat zones of operation. (SLO)		I									Р			
Describe the various DOT Hazard classifications. (MO)		I									Р			
Analyze, and then conduct scene isolation, scene stabilization and incident control. (MO)	ı										Р	Р		
Compare and contrast importance of evaluation, non-commitment by the fire department, and total withdrawal procedures. (MO)		ı									Р	Р		
Write a technical report on the health dangers within chemical classes, and describe their resultant symptoms during physical human contact. (MO)		I			I							Р	Р	
Identify OSHA mandated safety training requirements for employers and employees when handling, storing, and using hazardous materials in the work environment. (MO)		ı									Р			

#### Student Learning Objectives (SLOs), Measureable Objectives (MOs), Administrative Unit Objectives (AUOs) Connect Outcomes with an I, P, or M (see Key in Footer) identifying the level to which knowledge or a skill can be Course: Fire 7 demonstrated in that portion of the course or service. 10 4 2 $^{\circ}$ 2 9 $\infty$ $\sim$ 3 PLO PLO PLO PLO PLO PLO PLO PLO 10 SLOs, MOs, AUOs PLO 0 100 0 The student will apply the incident command system at structure fires, wildland fires and Haz Р Mat situations. (SLO) The student will develop pre-fire plans for various Р Р Р types of occupancies. (SLO) Analyze the principles of fire ground tactics and Р strategy and how they relate to fire behavior. (MO) Evaluate different extinguishing agents and their effectiveness. (MO) Determine appropriate staffing requirements for Р structure fire situations. (MO) Determine scene size-up requirements for ı commercial fires. (MO) Recognize and describe the need to implement Р rapid intervention at the fire scene. (MO) Analyze and apply the incident command system at structure fires, wildland and Haz Mat incidents. (MO)

#### Student Learning Objectives (SLOs), Measureable Objectives (MOs), Administrative Unit Objectives (AUOs) Connect Outcomes with an I, P, or M (see Key in Footer) identifying the level to which knowledge or a skill can be Course: Fire 8 demonstrated in that portion of the course or service. 10 4 0 2 $^{\circ}$ 2 9 / $\infty$ $\sim$ 3 $\overline{\phantom{a}}$ PLO PLO PLO PLO PLO PLO PLO PLO PLO 10 SLOs, MOs, AUOs PLO 0 100 0 Students will describe the principles of conflict Р resolution. (SLO) Students will be able to explain principles of group dynamics and their impact on the function Р of the organization. (SLO) Identify skills necessary for successful transition Р Р from firefighter to supervisor. (MO) Classify specific management principles that Р impact the organization's productivity. (MO) Explain different leadership styles and their P impact on meeting organizational goals and Р objectives. (MO) Demonstrate effective written communication Р skills. (MO) Describe the principles of conflict resolution. Р Р Demonstrate accurate report writing and record Р Р keeping. (MO) Apply appropriate safety regulations and Р standards. (MO) Assess firefighting capability. (MO) Р Т

Student Learning Objectives (SLC	Os), M	leasur	eable	Objec	ctives	(MOs)	), Adm	ninistr	ative (	Unit O	bjecti	ves (A	(UOs	
Course: Fire 9	Connec	t Outcom strated in	es with a that portic	n I, P, or on of the	M (see Ke course or	ey in Foot service.	ter) identi	fying the I	evel to w	hich knov	vledge or	a skill ca	n be	
SLOs, MOs, AUOs	PLO 1	PLO 2	PLO 3	PLO 4	PLO 5	9 O7d	PLO 7	PLO 8	PLO 9	PLO 10	ILO 1	ILO 2	ILO 3	ILO 4
Students will be able to calculate engine and pump pressure during firefighting operations. (SLO)	1										Р			
Students will be able to calculate the horizontal reach of fire streams, water flow velocity, nozzle pressure, and hydrant discharge. (SLO)				I							Р			
Summarize principles of hydraulic operations.	1			- I							Р			
Calculate the area and volume of appliances. (MO)				ı							Р			
Calculate volume and capacity of fire hoses, water systems. (MO)		- 1		- 1							Р			
Calculate the horizontal reach of fire streams, water flow velocity, nozzle directions and hydrant and nozzle discharge. (MO)		I		I							Р			
Calculate friction loss in various types of fire hoses, required engine pressure at ground level, engine pressure for elevated streams and pump capacity. (MO)		1		1							Р			
Calculate the number of pumpers required in relay operations and calculate the remaining pump pressure in drafting operations. (MO)		I		I							Р			

