

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

Course Outline Cover Page

Navigation and Position Determination II

Course Title

MM 212

Department and Number

Course Description: This course provides the student with the knowledge and skills required in navigation & position determination required to plan and conduct the coastal passage of a vessel of up to 500 gross tons at the management level.

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 177 Navigation and Position Determination_____
Signature, Chairman, Curriculum Committee_____
Date Approved by Committee_____
Signature, President, COM-FSM_____
Date Approved by the President

General Objective: By successfully completing this course, students will have been provided with the knowledge and skills in navigation & position determination required to plan and conduct the coastal passage of a vessel of up to 500 gross tons at the management level.

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

1. Perform plane sailing calculations for voyage planning purposes.
2. Apply tidal data to navigation planning.
3. Calculate rising and dipping distances of lights.
4. Determine the vessel's position by transferring a position line.
5. Prepare and execute a voyage plan with emphasis on safety and economy.

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. Plane Sailing
 - Relationship between d'lat, departure, d'long, distance and course
 - Calculation of courses and distances
 - Determination of arrived position
2. Tides
 - Calculation of intermediate heights and times between HW and LW
 - Application of tidal data for navigational planning
 - Causes of differences between predicted and actual tidal heights and times
3. Rising & Dipping of lights
 - Factors affecting range
 - Geographical range
 - Luminous range
 - Calculation of rising and dipping ranges
4. Transferred position lines
 - Running fix with bearings

- Running fix with ranges

5. Voyage Planning

- Voyage appraisal
- Ship reporting systems
- Selection of route
- Markings on chart
- Monitoring of vessel's progress
- Reliability of position fixes

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

Learning Outcome 1 **Perform plane sailing calculations for voyage planning purposes.**

Assessment criteria

1.1 Meaning of terms used in plane sailing calculations are explained.

1.2 Relationships between D'lat, departure, D'long, distance, and course is described.

1.3 Course and distance between two positions is determined using plane sailing formulae.

1.4 Given the starting position, course and steaming distance, the arrived position is determined using plane sailing formulae.

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 chart plotting, sketching, diagram interpretation, short answer questions, calculations
- Oral questioning.

Learning Outcome 2 **Apply tidal data to navigation planning.**

Assessment criteria

2.1 Tidal height for a standard port is estimated for a specified time on a given day using standard tidal curves.

2.2 Tidal height for a secondary port is estimated for a specified time on a given day using standard tidal curves.

2.3 Tidal height is applied to charted depth at ship's draft to calculate keel clearance over charted dangers.

2.4 Time at which tidal height will provide a minimum stated under-keel clearance over charted dangers, is calculated.

Conditions and Method of assessment	<p>2.5 Likely causes of differences between predicted and actual tidal heights and times 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"> • Written test involving the use of sketching, diagram interpretation, short answer questions, multiple choice questions • Oral questioning.
Learning Outcome 3	Calculate rising and dipping distances of lights.
Assessment criteria	<p>3.1 Factors that will influence the range at which a navigational light will be sighted are described.</p> <p>3.2 Geographical range of a light is determined by calculation and use of geographical range tables.</p> <p>3.3 Luminous range of a light is determined using luminous range diagrams.</p> <p>3.4 The maximum ranges at which a light can be expected to "rise" and "dip" are determined.</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"> • Written test involving the use of sketching, diagram interpretation, short answer questions, multiple choice questions, and calculations. • Oral questioning.
Learning Outcome 4	Determine the vessel's position by transferring a position line.
Assessment criteria	<p>4.1 Ability to obtain a running fix with bearings is demonstrated.</p> <p>4.2 Ability to obtain a running fix with ranges is demonstrated.</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"> • Written test involving the use of sketching, diagram interpretation, short answer questions, multiple choice questions, chart work exercises

- Oral questioning
- Observation during practical exercises.

Learning Outcome 5 Prepare and execute a voyage plan with emphasis on safety and economy.

Assessment criteria	<p>5.1 Ability to obtain information necessary to make a full appraisal of the intended voyage is demonstrated.</p> <p>5.2 Reporting procedures in accordance with the guidelines and criteria for Ship Reporting Systems are described.</p> <p>5.3 Ability to select an intended route with reference to the following factors is demonstrated:</p> <ul style="list-style-type: none"> • Navigation hazards • Navigation aids • Currents and tidal streams • Weather forecasts • Fuel reserves • Maneuvering characteristics of the vessel <p>5.4 Projected courses and main details of the plan are marked on the chart in accordance with established practice.</p> <p>5.5 Methods used for monitoring the progress of the vessel are described.</p> <p>5.6 Effects of errors in range and bearing on the reliability of position fixes are described.</p>
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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"> • Written test involving the use of sketching, diagram interpretation, short answer questions, multiple-choice questions, chart work exercises. • Written assignments • Oral questioning • Observation during practical exercises.
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<u>Delivery strategy</u>	<p>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.</p>
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Resource requirements

Delivery of the training will require:

- A suitable theory teaching space
- Simulation and/or laboratory equipment
- Vessel in survey
- Suitable navigational charts and publications.

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.