Course: **Auxiliary Machinery I (FE)** **EN-1222**
Spring 2022

Instructor: LT Tim Demoranville
Office: Harrington Building, Room 216A
Phone/Email: 508-830-5281. **tdemoranville@maritime.edu**

Office Hours: Tuesday Period 3, Friday Periods 2 and 3, or by appointment.

Text: Marine Engineering Workbook and Illustrations (Handouts by Professor)
Engineering Training Manual (ETM), TS Kennedy
Excerpts from Department of Energy (DOE) Fundamentals Handbook (slides)

Prerequisite: Engineering Systems and Safety (EN-1112)

Course Description:
Auxiliary Machinery I is a (3.5) credit course that lays the foundation for future engineering courses. Students will learn the basic principles of construction, operation, maintenance and repair of piping systems. Topics include pipe and fittings: valves, pumps and heat exchangers; pressure, temperature, level and flow measurement; piping and instrument diagrams (P & ID) and blueprint reading. Both shore side and marine applications are discussed.
This is a required course for all engineering students and contains STCW knowledge and practical elements. A grade of **C-** or better is required to pass.

Homework:
Homework when assigned, will be subject material for quizzes and exams. All homework assignments must be passed in on due dates with no exceptions. Late or illegible homework will not be accepted, and graded as a zero. For medical exemptions, homework must be passed in on an agreed upon date with me.

Quizzes:
Quizzes will be given WEEKLY throughout the semester at the beginning of class on FRIDAYS. Material for the quizzes will come from subject matter covered in class, labs, reading assignments, handouts, weh.maritime.edu website, course textbooks and homework. There will be no make-up quizzes given other than for the 3 reasons stated below in the attendance policy.

Attendance:

- Attendance is mandatory for all class lectures and lab instruction. Special liberties DO NOT COUNT as excused
- Students with perfect attendance will have their lowest quiz grade dropped. Perfect attendance means perfect attendance, you physically were present during every lecture.
- **NO** Make up quizzes will be offered **UNLESS** the student is unable to make the quiz due to an Academy authorized event (with documentation from the Dean's office) such as sports team travel, military service, or a documented illness. **Otherwise a Missed Quiz = 0**
- **Students who miss four (4) or more classes will automatically fail the course**
- Lab instruction classes are Mandatory. An "Incomplete" grade will be issued if all labs are not completed and you will be in danger of failing the course.

Grading:
Weekly Quizzes (55%), Final (25%), Homework and Class Participation (10%) and Labs (10%)
The Final Exam will be given during Finals Week, not during the last class of the semester.

Grading Scale:

A: 94-100	**C+:** 77-79
A-: 90-93	**C:** 73-76
B+: 87-89	**C-:** 70-72
B: 83-86	**F:** < 70
B-: 80-82	

Standard in Training, Certification, and Watch keeping (STCW):
Auxiliary Machinery I is an STCW Course. STCW policy requires a passing grade of 70 or higher for any STCW course and requires 90% classroom lecture participation.
The STCW course grading will be A, B, C, C- or F. No "D" grading policy. You will Pass or Fail. Failing will require re-taking the course.

Special Liberty Policy:
Please do not ask the Instructor to sign a special liberty request. The only special liberties recognized by the engineering department are those of an emergency nature which are granted directly by the Commandant of Cadets office.

Uniform and Dress Code:
Cadets are expected to be in proper uniform of the day as announced by the Commandant of Cadets.

CELL PHONE & SMART TECHNOLOGY POLICY:
Cell phones, laptops, and internet-capable technology are not to be used during class. These instruments are to be on silent and out of view at all times unless otherwise instructed. Usage during class will result in authorized confiscation to the dean's office. Programmable calculators are permitted in class, but may not be used during exams. Non-programmable calculators are welcome at all times. Use of a Cell Phone for a calculator during any test/quiz is Prohibited.

Entrance Requirements

- Comprehend reading assignments at the post-secondary level
- Perform basic arithmetic problems
- Ability to follow a fluid piping system drawing
- Demonstrate knowledge of the main steam and water cycle
- Demonstrate knowledge of the fuel oil service system
- Demonstrate knowledge of the lube oil service system

FOOD, DRINKS, & LAVATORY USAGE DURING CLASS:
Please refrain from bringing any kind of food or drink into the classroom. They will not be allowed.

Please refrain from using the lavatory during class. It will not be allowed

Learning Objectives
Demonstrate knowledge and understanding of the following STCW elements:

- AB-E-A5.1 Basic knowledge of the function of auxiliary machinery
- AB-E-A5.1 Basic knowledge of the operation of auxiliary machinery
- AB-E-A6.1 Knowledge of oil transfer operations
- AB-E-A6.1 Preparations for fueling and transfer operations
- AB-E-A6.1 Procedures for connecting and disconnecting fueling and transfer hoses
- AB-E-A6.1 Procedures relating to incidents that may arise during fueling or transferring operation
- AB-E-A6.1 Procedures for securing from fueling and transfer operations
- AB-E-A8.1 Safe operation of valves and pumps
- AB-E-B1.1 Ability to use lubrication materials and equipment
- OICEW-A4.1 Basic construction and operation principles of pumps
- OICEW-A4.1 Basic construction and operation principles of heat exchanges
- OICEW-A5.2 Operation of pumping systems
- OICEW-A5.2 Routine pumping operations
- OICEW-C1.7 Use of various types of sealants and packings
- OICEW-C2.2 Appropriate basic mechanical knowledge and skills
- OICEW-C2.5 Design characteristics and selection of materials in construction of equipment
- OICEW-C2.6 Interpretation of machinery drawings and handbooks

Demonstrate proficiency in the following skills:

- ABE-1-6A Assist with fuel oil transfer

LEARNING DISABILITIES:
The Academy offers, upon request, accommodations to students with documented learning disabilities. The ADA Coordinator, Asst. Dean Elaine Craghead, evaluates the documentation provided, determines appropriate services, and is available to discuss accommodations with students. The Disability Resources office is located in the Academic Resource Center, ABSIC 320. Students can drop in during normal business hours, M-F 0800-1600, or call x5120, or email ADAcompliance@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.

Student Learning Outcomes:

The main objective of the course is to give the student a basic understanding of the Installation, Operation and Maintenance of Auxiliary Systems and Equipment that relate to the Marine and Facilities Industry.

TOPICS	**READING ASSIGNMENTS**
1. Steam Cycle Review	Intro to Steam Engineering ch.1
2. Fasteners and Hardware	Study Guide pg. 9-18
3. Piping	Study Guide pg. 105-145
4. Valves	DOE pg.201-250 pg. 394-400 Study Guide pg.187-243
5. Steam Traps	DOE pg.251-255 Study Guide pg.159-172
6. Filters and Strainers	DOE pg. 256-264 Study Guide pg.147-157
7. Temperature Measurements	DOE pg. 43-58 Study Guide pg.61-71
8. Pressure Measurements	DOE pg. 59-71 Study Guide pg. 73-95
9. Level Measurements	DOE pg.72-88 Study Guide pg. 97-104
10. Heat Exchangers	DOE pg. 293-310
11. Pumps Overview	DOE pg. 265-292 Study Guide pg. 247-275
12. Process Control	DOE pg. 341-393

** ***This schedule may be changed subject to class requirements***