

**College of Micronesia – FSM  
P.O. Box 159  
Kolonia, Pohnpei**

**Course Outline Cover Page**

**Advanced Fire Control and Prevention**

Course Title

**MM 173**

Department and Number

**Course Description:** To provide candidates with the skills and knowledge required to respond effectively as a key member of the on board command fire fighting team and manage shipboard fire prevention, co-ordinate tactical fire fighting and use and maintain fire fighting and fire detection equipment carried on merchant ships.

**Prepared by:** Brent Villiers

**State:** FSM-FMI

	Hours per Week	No. Of Weeks	Total Hours	Semester Credits
Lecture	2/4/8	4/2/1	8	0.5
Practicum	26/13	2/4	52	1
Total Semester Credits:				1.5

**Purpose of Course**

Degree Requirement	_____
Degree Elective	_____
Advanced Certificate	_____
Certificate	_____XX_____
Remedial	_____
Other (Workshop)	_____

**Prerequisite Course(s):** MSG 090 Fire Prevention and Control

\_\_\_\_\_  
**Signature, Chairman, Curriculum Committee**

\_\_\_\_\_  
**Date Approved by Committee**

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**Signature, President, COM-FSM**

\_\_\_\_\_  
**Date Approved by the President**

**General Objective:** To provide candidates with the skills and knowledge required to respond effectively as a key member of the on board command fire fighting team and manage shipboard fire prevention, co-ordinate tactical fire fighting and use and maintain fire fighting and fire detection equipment carried on merchant ships.

**Learning Outcomes:** Upon successful completion of this course the student will be able to:

1. Develop and implement on board training exercises that are appropriate for the vessel type.
2. Manage shipboard fire fighting teams.
3. Manage the evacuation of personnel from fire and smoke affected compartments.
4. Co-ordinate shipboard tactical fire fighting activities.
5. Manage fire prevention and suppression activities involving hazardous goods.
6. Liaise effectively with shore based agencies during a shipboard fire in port.
7. Manage fire investigation and reporting activities.
8. Manage firefighting equipment maintenance.
9. Supervise the operation of fixed fire suppression systems on board ships.

***STUDENTS SHOULD BE MADE AWARE OF OCCUPATIONAL HEALTH AND SAFETY ISSUES IN ALL SITUATIONS AND BE EXPECTED TO DEMONSTRATE SAFE WORKING PRACTICES AT ALL TIMES.***

**Outline of Content:** This course contains:

1. Organization of fire parties.
  - Emergency response organization
  - Roles and responsibilities of parties
2. Organization of on board training in fire fighting activities.
  - Training requirements
  - Strategies for improving on board

3. Management of tactical fire fighting activities for various vessel types and spaces.
  - Contingency planning
  - Command problems and strategies
4. Management of fires involving hazardous cargoes and materials.
  - Use of material data safety sheets.
  - Use of IMDG code emergency schedule
  - Use of BC code
5. Co-ordination and liaison with shore base
  - Relevant Acts
  - Roles and responsibilities
  - Liaison problems and strategies
6. Supervision of inspection and maintenance of fire detection and suppression equipment.
  - Firefighting equipment
  - Fire detection systems
  - Fixed firefighting systems

**Learning Outcomes:** On completion of this course the learner will be able to:

**Learning Outcome 1** **Develop and implement on board training exercises that are appropriate for the vessel type.**

Assessment Criteria

- 1.1 The requirements for on board fire fighting training required by relevant regulations are stated.
- 1.2 The importance of having aims and objectives for a training exercise are discussed.
- 1.3 Strategies for effective debriefing of fire fighting training exercises are developed.

Conditions and method of assessment

As specified in the Assessment Strategy listed at the end of this outline and by a combination of:

- Observation and oral questioning during development of on board training scenarios.

