

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

Course Outline Cover Page

Nautical Knowledge II
Course Title

MM 176
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 compliance with legislative requirements, compliance with pollution prevention requirements, vessel maneuvering and handling, response to emergencies, maintenance of a safe navigational watch and handling and stowage of cargoes.

Prepared by: Brent Villiers

State: FSM-FMI

	Hours per Week	No. Of Weeks	Total Hours	Semester Credits
Lecture	8/16/32	4/2/1	32	2
Laboratory	6/12/24	16/8/4	96	2
Total Semester Credits:				4

Purpose of Course

Degree Requirement _____

Degree Elective _____

Advanced Certificate _____

Certificate _____ XX _____

Remedial _____

Other (Workshop) _____

Prerequisite Course(s): Nil

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 compliance with legislative requirements, compliance with pollution prevention requirements, vessel maneuvering and handling, response to emergencies, maintenance of a safe navigational watch and handling and stowage of cargoes.

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

1. Apply the requirements of the South Pacific Maritime Code and National Legislation, Regulations and Codes that relate to the operation of a small commercial vessel.
2. Apply available meteorological data to the safe operation of a small vessel.
3. Apply the principles of keeping a safe navigational watch onboard a small vessel.
4. Maneuver a vessel of less than 25 meters in length.
5. Take appropriate action in response to shipboard emergency situations.
6. Use ropes, wires, lifting and hauling equipment in the operation of a small vessel.
7. Monitor the stowage and handling of cargoes in accordance with national regulations and established practice.
8. Use a range of wheelhouse equipment typical to a small vessel operating in the South Pacific region.

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. Marine Legislation
 - South Pacific Maritime Code
 - National legislation concerning safety equipment and procedures
 - Certificates
 - Marine pollution
 - Master's responsibilities
 - Records.

2. Meteorology
 - Common terms
 - Instruments
 - Meteorological observations
 - Weather reports and maps
 - Interpretation of weather reports and maps
 - Tropical revolving storms
 - Precautions when navigating in the vicinity of a tropical revolving storm
 - Safe havens.
3. Watchkeeping & Navigational Safety
 - International collision regulations
 - Buoyage
 - Watchkeeping principles
 - Masters instructions to watchkeepers
 - Maneuvering difficulties of larger vessels
4. Vessel Maneuvering & Handling
 - Single screw and twin screw vessels
 - Effect of wind and currents
 - Shallow water effects
 - Berthing and unberthing
 - Anchoring
 - Securing to a buoy
 - Turning short round
 - Person-overboard procedures
 - Crossing a bar
 - Towing
 - Maneuvering in heavy weather
 - Launching and recovery of survival craft
5. Emergency Procedures
 - Actions to take in the event of collision, stranding, flooding, beaching, and loss of rudder or propeller
 - Person overboard procedures
 - Distress procedures
 - Search and rescue procedures.

6. Seamanship

- Construction and characteristics of marine ropes
- Care & maintenance of ropes
- Inspection of ropes
- Knots, bends & hitches
- Splicing fiber ropes and wire ropes
- Strength of ropes & chains
- Use of purchases and tackles
- Safe use and maintenance of lifting gear
- Rigging of stages, boson's chairs and portable ladders.

7. Cargo Handling & Stowage

- General principles and practices
- General precautions in the handling and stowage of cargo
- General knowledge of the national regulations for the carriage of dangerous goods and the International Maritime Dangerous Goods Code.

8. Wheel House Equipment

- Magnetic compass.
- Echo sounder
- Speed logs
- Auto-pilot
- Wheelhouse alarms.

Learning Outcomes:

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

Learning Outcome 1

Apply the requirements of the South Pacific Maritime Code and National Legislation, Regulations and Codes that relate to the operation of a small commercial vessel.

- 1.1 Relationship between national legislation, the South Pacific Maritime Code, and international maritime conventions is described.
- 1.2 Certificates required to be carried onboard vessels of less than 80 gross tons, their validity and issuing authorities are listed..

- 1.3 Requirements relating to:
 - Life saving appliances
 - Fire fighting appliances
 - Musters and drills,
 - Distress obligations and procedures, in accordance with applicable regulations and codes are outlined.
- 1.4 Responsibilities of the master with respect to protection of the environment are described.
- 1.5 Requirement to keep a logbook and the type of information required to be recorded is described.

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

Learning Outcome 2 Apply available meteorological data to the safe operation of a small vessel.

Assessment criteria

- 2.1 Meaning of common meteorological terms and their application in relation to interpreting information provided by weather forecasts is described.
- 2.2 Use of instruments and observations to record and report actual weather including wind strength and direction, swell height, direction and period, sea state, visibility, cloud cover and atmospheric pressure is demonstrated.
- 2.3 Sources of weather forecasts available to a small vessel and the contents of a marine weather forecast are described.
- 2.4 Weather forecasts and weather maps are interpreted to predict weather conditions in the vessel's operating area.

