

**COURSE:** ICE II EN-4131 Fall 2015

**INSTRUCTOR:** LCDR Todd Hibbert Office: Room C210A Harrington  
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Office Hours: Mon. 4<sup>th</sup> Period, Wed. 4<sup>th</sup> Period,  
Fri. 4<sup>th</sup> Period

**TEXT:** Diesel Engines, Volume I and II  
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### **COURSE INFORMATION**

**DESCRIPTION:** This course lays the foundation for future engineering courses. Students will learn the basic principles of construction, operation, maintenance and repair of both 2 stroke and 4 stroke diesel engines of slow, medium and high speed.

This is a required course for **ALL** marine engineering students and contains STCW knowledge and practical elements. The grade of “C-” or better is required.

**PREREQUISITE:** Algebra/Trig, ICE I

#### **Learning Objectives**

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

- **OICEW-A4.2** Safety and emergency procedures for operation of propulsion plant control systems
- **OICEW-A4.3** Preparation, operation, fault detection and measures to prevent damage for main engine and associated auxiliaries
- **OICEW-B1.2** Main propulsion plant operational control systems

##### **Demonstrate proficiency in the following skills:**

- **OICEW-5-1J** Prepare main propulsion diesel engine for operation
- **OICEW-5-1K** Secure main propulsion diesel engine
- **OICEW-7-1A** Start emergency generator
- **OICEW-7-1B** Pre-start inspection of diesel generator

##### **Other Objectives**

- Correctly start and operate a diesel engine
- Correctly maintain and repair diesel engines.
- Troubleshoot operational problems
- Be able to pass the USCG license exam for third assistant engineer, motor section.
- Act as a mature, thoughtful critically thinking professional.

**GRADING:** Quizzes (30%), Midterm (30%), Final (40%).

**ATTENDANCE:** There will be **NO** quiz make-ups. For each *unexcused* absence there will be a 1% deduction from the final course average. Labs are mandatory and any missed labs will result in an “**F**” for the course. **Everyone** will take the final on the scheduled day.

**NOTE:** No Programmable Calculators or Cell Phones allowed during classroom or test time.

*MMA 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 Fran Tishkevich, Director of Disability Compliance, within the first two weeks of class at ext. 2208 or by email [ftishkevich@maritime.edu](mailto:ftishkevich@maritime.edu)*

**TOPICS/ASSIGNMENTS**

**READING**

1. Fuels and Fuel Injection	Ch. 8 and 9
2. Governors and Engine Speed Control	Ch.15
3. Lubricants and Lube Oil Systems	Ch. 11
4. Diesel Engine Cooling Systems	Ch. 10
5. Air Intake Systems	Ch. 12
6. Supercharging and Exhaust Systems	Handout
7. Waste Heat Recovery Boilers	Handout
8. Starting and Reversing	Ch. 13 and 14
9. Emissions Control	Ch. 22

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Lab Schedule

Lab 1

General Motor EMD 12V-567: Piston, liner, and power pack removal and replacement

Lab 2

Stork Werkspoor: Head, piston, and liner removal and replacement

Lab 3

Group A: Stork Werkspoor: Measurements and bearing roll out

Group B: C9 Caterpillar: Startup, shutdown and component identification

Groups switch at the 2 hour mark to complete the 4 hour lab

Lab 4

Group A: Emergency Diesel Generator 3406C Caterpillar: Start up, shutdown and component identification (Ship)

Group B: Stork Werkspoor: Lube oil, air start and fuel oil system

Groups switch at the 2 hour mark to complete the 4 hour lab

Lab 5

Group A: Alfa Laval PU150 Separation System: Start up and shutdown

Group B: Alfa Laval PU150 Separation System: Disassembly and reassembly

Groups switch at the 2 hour mark to complete the 4 hour lab

Lab 6

STCW Assessments

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DIESEL LAB POLICIES

1. You must attend **6, four period labs**, every other week. See Lab schedule for attendance days. **SHOW UP EARLY.**
2. Eye protection **MUST** be worn. **NO ELASTIC BAND** goggles.
3. Steel toe shoes **MUST** be worn.
4. Personal tools will **NOT** be stored in the lab.
5. The student must sign in and have their lab handout signed before leaving.
6. **Each student is responsible for cleaning** the engine they worked on and any other assignments from the Instructor. The student must not leave the Lab until properly dismissed.