<b>Learning Outcome 2</b>	<b>Manage shipboard fire fighting teams.</b>
Assessment criteria	<p>2.1 The role/function of the command team in a shipboard fire situation is described.</p> <p>2.2 The roles of other fire fighting teams in a shipboard fire are discussed.</p> <p>2.3 The role and duties of the scene leader in a shipboard fire scenario are described.</p> <p>2.4 Possible sources for information that should be available to the command team in a shipboard fire situation are stated.</p> <p>2.5 Problems that are likely to be encountered during the management of a shipboard fire are identified.</p> <p>2.6 Strategies for dealing with tactical fire fighting problems are developed.</p> <p>2.7 A checklist for use in fire fighting management is developed.</p>
Conditions and Method of assessment	<p>As specified in the Assessment Strategy listed at the end of this outline and by a combination of observation and oral questioning of learners during:</p> <ul style="list-style-type: none"> <li>• Practical exercises and fire management simulation using training props under supervision.</li> <li>• Tabletop and role-play exercises in the training room.</li> </ul>
<b>Learning Outcome 3</b>	<b>Manage the evacuation of personnel from fire and smoke affected compartments.</b>
Assessment criteria	<p>3.1 The use of controlled ventilation, in keeping occupied compartments smoke free is discussed.</p> <p>3.2 Evacuation plans are prepared.</p> <p>3.3 The likely actions of passengers in a shipboard fire are described.</p> <p>3.4 SAR operations for missing personnel are planned and implemented.</p> <p>3.5 The handling and treatment of injured personnel is coordinated.</p>

Conditions and Method of assessment	<p>As specified in the Assessment Strategy listed at the end of this outline and by a combination of observation and oral questioning of learners during:</p> <ul style="list-style-type: none"> <li>• Practical exercises and fire management simulation using training props under supervision.</li> <li>• Tabletop and role-play exercises in the training room.</li> </ul>
<b>Learning Outcome 4</b>	<b>Co-ordinate shipboard tactical fire fighting activities.</b>
Assessment criteria	<p>4.1 The characteristics and hazards associated with fires on various ship types and spaces are described.</p> <p>4.2 The use of controlled ventilation in fire suppression and rescue applications is discussed.</p> <p>4.3 A fire control plan is consulted in order to determine a tactical plan of action in a shipboard fire situation.</p> <p>4.4 The indicators of and possible solutions for the loss of stability caused by free surface effect is stated.</p> <p>4.5 Communications with fire teams and with outside stations is managed</p>
Conditions and Method of assessment	<p>As specified in the Assessment Strategy listed at the end of this outline and by a combination of observation and oral questioning of learners during:</p> <ul style="list-style-type: none"> <li>• Practical exercises and fire management simulation using training props under supervision.</li> <li>• Tabletop and role-play exercises in the training room.</li> </ul>
<b>Learning Outcome 5</b>	<b>Manage fire prevention and suppression activities involving hazardous goods.</b>
Assessment criteria	<p>5.1 The use of the IMDG code is demonstrated for:</p> <ul style="list-style-type: none"> <li>• Prevention of fires involving hazardous materials.</li> </ul>

- Preparation of contingency plans.
  - Tactical fire fighting.
- 5.2 The use of material safety data sheets in the event of a fire involving hazardous materials is described.
- 5.3 The use of the BC Code are demonstrated for:
- Prevention of fires involving hazardous bulk cargoes.
  - Preparation of contingency plans.
  - Tactical fire fighting.
- 5.4 The location and purpose of the ships hazardous goods stowage plan is stated.

Conditions and  
Method of assessment

As specified in the Assessment Strategy listed at the end of this outline and by a combination of observation and oral questioning of learners during:

- Practical exercises and fire management simulation using training props under supervision.
- Tabletop and role-play exercises in the training room.

### **Learning Outcome 6**

**Liaise effectively with shore based agencies during a shipboard fire in port.**

Assessment criteria

- 6.1 The implications are described of the:
- Navigation Act
  - State Fire Acts
  - Port regulations
- for shipboard fire fighting management in port.
- 6.2 Strategies are developed for rapid briefing of shore based fire fighters and other shore based emergency organisations.
- 6.3 Strategies are developed for overcoming language barriers when communicating with shore based fire fighters.

