

POWER PLANT TECHNOLOGY

Professor Bosela (Program Coordinator) 330-941-3286

This program prepares graduates to perform basic operating functions required in electric utility power plants, and other related industries. Students gain knowledge in electrical theory, electrical machinery and controls, power plant operations, boiler, turbine, and generator operations, power plant instrumentation, and pollution control equipment. In addition, college writing, oral communications, and general education form an integral part of the program. Upon successful completion of the program, students are prepared for entry-level employment in the utility industry as power plant operators.

Associate of Technical Study Degree Program

First Year

Fall Semester

<input type="checkbox"/>)GER - PS	Personal & Social Responsibility	3 SH
<input type="checkbox"/>)ENGL 1550	College Writing 1	3 SH
<input type="checkbox"/>)STECH 1500	Technical Skills Development	4 SH
<input type="checkbox"/>)EUT 1502/L	Power Plant Fundamentals & Lab*	<u>4+2 SH*</u>
		16 SH

Spring Semester

<input type="checkbox"/>)EUT 1500/L	Electrical Fundamentals & Lab	3+1 SH
<input type="checkbox"/>)EUT 1503/L	Power Plant Mechanical Equipment & Lab	3+1 SH
<input type="checkbox"/>)MATH 2623	Survey of Math	3 SH
<input type="checkbox"/>)ENGL 1551	College Writing 2	3 SH
<input type="checkbox"/>)GER-SI	Societies & Institutions	<u>3 SH</u>
		17 SH

Summer Semester

<input type="checkbox"/>)EUT 2699	Electric Utility Co-op (Optional)	2 SH
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Second Year

Semester 3

<input type="checkbox"/>)EUT 2604/L	Power Plant Electrical Equipment & Lab	3+1 SH
<input type="checkbox"/>)EUT 2605/L	Intermediate Power Plant Systems & Lab	3+1 SH
<input type="checkbox"/>)EUT 2606/L	Power Plant Operator Practice & Lab	3+1 SH
<input type="checkbox"/>)COMM 1545	Communication Theory and Practice	<u>3 SH</u>
		15 SH

Semester 4

<input type="checkbox"/>)EUT 2607/L	Power Plant Inst and Control & Lab	3+1 SH
<input type="checkbox"/>)EUT 2608/L	Advanced Power Plant Systems & Lab	3+1 SH
<input type="checkbox"/>)EUT 2609/L	Power Plant Supervision & Lab	3+1 SH
<input type="checkbox"/>)GER - NS	PHYS 1500/L or A&S 2600	<u>4 SH</u>
		16 SH

Semester Hours for degree 64-66 SH

***Note: MATH 1501 or level 3 on the MPT and eligibility to take ENGL 1550 (i.e. completion of R&SK and ENGL 1540 or test out) are prerequisites. STECH 1500 is a pre- or co-requisite.**

Power Plant Technology Course Descriptions

EUT 1500. Electrical Fundamentals. Introduction to direct and alternating current circuits. Study of resistance, capacitance, inductance, Ohm's and Kirchoff's Laws applied to circuits. Three hours lecture per week. Concurrent with EUT 1500L. Prereq. STECH 1500 and MATH 1501 or at least level 3 on the Mathematics Placement Test. 3 s.h.

EUT 1500L. Electrical Fundamentals Lab. Lab component of EUT 1500. Provides hands-on instruction in the use of electrical test equipment including digital multimeters, power supplies, oscilloscopes, etc. Three hours per week. Concurrent with EUT 1500. Prereq. STECH 1500 and MATH 1501 or at least level 3 on the Mathematics Placement Test. 1 s.h.

EUT 1502. Power Plant Fundamentals. Introduction to power plant systems including boiler, turbine, generator, condenser, pumps, and auxiliary equipment. Emphasizes use of schematics and diagrams in discussing plant systems. Includes plant safety training. Four hours lecture per week. Prerequisite MATH 1501 or at least level 3 on the MPT, and eligibility to take ENGL 1550. Concurrent with EUT 1502L, STECH 1500. 4 s.h.

EUT 1502L. Power Plant Fundamentals Lab. Lab component to accompany EUT 1502. Provides hands-on activities related to power plant systems including boiler, turbine, generator, condenser, pumps, and auxiliary equipment. Emphasizes use of schematics and diagrams in discussing plant systems. Includes plant safety training. Six hours per week. Concurrent with EUT 1502. 2 s.h.

EUT 1503. Power Plant Mechanical Equipment. Introduction to various mechanical equipment found in power plants including pumps, fans, blowers, valves, heat exchangers and power transmission equipment. Mechanical concepts of force and torque. Basic types of bearings, seals, and lubrication. Mechanical assembly drawings and diagrams. Three hours lecture per week. Concurrent with EUT 1503L. Prereq: STECH 1500, EUT 1502, EUT 1502L, and MATH 1501. 3 s.h.

