Massachusetts Maritime Academy

Massachusetts Maritime Academy

VESSEL FAMILIARIZATION AND BASIC SAFETY TRAINING

COURSE: MT1111 (CREDITS: 4)

FALL SEMESTER ACADEMIC YEAR 2010

Lecture Instructor:

CAPT. Joseph S. Murphy, II OFFICE: Bresnahan Bldg. - 304C

Laboratory Instructors

CAPT Edward Bruce	OFFICE: *SeaLab*
CAPT Kurt DeCiccho	OFFICE: 321A
CAPT Barry Fuller	OFFICE 321A
CAPT Robert Ford	OFFICE 306C
CAPT Thomas Tucker	OFFICE: *SeaLab*
CAPT David Sweeney	OFFICE: *SeaLab*

Scope

This course is based on IMO Model Courses 1.19 (Personal Survival), 1.20 (Basic Fire-Fighting) and elements of 2.03 (Advanced Training in Fire-Fighting) which covers the training recommended in resolution 19 and Annex 1 of IMO Assembly resolution A.437 (XI) on training of seafarers in personal survival and fire-fighting techniques adopted by the International Conference on Training and Certification of Seafarers, 1978 as required by 46 CFR 15.1105, *Familiarization and Basic Safety Training*.

Learning Objectives

At the completion of this course, each cadet is required to complete the learning objectives and assessment standards set forth in the STCW-95 course for Vessel Familiarization and Basic Safety Training.

Learning Outcomes

Upon completion of this course, students will be able to react in a correct manner during emergency situations, take measures appropriate to his/her own survival and to the survival of others, and use survival equipment correctly. Additionally, a student will be able to react in a correct manner in the event of an outbreak of fire, to take appropriate measures for the safety of personnel and of the ship, and to use fire appliances correctly. He/she will also be able to state and demonstrate that he/she has acquired knowledge and skills, which, in some instances, will enable him/her to identify and correct defects and thus prevent emergencies from occurring.

Entry Standards

This course is presented in English. Trainees must be able to read, write, speak and understand English. This course is open to any cadet and must be successfully completed before enrolling for Sea Term aboard the T.S. Enterprise. There are no prerequisite educational requirements. All trainees must be certified by a doctor to be in good health and fit in all respects for training in personal survival.

Teaching Facilities and Equipment

The Vessel Familiarization and Basic Safety Training (MT1111) course will be presented in the Massachusetts Maritime Academy's academic facilities. A classroom or lecture hall equipped with a black/white board or flip chart supported by audio-visual aids when making use of audio-visual materials such as personal computer presentation software, transparencies, videos or slides will be provided for lectures. Course information and course documents will be posted electronically on the Blackboard.

In addition, practical demonstrations and/or drills will be conducted at the Academy's full equipped Sea Laboratory, swimming pool and waterfront facilities as well as aboard the Training Ship Enterprise, Training Vessel Ranger as well as motor whale boats and monomys whenever the instruction or practical exercises require access to water or use of SOLAS/U.S. Coast Guard approved survival equipment.

Teaching Aids (A)

A1 Vessel Familiarization and Basic Safety Training (MT1111) Instructor Manual
A2 Classroom handouts/notes
A3 Audiovisual aids: PowerPoint presentations
A4 Audiovisual aids: Video projector
A5 Audiovisual aids: Multimedia projector with computer
A6 Personal computer
A7 Cutaway equipment
A8 T.S. Enterprise, equipment and fittings
A9 T.V. Ranger, equipment and fittings
A10 T.V. Towline, equipment and fittings
A11 Certified lifeboat/gravity davit
A12 Motor whale boat
A13 USCG certified inflatable liferaft cradle and davit launch/immersion suits
A14 USCG approved covered lifeboat
A15 Monomoy (pulling) rowing boat

V1 Water Entry and Survival Techniques (27 minutes)
V2 Man Overboard, A Guide to Rescue and Treatment of Man Overboard Victims (31 minutes)
V3 Lifeboat Operation and Survival Practices (25 minutes)
V4 Liferaft Operation and Survival Practices (28 minutes)
V5 First Aid Basics Training Program (30 minutes)
V6 Snap-back (USN)

Safety Routines

Safety precautions during drills are a major component of this course, and affect its organization. Trainees must be protected from danger at all times whilst the course is in progress.

Instructors and their assistants must strictly supervise the trainees, and act as their safety guards. First aid supplies, including a resuscitation kit, must be close at hand. If drills are to take place in the sea, a rescue boat must be in attendance. Night drills must not be performed unless all trainees and instructors have been provided with lifejackets having retro-reflective material as specified in SOLAS, Chapter 111, Regulation 30.2.7. Searchlights must illuminate the practice area.

References (R)

R1 The International Convention on Standards of Training, Certification and Watchkeeping for Seafarers, 1978 (STCW 1978), Annex to resolution 19 Recommendation on Training of Seafarers in Personal Survival Techniques (IMO Sales No. 938 78.15.E).

R2 International Convention for the Safety of Life at Sea, 1974 (SOLAS 1974), as amended (IMO Sales No. 110 86.02.E).

R3 Merchant Ship Search and Rescue Manual (MERSAR) (IMO Sales No. 963 86.08.E).

R4 A Pocket Guide to Cold, Water Survival (IMO Sales No. 946 81.03.E).

Textbooks (T)

T1 Hayler, W.B., Keever, J.M. and Seiler, P. M., The Cornell Manual for Lifeboatman, Able Seamen and Qualified Members of the Engine Department, 1st ed. (Centreville, MD: Cornell Maritime Press, 1984) ISBN 0-87033-313-5

T2 Murphy, II, J.S., *Vessel Familiarization and Basic Safety Training (MT1111), Class Workbook.* (Buzzards Bay, Massachusetts Maritime Academy, 1998)

T3 Brady, R., *Marine Fire Prevention, Firefighting and Fire Safety*, (Prentice-Hall Publishing) (ISBN 0-87618-994-X)

T4 Murphy, II, J.S., *T.S. Enterprise Vessel Particulars, Standing Orders, Bridge Procedures, and Directions for Keeping the Deck Logbook (Version MMA PSBD 001-1998), as revised,* (Buzzards Bay, MA: Massachusetts Maritime Academy, 1998)

Bibliography/Textbooks (B)

B1 Bo, Olav. *Basic Safety Course: Sea Safety and Survival.* Oslo: Norwegian University Press, 1987. (ISBN 82-00-432122.)

B2 Richards, P. and Banigan, J.J. *How to Abandon Ship.* Cornell Maritime Press, 1942.

B3 Wright, C. H. *Survival at Sea: The Lifeboat and Liferaft.* Liverpool: The James Laver Printing Co. Ltd., 1986.

B4 Wright, C. H. *Know Your Liferaft.* Liverpool: The James Laver Printing Co. Ltd., 1986.

B5 Lewis, J.H. *Life Saving Appliance Manual.* London: Stanford Maritime Limited, 1976. (ISBN 0-540-07286-9)

B6 House, D.J. *Marine Survival and Rescue Systems*. Cornell Maritime Press, 1988. (ISBN 0-87033-387-9)
B7 Lee, E. C. B. and Lee,. K. *Safety and Survival at Sea*. London: W. W. Norton, 1980. (ISBN 0393-03242-6.)
B8 *Safety at Sea* (selected issues of the monthly journal). Redhill, Surrey, England: Industrial and Marine Publications, Ltd.
B9 Unden, J.E., *Safety at Sea*. Denmark: Viking, A/S Nordisk Gummibaadsfabrik, 1985.
B10 Baldridge, D. *Shark Attack*. London: MacDonald Futura Publications, 1979. (ISBN 0-7088-1483-2.)
B11 Wright, C. H. *Survival at Sea: The Lifeboat and Liferaft*. Liverpool: The James Laver Printing Co. Ltd., 1986.
B12 Muern, R.J. Survival Guide for the Mariner. Cornell Maritime Press, 1993. (ISBN 0-87033-441-1)
B13 Water Safety and You. Seafarers Harry Lundberg School of Seamanship, 1981
B14 Murphy, II, J.S., Deck Officer Study Guide, Volume 1, Deck General, 1998 ed., (Buzzards Bay, MA: Academy Publishing Company, 1998)
B15 Murphy, II, J.S., Deck Officer Study Guide, Volume 3, Deck Safety, 1998 ed., (Buzzards Bay, MA: Academy Publishing Company, 1998)
B16 Murphy, II, J.S., Deck Officer Study Guide, Volume 6, Deck Examination Illustration Booklet, 1998 ed., (Buzzards Bay, MA: Academy Publishing Company, 1998)

Course Structure

The course is four credits, involving three (3) lectures per week and one (1) two (2) hour laboratory.

1. Unit I Personal Survival
2. Unit II Seamanship
3. Unit III Personal protective Equipment
4. Unit IV Watchstanding

The lecture segment will provide theoretical and practical knowledge to demonstrate competency in the topic areas. The laboratory segment (known as SeaLab) compliments the lectures by providing practical application of the theoretical and to develop the skills necessary to demonstrate proficiency. Lecture syllabus and laboratory schedules are included in this information package.

Methods of Demonstrating Competence

The methods chosen to carry out an evaluation will depend upon what the candidate is expected to achieve in terms of knowledge, comprehension and application of the course content.

The methods used may include:

- Direct observation and participation in classroom training.
- Oral examination a simple question-and-answer discussion with the candidate (either individually or as a group)
- Written test instruments prepared multiple choice tests requiring the selection of correct or best responses from given alternatives, the correct matching of given items, the supply of short fill-in answers, the supply of more extensive essay written responses to prepared questions or mechanical drawings and technical sketches.
- Practical demonstration where the course content is aimed at the acquisition of practical skills, the test may involve a practical demonstration by the candidate making use of appropriate equipment, tools, or simulation.

The responses demanded may therefore consist of:

- the recall of facts or information, by oral response or objective tests
- the practical demonstration of an attained skill
- the oral or written description of procedures or activities
- rendering technical drawings, diagrams or sketches of vessel components and/or systems
- the identification and use of data from diagrams, drawings, publications, charts, tables, etc.
- carrying out calculations to solve numerical problems
- the writing of an essay, journal, or technical report (i.e. workbook assignments)

Massachusetts Maritime Academy is committed to providing reasonable accommodations to students with documented disabilities. Students who believe they may need accommodations in this class are required to report to Dr. Fran Tishkevich, Director of Disability Compliance, within the first two weeks of class. (Ftishkevich@maritime.edu, Office: Room H-311A, Ext. 2208)

Examinations and Grading:

A minimum of four unit examinations will be administered during the lecture segments. The minimum passing grade on each unit exam is 70% for STCW certification. Every candidate will be given two opportunities to achieve the minimum passing grade of 70% on each unit exam. Failure to achieve a passing grade in any one of the four unit exams will result in failure of the course. Lecture examinations will be announced and given during a full lecture period. In the laboratory (SeaLab) segments quizzes and one practical examination will be administered. All examinations and quizzes may take the form of either multiple choice or short answers. Both the lecture and laboratory instructors may give unscheduled quizzes at their discretion. Always carry a Number 2 pencil with you in class and in the Sealab.

Final Exam:

The final examination will be held during the final exam week in December. The final examination will consist of retake opportunities for incomplete/failed unit examinations. A candidate who successfully passes the unit examinations on the first attempt will be exempt from that unit exam on the final examination.

Final Grade:

Quizzes, unit exams and final exam	75%
Sealab quizzes/qualification	25%
	100%

The following is a breakdown of the final course grading:

93.0 100	**A**
90.0 – 92.9	**A-**
87.0 – 89.9	**B+**
83.0 – 86.9	**B**
80.0 – 82.9	**B-**
77.0 – 79.9	**C+**
73.0 – 76.9	**C**
70.0 – 72.9	**C-**
67.0 – 69.9	**D+**
63.0 – 66.9	**D**
60.0 – 62.9	**D-**
Below 60.0	**F**
Incomplete	**I**

Failure to complete laboratory STCW demonstrations for water entry with a survival suit will result in an incomplete (I) for the course until satisfied. A grade below C- will require a repeat of the entire course.

Attendance Policy

ATTENDANCE AT ALL CLASSES AND LABORATORIES IS MANDATORY. Cadets repeating this class must retake all sections and the laboratory. Unauthorized absence will not be tolerated. Disciplinary action and/or grade point reduction will be administered to repeat offenders. ***More than four (4) absences from classroom lectures and/or labs for any reason will result in failure of the course.***

Instructors will dismiss cadets who are found sleeping in class and/or fail to bring required course materials (text book, class notes, etc.). Dismissal from class will be considered an absence for attendance purposes.

If absences occur due to illness, the student must notify the instructor as soon as possible for make-up works or assignments. The instructor must be informed of all special liberty well in advance of the respective date. Authorized absences must be reported to the instructor prior to the missed class. Make-up examinations for authorized periods of absence will be scheduled for a mutually agreed upon time.

NOTE: Examinations missed, as a result of an unauthorized absence, will receive a ZERO.

Syllabus Changes

The syllabus and course schedule is tentative and may be adjusted as required to meet the goals and objectives of the course. Notice of changes will be made to students as soon as possible.

Classroom and Laboratory Policies

Cadets will wear the appropriate uniform of the day in lecture classrooms, and the issued uniform boiler suits while in the Sealab. Commuter students should wear clothing in the Sealab that will launder easily. ***Every cadet will bring their "Youngie" gear to all classes.*** Laboratories are conducted in all weather conditions. Always bring appropriate clothing, such as a warm jacket, as the fall progresses to winter, and rain gear if there is any chance of rain or snow. Cadets *will not* be excused from Sealab because of the lack of a jacket or rain gear. Any USCG approved floatation coat (Floatcoat) may be substituted for Type-III approved PFD's during waterborne laboratories. Students may wear soft shoes (sneakers) while in the boats only.

1. **Pocketknives are required at all times in the classroom and laboratories.**
2. **The use of laptop computers in class is prohibited.**
3. **Eating, drinking or the use of tobacco products is prohibited from all classes and laboratories.**

Add practical assessment control sheet.
and meet goals as I

How is lab graded?

Week	Lecture	Meeting	Topic
1	1	1	Introduction to Basic Safety & Personal Survival
1	2	2	Principles of survival at sea
2	1	3	Emergency situations
2	2	4	Survival craft and rescue boats
2	3	5	Survival craft and rescue boats
3	1	6	Survival craft and rescue boats
3	2	7	Personal lifesaving appliances
3	3	8	Personal lifesaving appliances
4	1	9	Dangers to survivors
4	2	10	Dangers to survivors
4	3	11	Cold water survival
5	1	12	Cold water survival
5	2	13	Use of survival craft
5	3	14	Use of survival craft
6	1	15	Use of survival craft
6	2	16	Helicopter assistance
6	3	17	Emergency signals and communications
7	1	18	Marlinespike seamanship
7	2	19	Marlinespike seamanship
7	3	20	Marlinespike seamanship
8	1	21	Mooring and line handling procedures
8	2	22	Mooring and line handling procedures
8	3	23	Introduction to the principles of firefighting
9	1	24	Theory of fire
9	2	25	Theory of fire
9	3	26	Fire prevention
10	1	27	Fire detection
10	2	28	Fire fighting systems & equipment
10	3	29	Fire fighting systems & equipment
11	1	30	Fire fighting systems & equipment
11	2	31	Fire fighting systems & equipment
11	3	32	Shipboard firefighting organization
12	1	33	Firefighting methods
12	2	34	Firefighting methods
12	3	35	Firefighting methods
13	1	36	Firefighting methods
13	2	37	Fire & emergency drills
13	3	38	Watchstanding
14	1	39	Watchstanding
14	2	40	Watchstanding
14	3	41	Final Examination

MT 1111L VESSEL FAMILIARIZATION LAB

- LAB IS WEEKLY, 2 PERIODS IN LENGTH
- CLASS MEETS AS A GROUP IN SEA LAB FOR ATTENDANCE
- CLASS IS DIVIDED BETWEEN TWO INSTRUCTORS

THE FOLLOWING IS A SAMPLE OF LAB SCHEDULING

6 WEEKS	LIFEBOAT/ ROWING…3 LABS OF INSTRUCTION WITH EACH
2 WEEKS	KNOTS/ SPLICES…1 LAB OF INSTRUCTION WITH EACH
1 WEEK	LINE HANDLING 1
1 WEEK	LINE HANDLING 2
1 WEEK	LAUNCHING OF THE DAVIT ASSISTED LIFERAFT
1 WEEK	IMMERSION SUIT PRACTICAL
1 WEEK	QUESTIONS AND REVIEW…OPTIONAL IF SCHEDULING ALLOWS
1 WEEK	KNOTS AND SPLICES PRACTICAL
14 WEEKS	

TESTING MARLINSPIKE PRACTICAL

LAB GRADE IS 25% OF VESSEL FAMILIARIZATION GRADE

LAB TRAINING OBJECTIVES

****NOTE…LAB NUMBERING IS NOT INDICATIVE OF LAB SCHEDULING ORDER**

LAB 1, 2, 3 LEARN HOW TO LAUNCH, LOWER AND RELEASE LIFEBOATS HANDS-ON EXPERIENCE IN EACH STEP; LEARN STANDARD COMMANDS ASSOCIATED WITH LIFEBOATS AND LAUNCHING

LAB 4, 5, 6 LEARN ROWING COMMANDS AND HOW TO SUCCESSFULLY MANEUVER CRAFT UNDER OARS

LAB 7, 8 LEARN HOW TO TIE THE FOLLOWING WHIPPINGS, KNOTS AND SPLICES:

1. WHIPPING, TEMPORARY
2. WHIPPING, SAILMAKERS
3. OVERHAND KNOT or THUMB KNOT
4. FIGURE EIGHT
5. SQUARE KNOT
6. BOWLINE
7. FRENCH BOWLINE
8. SINGLE BECKET BEND
9. DOUBLE BECKET BEND
10. CLOVE HITCH
11. ROUND TURN AND TWO HALF HITCHES
12. EYE SPLICE (THREE STRAND)
13. SHORT SPLICE (THREE STRAND)
14. BACK SPLICE (THREE STRAND)

LAB 9 LINE HANDLING 1

1. IDENTIFY LEAD/PURPOSE OF BOW , BREAST AND SPRING LINES
2. IDENTIFY…DOUBLING UP, BIGHT, DIPPING THE EYE, ON SHORE vs. OFF SHORE LEAD
3. POINT OUT THREE STRAND vs. EIGHT STRAND CONSTRUCTION
4. IDENTIFY
    a. BOW
    b. FORECASTLE HEAD
    c. BRIDGE
    d. STERN
    e. FOR'CASTLE DECK, MAIN DECK, POOP DECK
    f. BOLLARD, CLEAT, CHOCK (CLOSED AND ROLLER TYPE), BITT, FAIRLEAD, HEAVING LINE, HAWSER AND STOPPER
5. MAKE UP AND THROW A HEAVING LINE, NUMBER TO HAVE ON HAND
6. FAKE LINE ON DECK (REVERSE FLAKES)
7. USE OF A MESSENGER
8. METHOD FOR TYING HEAVING LINE TO MESSENGER, AND MESSENGER TO HAWSER

LAB 10 LINE HANDLING 2

9. LINE HANDLING SAFETY
    a. DANGERS OF STANDING IN A BIGHT
    b. LEARNING TO PASS HAWSER THROUGH BITTS BEFORE PAYING OUT TO CREATE ENOUGH FRICTION SO THAT THE HAWSER WILL NOT TRAVEL OUT WILDLY
    c. FINGERS AND PINCH SPOTS for ex. HAWSER/CHOCK
    d. USE STOPPER NOT FEET
    e. DANGER ZONE FOR A PARTING LINE, STAND CLEAR IN SAFE AREA WHEN LINE IS UNDER STRAIN
10. PUT SHORT BREAST HAWSER TO DOCK AND MANUALLY TAKE IN, STOP OFF AND MAKE UP…DIVIDE THE CLASS IN THREE GROUPS…SHIP PERSONNEL, DOCK WORKERS(NEED TO WEAR LIFEJACKETS) AND OBSERVERS…ROTATE GROUPS THROUGH EACH POSITION

LAB 11 IMMERSION SUITS

1. LEARN HOW TO DON AN IMMERSION SUIT
2. LEARN HOW TO SAFELY ENTER THE WATER
3. LEARN THE HELP, HUDDLE AND CHAIN POSITIONS
4. LEARN TO STAY TOGETHER AS A GROUP, USING THE BACK STROKE TO MANEUVER
5. LEARN HOW TO ENTER A LIFERAFT
6. LEARN THE USE OF THERMAL PROTECTION AIDS

LAB 12 OBSERVE THE PROCEDURES FOR LAUNCHING A DAVIT ASSISTED LIFERAFT

LAB 13 TESTING MARLINSPIKE PRACTICAL TEST ON THE TYING OF KNOTS AND SPLICES.LIST THE STEPS AND EXPLAIN THE PROCEDURES FOR LAUNCHING A LIFEBOAT, LINE HANDLING NOMENCLATURE

LAB GRADE

Average of SeaLab quizzes & knot qualification exam 100%

VESSEL FAMILIARIZATION LAB

COURSE MT 1111 (Credits - 3)

Fall Semester Academic Year 10

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1. **Instructor:** CAPT's DeCicco

   OFFICE: 3rd Deck Harrington Building Rm 322A and the sea lab

   I can be reached by telephone at extension 2112. If you can't reach me at the above number you may leave a message and I will return the call. I can also be reached via email at kdecicco@maritime.edu

   Assisting instructors: Captain's, Ford, Fuller, Tucker, Vacha and Sweeney

   Mass Maritime is committed to providing reasonable accommodations to students with documented disabilities. Students who believe they may need accommodations in this class are required to contact Director of Disability Compliance, within the first two weeks of class.

2. **Texts:**

   Carry the Cornell Manual for Lifeboatmen, Able Seamen, and QMED's. Access to Kights Seamanship.

4. **Supplementary Reading**

   As directed.

5. **Class Format**

   Simulation Role playing, Critical Thinking and Lecturettes with participative group discussions. Class participation includes: class attendance, attentiveness, good behavior and respect for classmates and the instructor.

6. **Objectives**

   To introduce the entire entering class to a life on board a merchant vessel, to enhance their learning experience. See attached schedule of labs.

7. **STCW Competencies**

   Water survival, and Lifeboat training.

MT 1111L VESSEL FAMILIARIZATION LAB

- LAB IS WEEKLY, 2 PERIODS IN LENGTH
- CLASS MEETS AS A GROUP IN SEA LAB FOR ATTENDANCE
- CLASS IS DIVIDED BETWEEN TWO INSTRUCTORS

THE FOLLOWING IS A SAMPLE OF LAB SCHEDULING...

6 WEEKS LIFEBOAT/ ROWING...3 LABS OF INSTRUCTION WITH EACH
2 WEEKS KNOTS/ SPLICES...1 LAB OF INSTRUCTION WITH EACH
1 WEEK DEPENDING ON HOW MUCH THE CLASS RETAINED ANOTHER KNOTS AND SPLICING
2WEEK MOORING LINES AND HEAVING LINES
1 WEEK IMMERSION SUIT PROPER ENTRY INTO WATER AND INTO LIFERAFT
1 WEEK INTRO TO BLOCKS AND TACKLES
1 WEEK KNOTS AND SPLICES PRACTICAL
14 WEEKS

TESTING MARLINSPIKE PRACTICAL

LAB GRADE IS 25% OF VESSEL FAMILIARIZATION GRADE

LAB TRAINING OBJECTIVES
****NOTE...LAB NUMBERING IS NOT INDICATIVE OF LAB SCHEDULING ORDER**

LAB 1, 2, 3...LEARN HOW TO LAUNCH, LOWER AND RELEASE LIFEBOATS HANDS-ON EXPERIENCE IN EACH STEP; LEARN STANDARD COMMANDS ASSOCIATED WITH LIFEBOATS AND LAUNCHING

LAB 4, 5, 6...LEARN ROWING COMMANDS AND HOW TO SUCCESSFULLY MANEUVER CRAFT UNDER OARS

LAB 7, 8...LEARN HOW TO TIE THE FOLLOWING WHIPPINGS, KNOTS AND SPLICES:

1. WHIPPING, TEMPORARY
2. WHIPPING, SAILMAKERS
3. OVERHAND KNOT
4. FIGURE EIGHT
5. SQUARE KNOT
6. BOWLINE
7. FRENCH BOWLINE
8. SINGLE BECKET BEND
9. DOUBLE BECKET BEND
10. CLOVE HITCH
11. ROUND TURN AND TWO HALF HITCHES

12. ROLLING HITCH
13. EYE SPLICE (THREE STRAND)
14. SHORT SPLICE (THREE STRAND)
15. BACK SPLICE (THREE STRAND)

LAB 9...LINE HANDLING 1

1. IDENTIFY LEAD/PURPOSE OF BOW , BREAST AND SPRING LINES
2. IDENTIFY...DOUBLING UP, BIGHT, DIPPING THE EYE, ON SHORE vs. OFF SHORE LEAD
3. POINT OUT THREE STRAND vs. EIGHT STRAND CONSTRUCTION
4. IDENTIFY
    a. BOLLARD, CLEAT, CHOCK (CLOSED AND ROLLER TYPE), BITT, FAIRLEAD, HEAVING LINE, HAWSER AND STOPPER
5. MAKE UP AND THROW A HEAVING LINE, NUMBER TO HAVE ON HAND
6. FAKE LINE ON DECK (REVERSE FLAKES)
7. USE OF A MESSENGER
8. METHOD FOR TYING HEAVING LINE TO MESSENGER, AND MESSENGER TO HAWSER

LAB 10...LINE HANDLING 2

9. LINE HANDLING SAFETY
    a. DANGERS OF STANDING IN A BIGHT
    b. LEARNING TO PASS HAWSER THROUGH BITTS BEFORE PAYING OUT TO CREATE ENOUGH FRICTION SO THAT THE HAWSER WILL NOT TRAVEL OUT WILDLY
    c. EXPLAIN HOW TO PUT A BIGHT OUT
    d. USE STOPPER NOT FEET
    e. DANGER ZONE FOR A PARTING LINE, STAND CLEAR IN SAFE AREA WHEN LINE IS UNDER STRAIN

LAB 11...IMMERSION SUITS

1. LEARN HOW TO DON AN IMMERSION SUIT
2. LEARN HOW TO SAFELY ENTER THE WATER
3. LEARN THE HELP, HUDDLE AND CHAIN POSITIONS
4. LEARN TO STAY TOGETHER AS A GROUP, USING THE BACK STROKE TO MANEUVER
5. LEARN HOW TO ENTER AND EXIT A LIFERAFT
6. LEARN THE USE OF THERMAL PROTECTION AIDS

LAB 13 TESTING...MARLINSPIKE PRACTICAL TEST -KNOTS AND SPLICES.

CLASSROOM POLICY AND PROCEDURES FOR COASTAL NAV 1 - SPRING 2010

A. CLASS SCHEDULES

1. Class Schedules are on Blackboard and are your responsibility to retrieve and monitor.
2. Much of the class information will be given on-line via Blackboard. It is your responsibility to immediately inform us if IT can not provide you access to Blackboard.
3. Cadets are responsible for reading assignments, classroom lectures, and assigned projects.
4. Reading Quizzes will be given as shown on your Lecture Schedule as "rq. ***READ YOUR ASSIGNMENTS.*** There will be no make ups for reading quizzes and missed ones will incur a ***zero grade.***
5. Cadets may be quizzed at any time without notice
6. Refer to your Lecture and Lab Schedule for Lab Quizzes and exams.
7. Make-up for non-reading quizzes, tests and examinations for ***authorized*** periods of absence will be scheduled (***prior to the absence***) for a mutually agreed upon time. Examinations missed as a result of an unauthorized absence will incur a ***zero grade***.

