# DEEP SEA NAVIGATION
MT-2121 FALL 2015

**COURSE**
Deep Sea Navigation

**CREDITS**
3: 2 - 50 min Lectures and 1 hour & 50 min Lab per week

**COURSE INFORMATION**
**Description:** This course reinforces and continues the learning of the navigational processes and knowledge acquired in Coastal Navigation that are used daily while at sea. In addition to applying knowledge already studied including position fixing techniques, sources of error and correction calculation, NAVAIDS, and navigational publications, the student will learn and understand the concepts of Tides and Currents and their calculation the navigational sailings, and introduction to voyage planning and record keeping. Classwork is supplemented by practical chart plot exercises during lab periods.

## Learning Objectives

**Demonstrate knowledge and understanding of the following STCW elements:**

- OICNW-A1.03 Thorough knowledge of and ability to use nautical charts, and publications, such as sailing directions, tide tables, notices to mariners, radio navigational warnings and ships' routeing information
- OICNW-A1.05 Ability to operate echo sounder equipment and apply the information correctly
- OICNW-A1.07 Ability to determine errors of the magnetic and gyro-compasses, using terrestrial means,
- OICNW-A1.07 Allow for errors in magnetic and gyro-compasses

**Demonstrate proficiency in the following skills:**

- OICNW-1-2D Plot the ship's DR position
- OICNW-1-2E Determine course to steer
- OICNW-1-5D Determine course to steer by magnetic compass
- OICNW-1-5E Position fix by magnetic compass bearing
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**To satisfy these requirements, the minimum passing grade for the course is 70%.**

**STCW Practical Assessments:** During the semester, cadets will have the opportunity to satisfy the following four STCW required assessments: 1) Accurate Dead Reckoning plotting; 2) Position fixing using corrected magnetic compass bearings; 3) Determining course to steer by true and magnetic compass; and 4) Determining course to steer allowing for set and drift.

- A cadet will have two opportunities to pass these four assessments during the course. If they have earned a 70% or better for the course, they will be given ***one*** more opportunity to retake the assessment at a later scheduled time. Should they fail at this third attempt, they will receive an F for the class, and be required to repeat the entire course.
- A student who has failed to achieve at least a 70% in the class must retake the entire class again ***and*** all assessments regardless if any were previously passed.

- STUDENTS MUST PASS THESE ASSESSMENTS and receive a grade for the course (NOT an incomplete) PRIOR TO SEA TERM II. ***STUDENTS WILL NOT BE ALLOWED TO PARTICIPATE IN SEA TERM II UNTIL THESE ASSESSMENTS ARE COMPLETED***

**Prerequisite:** All students enrolled in Deep Sea Navigation MUST HAVE PASSED Coastal Navigation with a C- or better.

**Required Books & Accessories:**

- DUTTONS 15th Edition
- BOWDITCH - Recommend you purchase the book, but ***BOOK IS AVAILABLE ONLINE***
- Charts 12221-TR, 12354-TR, 13205-TR, 18465-TR, 37121
- Chart # 1 Latest Edition
- Pad of universal plotting sheets
- Plotting Gear: Triangles, Parallel Ruler, and Dividers. I recommend two dividers, one with points, and one with a pencil lead
- Calculators are to be brought to ***every lecture class*** throughout the semester.
- Calculators, plotting tools, ***all charts and plotting sheets*** are to be brought to ***every lab*** throughout the semester (unless specifically requested by the instructor not to).

## COURSE OUTCOMES

As a result of completing Deep Sea Navigation and successfully passing the associated examinations and assessments, Cadets will:

- Present a proficiency in the skill of using visual bearings and radar ranges to fix their position and stay clear of dangers
- Display knowledge of the meaning and information proved by various NAVAIDs
- Show an understanding of how to determine and apply gyro compass error as well as magnetic Compass Error, Variation, and Deviation
- Demonstrate knowledge of available Navigational Publications and the information they provide
- Exhibit the ability to calculate the essential parameters of terrestrial navigation through The Sailings
- Prove an ability to determine tides and currents and know how these affect safe navigation, and
- Reveal an understanding of voyage planning including proper record keeping

Grading of multiple assignments issued throughout the semester as well as the results of tests and examinations will be used to determine satisfaction of these outcomes.