- 2.5 The formation, movement and weather associated with tropical revolving storms are described
- 2.6 Safety precautions to be taken by small vessels in the vicinity of tropical revolving storms and the actions to avoid tropical revolving storms are described.
- 2.7 Safe havens in specified areas of operations suitable for positioning small vessels prior to the arrival of a tropical revolving storm are identified.
- 2.8 Means of securing a vessel in a cyclonic mooring are described.

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 3

Apply the principles of keeping a safe navigational watch onboard a small vessel.

Assessment criteria

- 3.1 International Regulations for Preventing Collisions at Sea are understood and applied.
- 3.2 IALA Buoyage System 'A' is understood and applied to the safe navigation of a vessel.
- 3.3 Principles of keeping safe navigational watch onboard vessels at sea, at anchor and in port are described.
- 3.4 Instructions that a master would give to Watchkeepers with respect to keeping a safe navigational watch are listed.

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

Maneuver a vessel of less than 25 meters in length.

Assessment criteria

- 4.1 Maneuvering characteristics of small single-screw and twin-screw vessels are described.
- 4.2 Effects of wind and current on the maneuvering of small vessels are explained.
- 4.3 Principles of maneuvering a small vessel during berthing and un-berthing operations, anchoring, and securing to a buoy are described.
- 4.4 The effects on small vessels when maneuvering in shallow water are explained.
- 4.5 Safe procedures to be adopted when crossing a river entrance bar are explained.
- 4.6 Precautions to be taken in the event of heavy weather and procedures for handling small vessels to lessen the effects of heavy weather are described.
- 4.7 The preparations, procedures and maneuvering requirements to take another vessel in tow or be taken in tow are described.
- 4.8 Precautions in maneuvering to launch boats or life rafts in heavy weather are explained.
- 4.9 Ability to safely maneuver a vessel to turn short round, conduct berthing, anchoring and mooring operations, and recover a person from water is demonstrated.

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**Take appropriate action in response to shipboard emergency situations.**

Assessment criteria

- 5.1 Actions to be taken in the event of the following emergencies are described:
- Collision
 - Grounding
 - Beaching
 - Flooding
 - Loss of rudder or propeller
 - Abandoning ship
 - Person falling overboard
 - Rescuing people in distress.

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 6**Use ropes, wires, lifting and hauling equipment in the operation of a small vessel.**

Assessment criteria

- 6.1 Construction of ropes and wires is explained.
- 6.2 Care and maintenance of natural, synthetic and wire ropes and chains are described.
- 6.3 Defects that would render ropes, wire ropes and chains unserviceable are recognized.
- 6.4 Ability to tie common knots, bends and hitches, and construct short and eye splices in fiber ropes is demonstrated.

- 6.5 Ability to construct an eye splice in wire rope is demonstrated.
- 6.6 Approximate safe working loads for fiber ropes, wire ropes and chains are calculated.
- 6.7 Use of purchases and tackles to move and secure items onboard is demonstrated.
- 6.8 Use and maintenance of lifting gear typical to small vessels is demonstrated.
- 6.9 Rigging of portable ladders, stages and boatswains chairs in accordance with established practice is demonstrated.

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; calculations;
- oral questioning;
- observation during practical exercises.

Learning Outcome 7 Monitor the stowage and handling of cargoes in accordance with national regulations and established practice.

Assessment criteria

- 7.1 General principles and practices applicable to the carriage of cargoes with respect to safety of life, vessel and cargo, and the protection of marine environment are outlined.
- 7.2 General precautions to be observed in the handling and stowage of cargoes are described.
- 7.3 General understanding of national regulations applicable to the carriage of dangerous goods and the IMDG Code is demonstrated.

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	<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 8	Use a range of wheelhouse equipment typical to a small vessel operating in the South Pacific region.
Assessment criteria	<p>8.1 Ability to operate and maintain the following items of wheelhouse equipment in accordance with manufacturer's instructions and established practice is demonstrated:</p> <ul style="list-style-type: none"> • Magnetic compass • Echo sounder • Speed log • Auto-pilot <p>8.2 Ability to identify typical wheelhouse alarms and take appropriate action when an alarm sounds is demonstrated.</p>
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	<ul style="list-style-type: none"> • written test involving the use of sketching, diagram interpretation, short answer questions, multiple choice questions; calculations; • oral questioning; • observation during practical exercises.
<u>Delivery strategy</u>	This module provides for off-the-job delivery in a classroom, supported by simulation and/or laboratory equipment and access to a vessel in survey.
<u>Resource requirements</u>	<p>Delivery of this module will require:</p> <ul style="list-style-type: none"> • A suitable theory teaching space

- Simulation and/or laboratory equipment
- A vessel underway
- Suitable wheelhouse equipment and meteorological instruments

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.