Conditions and Method of assessment	As specified in the Assessment Strategy listed at the end of this outline and by a combination of observation and oral questioning of learners during: <ul style="list-style-type: none"> <li>• Practical exercises and fire management simulation using training props under supervision.</li> <li>• Tabletop and role-play exercises in the training room.</li> </ul>
<b>Learning Outcome 7</b>	<b>Manage fire investigation and reporting activities.</b>
Assessment criteria	<p>7.1 The procedure for securing an area affected by fire, prior to investigation is described.</p> <p>7.2 The principle of fire spread is outlined.</p> <p>7.3 The cause of a fire is determined.</p> <p>7.4 The manner in which a fire investigation report should be completed is described.</p> <p>7.5 The agencies that must be notified in the event of a shipboard fire are stated.</p>
Conditions and Method of assessment	As specified in the Assessment Strategy listed at the end of this outline and by a combination of observation and oral questioning of learners during: <ul style="list-style-type: none"> <li>• Class discussion sessions.</li> <li>• Case study analysis.</li> <li>• Tabletop and role-play exercises.</li> </ul>
<b>Learning Outcome 8</b>	<b>Manage firefighting equipment maintenance.</b>
Assessment criteria	<p>8.1 The importance of maintenance of fire detection and fire fighting equipment on board ships is discussed.</p> <p>8.2 Methods for identifying the maintenance required on fire fighting detection and suppression equipment are described.</p> <p>8.3 The maintenance required on the following is described: <ul style="list-style-type: none"> <li>• Portable fire extinguishers - foam, water, CO2, dry chemical, and wet foam.</li> <li>• CO2 and Halon systems.</li> <li>• Foam installations - semi portable and fixed installations.</li> </ul> </p>

- Sprinkler systems.
- Fire pumps - main and emergency fire pump.
- Fire hoses, hydrants, branches and international shore connection.

8.4 The requirements necessary for compliance with Marine Orders, and classification society inspection and servicing rules, are stated.

Conditions and  
Method of assessment

As specified in the Assessment Strategy listed at the end of this outline and by a combination of observation and oral questioning of learners during:

- Class discussion sessions.
- Case study analysis.

### **Learning Outcome 9**

#### **Supervise the operation of fixed fire suppression systems on board ships.**

Assessment criteria

9.1 The principle of operation of fixed fire suppression systems are described including:

- Carbon dioxide.
- Halon.
- Water spray.
- Halon alternatives.

9.2 The procedure for the safe activation of fixed fire fighting systems are described in:

- Cargo holds.
- Machinery spaces.

Conditions and  
Method of assessment

As specified in the Assessment Strategy listed at the end of this outline and by a combination of observation and oral questioning of learners during:

- Classroom discussion sessions.
- Case study analysis.
- Tabletop exercises in the training room.
- Practical exercises at the training ground.



**Delivery strategy**

This course is designed to be taught on or off-the-job, however, it is expected candidates will have on-the-job seagoing experience covering a portion of the learning outcomes.

Delivery strategies should be selected to reflect the nature of the learning outcomes and the needs of the candidates and should include: classroom lectures with handouts, course notes, overhead transparencies, slide presentations, video material and whiteboard notes.

Some areas of content may be common to more than one learning outcome, and thus integration may be appropriate, which may reduce the nominal hours.

Methods of instruction should include:

1. Simulated shipboard fire scenarios with role-playing.
2. Practical demonstrations using shipboard equipment.
3. Group task analysis.
4. Case studies.
5. Tabletop exercises.

**Resource requirements**

Delivery of the training will require:

- Classroom
- Whiteboard
- Overhead projector (or equivalent)
- Video player
- Fire Training Ground
- Protective clothing

**Assessment Strategy**

Assessment Method

A range of methods is suggested for measuring progress towards and achievement of learning outcomes in this module.

Learning outcomes may not be assessed separately. A holistic assessment strategy is proposed that attempts to ensure as much as possible that the assessment replicate

conditions that learners may encounter in their workplace.

Practical assessment will be undertaken by observing the ability of learners to correctly apply the techniques taught in the module.

Condition of Assessment

Assessment may be undertaken on or off-the-job, however, where possible the off-the-job environment will simulate a real work place situation.

**Evaluation:**

Final Grade for this course will be based on meeting the course requirements at the following percentage rates:

96% - 100%	A – Superior
90% - 95%	B – Above Average
80% - 89%	C – Average
69% - 79%	D – Below Average
0 % - 69%	F – Failure

**Attendance:**

The COM-FSM attendance policy will apply.