## COURSE CONDUCT

- Course conduct will be in accordance with the MMA regimental system. All Cadets shall wear the appropriate uniform to each class. The MMA honor code will be strictly followed.
- All students will soon be ship's officers. They will be addressed and treated as such**.**
- **Cell phone texting or calls are not permitted during class. Phones used for either purpose during class periods will be removed from class, and sent to the Dean to have your phone confiscated. You will then be marked absent for that day.** Use of smart phone calculators is not permitted during tests and exams.
- Laptop computers are permitted in the classroom. However, if Internet surfing or use of social media is detected during class periods, laptop computer use privileges will be suspended.

## GRADING POLICY

- In accordance with the Mass Maritime Academy academic policy, the minimum passing grade for STCW Deep Sea Navigation is 70%.
- Those who receive a grade below 70% ***must retake*** Deep Sea Nav ***and*** all four practical STCW Assessments in order to satisfy their STCW requirements.
- The + - system will be used.
- Grades will be averaged based upon the following percentage values:

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|---|---|---|---|
| Classroom Quizzes & Tests | 20% | Lab Tests | 15% |
| Classroom Assignments | 15% | Lab Chart Exercises | 15% |
| Classroom Final Examination | 15% | Lab Chart Final Exam | 15% |
| Participation Lab & Class | 5% | | |

**ATTENDANCE**

Since this is an STCW course, no allowance for unexcused absence can be made under Federal Law. More than two (2) absences from lectures, **or** more than one (1) from lab for ANY reason will result in at least a reduction of the final grade for the course by one full letter grade, and possibly an incomplete or failing grade.

If you are absent, without prior notifying me of the circumstances, I will put you on report. If you are sick, make sure you go to binnacle, and get on the binnacle list. Send me an email if this occurs, so I am aware of the situation. . . Again, in the industry you would just not show up to work without calling your boss. I expect the same courtesy.

It is your duty to keep up with the material, and to arrange to make up any quizzes, tests or material missed ***in advance.*** Failure to make arrangements satisfactory to the instructor beforehand will result in a zero for missed quizzes, test, labs or other material.
Assignments and labs turned in late will be reduced by 10% for *each* class period they are late.

Mass Maritime Academy is committed to providing reasonable accommodations to students with documented disabilities. Students who believe that they may need accommodations in this class are required to contact Professor Fran Tishkevich , Director of Disability Compliance. ftishkevich@maritime.edu MMA Tel. ext. 2208 Room H-311A (Harrington Building). Thereafter, you must make me aware of any determined accommodations so that they may be implemented within our classroom.

**Instructor: LDCR Colleen McRae** Office (Harrington) #307A cmcrae@maritime.edu
Office Hours: Tuesday 1000 - 1050 & 1300 - 1350
Thursday 1000 – 1050 or ***by appointment***

**Lab Instructor: LCDR John Belle** Office (Harrington) # 322A jbelle@maritime.edu
Office Hours: Wednesday 1300 – 1350
Thursday 1100-1150
Friday 1100-1150 or ***by appointment***

**Lab Instructor: Eugene Morrow** Office (Harrington) # 322A emorrow@maritime.edu
Office Hours: Thursday 1400-1530

**Lab Instructor: Laurel DeLong** Office (Harrington)# 322A ldelong@maritime.edu
Office Hours: Tuesday 1100-1150
Wednesday 1600-1650
Thursday 1100 – 1150

**Lab Instructor: Andrew Perron** Office (Harrington) # 306A aperron@maritime.edu
Office Hours: Tuesday 1100-1150
Thursday 1000 – 1050
Friday 1100-1150

**Lab Instructor: Barnaby Bosanquet** Office (Harrington) #305B bbosanquet@maritime.edu

**Our duty is to:**

- guide you through the material,
- answer all your questions, e-mails, texts, etc.,
- be available should you need further explanation, and
- promptly return and comment on assignments, quizzes and tests.

