

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

**Course Outline Cover Page**

**Nautical Knowledge III**  
Course Title

**MM 215**  
Department and Number

**Course Description:** This course provides the student with the knowledge and skills required by the master of a vessel of less than 500 gross tons to manage compliance with legislative requirements, compliance with pollution prevention requirements, vessel maneuvering and handling, to respond appropriately to emergencies and the maintenance of a safe navigational watch.

**Prepared by:** Brent Villiers

**State:** FSM-FMI

	Hours per Week	No. Of Weeks	Total Hours	Semester Credits
Lecture	3/6/12/24	16/8/4/2	48	3
Laboratory	3/6/12/24	16/8/4/2	48	1
			Total Semester Credits:	4

**Purpose of Course**

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

**Prerequisite Course(s):** MM 176 Nautical Knowledge II

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

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**Date Approved by Committee**

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**Signature, President, COM-FSM**

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**Date Approved by the President**

**General Objective:** By successfully completing this course, students will have been provided with the knowledge and skills required by the master of a vessel of less than 500 gross tons to manage compliance with legislative requirements, compliance with pollution prevention requirements, vessel maneuvering and handling, to respond appropriately to emergencies and the maintenance of a safe navigational watch.

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

1. Apply watchkeeping arrangements and procedures in compliance with international standards;
2. Maneuver a power driven vessel of less than 500 gross tons in various conditions of tide and weather to carry out the operations of the vessel;
3. Take appropriate action in emergency situations involving the safety of own vessel and those onboard;
4. Apply legislative requirements to the operation of a vessel of less than 500 gross tons, with particular emphasis on safety of life, safety of navigation, and prevention of pollution;
5. Devise appropriate shipboard procedures for the management of the vessel in accordance with applicable law;
6. Forecast the expected weather conditions for a given area in the South Pacific region using available and observed meteorological data;
7. Use shipboard lifting gear in accordance with established practice and within safe limits.

***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. Watchkeeping
  - International Collision Regulations
  - Application of International Collision Regulations
  - Navigational watchkeeping
2. Vessel Maneuvering & Handling
  - Berthing, un-berthing, anchoring and single point mooring

- Maneuvering landing barges and catamarans
  - Squat and interaction
  - Heavy weather handling
  - Towing
  - Rescue operations
3. Emergency Procedures
- Collisions
  - Grounding and beaching
  - Loss of rudder/propulsion power
  - Limiting damage
  - Master's obligations
  - Search & rescue
  - Person overboard.
4. Marine Legislation
- National legislation applicable to the operation of vessels of less than 500 gross tons
  - South Pacific Maritime Code
  - International conventions
  - Emergency equipment provisions
  - MARPOL 73/78
5. Master's Responsibilities
- Records
  - Musters and drills
  - Distress, search and rescue
  - Marine casualties
  - Pilotage
  - Salvage and towage
  - Survey of equipment
6. Meteorology
- High pressure and low pressure systems
  - Fronts
  - Cols, troughs, and ridges
  - Land and sea breezes
  - Collection and interpretation of metrological data by visual and instrumental observations
  - Weather reports and warnings
  - Tropical revolving storms
7. Lifting Gear
- Stresses
  - Safe working loads

- Mechanical advantage
- Maintenance, inspections, tests and record keeping.

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

**Learning Outcome 1** **Apply watchkeeping arrangements and procedures in compliance with international standards.**

Assessment criteria

- 1.1 Contents, application and intent of the International Regulations for Prevention of Collisions at Sea including those annexes concerned with safe navigation are described.
- 1.2 International Regulations for Prevention of Collisions at Sea are applied to the safe conduct of a vessel without error in simulated or real watchkeeping situations.
- 1.3 Basic principles to be observed in keeping navigational watch onboard vessels are applied.

Conditions and Method of assessment

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

- Written test involving the use of sketching, diagram interpretation, short answer questions, multiple choice questions
- Oral questioning
- Observation during practical exercises.

**Learning Outcome 2** **Manoeuvre a power driven vessel of less than 500 gross tons in various conditions of tide and weather to carry out the operations of the vessel.**

Assessment criteria

- 2.1 Procedures for berthing, unberthing, anchoring and mooring to a single point mooring in all conditions of wind and tide are described.
- 2.2 Procedures for maneuvering special types of vessels including landing craft and vessels with catamaran hulls are described.
- 2.3 Effects on the maneuvering characteristics of a power driven vessel and the

precautions to be taken with regard to maneuvering in shallow water, passing close to other vessels and maneuvering in canals or channels with steep-to sides are explained.

- 2.4 Special requirements associated with the management and handling of vessels in heavy weather including:
- Appropriate speed and other techniques to lessen the risk of damage
  - Maneuvering in following and quartering seas
  - Means of keeping a vessel out of a trough
  - Lessening drift and use of oil
  - Maneuvering for launching boats or liferafts in heavy weather
  - Maneuvering to assist another vessel or ditched aircraft, are described.
- 2.5 Procedures to take another vessel in tow or be taken in tow are explained.
- 2.6 Methods of taking onboard survivors from lifeboats or liferafts are explained.
- 2.7 Ability to maneuver a vessel to safely berth and unberth, anchor and weigh anchor, come to and slip from a buoy or single point mooring is demonstrated.

Conditions and  
Method of assessment

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

- Written test involving the use of sketching, diagram interpretation, short answer questions, multiple choice questions
- Oral questioning
- Observation during practical exercises.

