

MASSACHUSETTS MARITIME ACADEMY

ADVANCED SEAMANSHIP FALL 2015

MT 4132

Course Instructor: Captain Patrick E. Cunningham (USCG Unlimited Master)

Course Description

Operating a vessel safely and efficiently under all weather conditions requires a skill set for operating and maintaining a vessel and a knowledge of a vessel's fittings and equipment. Under the supervision of experienced unlimited master mariners, students in this program develop seamanship skills through hands on experience and learn critical thinking problem solving skills through the use of case studies of marine casualty incidents and investigations. This course provides students with a strong foundation in fundamentals of traditional seamanship and exposes the individual to "best approaches" in the constantly changing shipboard technologies and operations necessary to compete on a global scale in the maritime industry. Topics include search and rescue, damage control, marine salvage, tug and towing fundamentals, ice navigation, anchoring and mooring, ship / helicopter operations, and advanced ship handling techniques. An intensive, "hands on Seamanship" lab program in conjunction with the classroom experience. Also, Seamanship Lab time required and will be factored in your final grade.

Learning Objectives

Demonstrate knowledge and understanding of the following STCW elements:

OICNW A5.3 Appreciation of the procedures to be followed for rescuing persons from sea

OICNW A5.3 Appreciation of the procedures to be followed for assisting a ship in distress

OICNW A9.1 the effects of deadweight, draught, trim, speed and under- keel clearance on turning circles and stopping distances

OICNW A9.1 the effects of wind and current on ship handling

OICNW A9.1 maneuvers and procedures for the rescue of person overboard

OICNW A9.1 squat, shallow-water and similar effects

OICNW A9.1 proper procedures for anchoring and mooring

Learning Outcomes

Demonstrate knowledge of principles of ship's maneuvering characteristics

Demonstrate ability to perform simple maneuvers and operations with varying vessels

Demonstrate knowledge of safe mooring and the line handling

Demonstrate proper voyage planning principles and techniques

Safely practice and execute the duties of a licensed deck officer in the performance of mooring, line handling, ground tackle use, tug use, stranding and salvage operations

Demonstrate knowledge to safely operate in ice areas

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Demonstrate knowledge to execute a search and rescue operation

Demonstrate knowledge to utilize helicopters and use to operate in heavy weather

Prerequisites

Successfully completed MT Basic Seamanship 2231

(If you do not meet this prerequisite you are to notify the instructor immediately. Discovery of failure to comply with the prerequisite requirements, at a later time, will result in a failing grade for the course, despite what your grade may have been)

Attendance

Attendance is mandatory and any classes / labs missed must be made up with the instructor

Grading

Course is an STCW course requiring a grade of C- (70%) to satisfy all USCG STCW requirements. However, if a student achieves grade of 60-69.9 (D – range) they will receive that grade, until they retake the course to pass it for STCW requirements.

Mid Term Exam	25%
Final Exam	35%
Quizzes & Homework	20%
Lab Work	15%
Participation / Discussion	5%

Additional Assistance

Mass Maritime is providing reasonable accommodations to students with documented disabilities. Students who believe they may need accommodation 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 Carol O'Connell coconnell@maritime.edu.

SOCIAL MEDIA & ELECTRONICS

Electronic communication device: any telecommunication device that emits an audible signal, vibrates, a display a message, or otherwise summons or delivers a communication to the possessor, including but not limited: cell phones, iPhones are prohibited from this class. Discipline action will be taken in violation of above and will result in negative impact on final grade for course.