**It is your responsibility to:**

- Come to class prepared to discuss the reading and subject matter for that day,
- Actively participate in classroom discussions and labs,
- Stop me at any point that you don't understand as I will be glad to go over it again, and
- Learn the material.

Your comprehension of the material can only come from your active involvement in the homework, reading assignments, and the lectures.
Do your own work. These are not group assignments, because when you are standing on the Navigation Bridge looking out the windows, you and you alone must process the information. Any indication of collaborative work (outside of advice) on assignments will meet with a zero.

It is our personal goal to see each and every one of you succeed with this material. If you feel you are falling behind or having trouble understanding some of the subject matter, **contact one of us before you get in over your head. We can help you if you come to us.**

**COURSE**

# LECTURE LESSON PLAN – FALL 2015 -- ALL SECTIONS

| Class | LESSON | READ DUTTONS 15th ed. *before lecture on* | READ Bowditch 2002 *before lecture on* |
|---|---|---|---|
| | | | |
| 1 | Course Intro & Proper Units | | |
| 2 | Current Sailings Introduction | **Chap 13** | Art. 707-8 |
| 3 | Current Sailings | | |
| 4 | Navigation Mathematics | | Arts 2100-2113 |
| 5 | The Sailings **TEST 1** | **Chap 31** | Arts 2205 & 2400-03 |
| 6 | Plane Sailing | | Art 2412 |
| 7 | Parallel Sailing | | Art 2414 |
| 8 | Mid-Latitude Sailing | | Art 2415 |
| 9 | Mercator Sailing **TEST 2** | | Art 2416 |
| 10 | Mercator Sailing | | |
| 11 | Great Circle Sailing | | Arts 2404-2408 |
| 12 | Great Circle Sailing | | |
| 13 | Composite Sailings | | Arts 2409-2410 |
| 14 | Time Zones **TEST 3** | **2306-2316** | |
| 15 | Voyage Planning | | |
| 16 | Tides Intro | **Chap 10** | Art.900-12 |
| 17 | Tides Causes | | Art. 923-5, 927-30 |
| 18 | Tides Dynamic Theory | | Chap 25 |
| 19 | Tide Calculations **TEST 4** | | |
| 20 | Tide Calculations | | |
| 21 | Tidal Currents | **Art 1105-15** | Art.913-22, 926,931-39 |
| 22 | Ocean Currents | **Art 1100-1105** | Chap. 31 |
| 23 | Current Calculations **TEST 5** | | |
| 24 | Current Calculations | **Chap 14** | Art. 800-810 |
| 25 | Current Calculations | | |
| 26 | Log Books & Records | **Chap 4** | Chap 13 |
| 27 | Course & Final Review | | |
| | | *******NOTE******* | ***"Art." Means article number in the text*** |

# LAB LESSON PLAN – FALL 2015 -- ALL SECTIONS

| | Labs |
|---|---|
| 1 | Review Plotting, DR, TVMDC, Running Fix, Special Cases<br>Chart Plot all encompassing |
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| 2 | Chart Plot - Current Sailings |
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| 3 | Chart Plot - Current Sailings #2 |
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| 4 | Chart and Publication Correction Exercise **TEST 1** |
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| 5 | Chart Plot Eastern Long Island Sound - ENL Lab |
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| 6 | Mid Term Chart Plot – Assessments First Attempt |
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| 7 | Great Circle Sailing Chart Plot Part 1 **TEST 3** |
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| 8 | Chart Plot Block Island Sound -- ENL Lab |
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| 9 | Great Circle Sailing Chart Plot - Gnomonic Chart **TEST 4** |
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| 10 | Chart Plot English Channel – ENL Lab |
| | |
| 11 | Plotting Sheets and Exercise **TEST 5** |
| | |
| 12 | Chart Plot All Encompassing - Final Exam Practice |
| | |
| 13 | CHART PLOT FINAL – Assessments Second Attempt |