Environmental Resources – Power Generation Technology (ERPG)

Description

This program is geared towards students interested in mechanical and electrical systems, and will prepare students for entry-level positions in the steam and electrical power generation and distribution industry.

ERPG 0950
Power Plant Fundamentals 3 units
This course is an introduction to power plants and electrical power generation. Major topics include the systems, equipment and components required for power generation.

ERPG 0951
Mechanical Fundamentals 2 units
This course identifies maintenance fundamentals of typical power plant equipment. Specific topics include various mechanical equipment, preventative maintenance programs and ongoing general and specific maintenance requirements.

ERPG 0953
Technical Document Reading 2 units
This course is a fundamental study of technical documentation used in power generation and process plant applications. Specific topics include basic diagrams and symbols, flow and electrical diagrams, piping and instrument diagrams (P&ID), and manufacturer operation and equipment manuals.

ERPG 0954
Steam Turbines and Generators 2 units
This is an introductory course on the design, function and operation of steam turbines, auxiliary systems and steam turbine/electrical generators in power plant applications.

ERPG 0955
Gas Turbine Engines and Generators 1 unit
This is a survey course of gas turbine engines used in simple cycle and combined cycle applications for power generation. Specific topics include aero and fixed-frame derivates, combustion turbine sections, auxiliary systems, and operational procedures for various combustion turbine applications.

ERPG 0956
Plant Water Chemistry and Treatment 3 units
This is a survey course of water chemistry principles and treatment application used in power generation or process plant applications. Specific topics include demineralization, reverse osmosis, and treatment programs for boilers, cooling towers, condensate systems and feedwater systems.
ERPG 0961
Steam Generation and Boilers 3 units
This course is a survey of boilers and heat recovery steam generators (HRSG). Specific topics include the theory of steam generation, boiler and HRSG configurations, components and auxiliary equipment, boiler operation and protective features.

ERPG 0962
Steam Turbine and Support Systems 2 units
This is an introductory course on the design, function and operation of steam turbines.

ERPG 0963
Power Plant Support Systems 3 units
This course is an introduction to power plant support systems. Major topics include: the various supporting systems, equipment and components required for power generation.

ERPG 0964
Chemistry for Power Generation 3 units
This is a survey course of water chemistry principles and treatment applications used in power generation or process plant applications. Specific topics include water treatment and water treatment equipment; process systems water treatment, boiler and HRSG water treatment, and water treatment chemicals and applications.

ERPG 0970 3 units
Combustions Turbines and Support Systems
This is a survey course of combustion turbines used in simple cycle and combined cycle applications for power generation. Specific topics include Brayton cycle, gas turbine construction and application, gas turbine support systems, and operation, reliability, and efficiency.

ERPG 0971 2 units
Electrical Generators
This is an introductory course on the design, function and operation of electrical generators in power plant applications. Major topics include generator construction and application, generator support systems, and generator operation and control.

ERPG 0972 3 units
Instrumentation and Process Control
This is a survey course of instrumentation and process control principles and applications used in power generation applications. Specific topics include power plant controls, types and applications of field devices, automatic control loop responses, simple control/feedback loops, and logic control systems.
ERPG 0973 3 units
Electrical Fundamentals
This course covers basic electricity and identifies distribution and transmission. Specific topics include basic electrical theory, motor and motor controller constructions and application, electrical distribution systems and equipment, bulk electric system and electrical safety.

ERPG 1003 3 units
Principles of Electricity
This is an introductory course in electronics. Students will gain their first exposure to circuits, components of circuits, and reading schematic diagrams. Additional topics will include AC and DC components, sustainable sources of electric energy, circuitry, and current trends in the design of efficient electronic components that reduce energy consumption.

ERPG 1049 1 unit
Power Generation Technology Work Experience I
Occupational Work Experience is supervised employment extending classroom-based occupational learning at an on-the-job learning station relating to the student’s educational or occupational goal.

ERPG 1549 2 units
Power Generation Technology Work Experience 2nd Enrollment
Occupational Work Experience is supervised employment extending classroom-based occupational learning at an on-the-job learning station relating to the student’s educational or occupational goal.

ERPG 2049 3 units
Power Generation Technology Work Experience 3rd Enrollment
Occupational Work Experience is supervised employment extending classroom-based occupational learning at an on-the-job learning station relating to the student’s educational or occupational goal.

ERPG 2549 3 units
Power Generation Technology Work Experience 3rd Enrollment
Occupational Work Experience is supervised employment extending classroom-based occupational learning at an on-the-job learning station relating to the student’s educational or occupational goal.

ERPG 2929 1-2 units
Special Studies
This course provides an opportunity for capable students to do a research project or other study in an area of special interest. This course may be taken for credit a total for four times.