B. ABSENCES

1. Attendance at all classes is mandatory. Unauthorized absence will not be tolerated. ***Disciplinary action and or grade point reduction*** will be administered to policy offenders.
2. Notice of absence for any reason must be given to the instructor ***prior*** to the respective class.

C. GRADING POLICY

1. In accordance with the Mass Maritime Academy academic policy, the minimum passing grade for Coastal Nav is 60%.
2. However, as this course satisfies a portion of your STCW requirements for licensing, in order to receive credit for the knowledge-based components of STCW for this subject, it is necessary to obtain a grade of 70%.
3. Those who receive a grade of 60-69% only satisfy prerequisites for following Marine Transportation courses, and ***must retake*** Coastal Nav in order to satisfy their STCW requirements.
4. Anyone receiving a grade below 60 satisfies neither prerequisites nor STCW requirements, and must retake the course to satisfy both.
5. Grades will not be scaled.
6. The + - system will be used.
7. Grades will be averaged based upon the following percentage values:

Classroom Quizzes & Tests	25%	Lab Tests	10%
Classroom Final	10%	Lab Homework	20%
Classroom Homework	20%	Lab Chart Final Exam	15%
		TOTAL	100%

Cheating will not be tolerated and will incur a zero on the quiz/exam and disciplinary action.

D. **ACCOMODATIONS** -- Mass Maritime is committed to providing reasonable accommodations to students with documented disabilities. Students who believe they may need accommodations in this class are required to contact Ms. Fran Tishkevich, Director of Disability Compliance, within the first two weeks of class. ftishkevich@maritime.edu MMA Tel. ext. 2208. Harrington Bldg Room H 311A. Remember, you must notify me, ***in advance*** if you require accommodations for class or testing.

E. **ASSESSMENTS**

1. During the semester, cadets will have the opportunity to satisfy three STCW required assessments. Copies of these are attached.
2. Should a cadet fail to pass any of these three assessments during the course, he/she *will* ***not*** *have to* repeat the course (providing that they have satisfied the 70% minimum grade requirement). The cadet would only have to retake the assessment at a later scheduled time or during Coastal Nav 2.

F. **EXPECTED OUTCOMES**

At the completion of this course, cadets will have demonstrated via testing and practical assessment, the ability to safely navigate in coastal waters through:

- Reading and understanding nautical charts and publications
- Fast and Accurate plotting of Latitude and Longitude
- Fast and Accurate determination of and plotting of courses; true and magnetic
- Ability to calculate Speed/Time/Distance problems
- Determination and application of Variation and Deviation
- Proper use of fixology
- Proper use of Dead Reckoning
- Ability to accurately calculate the Geographic, Nominal and Luminous visibilities of lights
- Proper plotting of LORAN C and Radar fixes

G. **INSTRUCTORS**

Approved instructors for this course are Captain Craig Dalton, Mate Kerry Chicoine Approved instructors for this course's labs are Mate Kerry Chicoine, Captain John Christensen and Captain Barry Fuller.

H. **REQUIRED BOOKS & ACCESSORIES**

1. DUTTONS 15th ed
2. BOWDITCH - Recommend you purchase the book, but
   BOOK IS AVAILABLE ONLINE at :
   http://www.nga.mil/portal/site/maritime/
   Choose: PUBLICATIONS, then Menu Options, then pull down
   (AMERICAN PRACTICAL NAVIGTATOR
3. Charts 12221-TR, 12354-TR, 13205-TR, & 18465-TR
4. Chart # 1 Latest Edition
5. Pad of universal plotting sheets
6. Plotting Gear: Triangles, Parallel Ruler, Dividers

G. SUGGESTED BOOKS & EQUIPMENT:

1. Navigational Slide Rule
2. Check out from Library, on semester loan, Copy of IALA buoyage system pamphlet.

Books and calculators are to be brought to ***every class*** and lab throughout the semester.

In addition to the books and calculators, plotting tools, ***all charts and plotting sheets*** (unless specifically requested by the instructor not to) are also to be brought to ***every lab*** throughout the semester.

Check BlackBoard prior to each class for assignments, tip offs and notes.

Instructor: Captain Craig Dalton Office: # 317A
Phone: 830-5000 ext. 1951 e-mail cdalton@maritime.edu
Office Hours: Tuesdays 1330-1420 and Thursdays 0845-0950 and 1330-1420.
or ***any other time by appointment.***

Instructor: Captain John Christensen Office # 320A
Phone: 830-5000 ext. 1920 e-mail jchristensen@maritime.edu
Office Hours: Tuesdays and Thursdays

Instructor Mate Kerry Chicoine Office # 323 A
e-mail kchicoine@maritime.edu
Office Hours: Wednesdays 1235-1325 and Fridays 0850-0945

Lab Instructor: Captain Barry Fuller Office # 323A
e-mail bfuller@maritime.edu
Office Hours: Fridays

	Lecture Sections 24 & 25 *(Dalton)*							Labs		
	Date		Test	*Lecture*		*Read* before *class*		LAB #	Test	Remarks
	Date	Day		#	Topic	Dutton's	Bowditch			
Week 1	2-Mar	Tue		1	Intro and overview					
	4-Mar	Thu						1		Nautical Charts
Week 2	9-Mar	Tue		2	Overview of Nav.	Ch 1 &2	Ch. 1 and Bowditch bio			
	11-Mar	Thus	rq1	3	Earth's Coordinates			2	Q 1	Plotting Instruments. Plotting Lat. & Long.
Week 3	16-Mar	Tue		4	Direction/Distance	Ch. 33 + Art 806				
	18-Mar	Thus	rq2	5	Direction/Distance	Ch. 33 + Art 806		3		Distance, Direction, Time, Speed, Logarithmic Scales
Week 4	23-Mar	Tue	Q1	6	Gyro Compass and Error	Arts. 715-719	Arts. 627-621, 623			
	25-Mar	Thus		7	DR and Position fixing	Arts 801-05, 808-10, Ch 9 + arts 1201-06,1222	Arts 700-06, 811, 813-14	4	Q2	DR work and Position Fixing
Week 5	30-Mar	Tue	rq3	8	Running fix & Danger Bearings	Arts 1207-10 & 1215-16	Arts. 812, 819-823			
	1-Apr	Thus	Q2	9	Earth's Magnetism	Art. 703-704	Art. 602-03 & 622	5		ENL Lab Exercise - Chart Plots DRS Fixes
Week 6	6-Apr	Tue		10	Magnetic Compass	Art. 701-02, 706-07, & 714	Arts. 600-601			
	8-Apr	Thus	Q3	11	Variation & Deviation	Art. 705, 708, 709	Arts. 624-626	6	Q3	Field Exercise: Find Variation Chart Plot
Week 7	13-Apr	Tue	rq4	12	Variation & Deviation					
	15-Apr	Thus		13	Compass Error: TVMDC	Arts 710-713	Arts. 604-616			
						Patriots' Day Holiday				

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	Lecture Sections 24 & 25 *(Dalton)*							Labs		
	Date		Test	*Lecture*		*Read* before *class*		LAB #	Test	Remarks
	Date	Day		#	Topic	Dutton's	Bowditch			
Week 8	20-Apr	Tue		14	Compass Error					
	22-Apr	Thus		15	Other Compass Types			7		Magnetic Courses, variation, deviation
Week 9	27-Apr	Tue	rq5	16	Satellite Navigation	Ch 17	Ch. 11			
	29-Apr	Thus	Q4	17	Bathymetric Nav.	Ch 32, Art 807	Art. 815	8	Q4	Magnetic Courses, variation, deviation
Week 10	4-May	Tue	rq6	18	Loran Navigation	Ch. 16	Ch. 12			
	6-May	Thus		19	Radar Use in Nav	Arts. 1217-1221	Ch. 13	9		ENL Lab Exercise
Week 11	11-May	Tue		20	Chart Projections	Ch. 3	Ch. 3			
	13-May	Thu	Q5	21	Chart Projections			10	Q5	DRs, Fixes, Loran
Week 12	18-May	Tue		22	Chart Datums - Chart Accuracy		Ch. 2			
	20-May	Thus		23	Aids to Navigation 1	Ch. 6	Ch. 5 And Chart #1	11		DRs, Fixes, Loran, Radar
Week 13	25-May	Mon	rq7	24	ATON 2					
	27-May	Thus	Q6	25	Lights		Ch. 29	12		Chart Plot: Visibility of lights
Week 14	1-Jun	Tue			MONDAY SCHEDULE					
	3-Jun	Thus	rq8	26	Navigational Pubs	Ch. 5	Ch. 4	13	final	Chart final: assessments
Week 15	8-Jun	Tue		27	review					
			F		Final Exams					
	16-Jun	Tue								

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Massachusetts Maritime Academy
TABLE A-II/1 Specification of Minimum Standard of Competence
OFFICER IN CHARGE OF A NAVIGATIONAL WATCH

Control Sheet

ASSESSMENT NO. OICNW-1-2D, MMA # 21A104A

FUNCTION: Navigation at the Operational Level

COMPETENCE: Plan and conduct a passage and determine position

KNOWLEDGE, UNDERSTANDING & PROFICIENCY: *Terrestrial and Coastal Navigation* -- Ability to determine the ship's position by use of: Dead Reckoning

TASK: Plot the ship's DR position

PERFORMANCE CONDITION: On a ship underway or under laboratory conditions, and using a plotting sheet or chart, given the vessel's speed and course made good for the past four hours.

PERFORMANCE BEHAVIOR: Plot the ship's DR position for every hour (or more frequently if required) for the duration of the watch.

PERFORMANCE STANDARD:

The position is within ± 1 nm of the assessor's position.

COURSE: MT 2121 Coastal Navigation II

Candidate	SSN
Assessor	Position
Vessel or Course	License No. / Date

December 2007, Rev. 06, STCW Compliance Officer

Massachusetts Maritime Academy
TABLE A-II/1 Specification of Minimum Standard of Competence
OFFICER IN CHARGE OF A NAVIGATIONAL WATCH

Control Sheet

ASSESSMENT NO. OICNW-1-5D, MMA # 21A110D

FUNCTION: Navigation at the Operational Level

COMPETENCE: Plan and conduct a passage and determine position

KNOWLEDGE, UNDERSTANDING & PROFICIENCY: *Magnetic & Gyro Compass* – Ability to determine errors of the magnetic and gyro-compasses, using terrestrial means, and to allow for such errors

TASK: Determine course to steer by magnetic compass

PERFORMANCE CONDITION: On a ship underway or a full mission ship simulator, and given a deviation table.

PERFORMANCE BEHAVIOR: Apply the compass error to the course by magnetic compass to make good the intended true course.

PERFORMANCE STANDARD:

1. Compass error is correctly applied to the magnetic course.
2. The solution is ± 2° of the assessor's solution.

COURSE: MT 2121 Coastal Navigation II

Candidate	SSN
Assessor	Position
Vessel or Course	License No. / Date

December 2007, Rev. 06, STCW Compliance Officer

Massachusetts Maritime Academy
TABLE A-II/1 Specification of Minimum Standard of Competence
OFFICER IN CHARGE OF A NAVIGATIONAL WATCH

Control Sheet

ASSESSMENT NO. OICNW-1-5E, MMA # 21A110E

FUNCTION: Navigation at the Operational Level

COMPETENCE: Plan and conduct a passage and determine position

KNOWLEDGE, UNDERSTANDING & PROFICIENCY: *Magnetic & Gyro Compass* – Ability to determine errors of the magnetic and gyro-compasses, using terrestrial means, and to allow for such errors

TASK: Position fix by magnetic compass bearings

PERFORMANCE CONDITION: On a ship underway or a full mission ship simulator, or in a navigational laboratory, and given a deviation table.

PERFORMANCE BEHAVIOR: Apply the compass error to the bearings by magnetic compass of at least two charted objects and plot them on the chart in use.

PERFORMANCE STANDARD:

1. Compass error is correctly applied to the magnetic bearings.
2. The position is within ± 0.5 nm of the assessor's position on a chart with a scale no smaller than 1:150,000.

COURSE: MT 2121 Coastal Navigation II

Candidate	SSN
Assessor	Position
Vessel or Course	License No. / Date

December 2007, Rev. 06, STCW Compliance Officer

SPRING 2010 - Calendar

March	1 Academic Orientation Day	2 Commence Classes C-1	3	4 C-2	5 L-1	Saturdays
	8	9 Last Day to add classes C-3	10	11 C-4	12 L-2	COASTAL
	15	16 C-5	17	18 C-6	19 L-3	
	22	23 Last Day to drop classes C-7	24	25 C-8	26 L-4	
April	29	30 C-9	31	1 C-10	2 L-5	3 Welcome Aboard
	5 Uniform Change	6 C-11	7	8 C-12	9 L-6	NAUONE
	12	13 C-13	14	15 C-14	16 PATRIOTS' DAY	
	19 WEEKEND	20 Deficiencies Due by 1000 C-15	21	22 C-16	23 L-7	
	26	27 C-17	28	29 C-18	30 L-8	
May	3	4 C-19	5	6 C-20	7 L-9	8 Open House
	10 License Exams Start	11 Last Day to w'draw C-21	12	13 C-22	14 L-10	SP2010
	17	18 C-23	19	20 C-24	21 L-11	
	24	25 C-25	26	27 C-26	28 L-12	
June	31 MEMORIAL DAY	1 MONDAY SCHEDULE	2	3 C-27	4 L-13	
	7	8 End Academics C-28	9 Begin Finals	10	11	
	14	15 Last Day of Finals	16	17 Grades Due by 0900	18	19 Grad-Day
	21 Academic Board Meets 0900	22	23	24	25 END TERM	

Since this is an STCW course, no allowance for absence can be made under Federal Law. It is your duty to keep up with the material, and to arrange to make up any quizzes, tests or material missed *in advance*. Make your arrangements beforehand, or forget about it: a zero will be recorded for that work.

My duty is to guide you through the material, not to spoon feed you. Come to class prepared to discuss the reading for that day. Stop me at any point that you don't understand—I will be glad to go over it again. Ditto for any part of the reading that you want to discuss.

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 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.

No extra credit work will be offered.

I wish for all of you to succeed with this material. Contact me or stop by my office for extra help. Avail yourself of the tutoring that is offered. Feel free to email me with questions.

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).

Expected Outcomes: At the completion of this course Cadets will have demonstrated, via testing and practical assessments, the ability to keep their vessels out of danger in Coastal waters through:

- a respect for sources of error
- Accurate use of visual bearings to fix their position and stay clear of dangers.
- Calculating the essential parameters of terrestrial navigation through the Sailings.
- Calculating tides and currents and how these affect safe navigation.
- A comprehensive view of voyage planning, including record keeping and BRM

GRADING POLICY

1. In accordance with the Mass Maritime Academy academic policy, the minimum passing grade for Coastal Nav is 60%.
2. However, as this course satisfies a portion of your STCW requirements for licensing, in order to receive credit for the knowledge-based components of STCW for this subject, it is necessary to obtain a grade of 70%.
3. Those who receive a grade of 60-69.99% only satisfy prerequisites for following Marine Transportation courses, and ***must retake*** Coastal Nav II in order to satisfy their STCW requirements.
4. Anyone receiving a grade below 60 satisfies no prerequisites or STCW requirements, and must retake the course to satisfy both.

5. Grades will not be scaled.
6. The + - system will be used.
7. Grades will be averaged based upon the following percentage values:

Classroom Quizzes & Tests	25%	Lab Tests	10%
Classroom Final	10%	Lab Homework	20%
Classroom Homework	20%	Lab Chart Final Exam	10%
Participation Lab & Class	5%		

REQUIRED BOOKS & ACCESSORIES

- DUTTONS 15th Edition
- BOWDITCH - Recommend you purchase the book, but
  - ***BOOK IS AVAILABLE ONLINE at :***
    - http://164.214.12.45/NGAPortal/MSI.portal?_nfpb=true&_pageLabel=msi_portal_page_62&pubCode=0002

- Charts 12221-TR, 12354-TR, 13205-TR, 18465-TR & ***37120***
- 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

F. SUGGESTED BOOKS & EQUIPMENT:

- Navigational Slide Rule
- Check out from Library, on semester loan, Copy of IALA buoyage system pamphlet.
- In addition to the books and calculators, plotting tools, ***all charts and plotting sheets*** (unless specifically requested by the instructor not to) are also to be brought to ***every lab*** throughout the semester.

G. ASSESSMENTS

1. During the semester, cadets will have the opportunity to satisfy four STCW required assessments. Copies of these are attached.
2. Should a cadet fail to pass any of these four assessments during the course, he/she *will **not** have to* repeat the course (providing that they have satisfied the 70% minimum grade requirement). The cadet would have ***one*** more opportunity to retake the assessment at a later scheduled time. **NOTE:** The opportunity to retake these might not occur until the course is run again the next fall. Should you fail at this attempt you will be required to repeat the course.
3. YOU MUST PASS THESE ASSESSMENTS and receive a grade for the course (NOT an incomplete) PRIOR TO YOUR JUNIOR SEA TERM. ***YOU WILL NOT BE ALLOWED TO SHIP OUT YOUR JUNIOR YEAR UNTIL THESE ASSESSMENTS ARE COMPLETED.***

H. PREREQUISITES

All students enrolled in Coastal Navigation II **MUST HAVE PASSED Coastal Navigation I** with a D- or better. IF you have not done so, notify the instructor at once, as *you will be removed from the course if it is discovered at a later date.*

I. Check BlackBoard prior to each class for assignments, tip offs and notes.

Instructor: Captain Craig Dalton Office # 317A Ext: 1951 cdalton@maritime.edu

Office Hours: Mon & Wed 1100-1150 & Mon 1400-1450 or ***any other time by appointment.***

Instructor: Ms. Kerry Chicoine Office # 323A kchicoine@maritime.edu

Office Hours: Every other Monday 0900-1050 Thursdays. 1100-1150 & Fridays 1200-1250 or ***any other time by appointment.***

Lab Instructor: Capt. Barry Fuller Office # 323A bfuller@maritime.edu

Office Hours: Mondays 1200-1250, Tuesdays 1000-1050, Fridays 1200-1250

Contact us before you get in over your head.

We can help you if you come to us, can't if you don't.

MARINE TRANS DEPT. COASTAL NAV 2 MT 2121
LESSON PLAN CLASSROOMS -- FALL 2010 -- ALL SECTIONS

Class	LESSON	READ DUTTONS 15th Ed *before lecture on*	READ Bowditch 2002 *before lecture on*
1	Review Buoyage	**Chap 6 & Chart #1**	Chap 5
2	Vectors		
3	Current Sailing Introduction	**Chap 13**	Art. 707-8
4	Navigational Publications	**Chap 5**	Chap 4
5	Trigonometry Review		Art. 2100-02, 2106-8
6	Danger Angles, Bearings and Special Case Bearings	**Art 1214-16**	Art. 2100-02, 2106-8
7	Special Case Bearings Review		
8	Plane & Parallel Sailing	**Chap 31**	Arts 2205 & 2400-03
9	Mid-Latitude Sailing		Arts 2411 - 2417
10	Mid-Latitude Sailing		
11	Interpolation Techniques		
12	Mercator Sailing		
13	Mercator Sailing		
14	Tides	**Chap 10**	Art.900-12
15	Tides		Art. 923-5, 927-30
16	Tides		
17	Tidal Calculations		
18	Tidal Calculations		
19	Tidal Currents	**Art 1105-15**	Art.913-22, 926,931-39
20	Tidal Currents		
21	Current Calculations		
22	Piloting -- Advance & Transfer	**Chap 14**	Art. 800-810
23	ECDIS	**Chap 4**	Chap 14
24	ECDIS		
25	Log Books		
26	Voyage Planning		Chap 25
27	Review		
		****NOTE****	***"Art." Means article number in the text***

MARINE TRANS DEPT. COASTAL NAV 2 MT 2121
LESSON PLAN FOR FALL 2010 --- ALL SECTIONS

	Classes		Labs
1	Review Buoyage Systems	1	Review DR, TVMDC, Luminous Range Chart Plot all ecompassing
2	Vectors		
3	Current Sailing Introduction	2	Chart Plot -- Lights & Running Fix Review
4	Navigational Publications		
5	Trigonometry Review	3	Chart Plot - English Channel PPT
6	Danger Angles, Bearings and Special Case Bearings		
7	Special Case Bearings Review	4	Chart Plot - Current Sailings
8	Plane Sailing		
9	Mid-Latitude Sailing	5	Chart Plot - Time Zones & ETAs
10	Mid-Latitude Sailing		
11	Interpolation Techniques	6	Chart Plot - Special Case Bearings Usage
12	Mercator Sailing		
13	Mercator Sailing	7	Mid Term Chart Plot - Assessments
14	Tides		
15	Tides	8	Chart Plot - Bbay ENL Lab
16	Tides		
17	Tidal Calculations	9	Plotting Sheet Review and Exercise
18	Tidal Calculations		
19	Tidal Currents	10	Chart Plot - Gnomonic @ Great Circle
20	Tidal Currents		
21	Current Calculations	11	Chart Plot -- ENL Lab
22	ECDIS		
23	ECDIS		
24	Log Books	12	CHART PLOT ECDIS in ENL Lab
25	Log Books		
26	Voyage Planning	13	CHART PLOT FINAL - Assessments
27	Review		

Coastal NAVI

Fall 2010 - Calendar

Classes

	30	31	1 Academic Orientation Day	2 Commence Classes	3
Sept	6 Labor Day	7	8 Last Day to add classes 1	9	10
	13 2	14	15 3	16	17
	20 4	21	22 Last Day to drop classes 5	23	24
	27 6	28	29 7	30	1
Oct	4 8	5	6 9	7	8
	11 Columbus Day	12 - MONDAY Sched. 10	13 11	14	15
	18 12	19 Deficiencies Due by 1000	20 13	21	22
	25 Uniform Change 14	26	27 15	28	29
Nov	1 16	2	3 17	4	5
	8 18	9	10 19 Last Day to w'draw	11 Veteran's Day	12
	15 20	16	17 21	18	19
	22 22	23 Break starts after classes	24 Travel Day	25 Thanksgiving	26 Vacation
	29 Resume Classes 23	30	1 24	2	3
Dec	6 25	7	8 26	9	10
	13 27	14 End Academics	15 Begin Finals	16	17
	20	21 Last Day of Finals	22 Grades Due by 0900		27 Academic Board Meets 0900 END TERM

Coastal Nav # Fall 2010 - Calendar LABS

	30	31	1 Academic Orientation Day	2 Commence Classes L1	3 L1
Sept	6 Labor Day	7 L1	8 Last Day to add classes	9 L2	10 L2
	13	14 L2	15	16 L3	17 L3
	20	21 L3	22 Last Day to drop classes	23 L4	24 L4
	27	28 L4	29	30 L5	1 L5
Oct	4	5 L5	6	7 L6	8 L6
	11 Columbus Day	12 - MONDAY Sched.	13	14 L7	15 L7
	18	19 Deficiencies Due by 1000 L6	20	21 L8	22 L8
	25 Uniform Change	26 L7	27	28 L9	29 L9
Nov	1	2 L8	3	4 L10	5 L10
	8	9 L9	10 Last Day to w'draw	11 Veteran's Day	12 L11
	15	16 L10	17	18 L11	19 L12
	22	23 Break starts after classes L11	24 Travel Day	25 Thanksgiving	26 Vacation
	29 Resume Classes	30 L12	1	2 L12	3 L13
Dec	6	7 L13	8	9 L13	10 Reassess
	13	14 End Academics Reassess	15 Begin Finals	16	17
	20	21 Last Day of Finals	22 Grades Due by 090		27 Academic Board Meets 0900 END TERM

Massachusetts Maritime Academy
TABLE A-II/1 Specification of Minimum Standard of Competence
OFFICER IN CHARGE OF A NAVIGATIONAL WATCH

Control Sheet

ASSESSMENT NO. OICNW-1-2D, MMA # 21A104A

FUNCTION: Navigation at the Operational Level

COMPETENCE: Plan and conduct a passage and determine position

KNOWLEDGE, UNDERSTANDING & PROFICIENCY: *Terrestrial and Coastal Navigation* -- Ability to determine the ship's position by use of: Dead Reckoning

TASK: Plot the ship's DR position

PERFORMANCE CONDITION: On a ship underway or under laboratory conditions, and using a plotting sheet or chart, given the vessel's speed and course made good for the past four hours.

PERFORMANCE BEHAVIOR: Plot the ship's DR position for every hour (or more frequently if required) for the duration of the watch.

PERFORMANCE STANDARD:

The position is within ± 1 nm of the assessor's position.

COURSE: MT 2121 Coastal Navigation II

Candidate _____ SSN _____

Assessor _____ Position _____

Vessel or Course _____ License No. _____ Date _____

Massachusetts Maritime Academy
TABLE A-II/1 Specification of Minimum Standard of Competence
OFFICER IN CHARGE OF A NAVIGATIONAL WATCH

Control Sheet

ASSESSMENT NO. OICNW-1-2E, MMA # 21A105A

FUNCTION: Navigation at the Operational Level

COMPETENCE: Plan and conduct a passage and determine position

KNOWLEDGE, UNDERSTANDING & PROFICIENCY: *Terrestrial and Coastal Navigation* -- Ability to determine the ship's position by use of: Set and drift

TASK: Determine course to steer

PERFORMANCE CONDITION: On a ship underway, under laboratory conditions, or in a full mission ship simulator, with the ship's speed of at least 10 knots, and using a plotting sheet or chart, when encountering wind and current which sets the vessel. Given adequate radar ranges and visual or electronic bearings.

PERFORMANCE BEHAVIOR: Plot the vessel's position on at least two successive occasions not less than 30 minutes apart, for a vessel steaming at 20 kts, and calculate set and drift by vector analysis and determine the course to steer to make the intended course.

PERFORMANCE STANDARD:

The course to steer is within ± 5° of the assessor's solution.

SUPPORT: MT 2121 Coastal Navigation II

Candidate	SSN
Assessor	Position
Vessel or Course	License No. / Date

Massachusetts Maritime Academy
TABLE A-II/1 Specification of Minimum Standard of Competence
OFFICER IN CHARGE OF A NAVIGATIONAL WATCH

Control Sheet

ASSESSMENT NO. OICNW-1-5D, MMA # 21A110D

FUNCTION: Navigation at the Operational Level

COMPETENCE: Plan and conduct a passage and determine position

KNOWLEDGE, UNDERSTANDING & PROFICIENCY: *Magnetic & Gyro Compass* -- Ability to determine errors of the magnetic and gyro-compasses, using terrestrial means, and to allow for such errors

TASK: Determine course to steer by magnetic compass

PERFORMANCE CONDITION: On a ship underway or a full mission ship simulator, and given a deviation table.

PERFORMANCE BEHAVIOR: Apply the compass error to the course by magnetic compass to make good the intended true course.