EUT 1503L. Power Plant Mechanical Equipment Lab. Lab component to accompany EUT 1503. Provides hand-on activities related to pumps, fans, blowers, valves, heat exchangers, bearings, seals, lubrication, and power transmission equipment. Three hours lab per week. Concurrent with EUT 1503. Prereq: STECH 1500, EUT 1502, EUT 1502L, and MATH 1501. 1 s.h.

EUT 2604. Power Plant Electrical Equipment. Study of three phase power systems including motors, generators, transformers, and switchgear. NEC and NESC Code requirements, automatic and manual motor controls, variable speed drives, circuit protection. Three hours lecture per week. Concurrent with EUT 2604L. Prereq: EUT 1500 and EUT 1500L. 3 s.h.

EUT 2604L. Power Plant Electrical Equipment Lab. Lab component to accompany EUT 2604. Provides hands-on activities related to three phase power systems, motors, generators, transformers, and switchgear. Three hours lab per week. Concurrent with EUT 2604. Prereq: EUT 1500 and EUT 1500L. 1 s.h.

EUT 2605. Intermediate Power Plant Systems. Continuation of EUT 1502. Study of power plant cycles, thermodynamic properties of water and steam, and use of steam tables. Includes thermodynamic analysis of boiler system, feedwater, superheat, and reheat systems, heat transfer in pre-heaters, turbine, condenser, and pumps. Three hours lecture per week. Concurrent with EUT 2605L. Prereq.: EUT 1503, and EUT 1503L. 3 s.h.

EUT 2605L. Intermediate Power Plant Systems Lab. Lab component to accompany EUT 2605. Provides hands-on and computational methods of dynamic analysis of boiler system, feedwater, superheat, and reheat systems, heat transfer in pre-heaters, turbine, condenser, and pumps. Three hours per week. Concurrent with EUT 2605. Prereq.: EUT 1503, and EUT 1503L. 1 s.h.

EUT 2606. Power Plant Operator Practice. Discusses the operation of a large utility power plants including start-up and shut-down of all major systems, disturbance response, and safe operation of plant systems. Three hours lecture per week. Concurrent with EUT 2606L, EUT 2605, and EUT 2605L. Prereq.: EUT 1503 and EUT 1503L. 3 s.h.

EUT 2606L. Power Plant Operator Practice Lab. Provides students the opportunity to practice operation of a large utility power plant system on a power plant simulator. Three hours per week. Concurrent with EUT 2606, EUT 2605, and EUT 2605L. Prereq.: EUT 1503 and EUT 1503L. 1 s.h.

EUT 2607. Power Plant Instrumentation & Control. Introduces basic principles of process instrumentation and control systems. Measurement parameters such as flow, pressure, level, temperature, pH, etc. Includes coverage of programmable logic controllers, and distributed control systems. Three hours lecture per week. Concurrent with EUT 2607L. Prereq.: EUT 2604/L, and EUT 2605/L. 3 s.h.

EUT 2607L. Power Plant Instrumentation & Control Lab. Lab component to accompany EUT 2607. Provides hands-on activities related to process instrumentation and control systems. Three hours per week. Concurrent with EUT 2607. Prereq.: EUT 2604/L, and EUT 2605/L. 1 s.h.

EUT 2608. Advanced Power Plant Systems. Continuation of EUT 2605. Examines on-line boiler control concepts, including combustion, feedwater, header pressure, oxygen content, power demand, and other processes as applied to utility boilers and process heat supply boilers. Also examines pollution control systems, gas turbines and diesel generators. Three hours lecture per week. Concurrent with EUT 2607/L and EUT 2608L. Prereq.: EUT 2605/L. 3 s.h.

EUT 2608L. Advanced Power Plant Systems Lab. Lab component to accompany EUT 2608. Provides hands-on activities related to on-line boiler control concepts, pollution control systems, gas turbines and diesel generators. Three hours per week. Concurrent with EUT 2607/L and EUT 2608. Prereq.: EUT 2605/L. 1 s.h.

EUT 2609. Power Plant Supervision. Examines the leadership role of the supervisor, including facilitating change, decision making and problem solving, conflict resolution and management, and legal issues. Prepares students for supervisory positions in a power plant environment. Three hours lecture per week. Concurrent with EUT 2609L. Prereq.: EUT 2606/L. 3 s.h.

EUT 2609L. Power Plant Supervision Lab. Lab component to accompany EUT 2609. Provides group activities related to leadership, facilitating change, decision making, problem solving, conflict resolution, human relations, and legal issues. Three hours per week. Concurrent with EUT 2609. Prereq.: EUT 2606/L. 1 s.h.

EUT 2699. Electric Utility Co-Op. Compensated and evaluated work experience with local utility company. Forty contact hours per week. Prereq: Permission of Electric Utility Technology Program Coordinator. 2 SH.

Course descriptions for other courses may be found in the YSU Bulletin.

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