<b>Learning Outcome 3</b>	<b>Take appropriate action in emergency situations involving the safety of own vessel and those onboard.</b>
Assessment criteria	<p>3.1 Actions to be taken in the event of grounding or beaching a vessel are described.</p> <p>3.2 Procedure for refloating a vessel following grounding or beaching is described.</p> <p>3.3 Actions to be taken in the event of a collision or damage to hull are described.</p> <p>3.4 Methods of emergency and jury steering of a vessel are explained.</p> <p>3.5 Actions to be taken in the event of:</p> <ul style="list-style-type: none"> <li>• A person falling overboard, and</li> <li>• Abandoning ship, are described.</li> </ul>
Conditions and Method of assessment	<p>As specified in the Assessment Strategy listed at the end of this outline and by a combination of:</p> <ul style="list-style-type: none"> <li>• Written test involving the use of sketching, diagram interpretation, short answer questions, multiple choice questions</li> <li>• Oral questioning</li> <li>• Observation during practical exercises.</li> </ul>
<b>Learning Outcome 4</b>	<b>Apply legislative requirements to the operation of a vessel of less than 500 gross tons, with particular emphasis on safety of life, safety of navigation and prevention of pollution.</b>
Assessment criteria	<p>4.1 Requirements of National acts and regulations applicable to the operation of vessels of less than 500 gross tons are outlined with regards to:</p> <ul style="list-style-type: none"> <li>• Seaworthiness</li> <li>• Safety of navigation</li> <li>• Safety of life</li> <li>• Safety manning</li> <li>• Pollution prevention.</li> </ul> <p>4.2 Requirements for the provision of life-saving appliances for vessels up to 500 gross tons are described.</p> <p>4.3 Requirements for the provision of fire-fighting appliances for vessels up to 500 gross tons are described.</p>

Conditions and Method of assessment	<p>4.4 Requirements for the provision of navigational equipment for vessels up to 500 gross tons are described.</p> <p>4.5 Legislative requirements for prevention of pollution are described.</p>
	<p>As specified in the Assessment Strategy listed at the end of this outline and by a combination of:</p> <ul style="list-style-type: none"> <li>• Written test involving the use of sketching, diagram interpretation, short answer questions, multiple choice questions</li> <li>• Oral questioning</li> </ul>
<b>Learning Outcome 5</b>	<b>Devise appropriate shipboard procedures for the management of the vessel in accordance with applicable law.</b>
Assessment criteria	<p>5.1 Master's duties and responsibilities with respect to log books, musters and drills, marine casualties, distress and urgency signals, search and rescue, and pilotage are described.</p> <p>5.2 Ability to plan, organize and conduct emergency drills in accordance with legislative requirements is demonstrated.</p> <p>5.3 Terms and conditions applicable to salvage and towage are explained.</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:</p> <ul style="list-style-type: none"> <li>• Written test involving the use of sketching, diagram interpretation, short answer questions, multiple choice questions</li> <li>• Oral questioning</li> <li>• Observation during practical exercises.</li> </ul>
<b>Learning Outcome 6</b>	<b>Forecast the expected weather conditions for a given area in the South Pacific region using available and observed meteorological data.</b>
Assessment criteria	<p>6.1 Formation and general movement of air masses and the weather conditions associated with weather systems affecting the South Pacific including:</p>

- High pressure systems
  - Low pressure systems
  - Fronts
  - Cols
  - Troughs
  - Ridges
  - Local sea and land breezes are described.
- 6.2 Visual observations and meteorological instruments including:
- Aneroid barometer (clock face and precision)
  - Barograph
  - Anemometer
  - Hygrometer, are used to record local meteorological data.
- 6.3 Sources of obtaining weather reports and warnings are listed.
- 6.4 Information contained in weather reports and warnings is listed.
- 6.5 Use of a weather facsimile receiver, VHF and HF radio to obtain current weather information is demonstrated.
- 6.6 Meteorological information provided through various external sources and local observation is interpreted to predict a change in weather conditions particularly those that will effect visibility, wind, sea and swell state.
- 6.7 Formation and movement of tropical revolving storms in the South Pacific region are described.
- 6.8 Signs of approach and weather associated with a TRS are listed.
- 6.9 Action to be taken when in the vicinity of a TRS and practical rules for avoiding the storm centre are detailed.
- 6.10 Appropriate actions to take with respect to the safety of a vessel which is in an area subject to a storm warning 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:

- Written test involving the use of sketching, diagram interpretation, short answer



questions, multiple choice questions

- Oral questioning
- Observation during practical exercises.

### **Learning Outcome 7**

**Use shipboard lifting gear in accordance with established practice and within safe limits.**

#### Assessment criteria

- 7.1 Stresses and loads on lifting gear are identified.
- 7.2 Approximate safe working loads of fiber ropes, wire ropes, and chains are determined.
- 7.3 Power gained by using a range of purchases is determined.
- 7.4 Defective or unsafe gear is identified.
- 7.5 Maintenance, inspection, tests, and record-keeping requirements of lifting gear are listed.

#### Conditions and Method of assessment

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

- 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.

#### Resource requirements

Delivery of the training will require:

- A suitable theory teaching space
- Simulation and/or laboratory equipment
- A vessel underway
- Meteorological instruments
- Lifting gear typical to small vessels.

**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.