PERFORMANCE STANDARD:

1. Compass error is correctly applied to the magnetic course.
2. The solution is ± 2° of the assessor's solution.

COURSE: MT 2121 Coastal Navigation II

Candidate _____ SSN _____

Assessor _____ Position _____

Vessel or Course _____ License No. _____ Date _____

TABLE A-II/1 Specification of Minimum Standard of Competence
OFFICER IN CHARGE OF A NAVIGATIONAL WATCH

Control Sheet

ASSESSMENT NO. OICNW-1-5E, MMA # 21A110E

FUNCTION: Navigation at the Operational Level

COMPETENCE: Plan and conduct a passage and determine position

KNOWLEDGE, UNDERSTANDING & PROFICIENCY: *Magnetic & Gyro Compass* -- Ability to determine errors of the magnetic and gyro-compasses, using terrestrial means, and to allow for such errors

TASK: Position fix by magnetic compass bearings

PERFORMANCE CONDITION: On a ship underway or a full mission ship simulator, or in a navigational laboratory, and given a deviation table.

PERFORMANCE BEHAVIOR: Apply the compass error to the bearings by magnetic compass of at least two charted objects and plot them on the chart in use.

PERFORMANCE STANDARD:

1. Compass error is correctly applied to the magnetic bearings.
2. The position is within ± 0.5 nm of the assessor's position on a chart with a scale no smaller than 1:150,000.

COURSE: MT 2121 Coastal Navigation II

Candidate	SSN
Assessor	Position
Vessel or Course	License No. / Date

CLASSROOM POLICY AND PROCEDURES
SHIP CONSTRUCTION - FALL 2010

Learning Objective Upon completion of MT 2141,Ship's Construction,the student will appreciate ship construction as multi-disciplinary , combining commercial, economic, structural, climatological,and regulatory aspects, with deep historical and mercantile roots and be able to assume a responsible role in a ship management team.

A. In accordance with STCW the student will demonstrate fluency in...

- Identifying ship types by their external characteristics .
- The internal structural types of ship construction
- The factors that determine the design of a ship
- The process of converting plans into a functioning ship
- The external and internal forces that work to diminish a ship's structural integrity
- The basic concepts of hydrodynamics and buoyancy
- The specific areas that are prone to deterioration, why, and how to mitigate
- Shipyard prcesses and procedures
- Metallurgy, welding, and riveting
- Hull form, depicted in 2D and 3D, and design and construction limitations,

...by frequent quizzes, building of small scale models, a Term Paper on an aspect of Ship's Construction and Socratic give-and-take in the classroom.

B. CELL PHONES

Cell phones and other devices must be switched off before the appointed class time: no texting, no messaging, no pictures, no nothing. Phones ringing will be confiscated till the end of time. If your phone rings and you fail to own up to it, the entire class will be sent to Switzerland for a sex-change operation.

C. ABSENCES

Attendance at all classes is mandatory. STCW does not allow for any type of absence. Students must arrange to make up any work missed. I will not keep track of it for you.

- Notice of absence for any reason must be given to the instructor prior to the respective class. The *cadet* is responsible for initiating the arrangements for making up any work.
- Make-up examinations for authorized periods of absence are a privilege, and must be scheduled prior to the absence for a mutually agreed upon time.

Quizzes missed as a result of an unauthorized absence will incur a zero grade.

D. HOMEWORK

1. Cadets are responsible for reading assignments, classroom lectures, and assigned projects. Plan on a quiz each Thursday. However, cadets may be quizzed at any time without notice. Unannounced quizzes are more likely to occur when cadets have *NOT* been doing their required readings. *READ YOUR ASSIGNMENTS.*
2. DEFINITIONS HOMEWORK 411 Definitions are in the front of your illustration booklet. I will use several formats to assess your knowledge of these. This is an easy 10% of your grade. Don't blow it.

3. You are expected to produce a research paper on a subject mutually agreeable to us, either selected from a list, or an original idea. More on that later.
4. In addition, I will assign a shorter "warm-up" paper with subject and sources specified. Also, I will assign you each a book to summarize for me. Yes, a book report.
5. Finally, in lieu of written vocabulary, I will assign some models for you to make. It'll be fun!

E. GRADING POLICY

In accordance with the Mass Maritime Academy academic policy and STCW testing requirements for knowledge-based assessments, the passing grade for Ship Construction is 70% (C-). Any license-track cadet not receiving a grade of C - or higher will have to retake this course.

Grades will not be scaled. The + - system will be used.
Grades will be averaged based upon the following percentage values:

Quizzes	50%	(Lowest quiz grade will be dropped)
Term Paper	20%	
Homework	10%	
Final Exam	15 %	
Class Participation	5%	

Cheating (including plagiarism) will not be tolerated and will incur a zero on the quiz/exam and possible disciplinary action.

F. REQUIRED BOOKS

1. SHIP CONSTRUCTION - Eyres - Sixth Edition
2. MT 644 ILLUSTRATION BOOK - Murphy/Dalton - 2003 Edition
   (You will be charged back the printing costs for this book)

G. Instructor: John Christensen Office: 320 A Harrington

Phone: 508 830 5000 ext 1920 email jchristensen@maritime.edu.
Office hours: I generally arrive on campus around 0730 and will leave around 1500. If I'm in my office, feel free to stop in. My official office hours are 0800-0850 Tuesdays and Thursdays.

H. Disabilities: If you have a documented learning disability and feel you need

accommodation for this course, contact the school's Disability Resource Coordinator, Professor Fran Tishkevich room H 311A ftishkevich@maritime.edu tel ext. 2208.

I. OBJECTIVES AND EXPECTATIONS:

This course is meant to enhance your knowledge of ships' construction and prepare you to perform the duties of a Licensed Mate. Your effort and participation are keys to successfully completing this course.

Do not hesitate to seek help whenever you feel you are falling behind and do not understand material and or course expectations. *Come talk to me. I can also help with other courses, or point you to someone who can. We want you to succeed.*

	Date		Lecture		Reading		Assignment	Quiz
	Date	Day	#	Topic	Eyres	Illus. Book	Due	Content
Week 1	2-Sep	Thu	1	Introduction				
				Ship Types	Chapter 3			No Quiz
Week 2	6-Sep	Mon		**Labor Day**				
	7-Sep	Tue	2	Library resources			**Ship description**	
	9-Sep	Thu	3	Ship Dimensions	Chapter 2	18-21	Definitions 1	Q1: Lecture, Chapter 2 & 3
Week 3	14-Sep	Tue	4	Ship Dimensions				
	16-Sep	Thu	5	Ship Form	Chapter 12	22-23		
				Ship Plans			Definitions 2	Q2: Lecture, Chapter 12
Week 4	21-Sep	Tue	6	Metallurgy	Ch. 5, 6, 7	160-168		
	23-Sep	Thu	7	Stresses	Ch. 8	15-30	**Paper topic chosen**	
							Definitions 3	Q3: Lecture, Chs 5-8
Week 5	28-Sep	Tue	8	Stresses	Ch. 9		**Book report**	
	30-Sep	Thu	9	Rivets and Welding	Ch. 10	31-37		
							Definitions 4	Q4: Lecture, Chs 9 & 10
Week 6	5-Oct	Tue	10	Welding	Ch. 16 & 17		**Research strategy & preliminary outline**	
	7-Oct	Thu	11	Hull Framing	Ch. 22 & 23	41-67		
							Definitions 5	Q5: Lecture, Chs. 16, 17, 22, 23
Week 7	14-Oct	Thu	12	Hull Plating		68-80		
				Bulkheads	Ch. 18	81-85		
							Definitions 6	Q6: Lecture, Ch 18
Week 8	19-Oct	Tue	13	Bows and Sterns	Ch 20	98-105		
	21-Oct	Thu	14	Stern Construction	Ch 21	108-112		
					Ch 28	106-107	Definitions 7	Q7: Lecture, Ch 20, 21
Week 9	26-Oct	Tue	15	Propellers	Ch. 19	86-91		
	28-Oct	Thu	16	Rudders	24, 25, 26			
					Ch 21 (ref)		Definitions 8	Q8: Lecture, Ch 28, 19, 24-26
Week 10	2-Nov	Tue	17	Hatches, cargo gear, and deck fittings	Ch 21 (ref)			
	4-Nov	Thu	18			113-117		
							Definitions 9	

	Date		Lecture		Reading		Assignment	Quiz
	Date	Day	#	Topic	Eyres	Illus. Book	Due	Content
Week 11	9-Nov	Tue	19	Engines	30	10-11	**Papers due**	
	11-Nov	Thu		**Veterans' day**				
				Tonnages			Definitions 10	Q9: Lecture, Ch 30
Week 12	16-Nov	Tue	20	Tonnages, Load lines	31	134-139		
	18-Nov	Thu	21	Drafts, draft marks		143		
						140-142	Definitions 11	Q10: Lecture, Ch 31
Week 13	23-Nov	Tue	22	Buoyancy				
				Thanksgiving				
				Thanksgiving				
Week 14	30-Nov	Tue	23	Freshwater Allowance	1, 11, 13	147	FWA homework	
	2-Dec	Thu	24	Shipyards	14, 15			
								Q11: Lecture, Chs 1, 11, 13-15
Week 15	7-Dec	Tue	25	Orgs/Surveys	4, 29			
	9-Dec	Thu	26	Corrosion Control	27			
								No Quiz
	14-Dec	Tue						
	15-Dec	Wed		Final Exams				
	18-Dec	Fri		Final Exams				

MASSACHUSETTS MARITIME ACADEMY
DEPARTMENT OF MARINE TRANSPORTATION

RULES OF THE ROAD (MT2161)

FALL 2010

I. LEARNING OBJECTIVES

This course is designed to meet all Rules of the Road knowledge based assessments and the three performance-based assessments, which form part of the requirements for Officer in Charge of a Navigation Watch (STCW 95 Table A-II/1).

The objective of this rigorous program of study is to provide the student with a thorough knowledge of the content, application and intent of the International Regulations for Preventing Collisions at Sea, COLREGS, and the Unified Inland Navigation Rules and Regulations, INLAND RULES.

LEARNING OUTCOMES

The student will be able to discuss the differences and similarities between the COLREGS and the INLAND RULES. The student will be able to identify the traditional elements of maintaining a proper lookout at all times and in such a way as to conform to accepted "best practices." The student will be able to identify the lights, shapes and sound signals contained in both the COLREGS and the INLAND RULES. The student will be able to recognize a vessel's status by relative bearing, aspect, lights and sound signals. The student will be able to interpret the relevant rules that govern the actions between vessels. The student will be able to identify the elements that comprise risk of collision. The student will be able to describe the accepted principles and procedures to avoid a collision in any state of visibility. Ultimately, with shipboard, watch-standing experience, the student will be qualified to apply the Rules of the Road appropriately when serving as officer in charge of the navigation watch.

II. INSTRUCTOR

Capt. Patrick J. Modic

III. TEXT

NAVIGATION RULES: INTERNATIONAL – INLAND,
COMDINST M16672.2E
FARWELL'S RULES OF THE ROAD, Craig H. Allen, 8th Edition

IV. ACADEMIC GRADING

"If something exists, it exists in some amount. If it exists in some amount, then it is capable of being measured." Rene Descartes, Principles of Philosophy, 1644

A. The instructor intends to administer integral assessments biweekly during the semester and a comprehensive final exam. The purposes of the biweekly assessments are:

to measure the student's progress and provide feedback
to provide motivation
to ensure that the STCW Assessment standards are met

B. **Approximately one third of each test will be based on material found solely in the assigned readings.** In addition, the instructor reserves the right to administer short unannounced tests at his discretion.

C. Students who miss a scheduled test due to an authorized absence must personally notify the instructor prior to the test missed. Students who do not follow this procedure will be considered an unauthorized absentee and will receive a grade of zero for the test missed.

D. The grade for the course will be the numerical sum of all earned points divided by the total points possible.

E. The final examination will be approximately one third of final grade and will be administered only in the period designated by the Registrar during final examination week at the end of the semester.

V. STCW ASSESSMENTS

A. This course supports the following STCW elements:

- **21A2** Maintain a safe navigational watch
- **21A2.01** Thorough knowledge of the content, application and intent of the International Regulations for Preventing Collisions at Sea
- **21A2.02** Thorough knowledge of the Principles to be observed in keeping a navigational watch.

B. Knowledge-based assessments will be conducted as part of this course. Students will be required to achieve a minimum grade of 70% for this course to satisfy the knowledge component of STCW. Individuals failing to achieve a minimum grade of 70% will be required to retake this course, retake the three performance-based assessments and achieve a minimum grade of 70% prior to graduation.

C. Three performance-based assessments are associated with this course. The performance-based assessments are Pass/Fail (minimum passing grade is 90%). Each of the three performance-based assessments will be administered twice during the semester. Individuals that achieve a minimum grade of 70% but fail to pass one or more of the performance-based assessments associated with this course will receive an incomplete for the final grade.

VI. MISCELLANEOUS

A. Each student is responsible for completion of assessments, assignments and subject matter covered in the class whether he/she is present or not.

B. Class attendance in this STCW Course is mandatory. More than four (4) absences from scheduled classroom lectures will result in failure of this STCW course. Further, all unauthorized absences will be reported to the Commandant's Office (This means no cuts).

C. Office hours are established to allow the student the opportunity to consult with the instructor. If you are having a problem, do not hesitate to see your instructor. The instructor will be pleased to provide remedial help.

D. This course will use BLACKBOARD extensively as a means of communication outside the classroom and to provide additional study material to the students. Students are required to have an active BLACKBOARD account and to check it often for announcements and new material.

E. 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 Mrs. Fran Tishkevich, Director of Disability Compliance (Ext.2208).

F. Electronic communication devices, any telecommunication device that emits an audible signal, vibrates, displays a message, or otherwise summons or delivers a communication to the possessor including but not limited to: cell phones, Iphones and Blackberries, are prohibited from this class. In the event of a medical condition or personal circumstance necessitating the cadet to be in touch with a doctor or a parent, a reasonable accommodation will be made between the instructor and the cadet. Failure to comply with this directive will result in the following report offence, disobedience of a direct order.

G. You will be treated and expected to conduct yourselves as the professionals you are aspiring to be.

MASSACHUSETTS MARITIME ACADEMY
DEPARTMENT OF MARINE TRANSPORTATION
Rules of the Road (MT2161)
Syllabus

WEEK	TOPIC	COLREGS		FARWELL'S
Week One **Introduction and Regulatory History**	• Course Introduction and STCW Assessments & History of Collision Regulations			
	• Purpose of the Rules of the Road & RULE 1 - Application	pp. iv-v	pp. 2-5	pp. 55-61
Week Two **Vessel Definitions**	• RULE 3 - General Definitions which apply throughout the 72 COLREGS and INLAND RULES	pp. 6-11		pp. 61-86 p. 462, pp.484-517
Applying Lights to Vessel Definitions	• RULE 20 through 23 • Annex I	pp. 38-51	pp. 132-149	pp.484-517
Week Three **Applying Lights to Vessel Definitions**	• RULE 24 through 25 • RULE 26 through 31	pp. 52-113		pp.484-517
Week Four **Application of Definitions to Rule 18 Maneuvering Situations**	• RULE 18 Pecking Order Conduct of Vessels in Sight of One Another • RULES 11 & 12 Steering and Sailing Rules	pp. 34-35	pp. 26-27	pp.350-359

WEEK	TOPIC	COLREGS	FARWELL'S
Week Five Placing Moving Vessels In The Picture	Conduct of Vessels in Sight of One Another	pp. 28-33	
	• RULE 13, Overtaking		pp.396-427
	• RULE 14, Meeting		pp.361-395
	• RULE 15, Crossing		pp.429-450
Week Six Duties of Stand-on and Give-way Vessels	• RULE 16, Action of Give-way Vessel		pp.259-263
	• RULE 17, Action of Stand-on Vessel		pp.263-278
Week Seven Conduct of Vessels in Any Condition of Visibility	• Rule 4 Application	pp. 12-17	
	• Rule 5 Lookout		pp.129-174
	• Rule 6 Safe Speed		pp.175-206
Week Eight Conduct of Vessels in Any Condition of Visibility	• RULE 7 Risk of Collision	pp. 16-19	pp.207-241
	• RULE 8 Action to Avoid Collision		pp.242-278
Week Nine Conduct of Vessels in Any Condition of Visibility	• RULE 9 Narrow Channel	pp. 20-25	pp.281-320
	• RULE 10 Traffic Separation Schemes		pp.321-360
	OICNW-2-1A Identify Light Configuration Proficiency Demonstration Assessment		
	OICNW-2-1B Identify Day Shapes Proficiency Demonstration Assessment		

WEEK	TOPIC	COLREGS		FARWELL'S	
Week Ten Restricted Visibility	• RULE 19 Conduct of Vessels in Restricted Visibility • RULE 35 Sound Signals in Restricted Visibility	pp. 36-37	pp. 120-123	pp.451-456 pp.457-462	pp462-483
Week Eleven Sound Signals	• RULE 32 Sound Signal Definitions • RULE 33 Equipment for Sound Signals • ANNEX III • RULE 34 Maneuvering and Warning Signals	pp. 114-119	pp. 152-161	pp.518-543	pp.538-540
Week Twelve Sound Signals	• RULE 36 Signals to Attract Attention • RULE 37 Distress Signals • RULE 38 Exemptions	pp. 124-131		pp.461-462, 565 p.565	
Week Thirteen Applications of Rule 2	• Good Seamanship - Rule 2(a) • General Prudential Rule - Rule 2(b)	pp. 6-7		pp.87-128	
Annexes	• ANNEX II & IV **OICNW-2-1C Identify Sound Signals Proficiency Demonstration Assessment**	pp. 150-165			
Week Fourteen Annexes & Case Studies	• ANNEX V, Pilot Rules • Pennsylvania Rule • Louisiana Rule • Case Studies **EXXON CHESTER v REGAL SWORD** **EMPRESS OF IRELAND v STORSTAD**	pp. 167-173			

Massachusetts Maritime Academy

CELESTIAL NAVIGATION II (MT 3121)

FROM: Captain David D. DeCastro

TO: Enrolled Students

SUBJECT: CLASSROOM PROCEDURES AND POLICIES

In order to create a proper classroom atmosphere, the following procedures and policies will be carried out at all times:

A. SECTION LEADER

1. The Section Leader will seat, preserve order and prepare a complete and accurate muster prior to the arrival of the instructor.
2. The Section Leader will make his report to the instructor and then the instructor will seat the class.

B. ABSENCES

1. ***Attendance at all classes is mandatory.*** Unauthorized absence will not be tolerated. Disciplinary action, grade point reduction and dismissal from the class will be administered to repeat offenders. This means no cuts and don't be late. ***More than four (4) absences from classroom lectures for any reason will result in failure of the course.***
2. Notice of any authorized absence must be reported to the instructor **prior** to the missed class. If absences occur due to illness, the student must notify the instructor as soon as possible for make-up works or assignments. The instructor must be informed of and sign for all special liberty requests well in advance of the respective date.
3. Cadets repeating this class must retake all sections. Cadets are responsible for all material covered in class. Make-up examinations for authorized periods of absence will be scheduled for a mutually agreed upon time. **Examinations missed as a result of an unauthorized absence will incur a grade of zero.**
4. Students will stand-bye for 30 minutes after the scheduled start of class for instructor's arrival class before dismissing themselves.

The instructor will dismiss cadets who are found sleeping in class. Dismissal from class will be considered an absence for attendance purposes.

C. ACADEMY STANDARDS

a. At all times in the classroom, every cadet will observe the standards of uniform dress and personal appearance as specified by Academy Regulations. Cadets will wear the appropriate uniform of the day in lecture classrooms

Eating, drinking, the use of tobacco products, cell phones, black berrys or any electronic communication or entertainment devices are prohibited from all classes and laboratories.

Massachusetts Maritime Academy

CELESTIAL NAVIGATION II (MT3121)

TO: Captain David D. DeCastro

FROM: Enrolled Students

SUBJECT: RECEIPT OF COURSE DOCUMENTS

I have received, reviewed and understand the *Classroom Procedures and Policies*, as well as the *Course Syllabus* for Celestial Navigation II (MT3121).

NAME: _____

STUDENT ID NUMBER: _____

CLASS: _____

DATE: _____

Celestial Navigation II (MT 3121)
Capt. David D. DeCastro
Office: Rm 322A Harrington Bldg

Second Class Deck
e-mail: ddecastro@maritime.edu
Phone: 508-830-5000

MT3121
CELESTIAL NAVIGATION II

Learning Objectives

Celestial Navigation II covers the requirements of the 1978 STCW convention as amended in 1995. The course covers the theory and practice of navigation necessary for the effective and safe navigation of a ship including the use of charts, position fixing by celestial observations and the extraction of information from relevant navigational publications. It focuses on the theory and practice of the use of observations of celestial bodies for determining lines of position and checking compass errors. This course also prepares the student for performance based assessments of their proficiency in taking celestial observations and their practical application.

Learning Outcome

On completion of the Celestial Navigation II course, the student will possess an advanced understanding of the principles of celestial navigation. The student will be able to fix the vessel's position using sextant observations of the sun, moon, selected stars and planets. The student will also be able to determine compass error by computation of the exact azimuth of the above mentioned celestial bodies. The student will also possess a thorough understanding nautical astronomy as it applies to navigation and atmospheric conditions that affect celestial observations. This course also includes instruction in the adjustment and use of marine sextants and chronometers and the student will be able to properly operate and maintain both instruments. Together with knowledge gained in other areas, the student will be able to carry out routine day-to-day navigational watch keeping duties in a proper and safe manner.

Topic

I. NAUTICAL ASTRONOMY – Navigation General

A. *TIME MEASUREMENTS & CONVERSIONS*
1. Greenwich Mean Time (GMT)
2. Local Mean Time (LMT)
3. Zone Time (ZT)
4. Apparent Time
5. Sidereal Time
6. Time Diagram

B. *MOVEMENT OF CELESTIAL BODIES*
1. Sun
2. Moon
3. Stars
4. Planets

5. Motions of Celestial Bodies
6. Horizon System of Coordinates
7. Celestial Equator System of Coordinates
8. Ecliptic System of Coordinates
9. Earth System of Coordinates
10. Navigation Triangle
11. Altitude Corrections
12. Celestial Navigation Procedures

C. *ASTRONOMICAL & CELESTIAL COMPUTATIONS*
1. Greenwich Mean Time & Date
2. Local Mean Time & Date
3. Zone Time & Date
4. Equation of Time
5. Local Apparent Noon
6. Greenwich Hour Angle & Geographic Position
7. Sidereal Hour Angle
8. Observed Altitude (Ho)
9. Navigation Conversion Factors

II. NAVIGATION PROCEDURES

A. *PRACTICAL NAVIGATION*
1. Lines of Position
2. Great Circles
3. Rhumb Lines

III. CHARTS & PUBLICATIONS

A. *NAVIAGATION PUBLICATIONS & NOTICE TO MARINERS*
1. Nautical Almanac

B. *NAVIGATION & POSITION DETERMINATION COMPUTATIONS*
1. Great Circle
2. Mid-Latitude
3. Meridional Parts

IV. NAVIGATION INSTRUMENTS

A. *NAVIGATION INSTRUMENTS & ACCESSORIES*
1. Marine Sextant
2. Marine Chronometers

C. *NAVIGATION INSTRUMENTS & ACCESSORIES*

COMPUTATIONS

1. Chronometer Error
2. Chronometer Rate

V. CELESTIAL OBSERVATIONS

A. *OBSERVED ALTITUDE (Ho)*
1. Observed Altitude – Sun
2. Observed Altitude – Stars
3. Observed Altitude – Planets
4. Low Altitude Sight

B. *TIME OF CELESTIAL PHENOMENA*
1. Zone Time of Sunrise
2. Zone Time of Sunset

C. *TIME OF MERIDIAN TRANSIT (UPPER TRANSIT)*
1. Time of Upper Transit – Sun
2. Time of Second Estimate – Sun (Upper Transit)

D. *LATITUDE BY MERIDIAN TRANSIT (UPPER TRANSIT)*
1. Latitude by Upper Transit – Sun (At LAN)
2. Latitude by Upper Transit – Sun (At 2100)
3. Latitude by Upper Transit – Planet

E. *LATITUDE BY POLARIS*
1. Latitude by Polaris

F. *LINE OF POSITION (SIGHT REDUCTION)*
1. Line of Position – Sun (Azimuth)
2. Line of Position – Sun (Computed Altitude)
3. Line of Position – Sun (Computed Altitude & Azimuth)
4. Line of Position – Sun (Observed Altitude & Azimuth)
5. Line of Position – Sun (Azimuth & Intercept)
6. Line of Position – Star (Computed Altitude & Azimuth)
7. Line of Position – Star (Intercept)
8. Line of Position – Planet (Azimuth)
9. Line of Position – Planet Azimuth & Intercept)

G. *FIX & RUNNING FIX*
1. Fix at Local Apparent Noon (At LAN)
2. Fix at 1200 – Sun
3. Running Fix – Sun

4. Funning Fix – Star
5. Running Fix – Any Body

H. *IDENTIFICATION OF STARS & PLANET, STAR SELECTION*
1. Identification of Major Stars
2. Identification of Minor Stars
3. Identification of Planets
4. Star Selection
5. Star & Planet Selection

I. *COMPASS ERROR BY CELESTIAL OBSERVATION – AZIMUTH*
1. Azimuth – Sun
2. Azimuth – Star
3. Azimuth – Planet
4. Azimuth – Polaris

J. *COMPASS ERROR BY CELESTIAL OBSERVATION - AMPLITUDE*
1. Amplitude – Sun (Celestial Horizon)
2. Amplitude – Sun (Visible Horizon

VI. OCEAN TRACK PLOTTING

A. *MID-LATITUDE SAILING*
1. Mid-Latitude Course & Distance
2. Latitude & Longitude of Arrival

B. *MERCATOR SAILING*
1. Mercator Course
2. Mercator Distance
3. Mercator Course & Distance
4. Longitude of Arrival
5. Latitude & Longitude of Arrival

C. *PARALLEL SAILING*
1. Parallel Distance
2. Parallel Course & Distance
3. Longitude of Arrival

D. *GREAT CIRCLE SAILING*
1. Great Circle Initial Course
2. Great Circle Distance & Initial Course
3. Latitude of the Vertex
4. Longitude of the Vertex

5. Points Along the Great Circle Route

E. *VOYAGE PLANNING (COMPSITE SAILING)*
1. Voyage Planning (Chart No. WOXZC 5270)
2. Voyage Planning (Chart No. WOXZC 5274)

F. *ESTIMATED TIME OF ARRIVAL*
1. ETA

***STCW Requirements* – To satisfy the knowledge based STCW-95 requirements of celestial navigation, you must earn a 70% (C-) in the course. If you earn less than 70%, the course must be retaken to receive STCW credit.**

Class attendance policy - Attendance is mandatory. Each student is responsible for all material, homework, notices and other information disseminated during scheduled class hours. *More than four (4) unexcused absences throughout the semester will result in failure of the course!* Absences due to an "Academy authorized" event with prior notice given to the instructor are the only excused absences. All students missing class without prior notification to the instructor will be placed on report. If you must be absent during a scheduled exam due to an "Academy authorized" event or some other pre-approved reason, a make-up exam will be scheduled. **To qualify for a make-up exam however, each student is required to arrange for his/her make up exam prior to the date of the exam. Examinations missed as a result of an unauthorized absence will incur a grade of zero.**

Grading – It is anticipated there will be 6 exams throughout the semester. These exams, along with the lab homework account for 75% of the course grade. The lab homework will be weighted as one exam. The final exam will be a running plot for twenty four hours and account for the remaining 25% of the course grade.

Exams & Lab work	75%
Final Exam	25%
	100%

Cheating will not be tolerated. You will be given a zero for the exam or assignment and notifications will be made to the Commandant's Academic Dean's office in accordance with Massachusetts Maritime Academy academic disciplinary regulations.

