

**Course: Steam & Gas Turbines Lab EN-3233L**

**Spring 2023**

**Instructor: CAPT Jim Albani**

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**Prerequisites:**

None

Office Hours: M, W & F: 10:00 to 11:00 or by appointment

**Notice:**

- If a cell phone is seen in lab, it will be taken and given to the Undergraduate Dean.
- Students are expected to bring their lab book and writing utensils.
- Once lab starts, if a cadet leaves the lab, he/she will not be allowed back into the lab.
- All COVID-19 protocols and policies will be followed.
- You must bring your mask to lab and wear it if requested by the lab instructor.

**Lab Description:**

Steam & Gas Turbines lab uses the T/S Kennedy, operational trainers, and simulators. The goal of the lab is for students to be able to identify components onboard the T/S Kennedy with regards to the steam turbines. Students will be able to understand the various steam turbine engines used on a typical steam plant. Additionally, they will gain an understanding of the design and operations of marine gas turbine engine platform

**This lab is STCW requirement. All labs must be attended.**

**Required PPE:**

All students shall be in a boiler suit, clean with no rips and with a name tag. You must have some form of ID to gain access to the ship. Hard Hat, Eye Protection, Hearing Protection, Long sleeve boiler suit, steel-toe boots, flashlight that is working, and gloves are required.

**Attendance:**

- **Lab instruction classes are Mandatory. Disciplinary action will be taken if needed. An “Incomplete” grade will be issued if all labs are not completed.**
- **Labs meet every other week. You are required to bring proper PPE to all Labs.**

**Grading:**

- Lab Quiz 1                      10%
- Lab Quiz 2                      10%
- Lab Quiz 3                      10%
- Lab Quiz 4                      10%
- Lab Quiz 5                      10%
- Lab Quiz 6                      10%
- Lab Participation                40%

### **Labs:**

All Engineering Labs must be attended and completed to the satisfaction of the lab instructors to receive a final grade in this course. You must show up with all your PPE.

Due to potential COVID-related changes in lab space capacities and significant scheduling limitations, it is possible that students may not be able to make up missed in-person labs. The expectation for this course is that you will attend all labs at the scheduled time. If you miss a lab(s) and we are unable to accommodate a makeup, your course grade will be impacted and may result in a failing grade; and you may be advised to withdraw from the course.

### **Topics:**

- Steam Turbine Identification, Nomenclature, and Construction
- TS Kennedy Turbines
- TS Kennedy Main Plant Start-Up
- Steam and Gas Turbines – Lube Oil Purification techniques
- Gas turbine design features
- Gas Turbine plant start up
- Gas Turbine Simulator
- Steam and Gas Turbines plant variations - Battleship Cove

### **Student Learning Outcomes:**

Success in this lab will be measured through the application of your understanding of the course topics and thru quizzes.

### **Learning Objectives:**

- Understand the design, construction, and operation of marine steam and gas turbines
- Understand steam plant operation and gas turbine plant operation
- Satisfy the USCG requirements of Standards of Training, Certification, and Watchkeeping (STCW) for the skill sets developed during the lab and lecture portions of this course

### **STCW Learning Objectives:**

- [OICEW-5-1H](#) Start fuel oil or lube oil purifier
- [OICEW-5-1I](#) Shut down fuel oil or lube oil purifier
- [OICEW-7-1C](#) Pre-start inspection of steam turbo-generator
- [OICEW-7-1D](#) Connect ship service diesel generator to main switchboard
- [OICEW-4-3B](#) Prepare and start main gas turbine
- [OICEW-4-3E](#) Monitor main gas turbine operation
- [OICEW-4-3H](#) Secure main gas turbine
- [OICEW-1E2A](#) Change over control systems

*Note: While every effort is made to adhere to the syllabus, instructor reserves the right to amend the course content as required. This syllabus may change depending on the availability of TS Kennedy ER access.*