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REQUIRED BOOKS

1. Seamanship Notes – (Sea Notes) Captain P. Modic 8th Edition – (will be issued to you first week of class session)
2. Knights of Modern Seamanship – (KMS) 8th Edition.
3. American Merchant Seaman's Manual 7th Edition
4. American Practical Navigator Vol. 1 (2002 Edition)

COURSE OUTLINE

WEEK 1	COURSE INTRODUCTION & GROUND TACKLE REVIEW	READING ASSIGNMENTS
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Anchor design and use	Sea Notes pg. 1-1 to 1-12
Anchor Kinematics	KMS pg. 116 to 140
Chain Design	AMSM CH 8
Anchor machinery & associated fittings	
Associated equipment	

WEEK 2 & 3	ANCHORING & MOORING	
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Scope of chain & Calculations	Sea Notes pg. 2-1 to 2-23
Holding Power	KMS pg. 282 to 301
Anchoring procedure and safety measures	AMSM pg. Chap 8
Riding to single anchor	
Radius of swing	
Dredging of anchor	
Mooring with two anchors	
Open Moor	
Running Moor	
Standing Moor	
Mediterranean Moor	
Mooring to Buoy	
Single Offshore or mooring buoy	
Two buoy mooring	
Multiple buoy Offshore terminal	
Anchor Watch	

WEEK 4	SHIP MANEUVERING, CONTROLLABLE EFFECTS	
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Type of Machinery	Sea Notes pg. 3-1 to 3-33
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Horsepower to displacement ratio KMS pg. 95 to 115
Propellers: Number, type pg. 241 to 254
Rudders: forces and & resultant forces on rudder AMSM pg. 9-7 to 9-12
Speed by Revolution calculations
Maneuvering devices : thrusters and Auxiliary propulsion units

WEEK 5 & 6 SHIP MANUEVERING READING ASSIGNMENTS & UNCONTROLLABLE EFFECTS

Hydrodynamic forces & interaction
Interaction situations KMS pg. 225 to 261
Passing ship effects AMSM pg. 9-7 to 9-12
Ship squat & calculations
Bank effects
Current
Aerodynamic Interactions (Wind)

WEEK 6 & 7 SHIP MANEUVERING

Drift angle
Pivot Point KMS pg. 261 to 264
Maneuvering Characteristics (speed, turning)
Requirements for & limitations of
displayed maneuvering information
Man Overboard techniques
Deceleration & stopping maneuvers
Instruments to assist in judging motion

MID TERM

WEEK 8 & 10 DOCKING & UNDOCKING PROCEDURES

Mooring line Patterns
Characteristics of mooring line: material,
construction, size & elasticity
Attributes of mooring line
Bights & 3 part leads
Communications & line handling commands
Deck winch machinery

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Lead angles
Safety & operations while docking / undocking
Mooring line inspections
Mooring line calculations

WEEK 10

TUGS & TOWING

READING ASSIGNMENTS

Tug function & design
Ship assist practice
Towing – sheltered & Open Ocean
Emergency Towing
Tow packages
Tug & Towing safety considerations

WEEK 10 cont. HEAVY WEATHER MANUEVERING

& DAMAGE CONTROL

Waves & Swells
Dangers of Heavy Seas & Swells
Heading & Speed changes
Broaching & Speed changes
Synchronous Rolling
Loss Power
Controlled Drifting
Fractures, cracks & holes

WEEK 11

STRANDING & SALVAGE OPERATIONS

Actions taken immediately after stranding
Precautions against broaching, pounding
& further grounding
Methods of re-floating
Stranding calculations

WEEK 12

ICE SEAMANSHIP

Types of floating ice
Ice identification
Risk of ice passage
Anchoring & Towing in Ice
Mooring in ice

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ice accretion & vessel stability

Freeing a vessel beset while operating independently

Freeing a vessel beset with ice breaker escort

WEEK 13

HELICOPTER OPERATIONS

READING ASSIGNMENTS

Vessel responsibilities & preparations

Personnel safety & dangers

KMS pg. 372 to 381

Personnel approaching a helicopter

Helicopter operating conditions

Maneuvering your vessel

Shipboard hoisting & landing

Pilot use of helicopters

WEEK 14

SEARCH & RESCUE OPERATIONS

Source of SAR information & AMVER

Sea notes pg. 9.1 to 9.15

SAR Planning

On scene coordination

Search Patterns

Terminating the Search

WEEK 15

REVIEW FOR FINAL EXAM

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