Lab Policy –

1. All lab assignments are to be worked on during the lab period and completed for homework.
2. It is the responsibility of the student to bring a copy of the necessary navigation publications and equipment to the lab.

Extra Help –
Extra help is always available to a student. Assistance can be scheduled during office hours or any other mutually agreeable time.

MMA is committed to providing reasonable accommodations to students with documented disabilities. Students who believe they need accommodations in this class are required to contact Dr. Fran Tishkevich, Acting Director of Disability Compliance, within the first two weeks of class. ftishkevich@maritime.edu

Textbook - The American Practical Navigator, Bowditch, Pub. No. 9, 1995 ed. (Bethesda, MD: NVPUB9V1, 1995)

Required Materials -

1. 1981 Nautical Almanac (Library)
2. American Practical Navigator, Pub. No. 9, Volume II, 1981 edition (Library)
3. Sight Reduction Tables for Marine Navigation (pub. No. 229, Vol. 2, Lat. 15°-30°). (Library)
5. Deck Officer Study Guide, Volume No. 2, Navigation General (Library)
6. Deck Officer Study Guide, Volume No. 5, Navigation Problems (Library)
7. Deck Officer Study Guide, Volume No. 6, Illustration Book (Library)
8. Rude Star Finder (Library)
9. Position Plotting sheet 923 (Latitudes 17°-24°)
   Position Plotting sheet 924 (Latitudes 23°-30°)
10. Calculator with scientific functions
11. Plotting Tools
12. Circular Protractor (Small, book store)
13. Pencil (#2) at all times
14. Eraser, chart quality

Celestial Navigation II (MT 3121)
Capt. David D. DeCastro
Office: Rm 322A Harrington Bldg

Second Class Deck
e-mail: ddecastro@maritime.edu
Phone: 508-830-5000

EXAM SYLLABUS

Exam 1

NG – Time Measurements and Conversions

1. Greenwich Mean Time (GMT)
2. Local Mean Time (LMT)
3. Zone Time (ZT)
4. Apparent Time
5. Siderial Time
6. Time Diagram

NP – Observed Altitude (Ho)

1. Ho – Sun
2. Ho – Stars
3. Ho – Planets
4. Ho – Moon

NP – Time of Celestial Phenomena

1. Zone Time of Sunrise, Sunset, Twilights

Exam 2

NG – Movement of Celestial Bodies

1. Characteristics of the Sun, Moon, Stars, Planets

NP – Time and Latitude by Meridian Transit (Upper Transit)

1. Time of Upper Transit - Sun
2. Latitude at Upper Transit – Sun at LAN
3. Latitude at Upper transit – Sun at 1200
4. Latitude at Upper Transit – Planet

Exam 3

NG – Coordinate Systems, Navigation Triangle

1. Horizon System
2. Celestial equator System
3. Earth System
4. Ecliptic System
5. Navigation Triangle
6. Altitude Corrections
7. Celestial Navigation Procedures

NP –

1. Latitude by Polaris
2. Azimuth By Polaris
3. Compass Error and Deviation Calculation

Exam 4

NG – Astronomical and Celestial Computations

1. Greenwich Mean Time and Date

2. Local Mean Time and Date
3. Zone Time and Date
4. Equation of Time
5. Local Apparent Noon
6. Greenwich Hour Angle and Geographic Position
7. Sidereal Hour angle
8. Observed Altitude
9. Navigation Conversion Factors

NP – Celestial Observations (Determine Hc, Zn, "a")

1. Line of Position - Sun
2. Line of Position – Star
3. Line of Position – Planet

Exam 5

NG – Charts and Publications, Navigation Instruments

1. Nautical Almanac
2. Marine Sextant
3. Marine Chronometers
4. Chronometer Error
5. Chronometer Rate

NP – Compass Error – Azimuth

1. Azimuth – Sun
2. Azimuth – Planet
3. Azimuth – Star
4. Compass Error and Deviation Calculation

Exam 6

NG – Inclusive

NP – Compass Error by Amplitude of the Sun

1. Observation on the Visible Horizon - Sun
2. Observation on the Celestial Horizon – Sun
3. Observation on the Celestial Horizon – Planet
4. Compass Error and Deviation Calculation

LAB OUTLINE AND SCHEDULE 2010

HOMEWORK

		Date		**TOPIC**
	Lab A	**Lab B**	**Lab C**	
1	9/7	9/9	9/10	Hs – Ho, Zone Time of Sunrise, Sunset, Twilights, Mid-Lat Sailing
2	9/14	9/16	9/17	Time of LAN, LAT at LAN

3	9/21	9/23	9/24	LAT at 1200, LAT by Polaris
4	9/28	9/30	10/1	LOP – Sun, Stars and Planets, Hc, Zn, "a"
5	10/5	10/7	10/8	LOP – Ship, sight reduction check with computer
6	10/19	10/14	10/15	Azimuth – Sun, Stars and Planets, Polaris
7	10/26	10/21	10/22	Azimuth – SHIP – Azimuth; take and reduce using 229
8	11/2	10/28	10/29	Amplitude
9	11/9	11/4	11/5	Star I.D., Planet I.D.
10	11/16	11/18	11/19	Running Fix – calculation and plotting
11	11/30	12/2	12/3	Running Fix – Exam
12	12/7	12/9	12/10	Practice days run

EXAM OUTLINE AND SCHEDULE

EXAM	DATE	TOPIC
1	9/23	Hs-Ho, Sunrise
2	10/7	Time and LAT of LAN, LAT @ 1200
3	10/21	LAT by Polaris, Azimuth by Polaris
4	11/4	LOP
5	11/18	Azimuth
6	12/09	Amplitude, Star I.D.

MASSACHUSETTS MARITIME ACADEMY

Department of Marine Transportation

structor: Captain David D. DeCastro
Office: Harrington BLDG Rm 322A
Office Telephone: (508) 830-5000
Email: ddecastro@maritime.edu

Celestial Navigation II (MT-3121)

PERIOD	MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY
FIRST 1 0800-0850		Lecture 1 Section 21 (MT3121-21) Room: HA 201		Lecture 2 Section 21 (MT3121-21) Room: HA 201	Lecture 3 Section 21 (MT3121-21) Room: HA101
SECOND 2 0855-0945		Office Hours Rm 322A Harrington BLDG		Office Hours Rm 322A Harrington BLDG	Office Hours Rm 322A Harrington BLDG
THIRD 3 1000-		Nav II Lab Section 23 (MT-3121L-23) Room: HA 304		Nav II Lab Section 43 (MT-3121L-43) Room: HA 304	Office Hours Rm 322A Harrington BLDG
FOURTH 4 1150		Nav II Lab Section 23 (MT-3121L-23) Room: HA 304		Nav II Lab Section 43 (MT-3121L-43) Room: HA 304	Office Hours Rm 322A Harrington BLDG
FIFTH 5 1200-1250		Lecture 1 Section 15 (MT-3121-15) Room: HA 201		Lecture 2 Section 15 (MT-3121-15) Room: HA 201	Lecture 3 Section 15 (MT-3121-15) Room: HA 201
SIXTH 6 1300-					Nav II Lab Section 56 (MT-3121L-56) Room: HA 205
SEVENTH 7 1450					Nav II Lab Section 56 (MT-3121L-56) Room: HA 205
EIGHTH 8 1425-1515					
NINTH 9 1520-1630					

FALL SEMESTER 2010

Massachusetts Maritime Academy
RADAR Observer (MT 3122)
Fall Semester 2010

Instructor
CDR Linda Letourneau
Office: 320A or RADAR/ARPA lab in the Harrington
Phone: MMA ext. 2107, cell 508 280 7734
Email: lletourneau@maritime.edu
Office hours: Tues & Thurs 13:00-13:50, Mon, Tues, Wed, Thurs 15:00-15:15.

Course prerequisites
Coastal Navigation I
Rules of the Road (including all assessments)

Learning Objectives
This course is designed to meet all the RADAR Observer knowledge based assessments and twelve performance based assessments, which form part of the requirements for Officer in Charge of a Navigation Watch (STCW 95 Table A-II/1).

Learning Outcomes
A candidate successfully completing the Radar Observer Certification (MT3122) course will be able to explain the theory behind Radar technology, recognize when radar should be in use, will select a suitable mode and range setting for the circumstances, will be able to set the controls for optimal performance, and will be aware of the limitations of the equipment in detecting targets in terms of accuracy. When in range of the coast, the operator will be able to compare the radar display with the chart, select suitable land targets and use these targets to fix position. The operator will be aware of the need to maintain a continuing plot of ship targets which may pose a potential threat of collision, and will be able to derive from the plot the necessary information about other ship's courses, speeds and closest points of approach to enable action to be taken in ample time, in accordance with 72-COLREGS and Inland Rules, and to prevent a close quarters situation arising.

Required Text and Equipment
Bole, A.G. and Dineley, W.O., *RADAR & ARPA Manual –Second edition*
Pub 1310- RADAR NAVIGATION AND MANEUVERING BOARD MANUAL-Seventh Edition
Department of Transportation, *Navigation Rules*
Furuno Operations Manuals
Plotting tools, including a compass, triangles & Radar Plotting sheets
1 ½' binder with 5 dividers and note paper

Learning Disabilities
Mass Maritime is committed to providing reasonable accommodations to students with documented disabilities. Students who believe they may need accommodations in this class are required to contact Professor Fran Tiskevich, the Director of Disability Compliance, within the first two weeks of class in RM 311AHarrington, MMA ext. 2208, or ftishkevich@maritime.edu

Attendance
Attendance is mandatory at all classes and labs. Disciplinary action (pink mail) will be taken for unexcused absences. Notice of absence for any reason must be given to the instructor prior to the respective class. Cadets are responsible for reading assignments, classroom lectures, tests, quizzes, and assigned homework.

Massachusetts Maritime Academy
RADAR Observer (MT 3122)
Fall Semester 2010
(Cont.)

Grade Policy
An overall course grade of 70% or above and a P (pass) on the twelve practical assessments must be achieved to satisfy STCW requirements.
*In addition to the STCW requirement, a minimum of 70% on the theory final exam, 90% on both the simulator collision avoidance and navigation final exams, and 90% on the paper plot, must be achieved to receive the USCG RADAR certificate and pass the course.

In class Quiz average	25%	Take home Quiz average(HW)	20%
Midterm exam	20%	Class participation & attendance	10%
Notebook	5%	Final exam (Qual average*)	20%

Notebooks
Radar notebooks will be periodically checked and a grade will be given at the end of the semester. The notebook grade will be worth 5% of your final grade. It will be graded on the following content: notes, lab documents, take home quizzes (HW), course documents, and over all organization.

Take home Quizzes (homework)
Take home quizzes are worth 20% of your final course grade. Quizzes turned in late will be marked down 10 points for every day it's late. If you are absent from class it's still due that day.

Cheating
Cheating will not be tolerated. Appropriate disciplinary action will be taken. A zero will be given for the respective quiz, plot, homework assignment, or exam. Don't do it!

Blackboard
Course material and announcements may be posted on Blackboard. Prior to class meetings, the student is responsible for checking Blackboard for notices, assignments, and other course information.

Furuno Operators Manual
At the beginning of the semester each student will be loaned a copy of the Furuno Operators Manual. At the end of the semester, the student must return or replace the manual before a final grade will be given.

Extra Help
Students are encouraged to seek extra help. I will be either in my office or in the Radar lab during my posted office hours. I am available at other times with an appointment. If you feel that you are falling behind, don't wait until it's too late to get caught up.

Snacks
Eating and/or drinking will not be permitted in the RADAR lab or in the classroom.

Uniforms
The proper uniform shall be maintained while in the classroom and in labs. Disciplinary action will be taken for students out of uniform. Boiler suits may only be worn if coming directly from or to a lab or shipboard maintenance where that uniform is permitted.

Massachusetts Maritime Academy
RADAR Observer MT 3122
Fall 2010

Class	Date	Lecture topic	Reading reference
01.	9/02/10	Introduction- Class syllabus, Class room policies & Assessments	Course documents
02.	9/07/10	Radar Certification, CFR's Relative motion, plotting tools, Plotting sheets	Bole CH 7 pg. 299-322 CFR's, Pub 1310 CH3
03.	9/09/10	Plotting range & bearing CPA, TCPA, bow crossing	Bole CH 7, Pub 1310 CH3 Plotting Handout
04.	9/14/10	Plotting target true course and speed, target aspect	Bole CH 7, Pub 1310 CH3 Plotting Hand out
05.	9/16/10	Application of course or speed change to other contacts	Bole CH 7, Pub 1310 CH 3 Plotting Handout
06.	9/21/10	QUIZ 01- Plotting	
07.	9/23/10	Course & speed change For desired CPA	Bole CH 7, Pub 1310 CH 3 Plotting Handout
08.	9/28/10	Returning to original when Past and clear	Bole CH 7, Pub 1310 CH 3 Plotting Handout
09.	9/30/10	History and Fundamental Principles of RADAR system	Bole CH 1 pg. 1-26 Pub1310 pg. 35-38
10.	10/05/10	Fundamental Principles of RADAR system (cont.)	Bole CH 1 pg. 27-132 Pub1310 pg. 35-38
11.	10/07/10	Function and sitting of radar components	Bole CH 2 pg. 132-141 Pub 1310 pg. 17-21
12.	10/14/10	Mid term exam, Including paper plot	
13.	10/19/10	Return & review Mid term	
14.	10/21/10	Function & adjustment of radar controls	Bole CH 6 pg. 256-298 Pub 1310 pg.47-57

Massachusetts Maritime Academy
RADAR Observer MT 3122
Fall 2010 (con't.)

Class	Date	Lecture Topic	Reading reference
15.	10/26/10	Radar Navigation	Bole CH 8 pg. 356-364 Pub 1310 pg. 147-151, 161-165, 187-189
16.	10/28/10	Parallel indexing	Bole CH 8 pg. 364-392 Pub 1310 pg 166-169
17.	11/02/10	Factors effecting radar detection	Bole CH3 pg 142-198 Pub 1310 pg. 34
18.	11/04/10	Aids to radar navigation	Bole CH 3 pg. 154-170, Bole CH 11 pg. 508-520 Pub 1310 pg. 158-160
19.	11/09/10	Factors causing faulty interpretation	Bole CH 3 pg. 198-214 Pub 1310 pg. 237-238
20.	11/16/10	Unusual affects	Pub 1310 pg. 152-156
21.	11/18/10	Effects of weather, ice detection	Bole CH 3 pg. 184-192 Pub 1310 pg. 13-14, 186
22.	11/23/10	Radiation hazards, magnetic compass safe distance and radar log	Bole CH 2 pg. 138-139
23.	11/30/10	Relationship of Navigation Rules and Radar use	Bole CH7 pg 348-355
24.	12/02/10	IMO performance standards	Bole CH 11 pg 459-480
25.	12/07/10	Factors determining min and max range, bearing and range resolution & accuracy	Pub 1310 pg. 24-31
26.	12/09/10	Final exam review	
27.	12/14/10	Paper Plot Exam	
28.	Finals week	Final Theory Exam	

Massachusetts Maritime Academy
RADAR Observer -MT 3122
Fall 2010 Lab Syllabus

Lab	Lab exercise topic	Reading assignment
01	Introduction to Radar controls	Furuno Manual
02	Plotting- Relative motion, CPA, & TCPA Grease pencil demo	Pub 1310- pages 59, 90, 91
03	Plotting- Course, speed, & aspect Assessments OICNW 3-1A, 3-1B, 3-1G	Pub 1310- pages 92,93
04	Plotting- Graded exercise & Assessment OICNW 3-1D	Review Plotting handouts
05	Plotting-Course & speed changes in accordance with Rule of the road executing C&S change	Rule of the road Pub 1310- pages 96-99
06	Plotting- Graded exercise & Assessments OICNW 3-1F, 3-1H, 3-1I, 3-1J	Review Plotting handout
07	Introduction to Radar navigation & position plotting	Pub 1310- Ch. 4
08	Radar navigation & Parallel indexing	Pub 1310- Ch. 4
09	Radar Navigation (with traffic)-Graded exercise & Assessments OICNW 1-2B, 1-2C, 3-1K	Review
10	Live RADAR & Faulty interpretation, SARTS & RACONS	Furuno Manual Pub 1310- pages 152-156
11	Practical final exam part I- Collision avoidance & Assessment OICNW 3-1C	Review course material
12	Practical final exam part II- Navigation	Review course material
13	Practical retakes and make up assessments	Review course material
14	Finals Week- Written theory and paper plot exam	Review course material

Massachusetts Maritime Academy
TABLE A-II/1 Specification of Minimum Standard of Competence
OFFICER IN CHARGE OF A NAVIGATIONAL WATCH

Control Sheet

ASSESSMENT NO. OICNW-1-2B, MMA # 21A103A

FUNCTION: Navigation at the Operational Level

COMPETENCE: Plan and conduct a passage and determine position

KNOWLEDGE, UNDERSTANDING & PROFICIENCY: *Terrestrial and Coastal Navigation* -- Ability to determine the ship's position by use of: Marine Radar

TASK: Fix by two ranges

PERFORMANCE CONDITION: On an operational marine radar or a radar simulator that meets applicable national and international performance standards, with land and buoys displayed, and given a chart with a scale of no more than 1: 80,000.

PERFORMANCE BEHAVIOR: Determine two or more ranges measured from identified charted objects or points of land and plot them.

PERFORMANCE STANDARD:

The position is within ± 0.5 nm of the assessor's position.

COURSE: MT 3122 Radar Observer Certification I

Candidate _____ SSN _____

Assessor _____ Position _____

Vessel or Course _____ License No. _____ Date _____

Massachusetts Maritime Academy

TABLE A-II/1 Specification of Minimum Standard of Competence

OFFICER IN CHARGE OF A NAVIGATIONAL WATCH

Control Sheet

ASSESSMENT NO. OICNW-1-2C, MMA # 21A103B

FUNCTION: Navigation at the Operational Level

COMPETENCE: Plan and conduct a passage and determine position

KNOWLEDGE, UNDERSTANDING & PROFICIENCY: *Terrestrial and Coastal Navigation* -- Ability to determine the ship's position by use of: Marine Radar

TASK: Fix by tangent bearings of two identified objects

PERFORMANCE CONDITION: On an operational marine radar or a radar simulator that meets applicable national and international performance standards, with land and buoys displayed, and given a chart with a scale of no more than 1: 80,000.

PERFORMANCE BEHAVIOR: Determine two or more tangent bearings measured from identified-charted objects or points of land and plot them.

PERFORMANCE STANDARD:

The position is within ± 0.5 nm of the assessor's position.

COURSE: MT 3122 Radar Observer Certification I

Candidate _____ SSN _____

Assessor _____ Position _____

Vessel or Course _____ License No. _____ Date _____

Massachusetts Maritime Academy

TABLE A-II/1 Specification of Minimum Standard of Competence

OFFICER IN CHARGE OF A NAVIGATIONAL WATCH

Control Sheet

ASSESSMENT NO. OICNW-3-1A, MMA # 21A303A

FUNCTION: Navigation at the Operational Level

COMPETENCE: Use of radar and ARPA to maintain the safety of navigation

KNOWLEDGE, UNDERSTANDING & PROFICIENCY: *Radar Navigation* -- Ability to operate and to interpret and analyze information obtained from radar, including: Performance -- setting up and maintaining displays

TASK: Set up and maintain radar display

PERFORMANCE CONDITION: On an operational radar or radar simulator that meets the standards of 33 CFR 164.38 and other applicable national and international performance standards.

PERFORMANCE BEHAVIOR: Set up and maintain the radar display.

PERFORMANCE STANDARD:

Within three minutes, after the power was turned on:

1. The set was switched from standby to transmit;
2. The appropriate scale was selected;
3. The gain control was adjusted so that targets and sea return appeared;
4. The tune control was adjusted (if the unit is not self tuning);
5. The brilliance control was adjusted;
6. The sea clutter and rain clutter controls were adjusted to suppress the rain and sea clutter without losing targets;
7. The north up stabilized relative motion was selected.

COURSE: MT 3122 Radar Observer Certification I

Candidate _____ SSN _____

Assessor _____ Position _____

Vessel or Course _____ License No. _____ Date _____

Massachusetts Maritime Academy

TABLE A-II/1 Specification of Minimum Standard of Competence

OFFICER IN CHARGE OF A NAVIGATIONAL WATCH

Control Sheet

ASSESSMENT NO. OICNW-3-1B, MMA # 21A303B

FUNCTION: Navigation at the Operational Level

COMPETENCE: Use of radar and ARPA to maintain the safety of navigation

KNOWLEDGE, UNDERSTANDING & PROFICIENCY: *Radar Navigation* -- Ability to operate and to interpret and analyze information obtained from radar, including: Performance -- setting up and maintaining displays

TASK: Switch display modes

PERFORMANCE CONDITION: On an operational radar or radar simulator that meets the standards of 33 CFR 164.38 and other applicable national and international performance standards.

PERFORMANCE BEHAVIOR: Switch the display from north up stabilized relative motion to true motion to head up, and state how to recognize the mode displayed.

PERFORMANCE STANDARD:

Within 15 seconds:

1. The display is switched from north up stabilized relative motion to true motion;
2. The display is switched from true motion to head up; and,
3. The candidate pointed to the location on the display of the information that indicates the mode displayed.

COURSE: MT 3122 Radar Observer Certification I

Candidate _____ SSN _____

Assessor _____ Position _____

Vessel or Course _____ License No. _____ Date _____

Massachusetts Maritime Academy
TABLE A-II/1 Specification of Minimum Standard of Competence
OFFICER IN CHARGE OF A NAVIGATIONAL WATCH

Control Sheet

ASSESSMENT NO. OICNW-3-1C, MMA # 21A304A

FUNCTION: Navigation at the Operational Level

COMPETENCE: Use of radar and ARPA to maintain the safety of navigation

KNOWLEDGE, UNDERSTANDING & PROFICIENCY: *Radar Navigation* -- Ability to operate and to interpret and analyze information obtained from radar, including: Performance -- detection of misrepresentation of information, false echoes, sea return, etc., racons and SARTs

TASK: Identify false echoes, sea return, racons and SARTs

PERFORMANCE CONDITION: On an operational radar or radar simulator that meets the standards of 33 CFR 164.38 and other applicable national and international performance standards.

PERFORMANCE BEHAVIOR: Identify false echoes, sea return, a racon and SART.

PERFORMANCE STANDARD:

The following were recognized and correctly identified:

1. False echoes:
   a. Indirect echoes
   b. Multiple echoes
   c. Electronic interference
   d. Spoking
2. Sea return;
3. Racons; and,
4. SARTs.

COURSE: MT 3122 Radar Observer Certification I

Candidate _____ SSN _____

Assessor _____ Position _____

Vessel or Course _____ License No. _____ Date _____

Massachusetts Maritime Academy

TABLE A-II/1 Specification of Minimum Standard of Competence

OFFICER IN CHARGE OF A NAVIGATIONAL WATCH

Control Sheet

ASSESSMENT NO. OICNW-3-1D, MMA # 21A305A

FUNCTION: Navigation at the Operational Level

COMPETENCE: Use of radar and ARPA to maintain the safety of navigation

KNOWLEDGE, UNDERSTANDING & PROFICIENCY: *Radar Navigation* -- Ability to operate and to interpret and analyze information obtained from radar, including: Use -- range and bearing, course and speed of other ships; time and distance of crossing, meeting, and overtaking ships

TASK: Determine range and bearing

PERFORMANCE CONDITION: On an operational radar or radar simulator that meets the standards of 33 CFR 164.38 and other applicable national and international performance standards, with land and aids to navigation in range.

PERFORMANCE BEHAVIOR: Determine the range and bearing to an object.

PERFORMANCE STANDARD:

1. The candidate determined the range and bearing to an object selected by the assessor within 30 seconds.
2. The candidate's determination was within ± 0.2 nm of the assessor's solution or ± 1% of the range scale in use.
3. The candidate's determination of the bearing was within ± 1°of the assessor' s solution.

COURSE: MT 3122 Radar Observer Certification I

Candidate _____ SSN _____

Assessor _____ Position _____

Vessel or Course _____ License No. _____ Date _____

Massachusetts Maritime Academy

TABLE A-II/1 Specification of Minimum Standard of Competence
OFFICER IN CHARGE OF A NAVIGATIONAL WATCH

Control Sheet

ASSESSMENT NO. OICNW-3-1F, MMA # 21A306B

FUNCTION: Navigation at the Operational Level

COMPETENCE: Use of radar and ARPA to maintain the safety of navigation

KNOWLEDGE, UNDERSTANDING & PROFICIENCY: *Radar Navigation* -- Identification of critical echoes; detecting course and speed changes of to other ships; effective changes of own ship's course and speed

TASK: Determine DRM, SRM, CPA, and TCPA

PERFORMANCE CONDITION: On an operational radar or radar simulator that meets the standards of 33 CFR 164.38 and other applicable national and international performance standards, set on the 12 mile scale.

PERFORMANCE BEHAVIOR: Determine:

1. The range and bearing to 3 other ships (meeting, crossing, and overtaking);
2. The DRM and SRM of all other ships; and
3. The CPA and TCPA of all vessels on the 12 mile scale with less than a 3 mile CPA.

PERFORMANCE STANDARD:

FOR EACH contact:

1. The range and bearing solution is completed within 30 seconds and is within the previously stated tolerances.
2. The DRM solution is completed within 7 minutes and is within ± 5° of the assessor's solution.
3. The SRM solution is completed within 8 minutes of initial range and bearing and is within ± 5 knots.
4. The CPA solution is completed within 9 minutes and is within ± 0.5 miles.
5. The TCPA solution is completed within 10 minutes and is within ± 3 minutes.

COURSE: MT 3122 Radar Observer Certification I

Candidate	SSN
Assessor	Position
Vessel or Course	License No. / Date

Massachusetts Maritime Academy

TABLE A-II/1 Specification of Minimum Standard of Competence

OFFICER IN CHARGE OF A NAVIGATIONAL WATCH

Control Sheet

ASSESSMENT NO. OICNW-3-1G, MMA # 21A306C

FUNCTION: Navigation at the Operational Level

COMPETENCE: Use of radar and ARPA to maintain the safety of navigation

KNOWLEDGE, UNDERSTANDING & PROFICIENCY: *Radar Navigation* -- Identification of critical echoes; detecting course and speed changes of to other ships; effective changes of own ship's course and speed

TASK: Detect speed and course changes of other ships

PERFORMANCE CONDITION: On an operational radar or radar simulator that meets the standards of 33 CFR 164.38 and other applicable national and international performance standards, set on the 12 mile scale, in the stabilized relative motion north up mode, and with meeting of crossing targets.

PERFORMANCE BEHAVIOR: Detect speed and course changes of other ships, which result in a change in the direction or speed of relative motion.

PERFORMANCE STANDARD:

Other ships' speed changes of at least 5 knots and/or course changes of at least 10° were detected within one minute from the time the candidate began his or her systematic observation of the display.