Student Learning Objectives (SLC	Os), N	leasur	reable	Objec	ctives	(MOs)	), Adn	ninistr	ative (	Unit O	bjecti	ves (A	(UOs	
Course: Fire 10			nes with a that porti				ter) identi	fying the I	evel to w	hich knov	vledge or	a skill ca	n be	
SLOs, MOs, AUOs	PLO 1	PLO 2	PLO 3	PLO 4	PLO 5	PLO 6	PLO 7	PLO 8	PLO 9	PLO 10	ILO 1	ILO 2	ILO 3	ILO 4
The student will be able recognize the difference between the cause and origin of fires. (SLO	1	- 1	1		- 1						Р	Р		
Students will Identify the various motives used in arson fires. (SLO)	ı	I	I		ı						Р	Р		
Recognize the difference between cause and origin of fires. (MO)	-1	- 1	I		- 1		I				Р	Р		
2. Recognize, protect and preserve evidence of an incendiary fire. (MO)		I	I	I	I		I					Р	Р	
3. Use the technique of "known to unknown" to distinguish between an arson and incendiary fire. (MO)		- 1	1	- 1	-1		- 1				Р	Р	Р	
4. Identify the various motives used in arson fires and court procedures used to prosecute. (MO)		ı	ı	ı	ı						Р	Р	Р	
5. Compare preserved evidence to determine if a fire is arson or accidental. (MO)			I	I							Р	Р		

#### Student Learning Objectives (SLOs), Measureable Objectives (MOs), Administrative Unit Objectives (AUOs) Connect Outcomes with an I, P, or M (see Key in Footer) identifying the level to which knowledge or a skill can be Course: Fire 11 demonstrated in that portion of the course or service. 10 4 0 2 $^{\circ}$ 2 9 $\infty$ $\sim$ 3 $\overline{\phantom{a}}$ PLO PLO PLO PLO PLO PLO PLO PLO PLO 10 SLOs, MOs, AUOs PLO 0 100 0 Compare and contrast different types of fire Р Т apparatus and equipment based on use. (SLO) Students will understand the National Fire **Protection Association Standard for Fire** Т Р Apparatus. (SLO) Compare design types of fire apparatus and equipment and explain construction features and Т Р systems. (MO) Discuss safety troubleshooting and daily maintenance check on an engine, aerial ladder Р truck and elevating platform and small motorized equipment. (MO) Describe design variances between 2 and 4 cycle Р engines. (MO) Compare and contrast gas vs. diesel engines. Т Compare and contrast various pump types. (MO)

Student Learning Objectives (SLO	s), M	easur	eable	Objec	tives	(MOs)	, Adm	inistra	ative <b>l</b>	Jnit Ol	bjectiv	ves (A	UOs)	
Course: Fire 12					M (see K course or		ter) identi	fying the	level to w	hich knov	vledge or	a skill ca	n be	
SLOs, MOs, AUOs	PLO 1	PLO 2	PLO 3	PLO 4	PLO 5	PLO 6	PLO 7	PLO 8	PLO 9	PLO 10	ILO 1	ILO 2	ILO 3	ILO 4
Students will have a basic understanding of wildland fire control problems. (SLO)					I						Р			
Student will be able to identify atmospheric conditions and the impact of fuel availability on fire behavior. (SLO)					I						Р			
Identify wildland fire control problems and the functions of fire control organizations and personnel. (MO)	ı	I			I						P			
Identify atmospheric conditions and the impact of fuel availability and fire behavior. (MO)					I						Р	Р		
Relate fire behavior standards affecting fire line locations and standards. (MO)					I						Р	Р		
Determine fire forecasts, including interpretation and applications. (MO)					I						Р	Р		
Predict fire behavior based on interpretation of operational data. (MO)					I						Р	Р		
Evaluate fire loss report procedures for future prevention, attack and control design. (MO)		I	I					I			Р	Р		
Identify wildland fire terminology, tools, and equipment. (MO)	ı	I		I							P			

