ENGINEERING PLANT OPERATIONS (EPO) SOLANO CAMPUS

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EPO Courses

EPO 1110 Plant Operations I (1 unit)
Term Typically Offered: F, SP
CR/NC

Inspection, maintenance, and repair of marine machinery and systems aboard the training ship. Safe and proper use of hand and power tools and the identification and repair of valves, pumps, fittings, piping, switches, controllers, and circuit breakers. Credit/No Credit grading only. 1 laboratory. Formerly EPO 110 at Cal Maritime.

EPO 1125 Introduction to Marine Engineering (3 units)
Term Typically Offered: F, SP
Concurrent: EPO 125L or EPO 1125L. Corequisite: EPO 110 or EPO 1110.

Introduction to marine engineering common shipboard systems, their function, arrangement, major components and principles of operation. Engineering systems aboard the Training Ship reinforce engineering system concepts. Shipboard practical training with the watch routine and safety equipment in preparation for follow-on practical training at sea. 3 lectures. Formerly EPO 125 at Cal Maritime.

EPO 1125L Introduction to Marine Engineering Laboratory (1 unit)
Term Typically Offered: F, SP
Concurrent: EPO 125 or EPO 1125. Corequisite: EPO 110 or EPO 1110.

Introduces primary engineering systems aboard the Training Ship. Shipboard familiarity while studying and tracing key systems such as engine jacket water, fuel oil, lubrication, cooling, and starting air. Additional topics include measurement methods, gear train and clutch, environmental protection, distillation, firefighting, and safety practices with essential marine engineering operations. 1 laboratory. Formerly EPO 125L at Cal Maritime.

EPO 2210 Plant Operations II (1 unit)
Term Typically Offered: F
CR/NC
Prerequisite: EPO 110 or EPO 1110.

Continuation of the practical work performed on the training ship or in facilities maintenance lab. Equipment maintenance on diesel engines, air compressors, generators, electrical equipment and pumps. Credit/No Credit grading only. 1 laboratory. Formerly EPO 210 at Cal Maritime.

EPO 2213 Welding Laboratory (1 unit)
Term Typically Offered: F, SP

Provides experience in welding, brazing, cutting, and burning techniques sufficient to effect emergency repairs and routine maintenance of engineering structures and systems. 1 laboratory. Formerly EPO 213 at Cal Maritime.

EPO 2214 Boilers (3 units)
Term Typically Offered: F, SP
Prerequisite: EPO 125 or EPO 1125.

Comprehensive study of fossil fuel steam generators, with emphasis on marine propulsion plants. The principles of boiler design and construction, boiler auxiliaries, principles of combustion, heat recovery equipment, automated boiler controls, and boiler water treatment. Prepares students for the steam plant section of the U.S. Coast Guard Third Assistant Engineer's Exam. 3 lectures. Formerly EPO 214 at Cal Maritime.

EPO 2215 Manufacturing Processes I (1 unit)
Term Typically Offered: F

Introduction to machine shop practices utilizing engine lathes and milling machines, precision measuring instruments, and hand tools. Execute designs developed in prior graphics design courses. 1 laboratory. Formerly EPO 215 at Cal Maritime.

EPO 2217 Shipboard Medical (1 unit)
Term Typically Offered: F, SP
Prerequisite: Senior standing.

Practical applications and the principles of First Aid and Medical Care. Includes body structure and function, resuscitation techniques, and bleeding control. Shock management, burns and scalds, cold and heat effects, rescue and casualty transport, toxicological hazards, spinal injuries, fractures, dislocation and muscular injuries, radio medical advice, pharmacology, sterilization, cardiac arrest and drowning. 1 laboratory. Formerly EPO 217 at Cal Maritime.

EPO 2220 Diesel Engineering I (1 unit)
Term Typically Offered: F, SP
Concurrent: EPO 220L or EPO 2220L.

Introduction to the internal combustion engine utilized by industry and merchant vessels. Includes basic theory, history of the diesel engine, gas exchange process, engine types, engine construction, engine parts, fuel injection, and merchant vessel propulsion. Emphasis given to the crosshead type slow-speed diesel engine. Preparation for the motor section of the USCG Third Assistant Engineer examination. 1 lecture. Formerly EPO 220 at Cal Maritime.

EPO 2220L Diesel Engineering I Laboratory (1 unit)
Term Typically Offered: F, SP
Concurrent: EPO 220 or EPO 2220.

Laboratory supporting Diesel Engineering I. 1 laboratory. Formerly EPO 220L at Cal Maritime.

EPO 2230 Steam Plant System Operations (1 unit)
Term Typically Offered: F, SP
Prerequisite: EPO 125 or EPO 1125; and CRU 150 or CRU 1150. Corequisite: EPO 214 or EPO 2214.

Introduction to the engineering systems, operating and emergency procedures, and watch requirements of a steam propulsion plant. Experience in the Steam Plant Simulator. 1 laboratory. Formerly EPO 230 at Cal Maritime.