COURSE: MT 3122 Radar Observer Certification I

Candidate _____ SSN _____

Assessor _____ Position _____

Vessel or Course _____ License No. _____ Date _____

Massachusetts Maritime Academy

TABLE A-II/1 Specification of Minimum Standard of Competence
OFFICER IN CHARGE OF A NAVIGATIONAL WATCH

Control Sheet

ASSESSMENT NO. OICNW-3-1H, MMA # 21A307A

FUNCTION: Navigation at the Operational Level

COMPETENCE: Use of radar and ARPA to maintain the safety of navigation

KNOWLEDGE, UNDERSTANDING & PROFICIENCY: *Radar Navigation* -- Identification of critical echoes; detecting course and speed changes of to other ships; effective changes of own ship's course and speed; and, application of International Regulations for Preventing Collisions at Sea

TASK: Change course to control target DRM

PERFORMANCE CONDITION: On an operational radar or radar simulator that meets the standards of 33 CFR 164.38 and other applicable national and international performance standards, set on the 12 mile scale in north up stabilized relative motion mode, with a ship on the starboard bow with a CPA of 0.5.

PERFORMANCE BEHAVIOR: Control the target vessels DRM by changing own ship's course in accordance with the COLREGS.

PERFORMANCE STANDARD:

1. Determined the new course to steer to achieve a CPA as specified by the assessor;
2. Executed a turn in the appropriate direction; and
3. Achieved a CPA of not less than -0.2 nm or more than + 0.5 nm. of that specified by the assessor.

COURSE: MT 3122 Radar Observer Certification I

Candidate _____ SSN _____

Assessor _____ Position _____

Vessel or Course _____ License No. _____ Date _____

Massachusetts Maritime Academy

TABLE A-II/1 Specification of Minimum Standard of Competence

OFFICER IN CHARGE OF A NAVIGATIONAL WATCH

Control Sheet

ASSESSMENT NO. OICNW-3-1I, MMA # 21A307B

FUNCTION: Navigation at the Operational Level

COMPETENCE: Use of radar and ARPA to maintain the safety of navigation

KNOWLEDGE, UNDERSTANDING & PROFICIENCY: *Radar Navigation* -- Identification of critical echoes; detecting course and speed changes of to other ships; effective changes of own ship's course and speed; and, application of International Regulations for Preventing Collisions at Sea

TASK: Change speed to control target DRM

PERFORMANCE CONDITION: On an operational radar or radar simulator that meets the standards of 33 CFR 164.38 and other applicable national and international performance standards, set on the 12 mile scale in the north up stabilized relative motion mode, with a vessel on the beam with a CPA of less than 0.5 NM ahead.

PERFORMANCE BEHAVIOR: Control the target vessels DRM by changing own ship's speed in accordance with the COLREGS.

PERFORMANCE STANDARD:

1. Determined the new speed to achieve a CPA as specified by the assessor;
2. Executed a speed reduction; and
3. Achieved a CPA of not less than -0.2 nm or more than + 0.5 nm. of that specified by the assessor.

COURSE: MT 3122 Radar Observer Certification I

Candidate _____ SSN _____

Assessor _____ Position _____

Vessel or Course _____ License No. _____ Date _____

Massachusetts Maritime Academy

TABLE A-II/1 Specification of Minimum Standard of Competence

OFFICER IN CHARGE OF A NAVIGATIONAL WATCH

Control Sheet

ASSESSMENT NO. OICNW-3-1J, MMA # 21A308A

FUNCTION: Navigation at the Operational Level

COMPETENCE: Use of radar and ARPA to maintain the safety of navigation

KNOWLEDGE, UNDERSTANDING & PROFICIENCY: *Radar Navigation* -- plotting techniques and relative and true motion concepts

TASK: Determine true course and speed of target vessels

PERFORMANCE CONDITION: On an operational radar or radar simulator that meets the standards of 33 CFR 164.38 and other applicable national and international performance standards, set on the 12 mile scale in the relative motion north up mode, using any graphically correct method.

PERFORMANCE BEHAVIOR: Determine the true course and speed of three target vessels.

PERFORMANCE STANDARD:

FOR EACH CONTACT:

1. Constructed a relative motion triangle on either a reflection plotter, a maneuvering board, or a transfer plotting sheet; and
2. Solved for the target vessel's true course and speed within 8 minutes.
3. The candidate's true course solution is within ± 5° and the true speed solution is within ± 5 knots.

COURSE: MT 3122 Radar Observer Certification I

Candidate _____ SSN _____

Assessor _____ Position _____

Vessel or Course _____ License No. _____ Date _____

Massachusetts Maritime Academy

TABLE A-II/1 Specification of Minimum Standard of Competence

OFFICER IN CHARGE OF A NAVIGATIONAL WATCH

Control Sheet

ASSESSMENT NO. OICNW-3-1K, MMA # 21A309A

FUNCTION: Navigation at the Operational Level

COMPETENCE: Use of radar and ARPA to maintain the safety of navigation

KNOWLEDGE, UNDERSTANDING & PROFICIENCY: *Radar Navigation* -- parallel indexing

TASK: Parallel indexing

PERFORMANCE CONDITION: On an operational radar or radar simulator that meets the standards of 33 CFR 164.38 and other applicable national and international performance standards, set on the 12 mile scale in relative motion north up mode, with aids to navigation and a coastline displayed on the display.

PERFORMANCE BEHAVIOR: Use a parallel index line to monitor and maintain the vessel on track.

PERFORMANCE STANDARD:

1. Constructed a parallel index line through the edge of the known hazard to navigation or land mass; and,
2. Monitored the vessel's movement in relation to the parallel index line or an electronic display of the distance off the index line to determine if the vessel moved toward the hazard or landmass.
3. The vessel must not drift more than 10 % of the set distance toward the parallel index line.

COURSE: MT 3122 Radar Observer Certification I

Candidate _____ SSN _____

Assessor _____ Position _____

Vessel or Course _____ License No. _____ Date _____

Memorandum 22 August 2010

From: Captain James J. Quinn, USN (ret.)
To: Cadets enrolled in Meteorology (MT 3131)
Subject: Class procedure and policies

1. **Objective:** Upon completion of the Meteorology course of instruction, cadets will posses sufficient knowledge of the atmosphere and the effects of weather systems to interpret and analyze their present and future operating environments. Additionally cadets will utilize synoptic charts and satellite observation of weather systems to plan optimum and heavy weather avoidance routing. Cadets will also develop practical skills in weather observation and recording meteorological data to perform duties as a licensed watch officer. Emphasis will be placed on heavy weather maneuvering and determination of true and desired wind for shipboard operations.
2. **Absences:** Attendance is mandatory for all classes. **Any unauthorized absence will result in a cadet being placed on report and subject to disciplinary action. Three unexcused absences will result in a grade of F for the course.**
3. **Mustering**: One cadet from each section will be appointed as mustering officer. This cadet shall submit at the beginning of each class a muster of all cadets in the section using the following format:
   (a) Cadet name followed by
   (b) P= present
   (c) AA= authorized absence and the reason for absence (i.e. firefighting school, MMA authorized athletic event etc.)
   (d) UA= Unauthorized absence

   The mustering cadet is responsible for the accuracy of the muster and will sign and date each muster attesting to the validity of the muster. **False or incomplete muster will result in disciplinary action.**
4. **Cadet responsibilities**: Each cadet is responsible for all material covered in this course regardless of whether the material was presented in class. Due to limited class time not all reading assignments will be discussed; however cadets are responsible for completing reading assignments and material assigned for reading and research is testable. **If a test or quiz is missed due to an authorized absence it is the cadet's responsibility to make up the test /quiz at a time designated by me. All Tests & quizzes must be made up not later than 5 class days from the date of the exam.** This may mean making up exams and quizzes outside of normal class hours.
5. **Grading: Meteorology is a knowledge level STCW assessment**; a minimum of **70% (C-) is required to receive academic and STCW certification.** In addition a practical exam in synoptic interpretation and analysis **with 80% accuracy** will

be required to receive STCW practical certification. Each cadet will have two chances to achieve the 80% synoptic proficiency; **however the grade on the first proficiency exam will count toward overall academic grade. Any cadet receiving a final grade of D will receive academic credit but not STCW credit.** Grading will be according to Massachusetts Maritime Academy Policy. Class grade will be determined based on the following:

Classroom participation, quizzes & exams	=	50%
STCW practical	=	20%
Final Exam	=	20%
Homework and presentations	=	10%

6. **Cheating**: Any cadet found cheating will be given a grade of **zero for the exam and a semester grade of F, along with being placed on report. Failure to participate in group project or falsely stating participation in a group project will result in a grade of zero**
7. Uniform standards: All cadets shall adhere to academy dress and deportment standards. Cadets not in proper uniform will be dismissed from class and placed on report. Boiler Suites and work uniforms are not permitted in class. Failure to be in proper uniform will mean dismissal from class and being place on report.
8. **Academic Accommodations:** 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 Director of Disability Compliance.

9. Texts: The following Texts will be primary source for material covered:
   (a) American Practical Navigator Pub 9 2002 edition

   (b) Understanding Weather and Climate 5th edition
   (c) Radio Facsimile Guide from Ocean prediction center web site
   The following texts may prove helpful in understanding material presented in this course:
   (d) The Atmosphere, 8th edition by Lutkins and Tarbuck

   (e) Knights modern seamanship 18th edition

   (f) Observing Handbook number 1 from National weather service

   The following web pages will be of interest:
   National weather service www.nws.noaa.gov
   Internet weather source www.weather.noaa.gov
   Ocean prediction center www.opc.necp.gov
   National Hurricane center www.nhc.noaa.gov
   Joint typhoon warning center www.metocph.nmci.navy.mil
   Weather channel www.weather.com

   Navy Meteorological & Oceanography www.weather.navy.mil

I highly recommend you view these sites and bookmark them on your computer.

Respectfully

J. J. Quinn, Captain, USN (ret.)

Meteorology Syllabus
Fall 2010

Capt. J. J. Quinn, USN (ret.)
email: jquinn@ maritime.edu
Phone ext 2110

W/C = Weather and climate
B = Bowditch 2002 edition
K = Knights Modern seamanship 18th Edition

Date	Topic	Reading
9/3	Intro to Meteorology	Class policy and blackboard info W/C preface pgs xii-xx
9/6	LABOR DAY NO CLASS	
9/8	Weather / Climate	W/C pg 475 -494 B 3400-3402
9/10	Atmosphere/ Seasons	W/C chapter 1 and 2
9/13	Temperature/Energy balance	W/C chap 3
9/15	**TEST**	**All Material and Reading from 9/3**
9/17	Atmospheric Pressure	W/C CH 4 pgs 101-110 B 3402

9/20	Atmospheric circulation Pressure distribution	W/C Ch 8 pgs 227-242
9/22	Air masses/ Fronts	W/C CH 9
9/24	Atmospheric Moisture/Fog	W/C Ch 5 pgs 133-136,138-142. 149-164 K 15.1- 15.3 &15.5-15.7&1 15.13-15.14
9/27	**Test**	all material since last exam
9/29	Clouds and moisture	W/C Ch 6 156-184, handout
10/1	Precipitation process	W/C Ch 7
10/4	Wind	W/C Ch 4 pgs 114-126
10/6	True and apparent wind	Power point presentation Wind problems Bowditch
10/8	NOAA visit synoptic reporting importance and requirements	
10/11	Columbus Day No classes	
10/12	(Monday Schedule) **TEST** All material since last exam	
10/13	thunder /lightning, Tornadoes	W/C CH11
10/15	Wind /waves	B Ch 32
10/18	Mid Latitude cyclone	W/C Ch 10

10/20	Tropical Cyclone	W/C Ch 12, B Ch 35
10/22	**Test**	all material since last exam
10/25	Hurricane Avoidance	B art 3511-3512 K 18.8-18.11
10/27	Ocean currents	B ch 31
10/29	WEATHER SATTELITES www.nesdis.noaa.gov/satinformation.html Pay particular attention to GEOS and POES satellites WC pgs 435-436	
11/1	Weather Routing	B Chapter 37
11/3	**Test**	all material & reading From last exam
	WEATHER FORECASTING	W/C ch 13 pgs 411- 435
11/5	Synoptic charts/Ocean prediction Center/Weather charts www.opc.ncep.noaa.gov	Weather Fax users guide
11/8	Tropical Prediction Center &Hurricane center www.nhc.noaa.gov	

11/10	13	Upper air charts	Radiofax user guide

11/11 No Class Veterans Day Remember all those who served our country in the Armed forces and Merchant Marine especially those who made the Supreme Sacrifice

11/12	Surface Charts	Radiofax user guide	
11/15	Specialty Charts	Radiofaxusers guide	
11/17	TEST		All Material Since last Exam
11/19	Project presentations		
11/22	Project presentations		
11/23-29	Happy Thanksgiving safe Travel to All		
11/29	STCW Synoptic practice		
12/1	STCW synoptic practice		
12/3	STCW synoptic practice		
12/6	STCW Practical Exam		
12/8	STCW and final exam review		
12/10	STCW Make up		
12/13	make up day		

MASSACHUSETTS MARITIME ACADEMY
DEPARTMENT OF MARINE TRANSPORTATION

DANGEROUS LIQUID CARGO

Course MT-3151

Fall 2010
Classroom: Harrington 205
Lab Bresnahan 132

COURSE LEARNING OBJECTIVES

The Dangerous Liquid Cargo Course is designed to meet the the STCW code regulations V/1 and V/2 as well as 46 CFR 10.910 and 46 Part 13 of the U.S. Code appropriate to the duties of Tankerman PIC. This course utilizes formal instruction, hands-on demonstrations and state of the art simulator training to provide students with experiences in liquid cargo handling that would otherwise demand years of seagoing experience.

The objective of this program of study is to familiarize the student with the loading, discharge and carriage of dangerous liquid cargoes. This program is designed to expose the student to the safety, firefighting, and pollution prevention and response issues related to the carriage of dangerous liquid cargoes

COURSE LEARNING OUTCOMES

The student will be able to recognize the important aspects of construction of tank vessels and their piping, pumping, inerting, ballasting, vapor control and tank washing systems. The student will demonstrate an ability to conduct simulated loading, discharging, ballasting, inert gas and tank washing operations. The student will be able to identify the characteristics, dangers, refining and distribution of petroleum products. The student will be able to recognize the safety, firefighting and pollution prevention and response issues related to the carriage of petroleum products.

WEEKLY LEARNING OBJECTIVES

The expected learning outcome is that the trainee…

1. Explains tanker construction purpose and trade
2. Describes the exploration, refining and distribution of oil
3. Identifies tank layout and piping Systems
4. Demonstrates loading and discharging operations
5. Explains planning a load
6. Identifies safe ballast operations
7. Demonstrates tank cleaning operations

8. Describes Inert Gas and Crude Oil Wash Systems
9. Relates marine vapor control systems to vessel operations
10 Identifies the concepts behind tanker fire safety
11. Relates issues of oil in the environment to tanker safety
12. Describes the duties of the 3rd and Chief Mates aboard a tank vessel

SPECIFIC COURSE OBJECTIVE

This course satisfies the training course requirements necessary for an endorsement as :
Tankerman-PIC
Tankerman PIC(Barge)
Tankerman -Assistant
Tankerman-Engineer
A grade of less than C- will not fulfill the USCG mandated STCW requirements for issuance of either a Third Mate Unlimited license or an STCW OICNW certificate. Demonstration of competencies relating to dangerous liquid cargo handling are also required for successful course completion.

PROCEDURE AND POLICY

Attendance at all classes and labs is mandatory. Disciplinary action and grade point reduction will be administered to policy offenders. UNEXCUSED ABSENCES RESULT IN A 5 POINT FINAL GRADE REDUCTION PER ABSENCE. Notice of absence must be given to the instructor prior to the respective class. Examinations missed as a result of unauthorized absence incur a grade of zero. Cadets are responsible for all reading assignments, classroom lectures, and assigned projects. You may be quizzed at any time without notice. The grading policy is a 12 point system.
The grading matrix will be factored as follows

Regular Exams:	60%
Lab Projects:	10%
Paticipation/Attendance/Homewok	10%
Final Exam	20%

Course materials will be handed out and should be kept neatly in a three ring binder for present and future reference.

At all times every cadet will observe Academy standards of personal appearance and conduct as specified by Academy regulations. This may include waiting for an instructor at least twenty minutes after the scheduled class start. Changes of Laboratory venue sometimes cause confusion. If so find your lab instructor!
It is the students' responsibility to seek extra help whenever needed. I am available during office hours (see schedule provided) and any mutually convenient time. Please do not hesitate to seek help. If you need help I will find the time to help you!

USCG/ STCW approved DLC Syllabus

Textbook: TANKER OPERATIONS, Huber, 4th Edition, CMP

Week	Topic	Reading assignment
1.	Tanker construction, Purpose and Trade	Ch. 1
2.	Exploration, refining and distribution of oil	Ch. 2 and 3
3.	Tank Layout and Piping Systems	Ch. 4 and 7
4.	Loading and Discharging Operations	Ch. 8
5.	Planning a Load	Ch. 6
6.	Ballast Operations	Ch.11
7.	Tank cleaning operations	Ch. 12 and 13
8.	Inert Gas and Crude Oil Wash Systems	Ch. 15 and 12
9.	Marine Vapor Control Systems	Ch. 5
10.	Tanker Fire Safety	Ch. 16
11.	Oil in the Environment	Ch. 14
12.	Duties of the 3rd and Chief Mates	lecture

All lecture, reading and oral report material is fair game for tests. All reading assignments are expected to be completed before the week listed in the syllabus. Tanker Lab Projects will be assigned during weeks two and three of the semester.Attendance at all classes/ labs is mandatory. No eating, drinking or use of tobacco products is allowed. Any disclosure of learning disability (should you choose to disclose) should be made directly from the student to the instructor within the first two weeks of class. The Instructor will attempt to make any reasonable allowances.

DLC LAB Learning Outcomes

LAB Number 1 Simulator Orientation
The expected Learning Outcome is that the trainee:
.1 Complete student Orientation for the Liquid Cargo Handling Simulator

.2 Identifies tank layout and piping systems of the Suezmax product carrier model: Tank numbering, system layout and the various cargo and support piping.

LAB Number 2 Tank Measurements and Gauging
The expected Learning Outcome is that the trainee:
.1 Demonstrate taking cargo measurements including ullages, thieving, water cuts and temperature

LAB Number 3 Tank Vessel Cargo Systems
The expected Learning Outcome is that the trainee:
.1 (examines) Pumps, Valves and Piping specifications. Tracing the piping systems aboard the LCHS.

.2 understands 46 CFR 32.50 Pumps, piping and hoses for cargo handling

.3 understands 46 CFR 32.55 ventilation and venting

LAB Number 4 Cargo Oil Loading Exercise
The expected Learning Outcome is that the trainee:
.1 Using the LCHS simulator, line-up empty tanker for cargo. All valves closed, tanks inerted. No VEC or IGS. Ballast full. Maintain status board, sign D.O. I., when ready, commence to load one grades via three hoses. Load to safely maximize rate of loading.

LAB Number 5 Cargo Oil Discharge Exercise
The expected Learning Outcome is that the trainee:
.1 Using the LCHS simulator, discharge specific tanks. All valves closed, tanks inerted. Minimal Ballast. Maintain status board. When ready commence to discharge all cargo via cargo pumps.

LAB Number 6 Ballast/ De-Ballast Exercise
The expected Learning Outcome is that the trainee:
.1 Use the LCHS simulator to load cargo while simultaneously discharging segregated ballast

LAB Number 7 IGS/ COW Exercise
The expected Learning Outcome is that the trainee:
.1 Use the LCHS simulator to monitor tank washing using the COW system. At the commencement of the exercise, the tanks are inerted and the IGS system is operating.

Cargo discharge is already in progress. Crude oil wash heavy weather ballast tanks.

LAB Number 8 Inert Gas / Crude Oil Washing Exercise
The expected Learning Outcome is that the trainee:
.1 Using the LCHS simulator, line-up the inert gas system and put gas to deck. Conduct atmosphere testing of tanks to be crude oil washed. Line up the crude oil wash system and commence washing operations of identified tanks after removing one meter of liquid from tanks used to supply the COW system.

LAB Number 9 Vapor Emission Recovery Exercise
The expected Learning Outcome is that the trainee:
.1 Using the LCHS simulator, line-up and operate VEC system, then commence loading the tanker.

LAB Number 10 Execution of a Loading Plan
The expected Learning Outcome is that the trainee:
.1 LCHS simulator exercise starts with discharge in progress. Student uses CARGOMAX to monitor hull stress, drafts and trim. Student develops skills in establishing rate for determining finish of cargo. Ballasting started and rates taken of cargo discharge and ballasting.

LAB Number 11 Execution of a Loading Plan
The expected Learning Outcome is that the trainee:
.1 Use the LCHS simulator, exercise involving partial discharge and stripping of cargo tanks. Student uses CARGOMAX to monitor hull stress, drafts and trim. Student to ballast accordingly to relieve excess stress and maintain trim and drafts within prescribed limits.

LAB Number 12 Execution of a ballast plan
The expected Learning Outcome is that the trainee:
.1 Use the LCHS simulator to Start Heavy Weather Ballast

Discharge is nearing completion.

Massachusetts Maritime Academy
ARPA -MT 3222
Spring Semester 2010

Instructor
CDR Linda Letourneau
Office: 320A or RADAR/ARPA lab in the Harrington
Phone: Ext. 2107, Email: lletourneau@maritime.edu
Office hours: Posted on office door. Other times may be scheduled with an appointment

Course prerequisites
Radar Observer MT 3122

Learning Outcomes
Those who successfully complete the Automatic Radar Plotting Aids (ARPA MT 3222) course will be able to choose an appropriate mode of display, select plotting graphics controls suitable to the circumstances, make appropriate use of operational alarms, acquire and track those targets which present a potential threat of collision, extract the information needed on course, speed and nearest approach to enable early action to be taken to avoid a close quarters situation, and make use of ARPA to confirm and monitor their actions. In addition, please refer to the attached individual STCW ARPA assessments.

Required Text and Equipment
Bole, A.G. and Dineley, W.O., *RADAR & ARPA Manual 2nd edition*
Department of Transportation, *Navigation Rules*
ARPA Operations Manual
Plotting tools & Radar Plotting sheets

Furuno Operators Manual
At the start of the semester each student will be loaned a copy of the Furuno Operators Manual. At the end of the semester, it must be returned or replaced before a final grade will be given.

Attendance
Attendance is mandatory at all classes. Disciplinary action will be taken (pink mail) for unexcused absences. Final course grade will drop by one grade for every class missed. Notice of absence for any reason must be given to the instructor **prior** to the respective class. Cadets are responsible for reading assignments, classroom lectures, tests, and quizzes. Any assigned homework is still due, don't wait until the next class meeting.

Cheating
Cheating will not be tolerated. Disciplinary action will be taken. Don't do it!

Learning Disabilities
Mass Maritime is committed to providing reasonable accommodations to students with documented disabilities. Students who believe they may need accommodations in this class are required to contact Professor Fran Tiskevich, the Director of Disability Compliance, within the first two weeks of class in RM 311AHarrington, at MMA ext. 2208, or ftishkevich@maritime.edu

Massachusetts Maritime Academy
ARPA -MT 3222
Spring Semester 2010 (cont.)

Grade Policy
Final course grades will be given with pluses and minuses.
*In order to receive the USCG approved ARPA certificate a minimum of 70% on the theory, 90% on the simulator collision avoidance exam, and a P (pass) on all of the operations assessments must be achieved. Final course grade will drop by one grade for every class missed.

Quiz average	20%	Class participation	5%
Take home Quiz (homework)	15%	Notebook	5%
Presentation average	5%	*Final- Practical	15%
Midterm exam (practical & theory)	20%	*Final- Theory	15%

Assessments
There are fourteen operational STCW assessments imbedded in MT 3222. These Assements will be conducted during regular class/lab meetings. In the event a student is absent and misses the assessment or fails the assessment, a second opportunity will be given as a make up. Failure to pass every assessment will result in full course failure.

Snacks
Eating and/or drinking will not be permitted in the RADAR lab or in the classroom.

Blackboard
Course material may be posted on Blackboard. Prior to class meetings, the student is responsible for checking Blackboard for notices, assignments, and other information.

Take home Quizzes
Take home quizzes are worth 15% of your final course grade. Quizzes turned in late will be marked down 10 points every day it is late.

Notebooks
Notebooks will be graded for organization, content of notes, assignments, course documents and labs

Extra Help and Support
Students are encouraged to seek extra help. I will be either in my office or in the Radar lab during my posted office hours. I am available at other times with an appointment. If you feel that you are falling behind, don't wait until it's too late to get caught up

MMA Health Services realizes that students may encounter situations which could impede their academic, personal and social development and success. Counseling services are designed to help students address these concerns, increase their self-awareness and empower them to manage challenging areas in their lives. To schedule a confidential appointment please email kshineobrien@maritime.edu or call ext 1480.

Massachusetts Maritime Academy
ARPA -MT 3222 Course Syllabus
Spring 2010

ek	Lecture Topic	Reading due prior to class meeting
1.	Course Introduction & Review of RADAR plotting techniques	*RADAR & ARPA Manual* Chapter 7
2.	RADAR Plotting review (cont.) Quiz 1	*RADAR & ARPA Manual* Chapter 7
3.	Principle ARPA systems, Target acquisition, Tracking Capabilities and limitations. Quiz 2	*RADAR & ARPA Manual* Chapter 4, 5 ,7.6 Operators manual 2.5, 2.6, 2.9, 2.10, 2.11
4.	Setting up and maintaining displays, processing delays , representation of target information, alarms and warnings Quiz 3 and assessments	*RADAR & ARPA Manual* Chapter 6 Operators manual 2.13,2.14, 2.15, 2.16
5.	Trial maneuver, obtaining information Quiz 4 and assessments	*RADAR & ARPA Manual* Chapter 4.4 Operators manual
6.	Midterm Exam Written and Practical	*RADAR & ARPA Manual* -Review Operators manual-Review
7.	Speed input & Determining set and drift. Quiz 5	*RADAR & ARPA Manual* Chapter 6.8 Operators manual 2.4, 2.12
8.	System Operational Tests & Risk of over reliance on ARPA Quiz 6 and assessments	Operators manual 2.17,5.3
9.	Obtaining information from ARPA Navigation Lines. Quiz 7	*RADAR & ARPA Manual* Chapter 8 Operators manual 1.35
10.	Obtaining information from ARPA & Navigation techniques. Quiz 8	*RADAR & ARPA Manual* Chapter 8 Operators manual
11.	Errors of interpretation, Errors in displayed data. Quiz 9 and assessments	*RADAR & ARPA Manual* Chapter 9,10 Operators manual
12.	IMO Performance Standards Obtaining information from ARPA Quiz 10 and assessments	*RADAR & ARPA Manual* Chapter 11 Operators manual
13.	RADAR/ARPA assisted casualties	Case Studies
14.	Final Exam –Practical Make up assessments	*RADAR & ARPA Manual* -Review Operators manual-Review
15.	Final Theory Exam- Finals week	*RADAR & ARPA Manual* -Review Operators manual-Review

Massachusetts Maritime Academy
TABLE A-II/1 Specification of Minimum Standard of Competence
OFFICER IN CHARGE OF A NAVIGATIONAL WATCH

Control Sheet

ASSESSMENT NO. OICNW-3-1E, MMA # 21A306A

FUNCTION: Navigation at the Operational Level

COMPETENCE: Use of radar and ARPA to maintain the safety of navigation

KNOWLEDGE, UNDERSTANDING & PROFICIENCY: *Radar Navigation* -- Identification of critical echoes; detecting course and speed changes of to other ships; effective changes of own ship's course and speed

TASK: Determine risk of collision

PERFORMANCE CONDITION: On an operational radar or radar simulator that meets the standards of 33 CFR 164.38 and other applicable national and international performance standards, set on the 12 mile scale, with at least 5 vessels on the display.

