

ELECTRIC UTILITY TECH (EUT)

EUT 1500 Electrical Fundamentals 3 s.h.

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.

Prereq.: ENTC 1500 and MATH 1501 or at least level 3 on the Mathematics Placement Test.

Concurrent with: EUT 1500L.

EUT 1500L Electrical Fundamentals Lab 1 s.h.

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.

Prereq.: ENTC 1500 and MATH 1501 or at least level 3 on the Mathematics Placement Test.

Concurrent with: EUT 1500.

EUT 1502 Power Plant Fundamentals 4 s.h.

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.

Prereq.: MATH 1501 or Level 3 on MPT and eligible to enroll in ENGL 1550.

Prereq. or concurrent: ENTC 1500.

Concurrent: EUT 1502L.

EUT 1502L Power Plant Fundamentals Lab 1 s.h.

Lab component to accompany EUT 1502. Provides introduction to power generating plant systems and equipment including boiler, turbine, generator, condenser, pumps, and auxiliary equipment. Emphasizes the use of schematics and diagrams in discussing plant systems. Three hours laboratory per week.

Concurrent with: EUT 1502.

EUT 1503 Power Plant Mechanical Equipment 3 s.h.

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.

Prereq.: ENTC 1500 and EUT 1502, EUT 1502L, and MATH 1501.

Concurrent with: EUT 1503L.

EUT 1503L Power Plant Mechanical Equipment Lab 1 s.h.

Lab component to accompany EUT 1503. Provides hands-on activities related to pumps, fans, blowers, valves, heat exchangers, bearings, seals, lubrication, and power transmission equipment. Three hours lab per week.

Prereq.: ENTC 1500, EUT 1502, EUT 1502L, and MATH 1501.

Concurrent with: EUT 1503.

EUT 1504 Maintenance Fundamentals 1 4 s.h.

Introduction to blueprint reading and technical diagrams, use of hand tools and power tools, safety and health, development of troubleshooting skills, chemical hazards, and material safety data sheets. Three hours lecture, and three hours lab per week.

Prereq. or concurrent: ENTC 1500.

EUT 1505 Maintenance Fundamentals 2 4 s.h.

Introduction to piping systems, basic hydraulics and pneumatics, hydraulic and pneumatic troubleshooting, rigging and equipment installation, welding principals, oxyacetylene cutting and welding. Three hours lecture, three hours lab per week.

Prereq.: EUT 1502 and EUT 1504, concurrent or prerequisite EUT 1503.

EUT 2600 Electric Utility Distribution Systems 4 s.h.

Applications of transformers, switchgear, regulators, overhead conductors and underground cable. Power factor correction, voltage regulation, coordination and overcurrent protection of distribution circuits.

Prereq.: EUT 1500.

EUT 2601 Electrical Codes and Standards 4 s.h.

National Electrical Code and National Electrical Safety Code as applied to overhead and underground electric utility distribution systems. Pole guying, overhead conductor sag and tension, cable pulling, and clearances. Four hours lecture per week.

Prereq.: EUT 2600.

EUT 2604 Power Plant Electrical Equipment 3 s.h.

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.

Prereq.: EUT 1500 and EUT 1500L.

Concurrent with: EUT 2604L.

EUT 2604L Power Plant Electrical Equipment Lab 1 s.h.

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.

Prereq.: EUT 1500 and EUT 1500L.

Concurrent with: EUT 2604.

EUT 2605 Intermediate Power Plant Systems 3 s.h.

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, condensers, and pumps. Three hours lecture per week.

Prereq.: EUT 1503, and EUT 1503L.

Concurrent with: EUT 2605L.

EUT 2605L Intermediate Power Plant Systems Lab 1 s.h.

Lab component to accompany EUT 2605. Provides hands-on and computational methods to dynamic analysis of boiler system, feedwater, superheat, and reheat systems, heat transfer in pre-heaters, turbine, condenser, and pumps. Three hours per week.

Prereq.: EUT 1503, and EUT 1503L.

Concurrent with: EUT 2605.

EUT 2606 Power Plant Operator Practice 3 s.h.

Discusses the operation of 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.

Prereq.: EUT 1503 and EUT 1503, EUT 1503L.

Concurrent and EUT 2605/EUT 2605L.

EUT 2607 Power Plant Instrumentation and Control 3 s.h.

Introduces basic principles of process instrumentation and control systems. Measurement parameters such as flow, pressure, level, temperature, and pH. Includes coverage of programmable logic controllers, and distributed control systems. Three hours lecture per week.

Prereq.: EUT 2604, EUT 2604L and EUT 2605, EUT 2605L.

Concurrent with: EUT 2607L.

EUT 2607L Power Plant Instrumentation & Control Lab 1 s.h.

Lab component to accompany EUT 2607. Provides hands-on activities related to process instrumentation and control systems. Three hours per week.

Prereq.: EUT 2604L, and EUT 2605L.

Concurrent with: EUT 2607.

EUT 2608 Advanced Power Plant Systems 3 s.h.

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.

Prereq.: EUT 2605, EUT 2605L.

Concurrent with: EUT 2607, EUT 2607L and EUT 2608L.

EUT 2608L Advanced Power Plant Systems Lab 1 s.h.

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.

Prereq.: EUT 2605, EUT 2605L.

Concurrent with: EUT 2607, EUT 2607L and EUT 2608.