

Power Generation and Transmission (Career Track)
AATECH Course Descriptions

Computer Applications CSIT 120 (*Prerequisite for all AATECH courses*): Hands-on experience with microcomputers and microcomputer applications featuring the use of Windows, word processing, spreadsheet, database, and presentation graphics software.

Graphic Design ARTD 100: Design principles as they apply to graphic communication. Abstract and pictorial design for the printed media. Film and architectural signage. Lettering is applied as an abstract design element.

Electrical Theory I with Lab ELCT 111 and ELCT 111L: A study of the fundamentals of electrical theory including basic safety practices and a history of industrial electricity and electronics. Course topics include the theory and application of fundamental units of measurement, wire splicing, permanent magnets, electromagnets, and electrical/electronic symbols. Laboratory time includes instruction in the proper use and care of electrical tools, meters, instruments, and equipment with an emphasis on safe working habits.

Electrical Theory II with Lab ELCT 121 and ELCT 121L: A detailed study of the theory of alternating current including the generation of AC; electrical degrees, effective and average values; addition and subtraction of phasors; resistance, inductance, and capacitance in AC circuits; reactance; and impedance. This course also includes an in-depth study of single-phase series and parallel circuits, three-phase power generation, and current and voltage relationships. Laboratory activities include practice with basic DC motor circuits, power transmission lines, and instruction in the safe use of three-phase power supplies. This course also includes practice using AC voltmeters, AC ammeters, and AC watt meters.

Supervision PWM 125: Managerial aspects of public utilities including organization, decision making, coordination, communication, and public relations. Personnel management including recruiting, training, evaluation, discipline, promotion, morale, and grievances. Safety programs and encouraging safe conditions, actions and attitudes.

Power Plant Operation: Overview of power plant operations, including power generation systems, the operation and maintenance of power plant equipment including pumps, valves, motors and fans, thermodynamics and qualities of steam in power generation, industrial turbine operations and cogeneration operations.

Control Systems Operation: Overview of control systems used in the transmission and distribution of electricity, including a discussion of safety procedures, power flow, government regulation, operational and economic constraints and effective system management.

Systems Protection: Overview of the concepts and requirements of power system protection including a discussion of high voltage power equipment applications such as transformers, circuit breakers, and bus structures and disconnects. Also includes a discussion of the need and requirement for low and high voltage metering and recording of system data.