PERFORMANCE BEHAVIOR: Determine if risk of collision or danger of collision exists with all approaching vessels.

PERFORMANCE STANDARD:

The candidate identified:

1. All approaching vessels whose bearing did not change appreciably; and
2. All vessels that had a CPA of less than 3 miles; and
3. All determinations were made within 8 minutes of determining the initial range and bearing of each vessel or within 12 minutes overall.

COURSE: MT 0637 ARPA

Candidate	SSN
Assessor	Position
Vessel or Course	License No. / Date

Massachusetts Maritime Academy
TABLE A-II/1 Specification of Minimum Standard of Competence
OFFICER IN CHARGE OF A NAVIGATIONAL WATCH

Control Sheet

ASSESSMENT NO. OICNW-3-2A, MMA # 21A310A

FUNCTION: Navigation at the Operational Level

COMPETENCE: Use of radar and ARPA to maintain the safety of navigation

KNOWLEDGE, UNDERSTANDING & PROFICIENCY: Principal types of ARPA, their display characteristics, performance standards and the dangers of over-reliance on ARPA

Ability to operate and to interpret and analyze information obtained from ARPA, including: system performance and accuracy, tracking capabilities and limitations, and processing delays; and use of operational warnings and system tests

TASK: Set up and maintain an ARPA display

PERFORMANCE CONDITION: On an operational ARPA that meet the standards of 33 CFR 164.38 (or an ARPA simulator that meets applicable national and international performance standards for ARPA).

PERFORMANCE BEHAVIOR: Set up and maintain the ARPA display.

PERFORMANCE STANDARD:

Within three minutes, the candidate:

1. Turned the power on;
2. Initialized performance monitor;
3. Noted error messages;
4. Switched from standby to on;
5. Selected the appropriate scale;
6. Adjusted the gain control so that targets and sea return appeared;
7. Adjusted the tune control (if the unit is not self tuning);
8. Adjusted the brilliance control;
9. Adjust the sea clutter and rain clutter controls to suppress the rain and sea clutter without losing targets.
10. Display selected is north up stabilized, relative motion.
11. Select proper gyro course and speed input.
12. Select sea stabilized mode.

COURSE: MT 0637 ARPA

Candidate	SSN
Assessor	Position
Vessel or Course	License No. / Date

Massachusetts Maritime Academy
TABLE A-II/1 Specification of Minimum Standard of Competence
OFFICER IN CHARGE OF A NAVIGATIONAL WATCH

Control Sheet

ASSESSMENT NO. OICNW-3-2B, MMA # 21A313A

FUNCTION: Navigation at the Operational Level

COMPETENCE: Use of radar and ARPA to maintain the safety of navigation

KNOWLEDGE, UNDERSTANDING & PROFICIENCY: Principal types of ARPA, their display characteristics, performance standards and the dangers of over-reliance on ARPA

Ability to operate and to interpret and analyze information obtained from ARPA, including: methods of target acquisition and their limitations

TASK: Manual target acquisition

PERFORMANCE CONDITION: On an operational ARPA that meet the standards of 33 CFR 164.38 (or an ARPA simulator that meets applicable national and international performance standards for ARPA), with at least 10 targets on the selected range.

PERFORMANCE BEHAVIOR: Manually acquire ten targets.

PERFORMANCE STANDARD:

Manually acquire 10 targets within 2 minutes.

COURSE: MT 0637 ARPA

Candidate	SSN
Assessor	Position
Vessel or Course	License No. / Date

Massachusetts Maritime Academy
TABLE A-II/1 Specification of Minimum Standard of Competence
OFFICER IN CHARGE OF A NAVIGATIONAL WATCH

Control Sheet

ASSESSMENT NO. OICNW-3-2C, MMA # 21A313B

FUNCTION: Navigation at the Operational Level

COMPETENCE: Use of radar and ARPA to maintain the safety of navigation

KNOWLEDGE, UNDERSTANDING & PROFICIENCY: Principal types of ARPA, their display characteristics, performance standards and the dangers of over-reliance on ARPA

Ability to operate and to interpret and analyze information obtained from ARPA, including: methods of target acquisition and their limitations

TASK: Establish an exclusion area

PERFORMANCE CONDITION: On an operational ARPA that meet the standards of 33 CFR 164.38 (or an ARPA simulator that meets applicable national and international performance standards for ARPA), with the ARPA on the 12 mile scale, and in automatic acquisition.

PERFORMANCE BEHAVIOR: Establish an exclusion area that suppresses the automatic acquisition of targets in that area.

PERFORMANCE STANDARD:

The candidate will establish within 2 minutes an exclusion area on the either side of the vessel that is either described by an arc of 90° on the appropriate side of the vessel, or described by a line parallel to the vessel's track four miles from the vessel.

COURSE: MT 0637 ARPA

Candidate _____ SSN _____

Assessor _____ Position _____

Vessel or Course _____ License No. _____ Date _____

Massachusetts Maritime Academy
TABLE A-II/1 Specification of Minimum Standard of Competence
OFFICER IN CHARGE OF A NAVIGATIONAL WATCH

Control Sheet

ASSESSMENT NO. OICNW-3-2D, MMA # 21A314A

FUNCTION: Navigation at the Operational Level

COMPETENCE: Use of radar and ARPA to maintain the safety of navigation

KNOWLEDGE, UNDERSTANDING & PROFICIENCY: Principal types of ARPA, their display characteristics, performance standards and the dangers of over-reliance on ARPA

Ability to operate and to interpret and analyze information obtained from ARPA, including: true and relative vectors, graphic representation of target information and danger areas

TASK: Set vector characteristics

PERFORMANCE CONDITION: On an operational ARPA that meet the standards of 33 CFR 164.38 (or an ARPA simulator that meets applicable national and international performance standards for ARPA), with the ARPA on the 12 mile scale.

PERFORMANCE BEHAVIOR: Switch between true and relative vectors and change the length of the vectors from 6 minutes to 30 minutes.

PERFORMANCE STANDARD:

Switches between true and relative vectors and changes the length of the vectors within 30 seconds.

COURSE: MT 0637 ARPA

Candidate _____ SSN _____

Assessor _____ Position _____

Vessel or Course _____ License No. _____ Date _____

Massachusetts Maritime Academy
TABLE A-II/1 Specification of Minimum Standard of Competence
OFFICER IN CHARGE OF A NAVIGATIONAL WATCH

Control Sheet

ASSESSMENT NO. OICNW-3-2E, MMA # 21A314B

FUNCTION: Navigation at the Operational Level

COMPETENCE: Use of radar and ARPA to maintain the safety of navigation

KNOWLEDGE, UNDERSTANDING & PROFICIENCY: Principal types of ARPA, their display characteristics, performance standards and the dangers of over-reliance on ARPA

Ability to operate and to interpret and analyze information obtained from ARPA, including: true and relative vectors, graphic representation of target information and danger areas

TASK: Designate targets

PERFORMANCE CONDITION: On an operational ARPA that meet the standards of 33 CFR 164.38 (or an ARPA simulator that meets applicable national and international performance standards for ARPA), with the ARPA on the 12 mile scale.

PERFORMANCE BEHAVIOR: Designate two acquired targets.

PERFORMANCE STANDARD:

Designated two of the acquired targets for an alphanumeric display of the target information within 10 seconds for each target.

COURSE: MT 0637 ARPA

Candidate _____ SSN _____

Assessor _____ Position _____

Vessel or Course _____ License No. _____ Date _____

Massachusetts Maritime Academy
TABLE A-II/1 Specification of Minimum Standard of Competence
OFFICER IN CHARGE OF A NAVIGATIONAL WATCH

Control Sheet

ASSESSMENT NO. OICNW-3-2F, MMA # 21A314C

FUNCTION: Navigation at the Operational Level

COMPETENCE: Use of radar and ARPA to maintain the safety of navigation

KNOWLEDGE, UNDERSTANDING & PROFICIENCY: Principal types of ARPA, their display characteristics, performance standards and the dangers of over-reliance on ARPA

Ability to operate and to interpret and analyze information obtained from ARPA, including: true and relative vectors, graphic representation of target information and danger areas

TASK: Cancel targets

PERFORMANCE CONDITION: On an operational ARPA that meet the standards of 33 CFR 164.38 (or an ARPA simulator that meets applicable national and international performance standards for ARPA), with the ARPA on the 12 mile scale.

PERFORMANCE BEHAVIOR: Cancel a single target.

PERFORMANCE STANDARD:

A single target is cancelled within 10 seconds.

COURSE: MT 0637 ARPA

Candidate _____ SSN _____

Assessor _____ Position _____

Vessel or Course _____ License No. _____ Date _____

Massachusetts Maritime Academy
TABLE A-II/1 Specification of Minimum Standard of Competence
OFFICER IN CHARGE OF A NAVIGATIONAL WATCH

Control Sheet

ASSESSMENT NO. OICNW-3-2G, MMA # 21A314D

FUNCTION: Navigation at the Operational Level

COMPETENCE: Use of radar and ARPA to maintain the safety of navigation

KNOWLEDGE, UNDERSTANDING & PROFICIENCY: Principal types of ARPA, their display characteristics, performance standards and the dangers of over-reliance on ARPA

Ability to operate and to interpret and analyze information obtained from ARPA, including: true and relative vectors, graphic representation of target information and danger areas

TASK: Target history

PERFORMANCE CONDITION: On an operational ARPA that meet the standards of 33 CFR 164.38 (or an ARPA simulator that meets applicable national and international performance standards for ARPA), with the ARPA on the 12 mile scale.

PERFORMANCE BEHAVIOR: Demonstrate the ability to have the ARPA display past target history.

PERFORMANCE STANDARD:

1. Correctly operate the controls that display past target history.
2. The past history is displayed within 15 seconds.

COURSE: MT 0637 ARPA

Candidate _____ SSN _____

Assessor _____ Position _____

Vessel or Course _____ License No. _____ Date _____

Massachusetts Maritime Academy
TABLE A-II/1 Specification of Minimum Standard of Competence
OFFICER IN CHARGE OF A NAVIGATIONAL WATCH

Control Sheet

ASSESSMENT NO. OICNW-3-2H, MMA # 21A314E

FUNCTION: Navigation at the Operational Level

COMPETENCE: Use of radar and ARPA to maintain the safety of navigation

KNOWLEDGE, UNDERSTANDING & PROFICIENCY: Principal types of ARPA, their display characteristics, performance standards and the dangers of over-reliance on ARPA

Ability to operate and to interpret and analyze information obtained from ARPA, including: true and relative vectors, graphic representation of target information and danger areas

TASK: Establish CPA and TCPA

PERFORMANCE CONDITION: On an operational ARPA that meet the standards of 33 CFR 164.38 (or an ARPA simulator that meets applicable national and international performance standards for ARPA), with the ARPA on the 12 mile scale.

PERFORMANCE BEHAVIOR: Establish the CPA and TCPA for dangerous targets.

PERFORMANCE STANDARD:

1. The candidate will determine the parameters for dangerous targets by entering:
   a. minimum CPA; and
   b. minimum TCPA.

2. Data entry will be completed within 1 minute.

COURSE: MT 0637 ARPA

Candidate	SSN
Assessor	Position
Vessel or Course	License No. / Date

Massachusetts Maritime Academy
TABLE A-II/1 Specification of Minimum Standard of Competence
OFFICER IN CHARGE OF A NAVIGATIONAL WATCH

Control Sheet

ASSESSMENT NO. OICNW-3-2I, MMA # 21A314F

FUNCTION: Navigation at the Operational Level

COMPETENCE: Use of radar and ARPA to maintain the safety of navigation

KNOWLEDGE, UNDERSTANDING & PROFICIENCY: Principal types of ARPA, their display characteristics, performance standards and the dangers of over-reliance on ARPA

Ability to operate and to interpret and analyze information obtained from ARPA, including: true and relative vectors, graphic representation of target information and danger areas

TASK: Establish alarm area

PERFORMANCE CONDITION: On an operational ARPA that meet the standards of 33 CFR 164.38 (or an ARPA simulator that meets applicable national and international performance standards for ARPA), with the ARPA on the 12 mile scale.

PERFORMANCE BEHAVIOR: Establish an alarm area with outer and inner guard rings.

PERFORMANCE STANDARD:

Establish an alarm area with an outer guard ring of 8 nm and an inner guard ring of 4nm within 2 minutes.

COURSE: MT 0637 ARPA

Candidate	SSN
Assessor	Position
Vessel or Course	License No. / Date

Massachusetts Maritime Academy
TABLE A-II/1 Specification of Minimum Standard of Competence
OFFICER IN CHARGE OF A NAVIGATIONAL WATCH

Control Sheet

ASSESSMENT NO. OICNW-3-2J, MMA # 21A315A

FUNCTION: Navigation at the Operational Level

COMPETENCE: Use of radar and ARPA to maintain the safety of navigation

KNOWLEDGE, UNDERSTANDING & PROFICIENCY: Principal types of ARPA, their display characteristics, performance standards and the dangers of over-reliance on ARPA

Ability to operate and to interpret and analyze information obtained from ARPA, including: deriving and analyzing information, critical echoes, exclusion areas and trail maneuvers

TASK: Trial Maneuver

PERFORMANCE CONDITION: On an operational ARPA that meet the standards of 33 CFR 164.38 (or an ARPA simulator that meets applicable national and international performance standards for ARPA), with the ARPA on the 12 mile scale, with at least ten targets within 12 miles of the own ship.

PERFORMANCE BEHAVIOR: Demonstrate the trial maneuver function.

PERFORMANCE STANDARD:

1. Access the trial maneuver mode;
2. Enter course changes;
3. Determine the course to steer to avoid all targets by a distance specified by the assessor, within one minute;.
4. Enter speed changes;
5. Determine the speed necessary to avoid all targets by a distance specified by the assessor, within one minute;.; and
6. Return the display to real time.

COURSE: MT 0637 ARPA

Candidate	SSN
Assessor	Position
Vessel or Course	License No. / Date

Massachusetts Maritime Academy
TABLE A-II/1 Specification of Minimum Standard of Competence
OFFICER IN CHARGE OF A NAVIGATIONAL WATCH

Control Sheet

ASSESSMENT NO. OICNW-3-2K, MMA # 21A315B

FUNCTION: Navigation at the Operational Level

COMPETENCE: Use of radar and ARPA to maintain the safety of navigation

KNOWLEDGE, UNDERSTANDING & PROFICIENCY: Principal types of ARPA, their display characteristics, performance standards and the dangers of over-reliance on ARPA

Ability to operate and to interpret and analyze information obtained from ARPA, including: deriving and analyzing information, critical echoes, exclusion areas and trail maneuvers

TASK: Switch stabilization modes

PERFORMANCE CONDITION: On an operational ARPA that meet the standards of 33 CFR 164.38 (or an ARPA simulator that meets applicable national and international performance standards for ARPA), with the ARPA on the 12 mile scale.

PERFORMANCE BEHAVIOR: Switch the display from a north up relative motion sea stabilized display to a true motion ground stabilized display.

PERFORMANCE STANDARD:

Complete the change within 15 seconds.

COURSE: MT 0637 ARPA

Candidate	SSN
Assessor	Position
Vessel or Course	License No. / Date

Massachusetts Maritime Academy
TABLE A-II/1 Specification of Minimum Standard of Competence
OFFICER IN CHARGE OF A NAVIGATIONAL WATCH

Control Sheet

ASSESSMENT NO. OICNW-3-2L, MMA # 21A315C

FUNCTION: Navigation at the Operational Level

COMPETENCE: Use of radar and ARPA to maintain the safety of navigation

KNOWLEDGE, UNDERSTANDING & PROFICIENCY: Principal types of ARPA, their display characteristics, performance standards and the dangers of over-reliance on ARPA

Ability to operate and to interpret and analyze information obtained from ARPA, including: deriving and analyzing information, critical echoes, exclusion areas and trail maneuvers

TASK: Navigation lines

PERFORMANCE CONDITION: On an operational ARPA that meet the standards of 33 CFR 164.38 (or an ARPA simulator that meets applicable national and international performance standards for ARPA), with the ARPA on the 12 mile scale, using 2 nav marks and one nav line.

PERFORMANCE BEHAVIOR: Establish a nav line to monitor and maintain the vessel on track.

PERFORMANCE STANDARD:

1. Constructs a nav line between the 2 nav marks and through the seaward edge of the known hazard to navigation or land mass;
2. Positions the VRM at a distance named by the assessor from the edge of the nav line; and
3. Monitors the vessel' movement to determine if the edge of the VRM moves inside the nav line.
4. The VRM must not drift more than 10 % of the VRM distance inside the nav line.

COURSE: MT 0637 ARPA

Candidate	SSN
Assessor	Position
Vessel or Course	License No. / Date

Massachusetts Maritime Academy
TABLE A-II/1 Specification of Minimum Standard of Competence
OFFICER IN CHARGE OF A NAVIGATIONAL WATCH

Control Sheet

ASSESSMENT NO. OICNW-3-2M, MMA # 21A315D

UNCTION: Navigation at the Operational Level

COMPETENCE: Use of radar and ARPA to maintain the safety of navigation

KNOWLEDGE, UNDERSTANDING & PROFICIENCY: Principal types of ARPA, their display characteristics, performance standards and the dangers of over-reliance on ARPA

Ability to operate and to interpret and analyze information obtained from ARPA, including: deriving and analyzing information, critical echoes, exclusion areas and trail maneuvers

TASK: Determine set and drift

PERFORMANCE CONDITION: On an operational ARPA that meet the standards of 33 CFR 164.38 (or an ARPA simulator that meets applicable national and international performance standards for ARPA), with the ARPA on the 12 mile scale.

PERFORMANCE BEHAVIOR: Determine the set and drift of the vessel.

PERFORMANCE STANDARD:

1. The display was sea stabilized.
2. A stationery target was identified, acquired and designated.
3. The target's course and speed was read as the set and drift within 3 minutes.

COURSE: MT 0637 ARPA

Candidate _____ SSN _____

Assessor _____ Position _____

Vessel or Course _____ License No. _____ Date _____

Massachusetts Maritime Academy

CONTAINERIZATION & MODERN CARGO STOWAGE (MT3261)

FROM: Captain David D. DeCastro

TO: Enrolled Students

SUBJECT: CLASSROOM PROCEDURES AND POLICIES

In order to create a proper classroom atmosphere, the following procedures and policies will be carried out at all times:

A. SECTION LEADER

1. The Section Leader will seat, preserve order and prepare a complete and accurate muster prior to the arrival of the instructor.
2. The Section Leader will make his report to the instructor and then the instructor will seat the class.

B. ABSENCES

1. ***Attendance at all classes is mandatory.*** Unauthorized absence will not be tolerated. Disciplinary action, grade point reduction and dismissal from the class will be administered to repeat offenders. This means no cuts and don't be late. ***More than four (4) absences from classroom lectures for any reason will result in failure of the course.***
2. Notice of any authorized absence must be reported to the instructor **prior** to the missed class. If absences occur due to illness, the student must notify the instructor as soon as possible for make-up works or assignments. The instructor must be informed of and sign for all special liberty requests well in advance of the respective date.
3. Cadets repeating this class must retake all sections. Cadets are responsible for all material covered in class. Make-up examinations for authorized periods of absence will be scheduled for a mutually agreed upon time. **Examinations missed as a result of an unauthorized absence will incur a grade of zero.**
4. Students will stand-bye for 30 minutes after the scheduled start of class for instructor's arrival class before dismissing themselves.

The instructor will dismiss cadets who are found sleeping in class. Dismissal from class will be considered an absence for attendance purposes.

C. ACADEMY STANDARDS

a. At all times in the classroom, every cadet will observe the standards of uniform dress and personal appearance as specified by Academy Regulations. Cadets will wear the appropriate uniform of the day in lecture classrooms

Eating, drinking or the use of tobacco products is prohibited from all classes and laboratories.

Massachusetts Maritime Academy

CONTAINERIZATION & MODERN CARGO STOWAGE (MT3261)

Qualified Instructor/Designated Examiner

CAPT. David D. DeCastro
OFFICE: 322A Harrington Building
PHONE: (508) 830-5000
EMAIL: ddecastro@maritime.edu

Course Venue

MT3261-21	Bresnahan Building, Room 303	Tuesday/Thursday/Friday	0800-0850
MT3261-23	Bresnahan Building, Room 305	Tuesday/Thursday	0950-1040
MT3261-23	Bresnahan Building, Room 303	Friday	0950-1040

Required Textbook

Marine Cargo Operations, A Guide to Cargo Stowage, Third Edition, R.J. Meurn, C.L.Sauerbier, (Centreville, MD, Cornell Maritime Press, 2004) (ISBN 0-87033-550-2)

Description

Containerization and Modern Cargo Stowage (MT3261) is a three credit lecture course offered at the Massachusetts Maritime Academy. This course is required by the Standards of Training and Certification for Watchkeepers (STCW) for all deck license candidates. The course will encompass the knowledge, comprehension and application of practical skills required of a deck officer during cargo operations aboard a wide range of modern cargo vessel types.

Scope

This syllabus covers the requirements of the 1978-STCW Convention, regulation II/4, appendix, paragraph 18 and the recommendation in the IMO/ILO Document for Guidance, 1985, section 15 as well as 46 CFR 10.910, Subjects for Deck licenses of the United States code. The course covers the cleaning and preparation of holds and deep tanks, dunnaging, stowage, separation and securing of various cargoes, including the precautions to be taken with bulk and deck cargoes for the safety of the ship. The classification of dangerous goods and the labeling and marking requirements of the International Maritime Dangerous Goods Code are dealt with. The course also deals with ships' cargo gear and the methods of using it for handling various types of cargo. The use of cargo plans and calculations of space and weight are dealt with.

Objective

On completion of the Containerization and Modern Cargo Stowage (MT3261) course, students should be familiar with the principles of modern cargo stowage. Students will be able to supervise the preparation and dunnaging of holds and the operation of ships' cargo gear and will be aware of the importance of adequately securing cargo to prevent damage to the ship or cargo aboard break-bulk, container, lash, Seabee, and neo-bulk cargo vessels. Students will identify dangerous goods and know that they are to be stowed and separated according to the requirements of the IMDG Code. They will also know the hazards related to some bulk cargoes and the precautions to take during their loading and carriage.

Entry Standards

This course is presented in English. Students must be able to read, write, speak and understand English. This course is open to any cadet. The educational co-requisite requirement for Containerization & Modern Cargo Stowage (MT3261) is Basic Seamanship (MT2231)

Course Limitations (Intake)

Course intake should be limited to 35 students for classroom lectures

Teaching Facilities and Equipment

The Containerization and Modern Cargo Stowage (MT3261) course will be presented in the Massachusetts Maritime Academy's academic facilities, Bresnahan Building room 303 & 305. The classroom is equipped with a black/white board or flip chart supported by audio-visual aids when making use of audio-visual materials such as personal computer presentation software, transparencies, videos or slides will be provided for lectures.

In addition, practical laboratory sessions may be conducted at the Academy's full equipped Seamanship Laboratory, waterfront facilities and aboard the U.S.T.S. Kennedy, T.V. Ranger or T.V. Towline whenever instruction requires access to a vessel, the water, or the use of SOLAS/U.S. Coast Guard approved equipment.

The following items of equipment are desirable:

- Photographs, overhead transparencies, drawings and plans illustrating various types of ship and cargo system details.
- Working models of booms and/or cranes to illustrate different rigs used in handling cargo;
- Models or drawings of various types of hatch cover and their operating and securing arrangements;
- Examples of cargo plans for various types of ship.

Teaching Aids (A)

A1 Containerization and Modern Cargo Stowage (MT3261) Instructor Manual
A2 Classroom handouts/notes
A3 Audiovisual aids: Overhead projector with transparencies
A4 Audiovisual aids: Video projector
A5 Audiovisual aids: Multimedia projector with computer
A6 Personal computer
A7 Cutaway equipment
A8 U.S.T.S. Kennedy, equipment and fittings
A9 T.V. Ranger, equipment and fittings
A10 T.V. Towline, equipment and fittings

References (R)

R1 International Conference on Training and Certification of Seafarers, 1978, including the International Convention on Standards of Training, Certification and Watchkeeping for Seafarers, 1978 (STCW) (IMO Sales No. 938 78.15.E)
R2 IMO/ILO Document for Guidance, 1985 (IMO Sales No. 935 87.08.E)
R3 International Convention for the Safety of Life at Sea, 1974, as amended (SOLAS) (IMO Sales No. 110 86.02.E)
R4 International Maritime Dangerous Goods Code (IMDG Code), (1990 edition) (IMO Sales No. 200 89.10.E)
R5 Reference labels and placards for the carriage of dangerous goods (1988 edition) (IMO Sales No. 213 88.05.E)
R6 Medical First Aid Guide for Use in Accidents Involving Dangerous Goods (MFAG) (Included in the Supplement to the IMDG Code) (IMO Sales No. 210 89.09.E)
R7 Emergency Procedures for Ships Carrying Dangerous Goods (EmS) (Included in the Supplement to the IMDG Code) (IMO Sales No. 210 89.09.E)
R8 Code of Safe Practice for Solid Bulk Cargoes (1989 edition) (IMO Sales No. 260 89.03.E)
R9 Code of Safe Practice for Ships Carrying Timber Deck Cargoes (1981 edition) (IMO Sales No. 275 81.05.E)
R10 R9 Code of Safe Practice for Cargo Stowage and Securing (1994 edition) (IMO Sales No. 292 E)
R11 Assembly resolution A.288(VIII) - Recommendation on the safe stowage and securing of containers on deck on vessels which are not specially designed and fitted for the purpose of carrying containers
R12 Assembly resolution A.489 (XII) - Safe stowage and securing of cargo units and other entities in ships other than cellular container ships

Textbooks (T)

T1 R.J. Meurn, C.L.Sauerbier, *Marine Cargo Operations, A Guide to Cargo Stowage, Third Edition* (Centreville, MD, Cornell Maritime Press, 2004) (ISBN 0-87033-550-2)
T2 A wide range of text and reference materials will be posted on Blackboard for student use.

Bibliography/Textbooks (B)

B1 J. R. Immer, *Cargo Handling* (Washington D.C., Work Saving International, 1984) (ISBN 0-914501-03-8)

B2 H.I. Lavery, *Shipboard Operations, 2nd Edition,* (London, Heinemann, 1990) (ISBN 0-434-91091-0)

B3 Oram, R.B. & Carfrea, A.H., *Glossary of Cargo Handling Terms, 3rd Edition*, (1991) (ISBN 0-85174-579-2)

B4 Taylor, L.G., *Cargo Work 12th Edition*, (ISBN 0-85174-605-5)

B5 Thomas, O.O., Agnew, J. & Cole, K.L., *Thomas' Stowage: The Properties and Stowage of Cargoes 2nd Edition*, (ISBN 0-185174-503-2)

B6 Muller, G., *Intermodal Freight Transportation, 2nd Edition*, (Washington, DC 1989)

B7 Murphy, II, J.S., Deck Officer Study Guide, Volume 1, Deck General, 2009 ed., (Buzzards Bay, MA: Academy Publishing Company, 1998)

B8 Murphy, II, J.S., Deck Officer Study Guide, Volume 3, Deck Safety, 2009 ed., (Buzzards Bay, MA: Academy Publishing Company, 1998)

B9 Murphy, II, J.S., Deck Officer Study Guide, Volume 6, Deck Examination Illustration Booklet, 2009 ed., (Buzzards Bay, MA: Academy Publishing Company, 1998)

B10 Marine Safety Committee, *Guidelines for Preparation of the Cargo Securing Manual*, (Washington, DC June 1996) Circular (MSC/Circ.745)

B11 Department of the Navy, Sea Systems Command, *MPS Crane Operation, Student Training Guide*, T-ACS 4 Class Mission Handbook, Course No. G-060-2106, Navy Cargo Handling Battalion One, (Williamsburg, VA 1998)

Course Structure

Containerization and Modern Cargo Stowage (MT3261) is a three credit course, involving three (3) lectures per week. The course objectives will be achieved through a structured curriculum, which includes a comprehensive introduction to the principles of cargo stowage, classroom lectures, discussion, student assignments as well as a rigorous testing program. The lecture segment will provide theoretical and practical knowledge necessary to demonstrate competency in all of the topic areas.