EPO 2235 Steam Plant Watch Team Management (1 unit)
Term Typically Offered: F, SP
Prerequisite: EPO 214 or EPO 2214; and EPO 230 or EPO 2230.

Fault analysis techniques for steam propulsion plants, communication skills in a work environment, and management abilities. Experience in the Steam Plant Simulator. 1 laboratory. Formerly EPO 235 at Cal Maritime.

EPO 3310 Plant Operations III (1 unit)
Term Typically Offered: SP
Prerequisite: EPO 210 or EPO 2210.

Practical work performed on the training ship or in facilities maintenance. Supervision of equipment maintenance. Rotation in working on main propulsion, electrical, and auxiliary equipment. 1 laboratory. Formerly EPO 310 at Cal Maritime.

EPO 3312 Turbines (3 units)
Term Typically Offered: F, SP
Prerequisite: EPO 214 or EPO 2214.

Study of steam turbines, condensers, reduction gears, propulsion shafting, and gas turbines, with emphasis on marine propulsion plants. Steam and gas turbine controls, the thermodynamic principles of efficient steam plant operation, and operation and maintenance of turbines and their auxiliary systems are also included. Preparation for the steam plant section of the U.S. Coast Guard Third Assistant Engineer's Exam. 3 lectures. Formerly EPO 312 at Cal Maritime.

EPO 3315 Manufacturing Processes II (1 unit)
Term Typically Offered: SP
Prerequisite: EPO 215 or EPO 2215.

A continuation of Manufacturing Processes I, emphasizing work on metal lathes and vertical milling machines. 1 laboratory. Formerly EPO 315 at Cal Maritime.

EPO 3319 Facilities Engineering Diagnostics Laboratory (1 unit)
Term Typically Offered: F
Prerequisite: CRU 150 or CRU 1150.

Theory and application to machinery maintenance of vibration analysis, oil analysis, machinery alignment, thermography, and overall plant performance analysis. Study of various machinery maintenance programs applied to facilities engineering systems, including machinery history, trend analysis, and predictive maintenance. 1 laboratory. Formerly EPO 319 at Cal Maritime.

EPO 3321 Introduction to Power Generation Plants (1 unit)
Term Typically Offered: SP
Prerequisite: EPO 220 or EPO 2220.

Introduction to the operation, performance, and maintenance of simple cycle gas turbine, medium-speed reciprocating power generation systems, combined cycle gas turbine, and steam turbine power plants. The emphasis of this course is Power Plant Management and will train the students in common power plant systems and how they interact with each other. 1 laboratory. Formerly EPO 321 at Cal Maritime.

EPO 3322 Diesel Engineering II/Simulator (1 unit)
Term Typically Offered: F, SP
Prerequisite: EPO 220 or EPO 220. Concurrent: EPO 322L or EPO 3322L.

Engineering systems and components associated with diesel power plants. Includes exhaust treatment equipment and advanced engine technologies applied to the reduction of harmful emissions. Practical training in diesel engine systems, normal operations and maintenance, and casualty procedures. 1 lecture. Formerly EPO 322 at Cal Maritime.

EPO 3322L Diesel Engineering II/Simulator Laboratory (1 unit)
Term Typically Offered: F, SP
Prerequisite: EPO 220 or EPO 2220. Concurrent: EPO 322 or 3322.

Use Diesel Plant Simulator to operate a heavy-fuel diesel-propulsion plant under normal operating and emergency conditions. Diagnose combustion and machinery faults representative of those encountered in operating diesel power plants. Engine Team Management techniques utilizing the simulator as an instructional tool to train using good communication and problem solving even during stressful conditions. 1 laboratory. Formerly EPO 322L at Cal Maritime.

EPO 3343 Refrigeration & A/C (1 unit)
Term Typically Offered: SP
Prerequisite: ME 240 or ME 2241.

Introduction to refrigeration and air conditioning systems on merchant vessels. Basic thermodynamics theories of refrigeration systems: compressors, condensers, evaporators, control devices. Environmental regulations and requirements. Operational procedures: maintenance, troubleshooting and repair. 1 laboratory. Formerly EPO 343 at Cal Maritime.

EPO 3390 Independent Study (1-3 units)
Term Typically Offered: F, SP, SU
Prerequisite: Consent of instructor.

Substantial study above and beyond the regular offerings in the Academy catalog. Arrange with an Academy faculty member to be the Independent Study Advisor. Approved Application for Independent Study must be on file in the Office of the Registrar. Formerly EPO 390 at Cal Maritime.

EPO 3395 Special Topics (1-3 units)
Term Typically Offered: F, SP, SU
Prerequisite: Consent of instructor.

Special topic courses are intended to enable each department to offer an elective course of study when faculty scholarship activities, the expertise of visiting faculty, or off-campus educational programs may afford a unique and worthwhile learning experience. 1 to 3 lectures. Formerly EPO 395 at Cal Maritime.