

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

Course Outline Cover Page

Ship Construction and Machinery

Course Title

MM 178

Department and Number

Course Description: To provide the learner with the knowledge and skills required by the master of a vessel of less than 80 gross tons to manage structural related requirements to maintain the seaworthiness of the vessel and the operation of pumping systems and deck machinery on the vessel.

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
Laboratory	24/12/6	2/4/8	48	1
Total Semester Credits:				1.5

Purpose of Course

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

Prerequisite Course(s): MWD 100 Enabling English

Signature, Chairman, Curriculum Committee

Date Approved by Committee

Signature, President, COM-FSM

Date Approved by the President

General Objective: To provide the learner with the knowledge and skills required by the master of a vessel of less than 80 gross tons to manage structural related requirements to maintain the seaworthiness of the vessel and the operation of pumping systems and deck machinery on the vessel.

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

1. Manage the structural related requirements of a small vessel.
2. Maintain a vessel's watertight integrity in accordance with established practice and statutory requirements.
3. Manage the maintenance and survey requirements of a vessel of up to 80 gross tons.
4. Operate the fuel, fresh and ballast water, bilge and fire pumping arrangements installed in a vessel.
5. Operate the deck machinery and steering gear arrangements installed on a vessel.

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. Design and Construction
 - Structural components
 - Design considerations
 - Hull types
 - Construction materials
2. Watertight Integrity
 - Watertight and weathertight integrity
 - Authorities requisites
 - Maintenance to sustain watertight integrity.
3. Vessel maintenance
 - Corrosion and deterioration
 - Preventative and corrective maintenance
 - Slipping/docking procedure & safety precautions
 - Surveys.

4. Pumping Arrangements
 - Tank arrangements
 - Fuel system
 - Fresh & ballast water system
 - Bilge & fire system
 - Safety features incorporated in systems
 - Maintenance to ensure operational readiness.
5. Deck Machinery & Steering Systems
 - Mechanical deck equipment
 - Steering gear arrangement
 - Safety features incorporated in systems
 - Maintenance to ensure operational readiness.

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

Learning Outcome 1 **Manage the structural related requirements of a small vessel.**

- 1.1 Structural components of a small vessel are identified.
- 1.2 Information obtained from ship drawings and plans is interpreted correctly.
- 1.3 Design requirements of small vessels are outlined.
- 1.4 Characteristics of displacement, semi-displacement and planing type hull types are explained.
- 1.5 Characteristics of mono-hulls and multi-hulls are explained.
- 1.6 Advantages and disadvantages of different materials used in ship construction are compared.

Conditions This module may be assessed on-the-job and off-the-job. Competence may be assessed in the following situations: a vessel under survey; approved training vessel/facility; approved equipment laboratory; approved simulator facility.

Assessment Method

- written test involving the use of sketching, diagram interpretation, short answer questions, multiple choice questions;
- oral questioning;
- observation during practical exercises.

Learning Outcome 2	Maintain a vessel's watertight integrity in accordance with established practice and statutory requirements.
Assessment criteria	<ol style="list-style-type: none"> 2.1 Meaning of the terms 'watertight' and 'weathertight' is explained. 2.2 Effects of loss of watertight integrity are explained. 2.3 Requirements for watertight subdivision in accordance with the South Pacific Maritime Code are outlined. 2.4 Maintenance and survey requirements to maintain watertight integrity are described.
Conditions	<p>This module may be assessed on-the-job and off-the-job. Competence may be assessed in the following situations: a vessel under survey; approved training vessel/facility; approved equipment laboratory; approved simulator facility.</p>
Assessment Method	<ul style="list-style-type: none"> • written test involving the use of sketching, diagram interpretation, short answer questions, multiple choice questions; • oral questioning; • observation during practical exercises.
Learning Outcome 3	Manage the maintenance and survey requirements of a vessel of up to 80 gross tons.
Assessment criteria	<ol style="list-style-type: none"> 3.1 Deteriorated hull and fittings are identified. 3.2 Deteriorated underwater fittings are identified. 3.3 Causes of corrosion and deterioration of ship structures and fittings are described. 3.4 Procedures and materials used for preventative and corrective maintenance are described. 3.5 Maintenance / repairs that require a vessel to be removed from water are identified. 3.6 Methods of removing a small vessel from water are described. 3.7 Safety precautions and pollution control requirements associated with various methods of removing a small vessel from water are described.

- 3.8 Survey requirements in accordance with the South Pacific Maritime Code are itemized.

Conditions

This module may be assessed on-the-job and off-the-job. Competence may be assessed in the following situations: a vessel under survey; approved training vessel/facility; approved equipment laboratory; approved simulator facility.

Assessment Method

- written test involving the use of sketching, diagram interpretation, short answer questions, multiple choice questions;
- oral questioning;
- observation during practical exercises.

Learning Outcome 4

Operate the fuel, fresh and ballast water, bilge and fire pumping arrangements installed in a vessel.

Assessment criteria

- 4.1 Information obtained from ship drawings and plans are interpreted correctly.
- 4.2 Pipework is correctly identified and traced.
- 4.3 Procedures for operating fuel, fresh and ballast water, bilge and fire pumping systems are correct and appropriate.
- 4.4 Skin fittings and valves are used appropriately.
- 4.5 Regulatory requirements are interpreted correctly.
- 4.6 Described maintenance procedures comply with manufacturer's requirements.
- 4.7 Safety precautions followed are appropriate.

Conditions

This module may be assessed on-the-job and off-the-job. Competence may be assessed in the following situations: a vessel under survey; approved training vessel/facility; approved equipment laboratory; approved simulator facility.

Assessment Method

- written test involving the use of sketching, diagram interpretation, short answer questions, multiple choice questions;
- oral questioning;
- observation during practical exercises.

Learning Outcome 5**Operate the deck machinery and steering gear arrangements installed on a vessel.**

Assessment criteria

- 5.1 Use of equipment is appropriate and safe.
- 5.2 Regulatory requirements are interpreted correctly.
- 5.3 Described maintenance procedures comply with manufacturer's requirements.
- 5.4 Safety procedures and precautions followed are appropriate.

Conditions

This module may be assessed on-the-job and off-the-job. Competence may be assessed in the following situations: a vessel under survey; approved training vessel/facility; approved equipment laboratory; approved simulator facility.

Assessment Method

- written test involving the use of sketching, diagram interpretation, short answer questions, multiple choice questions;
- oral questioning;
- observation during practical exercises.

Delivery strategy

This course provides for off-the-job delivery in a classroom, supported by simulation and/or laboratory equipment and access to a vessel in survey. Visits to ship-repair and dry-docking facilities will support the delivery of learning outcomes dealing with construction and maintenance.

Resource requirements

Delivery of this module will require:

- A suitable theory teaching space
- Simulation and/or laboratory equipment
- Vessel in survey
- Samples of vessel component parts
- Access to a ship repair/dry-dock facility
- Learners Guide

Assessment Strategy

Assessment Method

Knowledge, skills and attitudes may be measured by using a combination of practical exercises, oral assessment, and written tests.

Condition of assessment This course may be assessed on-the-job and off-the-job. Competence may be assessed in the following situations: a vessel under survey; approved training vessel/facility; approved equipment laboratory; approved simulator facility.

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.