Methods of Demonstrating Competence

The methods chosen to carry out an evaluation will depend upon what the candidate is expected to achieve in terms of knowledge, comprehension and application of the course content.

The methods used may include:

- Direct observation and participation in classroom training.
- Oral examination a simple question-and-answer discussion with the candidate (either individually or as a group)
- Objective testing utilizing written test instruments consisting of any of the following formats: prepared multiple choice tests requiring the selection of correct or best responses from given alternatives, the correct matching of given items, the supply of short fill-in answers, the supply of more extensive essay written responses to prepared questions or mechanical drawings and technical sketches.

- Practical demonstration where the course content is aimed at the acquisition of practical skills, the test may involve a practical demonstration by the candidate making use of appropriate equipment, tools, or simulation.

The responses demanded may therefore consist of:

- the recall of facts or information, by oral response or objective tests
- the practical demonstration of an attained skill
- the oral or written description of procedures or activities
- rendering technical drawings, diagrams or sketches of vessel components and/or systems
- the identification and use of data from diagrams, drawings, publications, charts, tables, etc.
- carrying out calculations to solve numerical problems
- the writing of an essay, journal, or technical report (i.e. workbook assignments)

Massachusetts Maritime Academy is committed to providing reasonable accommodations to students with documented disabilities. Students who believe they may need accommodations in this class are required to contact Dr. F.M. Tishkevich, Interim, Director of Disability Compliance, within the first two weeks of class. ftishkevich@maritime.edu or Extension 1409.

Examinations and Grading

Unit examinations and quizzes will be administered during the lecture segments. Unit examinations will be announced and given during a full lecture period. Segment quizzes may be announced or unannounced and of such duration as required for completion at their discretion of the instructor. Examinations and quizzes may utilize written test instruments consisting of any of the following formats: prepared multiple choice tests requiring the selection of correct or best responses from given alternatives, the correct matching of given items, the supply of short fill-in answers, the supply of more extensive essay written responses to prepared questions or mechanical drawings and technical sketches.

STCW knowledge-based assessments will be conducted as part of this course. Students will be required to achieve a minimum grade of 70% in this course to satisfy the knowledge components of STCW. Individuals failing to achieve a minimum grade of 70% will be required to retake this course and achieve a minimum grade of 70% prior to graduation.

Final Exam:

The final examination will be held during the final exam week in June. The final examination will be a cumulative capstone examination covering all of the course content.

Final Grade:

Segment quizzes and unit exams	75%
Final Examination	25%
	100%

The following is a breakdown of the final course grading:

100 – 92.9	A
92.9 – 90.0	A-
89.9 – 87.0	B+
86.9 - 83.0	B
82.9 – 80.0	B-
79.9 – 77.0	C+
76.9 – 73.0	C
72.9 – 70.0	C-
69.9 – 67.0	D+
66.9 - 63.0	D
62.9 – 60.0	D-
Below 60.0	F

Syllabus Changes

The syllabus and course schedule is tentative and may be adjusted as required to meet the goals and objectives of the course. Notice of changes will be made to students as soon as possible.

Use of Laptop Computers

The use of laptop computers during classroom lectures is prohibited. Students will print the lecture notes posted on Blackboard and bring them to every class in addition to the required textbook. Failure to observe this policy will result in an absence from class being awarded.

Course Outline

WEEK	LECTURE	MEETING	TOPIC
1	1	1	Introduction to Containerization & Modern Cargo Stowage (MT3261). Course expectations, assignments, classroom policies, curriculum standards, attendance, examination format and assessment criteria
1	2	2	Innovations in the carriage of goods at sea. a. Introduction b. Background
2	1	3	Innovations in the carriage of goods at sea. c. Containerization
2	2	4	Innovations in the carriage of goods at sea. d. Documentation
3	1	5	Cargo responsibility a. Introduction b. Harter Act of 1893 c. Carriage of Goods by Sea Act of 1936 d. Advantages of uniform allocation of cargo responsibility e. Cargo claims and minimizing losses
3	2	6	Cargo responsibility f. Deck officer's responsibility in the stowage of containers
4	1	7	Principles of materials handling and stowage a. Stowage Principle 1: Protecting the ship b. Stowage Principle 2: Protecting the cargo c. Stowage Principle 3: Maximum use of available cubic
4	2	8	Principles of materials handling and stowage d. Stowage Principle 4: Rapid and systematic loading and discharge e. Stowage Principle 5: Safety of crew and longshoremen
5	1	9	Planning the stowage and preparing the cargo a. Planning complications b. Tentative cargo plan c. Capacity plan
5	2	10	Planning the stowage and preparing the cargo d. Final stowage plan e. Preparation of the cargo spaces f. Checking the condition of the cargo hold
6	1	11	Stowage of general cargo a. Stowage of important cargo types b. Stowage of lumber
6	2	12	Stowage of general cargo c. Stowage of refrigerated cargo d. Stowage factor

WEEK	LECTURE	MEETING	TOPIC
7	1	13	Stowage of hazardous cargo: Hazardous materials regulations a. International Maritime Dangerous Goods Code (IMDG Code)
7	2	14	Stowage of hazardous cargo: Hazardous materials regulations b. 49 CFR Parts 100-185
8	1	15	Stowage of hazardous cargo: Hazardous materials regulations c. 46 CFR Parts 140-155
8	2	16	Proper care for the cargo: Ventilation of cargo holds a. Elements of the ventilation problem b. Terms of psychrometry c. How to use the psychrometry chart d. Hygroscopic moisture transfer
9	1	17	Proper care for the cargo: Ventilation of cargo holds e. Moisture equilibrium chart f. Control of stowage atmosphere by the commodity g. Dew point control
9	2	18	Marine materials handling equipment a. Ship's equipment b. Calculations of stress
10	1	19	Marine materials handling equipment c. Working above normal loads d. Modifications of the married fall
10	2	20	Marine materials handling equipment e. Additional methods of handling cargo f. Shoreside materials handling equipment
11	1	21	Cargo calculations pertaining to marine cargo stowage a. Vertical weight distribution b. Longitudinal weight distribution
11	2	22	Cargo calculations pertaining to marine cargo stowage c. Change in draft due to density d. Weight concentration
12	1	23	Cargo calculations pertaining to marine cargo stowage e. Deck load capacity f. Height limitations g. Maximum use of available cubic capacity
12	2	24	Cargo calculations pertaining to marine cargo stowage h. Stowage factor i. Boom stress problems
13	1	25	Stowage of bulk grain
13	2	26	Stowage of bulk grain
14	1	27	Course review
14	2	28	Final examination

Massachusetts
Maritime Academy

CONTAINERIZATION & MODERN CARGO STOWAGE (MT3261)

TO: Captain David D. DeCastro

FROM: Enrolled Students

SUBJECT: RECEIPT OF COURSE DOCUMENTS

I have received, reviewed and understand the *Classroom Procedures and Policies*, as well as the *Course Syllabus* for Containerization & Modern Cargo Stowage (MT3261).

NAME: _____

STUDENT ID NUMBER: _____

CLASS: _____

DATE: _____

Massachusetts Maritime Academy

GLOBAL MARITIME DISTRESS AND SAFETY SYSTEM II

COURSE MT 4122 (Credits - 3)

REVISED: September 6, 2010 Fall Semester Academic Year 10-11

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1. Instructors

Professor: Dr. James J. Fitzpatrick, USCG MASTER UNLIMITED

Professor: CAPT Robert Buckley, USN ret.

Professor: CAPT Kurt DeCicco

OFFICE: 3rd Deck Bresnahan Building Room C303

I can be reached by telephone at extension 2109 or in the Lab at 2013. If you can't reach me at the above number you may leave a message and I will return the call. If you need to reach me in an emergency please call my cell phone number: *508-736-5113*. I can also be reached via email at jfitzpatrick@maritime.edu

Mass Maritime is committed to providing reasonable accommodations to students with documented disabilities. Students who believe they may need accommodations in this class are required to contact Dr. Fran Tishkevich, Director of Disability Compliance, within the first two weeks of class. Dr. Tishkevich can be reached at ftishkevich@maritime.edu and at ext 2208.

MMA Health Services realizes that students may encounter situations which could impede their academic, personal and social development and success. Counseling services are designed to help students address these concerns, increase their self-awareness and empower them to manage challenging areas in their lives. To schedule a confidential appointment please email kshineobrien@maritime.edu or call ext 1480.

2 Catalog Description

Pre-requisite: MT3221

Students will be taught to operate the radio communications equipment required on board GMDSS-compliant vessels. Students will become proficient with GMDSS equipment

and procedural operation along with developing knowledge of radio wave propagation. The GMDSS I and GMDSS II courses contain all of the elements contained in the GMDSS model course developed in the United States. This course satisfies the requirements necessary to earn the classroom and laboratory STCW-95 endorsement as a Global Maritime Distress and Safety System Operator.

3. Text

T1 - Introduction to GMDSS, J. Patrick Allen, Mercomms unlimited, 2nd edition 2007

4. Supplementary Reading

47 CFR Part 80.

Marine Radio navigation and Communications, Monroe and Bushy, 1998.

5. Class Format

Role playing, Critical Thinking and Lecturettes with group discussions. Class participation includes: class attendance, attentiveness, good behavior and respect for classmates and the instructor. All these factors are considered for your class participation grade.

6. Learning Objectives

As per US GMDSS Task Force syllabus

This course is designed to meet all GMDSS STCW 95 knowledge based and competency assessments, which form part of the requirement for Officer in Charge of a Navigation Watch (STCW 95).

The aim of the course is to provide the student with a comprehensive and practical understanding and operation of the GMDSS.

Massachusetts Maritime Academy

GLOBAL MARITIME DISTRESS AND SAFETY SYSTEM II

COURSE MT 4122 (Credits - 3)

REVISED: September 6, 2010 Fall Semester Academic Year 10-11

Learning Outcomes

Upon completion of the course the student will be able to operate and stand a radio watch for a shipboard GMDSS station. The student will be able to send distress, safety and urgency messages to ship and shore based radio stations. The student will have sufficient theoretical knowledge of GMDSS to sit for the FCC GMDSS General Operators license.

GMDSS Competencies

There will be 2 chances to demonstrate competencies on each piece of equipment set forth by the US GMDSS Task Force.

A student that passes the competencies on the first attempt will receive a mark of 100. A student that passes on the second attempt will receive a mark of 75.

* **Should a student fail to demonstrate competency during the second attempt on any piece of equipment s/he will fail the course.** There will be no exceptions made to this policy.

Examinations and Quizzes: There will be one quiz per week covering all material addressed in the course prior to the quiz. A passing grade of ***75%*** is required for issuance of the STCW'95 endorsement and FCC GMDSS General Operator License.

Final Grade Calculation:

1) Average of Quiz grades	30%
2) GMDSS Competencies	30%
3) Mid-Term Examination	15%
4) Final Examination	15%
5) Attendance	10%
	100%

The following is a breakdown of the final course letter grading:

89.0 - 100.0 A

87.0 – 88.9	A - minus
85.0 – 86.9	B+
83.0 – 84.9	B
81.0 – 82.9	B - minus
79.0 – 80.9	C+
77.0 – 78.9	C
75.0 – 76.9	C- minus
73.0 – 74.9	*D+*
71.0 – 72.9	*D*
69.0 – 70.9	*D-*
Below 69.0	*F*

A grade below C- minus (indicated in red italic) does not satisfy the STCW requirement and constitutes retaking of the entire course for STCW credit.

Additionally, the FCC element 7 (GMDSS General Operator) license is required for issuance of the STCW certificate for OICNW. Students will find test centers for this license at the Federal Communications web site (www.fcc.gov).

8. Attendance Policy

ATTENDANCE AT ALL CLASSES IS MANDATORY. Unauthorized absence will not be tolerated. Disciplinary action and/or grade point reduction will be administered to repeat offenders. ***More than four (4) absences of any nature will result in a failure to meet the STCW '95 attendance policy and consequently means course failure.***

The following Scale will be used for the attendance grade in the course.

# of Absences	Grade
0	100
1	90
2	80

3	50
4	0
5	Failure of Course

Authorized absences should be reported to me the day of the missed class, preferable by voice mail or email. Make-up examinations for authorized periods of absence will be scheduled for a mutually agreed upon time. **Authorized** absences still constitute an absent and are governed by the above scale as set forth by the Academy's STCW course submittal.

NOTE: Examinations missed as a result of an unauthorized absence will receive a grade of ZERO.

9. Syllabus Changes

The syllabus and course schedules are tentative and may be adjusted as required to meet the goals and objectives of the course and the Academy. Notice of changes will be made to students and the Academy as soon as possible.

Massachusetts Maritime Academy

GLOBAL MARITIME DISTRESS AND SAFETY SYSTEM II

COURSE MT 4122 (Credits - 3)

REVISED: September 6, 2010 Fall Semester Academic Year 10-11

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10. COURSE OUTLINE AND SCHEDULE

LESSON TOPICS BY CLASS MEETINGS

Lesson	*Week Ending*	*Lesson Topic*
1.	09/03	Course Overview and Review of GMDSS 1
2.	09/10	Part 80 Rules and Regulations / Basic Communications *Quiz 1*
3.	09/17	Purpose and use of Digital Selective Calling (DSC) facilities *Quiz 2*
4.	09/24	NBDP *Quiz 3*
5.	10/01	INMARSAT Systems *Quiz 4*
6.	10/08	Theoretical and Practical use of Ship Station Equipment MF/HF *Quiz 5*
7.	10/15	MF/HF *Quiz 6*
8.	10/22	Survival Craft Transceivers / Batteries / Fault Location / EPIRB *Quiz 7*
9.	10/29	SART / Marine Safety Information / Search and Rescue *Quiz 8*
10.	11/05	Distress, Safety, and Urgency Communications Procedures *Quiz 9*
11.	11/12	False Alerts, Equipment Tests, Radio Log keeping *Quiz 10*
12.	11/19	Radio Voyage Planning
13.	12/03	Sea Term Voyage Planning Workshop
14.	12/10	USCG Rescue 21
15.	12/17	NTSB SAR Case Studies

11. LABORATORY OUTLINE AND SCHEDULE SECTION 22 & 25

LABORATORY TOPICS BY CLASS MEETINGS

LAB#	*Day*	*Date*	*Lesson Topic*
01.	TUES	09/07	GMDSS Laboratory Equipment familiarization - rules and safety
02.	TUES	09/14	VHF Radiotelephone and DSC explanation & Tutor
03.	TUES	09/21	VHF Radiotelephone and DSC competencies demonstration
04.	TUES	09/28	VHF Radiotelephone and DSC competency practice
05.	TUES	10/05	INMARSAT C explanation & Tutor
06.	TUES	10/19	INMARSAT C competencies demonstration
07.	TUES	10/26	INMARSAT C competencies practice
08.	TUES	11/02	MF/HF Radiotelephony explanation & Tutor
09.	TUES	11/09	MF/HF SITOR explanation & Tutor
10	TUES	11/16	MF/HF competency practice
11.	TUES	11/23	STCW Competency Examinations INMARSAT C & VHF DSC
12.	TUES	11/30	***Make up Competencies*** INMARSAT C & VHF DSC
13.	TUES	12/07	STCW Competency Examinations MF/HF/DSC/SITOR
	Final Exam Day		***Make up Competencies for MF/HF/DSC/SITOR***

11. LABORATORY OUTLINE AND SCHEDULE SECTIONS 31

LABORATORY TOPICS BY CLASS MEETINGS

LAB#	*Day*	*Date*	*Lesson Topic*
01.	WED	09/08	GMDSS Laboratory Equipment familiarization - rules and safety
02.	WED	09/15	VHF Radiotelephone and DSC explanation & Tutor
03.	WED	09/22	VHF Radiotelephone and DSC competencies demonstration
04.	WED	09/29	VHF Radiotelephone and DSC competency practice
05.	WED	10/06	INMARSAT C explanation & Tutor
06.	WED	10/13	INMARSAT C competencies demonstration
07.	WED	10/20	INMARSAT C competency practice
08.	WED	10/27	MF/HF Radiotelephony explanation & Tutor
09.	WED	11/03	MF/HF SITOR explanation & Tutor
10.	WED	11/10	MF/HF competency practice
11.	WED	11/12	STCW Competency Examinations INMARSAT C & VHF DSC
12.	WED	11/17	***Make up Competencies*** INMARSAT C & VHF DSC
13.	WED	12/01	STCW Competency Examinations MF/HF/DSC/SITOR
	Final Exam Day		***Make up Competencies for MF/HF/DSC/SITOR***

MASSACHUSETTS MARITIME ACADEMY
DEPARTMENT OF MARINE TRANSPORTATION
APPLIED SHIPHANDLING II (MT4131)
RANGER COMPONENT

Learning Objectives

The students who have successfully completed Applied Shiphandling II will have gained experience in handling vessels in actual and simulated conditions and thereby will be able to make a more effective contribution to the bridge team during ship maneuvering operations. In particular, students will gain familiarization in the use of engines and helm for ship maneuvering, an understanding of the effects on the behavior of the ship due to wind, current, shallow water, banks and narrow channels, and condition of loading. The student will also gain a greater awareness of the importance of passage planning or maneuvering, vessel operations, docking, contingency planning, and a greater understanding of efficient bridge procedures.

This program is designed to provide the students with the opportunity to develop skills and proficiency in topics of study offered in the following prerequisites: MT1221 (Coastal Nav I) , MT2231 (Basic Seamanship), MT2161 (Rules), MT3222 (ARPA), and MT3231(Applied Ship I)

In recognition of the intense learning environment offered in the Applied Shiphandling Program, the U.S. Coast Guard awards sea time equivalency.

Learning Outcomes

Upon successful completion of Applied Shiphandling II the student will be familiar with the safe operation of a vessel. This will include navigation, linehandling, emergency procedures, vessel operational and lifesaving systems, anchoring, radar navigation and collision avoidance and operating within the colregs. The students will have operated the T/V RANGER in coastwise exercises and docking evolutions. They will have successfully completed six STCW competencies demonstrating some of the aforementioned evolutions. The student will have the knowledge, and some experience, in getting a vessel underway, completing a voyage through proper voyage planning and safely arriving back in port.

Instructor

Captain George A. Benway III

Office: HAR 318A Ext 1504 gbenway@maritime.edu

Office Hours; Mon and Wens 1230 - 1415

Text

APPLIED SHIPHANDLING RANGER MANUAL, **11th Edition** Captain Patrick J. Modic

Grading

A. The instructor intends to administer a short test every week while on board the T/V Ranger. There will be a total of five tests. The first will be given during the second lab and will include material from both labs. The weekly tests are intended to assess the student's preparedness to execute the scheduled training evolution for that particular day. **Questions on the tests will be based on material and lessons found in the assigned readings, prerequisite courses, and prior labs.**

B. In the process of executing the tasks that comprise the scheduled learning objectives, students will be individually assessed on their attitude and aptitude. This weekly participation grade is a qualitative assessment in four major areas: attitude, preparation, initiative, and demonstrable skills.

C. The Ranger component of the Applied Shiphandling II grade will be comprised of the average of weekly tests weighted 70% and weekly participation 30%.

D. The final Applied Shiphandling II grade will be comprised of both the simulator grade and the Ranger grade.

E. There are seven performance-based assessments (STCW) associated with this course (these are described in appendix 1). The performance-based assessments are Pass/Fail. These performance-based assessments will be administered during the academic semester. Per departmental policy individuals will be allowed two opportunities during the lab period to demonstrate proficiency. Individuals failing to pass the performance-based assessments will be issued an incomplete for the semester if they otherwise pass the course.

Miscellaneous

A. The Academic Code of Conduct will be strictly enforced.

B. Each student is responsible for assignments and work covered in the scheduled training evolution whether he/she is present or not.

C. Attendance is a course requirement. Because of the sea time connected with the completion of this program, there are no unauthorized absences. More than one emergency absence, for **whatever reason**, will result in an incomplete. A Cadet who misses a lab shall report to the instructor ASAP to arrange a makeup lab. An incomplete will turn into a failure two weeks into the next semester.

D. Office hours are established to allow the student the opportunity to consult with the instructor. Office hours are the ideal forum to discuss individual professional progress and to answer additional questions. Students schedules may conflict with the posted office hours, therefore the instructor will make themselves available around the students schedule when necessary. If you are having a problem, do not hesitate to see your instructor.

E. If you are a student with a documented learning disability, and feel you will need accommodations in this class, please contact the Disability Resource Officer Professor Tishkevich at ext 2208 or e-mail her at ftishkevich@maritime.edu to discuss appropriate accommodations as allowed by the ADA/USCG.

F. You will be treated and expected to behave as the professionals you are aspiring to be.

MASSACHUSETTS MARITIME ACADEMY
DEPARTMENT OF MARINE TRANSPORTATION
APPLIED SHIPHANDLING II (MT4131)

RANGER COMPONENT

Fall Semester 2010

From: Capt. George A. Benway III, Instructor
To: Applied Shiphandling II Students, FAll Semester 2010.
Subject: **Auxiliary Training Vessel RANGER, training schedule.**

1. The *T.V. Ranger* will be made available for cadet navigation and seamanship training in accordance with the schedule provided in paragraph 6.

2. Students will report to the *T.V. Ranger* for their respective modules on labs indicated in paragraph 6. A section scheduled for training on a given date will report to the vessel, and those not scheduled for the *T.V. Ranger* will report to the ship simulator.

3. **In preparation for each Ranger Lab, students will read and study the assigned Module contained in the Applied Shiphandling Ranger Manual, 11th Edition, by Captain Patrick J. Modic, and the assigned readings at the end of each assigned module. Additionally students will know the tides, currents, and weather for the day's voyage.** Students will report to the *T.V. Ranger* on their assigned dates prepared to begin the lab with proper uniforms as indicated by the Commandant's Office for lab classes, to include steel-toed boots, flashlights, pocket knives, work gloves, and foul weather gear. It is advised that you dress very warmly with layers of clothing, as you will be spending time both inside the wheelhouse and on deck. Do not assume that adverse weather will result in a lab cancellation. Voyage cancellations are at the discretion of the Master of the *T.V. Ranger,* Captain Brendan Roper.

4. The lab indicated for SHIPHANDLING II-Dock/Undock will be carried out in New Bedford. As the date nears arrangements will be made for transportation, meals.

5. There will be five examinations given starting on the second lab. The first test will be comprised of material from prerequisite subjects to include; rules, radar, seamanship etc. as well as the required reading and notes from the first two labs. Each subsequent week's test will focus on the Modules assigned for that particular week, however all material covered in prior labs, readings and prerequisite classes may be on tests as well.

6.

LAB	*TRAINING SUBJECT*	*READING*
1)	SHIPHANDLING I & RADAR SYSTEMS	Modules 11 & 15
2)	MAGNETIC COMPASS DEVIATION	Modules 8 & 9
3)	SHIPHANDLING II-DOCK/UNDOCK	Module 12
4)	COASTAL NAV. EX. & ANCHOR WORK	Modules 10 & 13
5)	COASTAL NAVIGATION EXERCISE I	Module 10
6)	COASTAL NAVIGATION EXERCISE II	Module 1-16

7. Students are to be aboard the *T.V. Ranger* at 0730 for an 0800 departure. In the event of a cancellation, dates, and/or the order of training events may be adjusted.

8. During each session aboard the *T.V. Ranger* cadets will be assigned duties on the T.V. RANGER EMERGENCY STATION BILL BILLET (APPLIED SHIPHANDLING RANGER MANUAL, 11th ed., pages 2-1 and 2-2, Capt. Patrick J. Modic). Cadets will be assigned a different duty each session in order that everyone is given a chance at each of the different assignments (Billets 4 through 7). **Cadets are required to know their emergency station / assignment upon signing on board.**

9. Assignment of these training subjects is derived from IMO Shiphandling, Bridge Resource Management, and *T.V. Ranger* Joint Training Programs (Version: SHBRMTVR 01-98).

Fall 2010 - Applied Shiphandling Schedule

Sept			1 Academic Orientation Day	2 4131-41 Intro 4131-91 Intro	3
	6 Labor Day	7 Ship I-21 Intro Ship II-21 Intro	8 Last day to add 4131-31 Intro 4131-81 Intro	9 4131-41 Systems 1&2 4131-91 Sim	10
	13 4131-11 Intro 4131-61 Intro	14 Ship I-21 Systems 1 Ship II-21 Sim	15 4131-31 Sim 4131-81 MOB	16 4131-41 Sim 4131-91 Systems 1&2	17
	20 4131-11 MOB 4131-61 Sim	21 Ship I -21 Sim Ship II -21 MOB	22 Last day to drop 4131-31 MOB 4131-81 Sim	23 4131-41 MOB 4131-91 Sim	24
Oct	27 4131-11 Sim 4131-61 MOB	28 Ship I -21 MOB Ship II 21 Sim	29 4131-31 Sim 4131-81 Comp / R Nav	30 4131-41 Sim 4131-91 MOB	1
	4 4131-11 Comp / R Nav 4131-61 Sim	5 Ship I -21 Sim Ship II -21 Comp / R Nav	6 4131-31 Comp - R Nav 4131-81 Sim	7 4131-41 Comp / R Nav 4131-91 Sim	8
	11 Columbus Day	12 Mon Schedule 4131-11 Sim 4131-61 Comp / R Nav	13 4131-31 Sim 4131-81 Anchor	14 4131-41 Sim 4131-91 Comp / R Nav	15
	18 4131-11 N:B 4131-61 Sim	19 Deficiencies Due Ship I -21 N:B Ship II -21 Sim	20 4131-31 N:B 4131-81 Sim	21 4131-41 N:B 4131-91 Sim	22
	25 Uniform Change 4131-11 Sim 4131-61 N:B	26 Ship I -21 Sim Ship II -21 N:B	27 4131-31 Sim 4131-81 N:B	28 4131-41 Sim 4131-91 N:B	29
Nov	1 4131-11 Anchor 4131-61 Sim	2 Ship I -21 Comp / R Nav Ship II -71 Sim	3 4131-31 Anchor 4131-81 Sim	4 4131-41 Nav 1 4131-91 Sim	5
	8 4131-11 Sim 4131-61 Anchor	9 Ship I -21 Sim Ship II -21 Anchor	10 Last Day w'draw 4131-31 Sim 4131-81 Nav 1	11 Veteran's Day	12
	15 4131-11 Nav 1 4131-61 Sim	16 Ship I -21 Nav 1 Ship II -21 Sim	17 4131-31 Nav 1 4131-81 Sim	18 4131-41 Sim 4131-91 Nav 1	19
	22 4131-11 Sim 4131-61 Nav 1	23 Ship I -21 Sim Ship II -21 M/U	24 Travel Day	25 Thanksgiving	26 Vacation
Dec	29 4131-11 Nav 2 4131-61 Sim	30 Ship I -21 Nav 2 Ship II -21 Sim	1 4131-31 Sim 4131-81 Nav 2	2 4131-41 Nav 2 4131-91 Sim	3
	6 4131-11 Sim 4131-61 Nav 2	7 Ship I -21 Sim Ship II -21 Nav 1	8 4131-31 Nav 2 4131-81 Sim	9 4131-41 Sim 4131-91 Nav 2	10
	13 4131 - 11 M/U 4131 - 61 Sim	14 End Academics Ship I - 21 M/U Ship II - 21 Nav II	15 Begin Finals	16	17
	20	21 Last Day of Finals	22 Grades Due by 0900		27 Academic Board Meets 0900 END TERM

Captain G. Benway

8/2010

MASSACHUSETTS MARITIME ACADEMY

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DEPARTMENT OF MARINE TRANSPORTATION

MT 4131 Applied Shiphandling II

FALL 2010

Course Syllabus

The stated general objectives of Applied Shiphandling II are as follows:

- Demonstrate capability of successfully performing all the responsibilities of the deck watch officer
- Further develop and solidify student practical watchkeeping skills
- Further develop and solidify student practical navigational skills
- Prepare the student for knowledge / practical STCW assessments directly pertaining to – *Officer in Charge of a Navigational Watch; Bridge Resource Management; and Member of a Bridge Team*

Specific Learning Objectives - "the expected learning outcome will provide knowledge of": basic principles of chart usage, methods of position fixing, performance standards of radar/arpa, use of nautical publications; familiarization with bridge equipment; standard ship maneuvers, i.e. turning circles, crash stops, loaded vs. ballast maneuvers, rudder cycling; the effects of wind and current; the effects of shallow water; bank, channel and interaction effects; anchoring maneuvers; execution of emergency procedures; and the planning and carrying out of voyages.

