MASSACHUSETTS MARITIME ACADEMY
ENGINEERING SYSTEMS and SAFETY (EN-1112)
FALL 2015 (3) CREDITS

Instructor: CDR Thomas L Stanton Professor (MMA)
Office: Bresnahan Lab 3rd floor, Room 308
Telephone and e-mail: (Ext. 2062) tstanton@maritime.edu
Office Hours: To be announced

NO ELECTRONIC DEVICES

UNIFORM AND DRESS CODE:
Cadets must be in the proper uniform of the day as announced by the Commandant of Cadets Department

TEXTBOOKS:
MMA Course Notes: Introduction to Steam Engineering

NOTEBOOKS:
Students are required to maintain a neat, three-ring notebook for the course materials. You must bring your calculator to class and exams. No sharing of any electronic devices during exams.

ATTENDANCE: Attendance is mandatory for class lectures and lab instruction. Daily Attendance will be taken. TWO (2) Points will be deducted from your Final grade for each class missed. . If you miss a class, for any reason, you are responsible for all lessons and assignments. **All medical/Illness absences must be accompanied by a signed Medical document upon return to class.** You must attend your assigned class, no "switching" to an earlier class. You must take exams on scheduled dates, confirmed by me. If, due to a MMA sporting event/activity, in which the Dean acknowledges your absence, you must immediately schedule with me the appropriate time to make-up this exam.

Special Liberty Policy: Please do not ask the Instructor to sign a special liberty request.

LABS:
All Engineering Labs (EN-1112L) must be attended and completed to the satisfaction of the lab instructors to receive a final grade in this course. **Lab Attire:** Wear PPE; Long-sleeve Boiler Suit, Hard Hat, Steel-Toed Boots, Hearing Protection, Flashlight, gloves..
Bring (3) Ring Binder and Pen/Pencil and calculator.

COURSE DESCRIPTION/OBJECTIVE:
To introduce the student to the field of Engineering Systems and Safety used on board the Training Ship and in the stationary power plant industry. This will include fundamental engineering thermodynamic concepts related to the steam cycle and its associated equipment, including Main and Auxiliary engineering equipment. The course will include basic safety specifications set forth in the STCW regulations and OSHA regulations. The importance of proper watch keeping, terminology, communications, pollution, and energy-control procedures will be discussed. Engineering safety will always be prioritized.

STCW
Engineering Systems and Safety is a required STCW course for all students continuing on to Marine Engineering, Facilities Engineering, and Energy Systems. For these majors, a "C-" is the lowest passing grade.

Learning Objectives

At the completion of the course, the student should be able to demonstrate knowledge and understanding of the following STCW elements:

- AB-D-C2.1 Working in enclosed spaces
- AB-D-C2.1 Permit to work systems
- AB-D-C2.1 Lifting techniques and methods of preventing back injury
- AB-D-C2.1 Electrical safety
- AB-D-C2.1 Mechanical safety
- AB-D-C2.1 Chemical and biohazard safety
- AB-D-C2.1 Personal safety equipment
- AB-E-A8.1 Safe operation of hoists and lifting equipment
- AB-E-A9.1 Safe use and operation of electrical equipment
- AB-E-A9.1 Safety precautions before commencing work or repair
- AB-E-A9.1 Electrical isolation procedures
- AB-E-A9.1 Electrical emergency procedures
- AB-E-A9.2 Knowledge of the causes of electric shock
- AB-E-A9.2 Precautions to be observed to prevent shock
- AB-E-C4.1 Electrical safety
- AB-E-C4.1 Lockout/tag-out
- AB-E-C4.1 Mechanical safety
- AB-E-C4.1 Permit to work systems
- AB-E-C4.1 Working in enclosed spaces
- AB-E-C4.1 Lifting techniques and methods of preventing back injury
- AB-E-C4.1 Chemical and biohazard safety
- AB-E-C4.1 Personal safety equipment
- OICEW-A4.1 Characteristics of lubricating oil systems
- OICEW-A4.1 Characteristics of fuel oil systems
- OICEW-A4.1 Characteristics of cooling systems
- OICEW-C1.5 Safety measures to be taken to ensure a safe working environment
- OICEW-C2.1 Safety measures to be taken for repair and maintenance
- OICEW-C2.1 Safe isolation of shipboard machinery and equipment before personnel are permitted to work
- OICEW-D8.4 Knowledge of personal safety
- OICNW-C8.4 Knowledge of personal safety
- PS-SR-X3.1 Importance of adhering to safe working practices at all times
- PS-SR-X3.2 Safety and protective devices available to protect against potential hazards aboard ship
- PS-SR-X3.3 Precautions to be taken prior to entering enclosed spaces
- PS-SR-X3.4 Familiarization with international measures concerning accident prevention and occupational health
- RFPEW-A1.3 Safe working practices as related to engine-room operations
- RFPEW-A3.2 Know escape routes from machinery spaces
- T-OPS-X3.2 protective clothing and equipment