Student Learning Objectives (SLC	)s), M	easur	eable	Objec	tives	(MOs)	, Adm	inistra	ative l	Jnit O	bjecti	ves (A	UOs)	
Course: Fire 13	Connec	ct Outcom strated in	nes with a that porti	n I, P, or on of the	M (see Ko	ey in Foot service.	ter) identi	fying the	level to w	hich knov	vledge or	a skill ca	n be	
SLOs, MOs, AUOs	PLO 1	PLO 2	PLO 3	PLO 4	PLO 5	PLO 6	PLO 7	PLO 8	PLO 9	PLO 10	ILO 1	ILO 2	ILO 3	ILO 4
Identify the major causes of firefighter's line of duty deaths and injuries in the United States. (SLO)	I	I									Р			
Identify the means of preventing firefighter's deaths and injuries through the prevention of fires. (SLO)	I		I								Р			
Define and describe the need for cultural and behavioral change within the emergency services relating to safety, incorporating leadership, supervision, accountability and personal responsibility. (MO)		I	I					I			P			
Explain the need for enhancements of personal and organizational accountability for health and safety. (MO)		ı						ı			Р			
Describe and evaluate circumstances that might constitute an unsafe act. (MO)		I									Р			
Defend the need for annual medical evaluations and the establishment of physical fitness criteria for emergency services personnel throughout their careers. (MO)		I									Р			
Discuss how incorporating the lessons learned from investigations can support cultural change throughout the emergency services. (MO)	ı	1						1			Р			
Explain standardized policies for responding to emergency scenes can minimize injuries and deaths. (MO)	I	ı						ı			Р			
Evaluate the need for counseling and psychological support for emergency services personnel and, their families. (MO)	I	I						I			Р	Р		
Identify access to local psychological resources and services. (MO)	I	I									Р			
Discuss the importance of code enforcement in residential structures. (MO)	I	I									Р			

#### Student Learning Objectives (SLOs), Measureable Objectives (MOs), Administrative Unit Objectives (AUOs)

Course: Fire 86	Connec	t Outcom trated in	es with a that porti	n I, P, or I on of the	M (see Ke course or	ey in Foot service.	ter) identi	fying the I	evel to w	hich know	vledge or	a skill car	n be	
SLOs, MOs, AUOs	PLO 1	PLO 2	PLO 3	PLO 4	PLO 5	PLO 6	PLO 7	PLO 8	PLO 9	PLO 10	ILO 1	ILO 2	ILO 3	ILO 4
Students will be able to pass the State Firefighter 1 written and manipulative skills certification exam. (SLO)	1			ı				ı			Р	Р		
Students will be able to pass the Comprehensive Physical Agility Test. (SLO)	I			- 1				I			Р	Р		
Analyze and describe differences between certificate, two-year, and four-year degree programs, and state certification. (MO)	I										Р	Р		
Describe educational requirements, duties, and information sources for various occupations in fire protection. (MO)	ı										Р	Р		
Identify basic components of fire as a chemical reaction, the major phases of fire, and the main factors that influence fire spread and fire behavior. (MO)	1	1			I						Р	Р		
Define and describe the purpose and scope of fire departments. (MO)	ı										Р	Р		
Analyze relationships between fire prevention efforts and resulting reduction of life and property loss. (MO)	1		ı								Р	Р		
Develop skills in: managing hose, using fire- fighting hand tools, knot-tying for hoisting and securing, and using power tools, the Hurst tool, jaws of life, generators, and power saws. (MO)				ı	ı	ı					Р	Р		
Assess fire prevention, how to protect of life and property, and hazardous materials procedures. (MO)		-1	I		- 1						Р	Р		