Learning Outcomes:

- Student will demonstrate knowledge of principles of: watch arrangements; navigational equipment; navigational duties; navigation with pilot embarked
- Student will demonstrate knowledge of chart projections and datum; navigational aids; navigation light characteristics
- Student will demonstrate ability to fix position by all available means
- Student will demonstrate knowledge of nautical publications – tide/current tables; list of lights; light lists; coast pilot; sailing directions; port index; notice to mariners; radio navigation aids
- Student will demonstrate ability to execute radar navigation – accuracy of range/bearing measurements; characteristics of targets; position fixing; parallel indexing
- Student will demonstrate knowledge of bridge familiarization – instrument operation; rudder/engine controls; bow thruster; gear testing; navigation lights
- Student will demonstrate ability to maneuver various vessel types –longitudinal motion; rotational motion; lateral motion; turning circles; stopping; pivot point and trim; pilot cards; constructing a wheelhouse poster; loaded vs ballast maneuvering
- Student will demonstrate knowledge of wind and current effects on maneuvering – compares the differences in ship behavior when being influenced by wind and/or current in both the loaded and light condition

- Student will demonstrate knowledge of shallow water effects – impacts on maneuvering caused by shallow water(increase in turn radius and directional stability; change of trim); squat determination; under-keel-clearance
- Student will demonstrate knowledge of channel/bank effects and vessel interaction in a channel – understands the moments and forces impacting vessel behavior in a narrow banked channel; speed impact in a narrow channel; passing and overtaking interaction forces; understands interaction between a passing and moored vessel; understands sheer and how to correct for it
- Student will demonstrate ability to anchor and single-buoy moor vessels – determines proper position; takes into account all environmental factors; prepares an anchoring plan (approach tracks, wheel over points, speed adjustment points, backing point, and drop anchor point); carries out(modifies) plan; maintains records and check lists; fixes final position
- Student will demonstrate knowledge of voyage planning – prepares a complete passage plan between two harbors; checklists for arrival, departure, and transit; contingency plans; demonstrates knowledge of traffic separation schemes; maintains records and monitors plan; demonstrate proper communications(internal and external); demonstrate skill in approach to pilot boarding areas; understands role in docking and undocking evolutions
- Student will demonstrate knowledge of bridge emergency procedures: loss of steering; loss of propulsion; loss of power

Individual assessments will be conducted by the Academy STCW Compliance Officer on those individuals who successfully complete this course. Throughout the semester the emphasis will be on improving individual voyage planning; piloting; watchstanding; bridge team management; and ARPA practical skills. The student will be exposed to several Full Mission Ship Simulator scenarios. Each will require thorough preparation, cohesive teamwork, and a skill level equivalent to that necessary to satisfy MT-4253 Watchkeeping Assessments. You must obtain a minimum grade of 70 % (C-) and successfully complete all imbedded practical assessments to receive STCW certification and gain entry into MT-4253.

MT 4131 is an advanced level course. Entry requirements, as defined by USCG course approval, must insure that minimum professional competencies have been achieved prior to course entry. These prerequisites will not be waived. As a condition of entry, each student must certify that they meet all requirements.

The student is expected to be proficient in basic navigation elements, i.e. use of buoyage systems, determination of sunrise/sunset, determination of range of lights, determination of tides and currents for any given area; proper execution of the Navigation Rules both International and Inland; chart work and use of the DR position. Entry into this course requires basic competency in Radar / ARPA. STCW knowledge and practical assessment control sheets are available on request. You are expected to be thoroughly familiar with all performance standards that will be required of you during this course. If at any time you are unsure of what is expected of you, consult me ASAP.

Textbook and Reference Materials

The required textbooks for this course are ***Watchstanding Guide for the Merchant Officer***, Meurn; ***Shiphandling for the Mariner, 4th Edition***, MacElrevey; and ***The Shiphandler's Guide***, the Nautical Institute, Rowe. Current editions of: **Navigation Rules** (COMDTINST M16672.2D); **THE ICS Bridge Procedures Guide; TV Enterprise Vessel Particulars, Standing Orders, and Bridge Procedures Manual** all will serve as course resource material throughout the semester. The student is expected to be familiar with all sections of the following publications: Light Lists; Coast Pilots; Radio Aids to Navigation; Sailing Directions (Enroute & Planning Guides); and NIMA Catalog of Hydrographic Products Part 2-Vol. 1 *Nautical Charts & Publications*. These materials are available in the library on closed reserve and some are in the Bridge Simulator. You are NOT permitted to remove any materials from the simulator without my permission. If you need to re-familiarize yourself with the simulator equipment see me for the appropriate manual. Plan ahead – do not wait until you are scheduled to be either OOW or Navigator to seek this information.

Outcome Assessment Methods

Each student must successfully complete STCW Assessment OICNW-5-1C Crash Stop. Weekly tests will be administered. Test subject matter can come from all previous courses that are required for entry into MT 4131 and will address both knowledge and performance based assessments required for *Officer in Charge of a Navigational Watch; Bridge Resource Management; and Member of a Bridge Team*. Every effort will be made to correct tests within 24 hours and you are encouraged to view your corrected test as soon as possible. There will be regular reading assignments, the contents of which will be incorporated into the tests. Information relevant to the course schedule and test content will be posted on the Marine Transportation bulletin board opposite room 318A Harrington and on Blackboard. It is your responsibility to consult these bulletin boards often for any schedule changes, simulator scenario equipment requirements, or any other course specific information. Each student will be assigned a voyage plan project. This project will be due at mid-term and will be treated as your mid-term examination. Each student will also be graded on your performance during planned simulator exercises. The simulator portion of your course grade will be derived as follows: weekly tests **50%**; simulator performance **25%**; mid-term and final examination **25%**. Your Applied Ship II grade will be comprised of two components: Simulator-weighted **67%** and Ranger-weighted **33%**.

Preparation and Attendance

USCG course approval conditions for Applied Ship II mandate each student to perform a minimum of four hours of self-study to adequately prepare for each scheduled session. I will expect a full commitment by each student to fulfill these goals whether you are acting individually or as a team member for each scenario. Understand that insufficient effort is readily apparent and will not be tolerated. Attendance for all scheduled sessions is **mandatory** and tardiness is unacceptable. If an emergency exists that will impact your attendance you must so notify me as far in advance as possible. Remember that an

individual absence can impact other members of your team by forcing cancellation of an exercise due to insufficient personnel.

YOU ARE ALL VERY CLOSE TO ASSUMING THE ROLE OF A PROFESSIONAL MARINER. DO NOT JEOPARDIZE YOUR CAREER BY RESORTING TO CHEATING. CHEATING IS A BREACH OF THE HONOR CODE AND WILL BE REPORTED TO THE COMMANDANT OF CADETS OFFICE FOR IMMEDIATE DISCIPLINARY ACTION.

Please Note: Massachusetts Maritime 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 Assistant Professor Frances Tishkevich, Director of Disability Compliance Ext. 2208 or ftishkevich@maritime.edu

Captain Robert H. Ford
Assistant Professor
Department of Marine Transportation
rford@maritime.edu
Room 305 Bresnahan Hall - Ext. 1971

Fall 2010 Office Hours:
Monday 1300-1350
Wednesday 1400-1450
Thursday 1000-1050

APPLIED SHIP II – FALL – 2010
Schedule & Reading

TEXTS: 1. ***Watchstanding Guide for the Merchant Officer***
2. ***Shiphandling for the Mariner, 4th edition***
3. ***The Shiphandler's Guide, 2nd edition***

SESSION 1 - INTRODUCTION

1. Course Overview
2. Reading Assignments
3. Simulator Assignments
4. Voyage Plan Project
5. Tests
6. Grading
7. Attendance
8. Assign Simulator Exercise 1
9. Power point – situational awareness
10. Simulator Orientation Exercise – Open Sea – maintain track; assess traffic by all available means; identify traffic; determine risk of collision; implement necessary action; internal/external comms.

SESSION 2

- ***Watchstanding Guide*** – Chapters 1 & 7
- ***Shiphandling for the Mariner*** Chapters 1 & 7 – Arrival and Departure
- Power point on above reading: watchstanding responsibilities; arrival & departure (gear tests); pilot boarding
- Controllable and uncontrollable forces in shiphandling – power point
- *33 CFR 164 Subparts 164.11-164.43*
- Review COLREGS rules 5, 7, 13, 15, 22, 29
- Chart No. 1 – section Q - buoys, beacons
- Assign Voyage Plan Projects
- Definitions page 1
- Test 1 / Simulator Exercise 1

SESSION 3

- ***Watchstanding Guide*** Chapter 3 – voyage plan preparation
- ***Shiphandling for the Mariner*** Chapters 2 & 11 - BRM with Pilot Onboard and Shiphandling in a Channel
- ***The Shiphandler's Guide*** Chapter 7 Interaction
- Watchkeeping in coastal waters
- Tides & Currents
- Review COLREGS rules 6, 14, 18, 19, 26
- Chart No. 1 – sections H, I, J (tides & currents; depths; nature of seabed)
- Test 2 / Simulator Exercise 2

SESSION 4

- ***The Shiphandler's Guide*** Chapters 1 & 2 Pivot Point & Slow Speed
- ***Shiphandling for the Mariner*** Chapter 9 Special Maneuvers pages 211-230 and Chapter 3 Use of Tugs
- ***Watchstanding Guide*** Chapters 5 & 6
- Power point on tugs
- Review COLREGS rules 16, 17, 21, 30
- Bridge Equipment / Bridge Emergency Procedures
- Definitions page 2
- Determination of Set and Drift
- Chart No. 1 sections K,M,N (rocks, wrecks, obstructions; tracks, routes; areas, limits
- Test 3 / Simulator Exercise 3

SESSION 5

- ***Watchstanding Guide*** Chapter 4
- ***Shiphandling for the Mariner*** Chapter 4 Turning & Chapter 8 Anchoring
- ***Shiphandler's Guide*** Chapter 12 pages 153-159 Tugs
- Precision Anchoring
- Review COLREGS rules 8, 9, 10, 35
- Definitions pages 3 & 4
- Sunrise / Sunset problems
- Chart No. 1 – section P (lights)
- Test 4 / Simulator exercise 4

SESSION 6

- ***Shiphandling for the Mariner*** Chapters 5 & 6 Docking & Undocking; Chapter 12 ppg.326-328
- ***The Shiphandler's Guide*** Chapter 8 Effect of Tide
- Record Keeping and Logbook Entries
- Watchkeeping during docking/undocking
- COLREGS Annex V 88.15
- Vessel Bridge-To-Bridge Radiotelephone Regulations (33 CFR 26)
- Visibility of lights
- Test 5 / Simulator Exercise 5
- Turn in Voyage Plan project

SESSION 7

- Review for Final Exam
- Final Simulator Exercise

MASSACHUSETTS MARITIME ACADEMY

DEPARTMENT OF MARINE TRANSPORTATION

STABILITY & TRIM (MT4241)

I. COURSE OBJECTIVE

This course is designed to meet all stability, knowledge based assessments, which form part of the requirements for Officer in Charge of a Navigation Watch (STCW Regulation II/4). Building on the principles of stability, the student will be able to use tables and diagrams of stability and trim data to calculate initial stability, drafts and trim for any given configuration of loading. The student will be trained in computing both longitudinal and transverse stability for any condition during the load-out or discharge through the use of the traditional stability booklet and state of the art stability software. The student will be able to interpret stability information and to identify factors adversely affecting stability. Finally, the student will become familiar with damage stability assessment and fundamental actions to be taken in the event of partial loss of intact buoyancy.

This course builds critical thinking and problem solving skills. Extensive use of homework, computer based training software and in class demonstrations using models will enable the student to analyze and experiment with the principles of stability. The objective of this course is to enable the student to internalize the material presented and to build the mental model necessary to competently function as Officer in Charge of a Navigation Watch.

II. INSTRUCTOR

Capt. Patrick J. Modic

III. TEXT

STABILITY AND TRIM FOR THE SHIP'S OFFICERS
LaDage and Van Gemert edited by George, Fourth Edition

IV. GRADING

A. Homework will be assigned, but will not be collected or graded. Test questions will be drawn from the homework or will be very similar in spirit. Keep up with the work.

B. The instructor intends to administer a test every other week during the semester. **Approximately one third of each test will be based on material found solely in the assigned readings.**

C. Students who miss a test due to an authorized absence must personally notify the instructor prior to the test missed. Students who do not follow this procedure will be considered an unauthorized absentee and will receive a grade of zero for the test missed.

D. The final examination will be administered during the day and period scheduled by the Registrar's office.

E. The final examination will be approximately one third of the final grade. The final grade will be the numerical sum of all earned points divided by the total points possible.

V. STCW ASSESSMENTS

A. Knowledge-based assessments will be conducted as part of this course. Students will be required to achieve a minimum grade of 70% for this course to satisfy the knowledge component of STCW. Individuals failing to achieve a minimum grade of 70% will be required to retake this course and achieve a minimum grade of 70% prior to graduation.

VI. MISCELLANEOUS

A. A strong foundation in algebra and trigonometry is a pre-requisite for this course. Building on previously learned computer skills, students are encouraged to use excel worksheets on their personal computers to facilitate "number crunching" while completing homework assignments. Further, students are encouraged to program their personal, programmable calculators with any and all stability functions for use while completing homework and during tests.

B. Self-directed tutoring is available through computer-based training, CBT. A CBT disk on the principles of stability is available from the instructor for copying.

C. Each student is responsible for assignments and work covered in the class whether he/she is present or not.

D. Attendance in this STCW Course is mandatory. **More than three (3) absences from classroom lectures will result in failure of the course.** Further, class attendance is a regimental requirement. All unauthorized absences will be reported to the Commandant's Office (This means no cuts).

E. Office hours are established to allow the student the opportunity to consult with the instructor. Office hours are the ideal forum to discuss individual homework and answer additional questions. If you are having a problem, do not hesitate to see your instructor. The instructor will be pleased to schedule tutoring.

F. Massachusetts 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 Mrs. Fran Tishkevich, Director of Disability Compliance (Ext.2208).

G. Electronic communication devices, any telecommunication device that emits an audible signal, vibrates, displays a message, or otherwise summons or delivers a communication to the possessor including but not limited to: cell phones, Iphones and Blackberries, are prohibited from this class. In the event of a medical condition or personal circumstance necessitating the cadet to be in touch with a doctor or a parent, a reasonable accommodation will be made between the instructor and the cadet. Failure to comply with this directive will result in the following report offence, disobedience of a direct order.

H. You will be treated and expected to behave as the professionals you are aspiring to be.

MASSACHUSETTS MARITIME ACADEMY

DEPARTMENT OF MARINE TRANSPORTATION

STABILITY & TRIM (MT4241)

WK.	LECT.	SUBJECT	READING
1	1	**Course Introduction:** Curriculum and Objectives, Assignments, Text. Grading and Attendance Six Motions of a Vessel	Adrea Dorea Case Study LaDage pp.31-46
	2	**Buoyancy:** Archimedes' Principle **Displacement:** Draft, Freeboard Purpose of Load Lines and Reserve Buoyancy Plimsol Marks **Initial Stability:** Centers of Gravity and Buoyancy The Couple and Righting Moment Indicators of Initial Stability and Dynamic Stability	Stability Diagram Handout
	3	Transverse Metacenter Stable, Neutral and Unstable Equilibrium Metacentric Height and Metacentric Radius	
2	1	Height of the Metacenter Height of the Center of Buoyancy Metacentric Radius	pp. 47-68
	2	**Movement of the Center of Gravity:** Calculations for: Vertical Center of Gravity Calculating GG' (Shift of Center of Gravity)	
	3	**Movement of the Center of Gravity:** Finding KG when Loading and Discharging. **Containership Bays-Tiers-Rows**	

WK.	LECT.	SUBJECT	READING
3	1	**Determining the Height of Metacenter:** Calculating Block Coefficient Calculating Height of the Center of Buoyancy, KB Calculating Metacentric Radius, BM Ship's Lines, Hydrostatic Data: Tables and Curves	pp. 69-86
	2	Relationship of Tons per Inch, TPI, to Area of the Waterplane, AWP. Approximating BM fro Curved Water Planes Analysis of the Vertical Movement of KM with a change of displacement Analysis of the Movement of KM with a transverse inclination.	KM Handouts
	3	Stability Booklets: Inspection of Contents Introduction to the S.S. American Mariner Booklet	
4	1	Calculating GM Stability versus Stowage The Relationship of GM to Rolling Period Proportionate Loss of Stability	pp. 87-110
	2	Effects of Negative GM on a Vessel Practical Methods of Calculating GM.	
	3	Practical Problems	
5	1	**The Inclining Experiment:** Required Gear and Data Derivation of Formulae Precautions to be Taken During Inclining Experiment Conducting a "model" inclining experiment and determining lightship KG	pp. 111-126
	2	*T.V. ENTERPRISE* Inclining Experiment Power Point Presentation.	
	3	**List and Its Correction:** Practical applications and Solutions Calculating angle of list resulting from loading, shifting or discharging a weight. Calculating weight to load, shift or discharge to remove a given list.	

WK.	LECT.	SUBJECT	READING
6	1	**Effects of Slack Tanks:** Free Surface Effects Surface Dimensions Effects of Specific Gravity and the Amount of Liquid in a Tank	**pp. 161-184**
	2	Effects of Weight and Vertical Position of Liquids Free Surface Corrections and Free Surface Constants	
	3	Operation of Cross-over-Valves between Deep Tanks Free Surface Effects on Overall Stability Tankage Systems for the Deck Officer Anti Rolling Devices Bilge Keels, Antirolling Tanks, Fins and Gyro Stabilization	**pp. 301-307**
7	1	**Fresh Water Allowance:** Water Density and Displacement Use of the Hydrometer FWA Calculations	**pp. 5-18** **FWA Handout p. 200**
	2	**Trim:** Introduction to Longitudinal Stability Preliminary Definitions	**pp. 187-214**
	3	Trimming Moments and MT1 Calculating MT1 Change of Draft at One End	
8	1	LCF Method of Trim Calculations Effects of Trim on Draft	
	2	LCF Method of Trim Calculations (cont.)	
	3	Change of Trim Due to Large Weights LCG Method of Trim Calculations	

WK.	LECT.	SUBJECT	READING
9	1	LCG Method of Trim Calculations (cont.)	
	2	Use of Trim Tables	
	3	Effect of Trim on Draft Effects of Trim on Displacement and Transverse Stability Effects on Trim when Passing From Salt to Fresh Water.	
10	1	**Curves of Statical Stability & Dynamic Stability:** Stability at Large Angles of Inclination Effects on GM Stability Curves	pp. 127-145
	2	Constructing Cross Curves of Stability (GZ) Drawing the Statical Stability Curve	
	3	Correction for a Vertical Shift of G Correction for a Horizontal Shift of G	
11	1	Effect of Hull Form on Righting Arm	pp. 146-160
	2	Correcting for a Change in Displacement and a Transverse Shift of G Stability Criteria and Statical Stability Curve	
	3	Analysis of Statical Stability Curve Summary of Analysis.	
12	1	Review of Dynamic Stability	
	2	**Angle of Loll** Inclination due to unstable equilibrium Calculating the upsetting moment Identifying angle of loll on Static Stability Curve	LOLL Handout
	3	**Actions To Be Taken In The Event Of Partial Loss Of Intact Stability:** Effects of Flooding on Transverse Stability Remedial Measures to Improve Transverse Stability	pp. 276-299

WK.	LECT.	SUBJECT	READING
13	1	Added weight Method for Statical Stability Effect of Grounding on Stability Effect of Flooding on Reserve Buoyancy Effect of Permeability on Floodable Length	
	2	**Introduction to Computer Based Stability Programs** Vessel Specific, USCG Approved Computer Based Stability Programs Excel Work Sheet Stability Programs With And Without Hydrostatic Micros	**pp. 255-275**
	3	Practical Applications And Limitations Of Computer Based Stability Programs And Stability And Trim Considerations	
14	1	Practical Stability and Trim Considerations Purpose of Ballasting Loading to Obtain a desired GM and Trim.	**pp. 300-320**
	2	Course Review	

Massachusetts Maritime Academy

MARINE SAFETY: MT-4251

John Christensen, Instructor of Marine Transportation

Course Objective: A study of the rules and regulations that govern marine inspection, lifesaving, firefighting, environmental pollution and hazardous materials. Prepare future licensed officers for shipboard responsibilities including:

Consult spread sheet online for specifics.

Grading policy:

1. Attendance at all classes is mandatory. Missing class or tardiness without prior Instructor approval will result in grade point reduction. Missing an exam without prior instructor approval will result in a grade of zero. Students are responsible for all material presented in class even if officially excused. Officially excused exams may be made up by a comprehensive exam. A grade of less than... C- ... will result in non-compliance with USCG/STCW mandated competency standards and result in license track students repeating the course.

Students shall wait at least 25 minutes after the scheduled class start time for the instructor.

2. Office hours are established to allow students the opportunity to consult with the instructor. Please seek help immediately when you need it.

3. The Academic Code of Conduct will be strictly enforced.

4. No eating, drinking, smoking. Electronic devices must be off.

5. ACCOMODATIONS -- Mass Maritime is committed to providing reasonable accommodations to students with documented disabilities. Students who believe they may need accommodations in this class are required to contact Mrs. Anne Folino, Director of Disability Compliance, within the first two weeks of class. afolino@maritime.edu ext. 1409. Remember, you must notify me, *in advance* if you require accommodations for class or testing.

6. Final Grades in this course will be determined as follows:

   A. Six Regular Quizzes (including HAZMAT) averaged together account for 40% of final grade.

   B. Online reading assessment, due at 0800 of the day for which the reading is assigned: 20 % of final grade.

   C. Homework: 20%

   D. The final exam (no exemptions) accounts for 20% of Final Grade.

   E. Unexcused absences are an automatic 5 point deduction from final grade.

   F. HAZMAT, week following immediately upon Coasties, requires a 70% for license, graduation, etc.

G. The numerical average that corresponds to the USCG/STCW required passing grade of (C-) is 70%.

Required Course Materials for Marine Safety:

- 46CFR parts 1-40, 70-89, 90-139, 156-165, 125-199, 199 (CFRs semester loan)
- Marine Fire Prevention.., Brady (Semester loan),
- HAZMAT regulations handbook Keller(Semester loan),
- 49 CFR
- Tanker Operations by Mark Huber.
- Chemical Data Guide (Semester Loan)
- The Logic of Failure Dorner
- Access to Blackboard and the Internets

John Christensen

MT-4251 Marine Safety

A study of the rules and regulations that govern marine inspection, lifesaving, fire fighting, and environmental pollution. This course prepares future licensed officers for shipboard responsibilities including: maintenance and use of lifesaving equipment, maintenance and use of firefighting equipment, confined space entry, emergency situations, and pollution prevention and abatement. Case studies of marine casualties are used to apply the **concepts and theories** of marine safety. The course provides the student with a mix of **critical analysis, application, and communication.**

Contact Information

Office HA 320A Hours Tues 1045-1200; Thursday 1045-1200

Phone extension: 1920

Email: jchristensen@maritime.edu, tankermate@gmail.com

Home phone: 508 693 0050

Cell phone: 508 662 1238

Contact me before you get in over your head. Same goes for all your instructors—we can help you if you come to us.

Complete the reading **before** the date listed

Lecture schedule

MT 4251 Spring 2010

	Lecture Sections 21 and 22						
	Date		Test	*Lecture*		*Read* before *class*	*homework*
	Date	Day		#	Topic		
Week 1	1-Mar	Mon		-	*Orientation*		
	2-Mar	Tue		1	It takes a calamity		
	4-Mar	Thu		2	The Regulatory Environment		
Week 2	9-Mar	Tue		3	Use and structure of the CFRs		
	11-Mar	Thu	Q1	4	Hazardous Material Regulations		
					HMR, 49 CFR		
Week 3	16-Mar	Tue		5	The Titanic and its Aftermath		
	18-Mar	Thu		6	SOLAS & IMO		
					US Code to NVIC		
Week 4	23-Mar	Tue		7	SMS		
	25-Mar	Thu	Q2	8	Inspections		
					Audits		
Week 5	30-Mar	Tue		9	Fire Case Studies		
	1-Apr	Thu		10	Structural Fire protection		
					Fire fighting CFRs		
Week 6	6-Apr	Mon		11	Pollution		
	9-Apr	Thu	Q3	12	MARPOL		
					US Regulations		
Week 7	13-Apr	Tue		13	CFRs on pollution		
	15-Apr	Thu		14	CFRs on pollution		

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Complete the reading **before** the date listed

Lecture schedule

MT 4251 Spring 2010

	Lecture Sections 21 and 22						
	Date		Test	*Lecture*		*Read* before *class*	*homework*
	Date	Day		#	Topic		
Week 8	20-Apr	Tue		15	Life Saving Equip		
	22-Apr	Thu	Q4	16	Sea Survival		
Week 9	27-Apr	Tue		17	Tanker Operations		
	29-Apr	Thu		18	Enclosed Space Entry		
					CFR practice		
Week 10	4-May	Tue		19	Record keeping		
	6-May	Thu	Q5	20	Oil Record Book, Oil from Mach. spaces		
Week 11	11-May	Tue	Coasties	21	Human Error		
	13-May	Thu		22	Human Error		
Week 12	18-May	Tue		23	Hazmat Training		
	20-May	Thu	T	24	Hazmat Training		
Week 13	25-May	Tue		25	Security and Piracy		
	27-May	Thu		26	Security and Piracy		
Week 14	1-Jun	Tue			**Monday Schedule**		
	3-Jun	Thu		27	Ballast and alien species		
Week 15	8-Jun	Tue		28	Local air pollution Regs		
	9-Jun	Wed	Finals				
	15-Jun	Tue					

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