Other Objectives

- Understanding of steam cycle component pressures temperatures and terminology
- Engine room watch keeping procedures
- Engine room safe working practices including lock-out-tag-out and confined space
- Engine room alarm and evacuation procedures and emergency equipment
- Basic maintenance of machinery and equipment
- Knowledge of personal safety and social responsibility
- Safe operation of boilers
- Fighting fires onboard ship
- Emergency equipment and emergency procedures

COURSE OUTCOMES:

- Understanding the (4) stages of the steam cycle
- Describe the components of the steam cycle
- Assess Emergency alarms, evacuation procedures ,procedures and equipment
- Recall basic engineering terminology and definitions
- Identify engine room safe working practices including lock-out –tag out and confined spaces
- Engine room watch keeping procedures
- Engine room safe working practices including lock-out-tag-out and confined space
- Engine room alarm and evacuation procedures and emergency equipment
- Awareness of basic maintenance of machinery and equipment
- Knowledge of personal safety and social responsibility
- Discuss the Safe operation of boilers
- Fighting fires onboard ship
- Emergency equipment and emergency procedures
- Thermodynamic concepts involved in the main steam cycle
- Knowledge of various types of valves used in engineering piping systems
- Knowledge of personal safety and social responsibility

EXAMS:

- Topic matter for exams will come from the course textbook, lectures, labs, and handouts.
- The Topic matter is outlined in this syllabus and is required reading for all students in my class.
- Topic matter reading assignments will be given in class and may/will include various chapters in the Introduction to Steam Engineering course book/handouts.
- The Topic matter must be read prior to the following class in which it was assigned.
- The Instructor reserves the right to prioritize topic matter, reading assignments, the number of tests and test dates.

GRADING:

- **Exams.....60%**
- **Lab.....10%**
- **Final Exam.....30%**

Topics **REQUIRED READING ASSIGNMENTS**

- **Chapter 1. Steam Cycle.....Introduction to Steam Engineering, pp. 1-15**
- **Chapter 2. Principles of Thermodynamics.....Introduction to Steam Engineering ,pp. 19-39**
- **Chapter 3. Valves. .....Introduction to Steam Engineering, pp. 43-59**
- **Chapter 4. Boilers... .....Introduction to Steam Engineering, pp. 67-80**
- **Chapter 5. Main Engine... .....Introduction to Steam Engineering, pp. 83-101**
- **Chapter 6.Main Condenser ....Introduction to Steam Engineering ,pp. 105-109**
- **Chapter 7.DC Heater.....Introduction to Steam Engineering ,pp. 113-118**
- **Chapter 8. Pumps..... Introduction to Steam Engineering, pp. 121-140**
- **Ship/Vessel Terminology.....Class/Lab**
- **Ship Emergency Alarms .....Class/lab**
- **Steam Tables.....Class/Appendix A: Steam Tables**
- **LOTO.....Class/Handout**
- **Ladders.....Class/Handout**
- **Personal Protective Equipment (PPE)..... Introduction to Steam Engineering, pp. 141-153**
- **Confined Spaces.....Class/Handout**
- **Fire Pumps.....Class/Lab**

Learning Disabilities: 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 Associate Professor, Fran Tishkevich, Acting director of Disability Compliance, the first day of class at ext. 2208 or by e-mail at ftishkevich@maritime.edu.

A signed copy must be given to me the following class.

***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 Jlevesque@maritime.edu or call ext. 1480.

COURSE: **Basic CAD** **EN-1212** **Fall 2015**

INSTRUCTOR: **Erik Fialkowski** Bresnahan 221

CAD Lab 221 Office Hrs: 9:30AM-10 Tues - Thur

Email: efialkowski@maritime.edu Phone: ext 2067

TEXT: Handouts, as required

PREREQUISITE: None

GRADING: Quizzes on Homework (25%), Projects (20%), and Final (25%) Attendance (30%)

ATTENDANCE:. There will be no quiz make-ups after the week of a quiz. 2 unexcused absences = (– ½ Grade)

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CLASS TOPICS HOMEWORK

Week 1	Introduction to Draftsight	9/3
Week 2	Basic Draftsight commands	9/10
Week 3	Orthographic Projection (2 views)	9/17
Week 4	Quiz (2 views): Isometric drawing	9/24
Week 5	Isometric drawings to 3 view layout	10/1
Week 6	Project 1a: Lego object: measure & draw	10/8
Week 7	Project 1b: Design and build a structure	10/15
Week 8	Project 2a Plan view layout of your desk	10/22
Week 9	Project 2b: Plan view of the CAD lab	10/29
Week 10	Process diagrams, Piping symbols & blocks	11/5
Week 11	Kennedy ship plate P & I.D.	11/12
Week 12	Kennedy ship plate P & I.D.	11/19
Week 13	P & I.D. 's	12/3
Week 14	Drawing output, Printing, Plotting/Review	12/10