M = Knowledge/Skill Mastered

Student Learning Objectives (SLOs), Measureable Objectives (MOs), Administrative Unit Objectives (AUOs)														
Course: Fire 91	Connect Outcomes with an I, P, or M (see Key in Footer) identifying the level to which knowledge or a skill can be demonstrated in that portion of the course or service.													
SLOs, MOs, AUOs	PLO 1	PLO 2	PLO 3	PLO 4	PLO 5	PLO 6	PLO 7	PLO 8	PLO 9	PLO 10	ILO 1	ILO 2	ILO 3	ILO 4
Students will be able to understand ladder terminology, analyze ladder placement, and determine proper climbing angles when placed against buildings. (SLO)														
Students will understand maintenance, cleaning and inspection functions for ladders. (SLO)														
Identify the parts of a ladder. (MO)														
Describe the function of the different types of ground ladders. (MO)														
Demonstrate ladder maintenance, cleaning and inspection of ladders. (MO)														
Raise, carry and climb ladders. (MO)														
Analyze ladder placement. (MO)														
Demonstrate ladder safety. (MO)														

#### Student Learning Objectives (SLOs), Measureable Objectives (MOs), Administrative Unit Objectives (AUOs) Connect Outcomes with an I, P, or M (see Key in Footer) identifying the level to which knowledge or a skill can be Course: Fire 93 demonstrated in that portion of the course or service. 10 4 0 2 $^{\circ}$ 2 9 $\infty$ $\sim$ 3 $\overline{\phantom{a}}$ PLO PLO PLO PLO PLO PLO PLO PLO 10 SLOs, MOs, AUOs PLO 0 100 0 Students will prepare for and be able to pass the IFSAC/PROBOARD written certification exam. Р (SLO) Students will prepare for and be able to pass the Р IFSAC/PROBOARD manipulative certification exam. (SLO) Complete paperwork per Authority Having Jurisdiction (AHJ) regulations in accordance with Р the National Firefighter 1 Certification process. (MO) Perform basic firefighting skills at an AHJ Р Т П approved level. (MO) Prepare for and pass a summative written exam Р set by the AHJ. (MO) Perform all manipulative skills in abidance with safety requirements. (MO) Appropriately request the retake through the AHJ. Р (MO)

Student Learning Objectives (SLOs), Measureable Objectives (MOs), Administrative Unit Objectives (AUOs)														
Course: Fire 96	Connect Outcomes with an I, P, or M (see Key in Footer) identifying the level to which knowledge or a skill can be demonstrated in that portion of the course or service.													
SLOs, MOs, AUOs	PLO 1	PLO 2	PLO 3	PLO 4	PLO 5	PLO 6	PLO 7	PLO 8	PLO 9	PLO 10	ILO 1	ILO 2	ILO 3	ILO 4
Employers of Fire Technology Work Experience Students will rate the technical skills of their students as above average. (SLO)														
Employers of Fire Technology Work Experience Students will rate the work habits of their students as above average. (SLO)														
Apply theories of fire service technology to real work-place scenarios. (MO)														
Examine career opportunities in fire service technology or related fields. (MO)														
Maximize opportunities for potential permanent employment through direct contact with the employer. (MO)														
Compare and contrast "real world" work experience with fire service technology theoretical concepts. (MO)														
Determine personal characteristics desired by fire service employers for potential employees. (MO)														
Determine depth and type of experiences required by fire service employers for potential employees. (MO)														