

# POWER CONSTRUCTION & ENGINEERING TECHNOLOGY (PCET)

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## **PCET3001 | Advanced Electrical Codes | Lecture (3 Credits)**

Examine and research the different codes utilized in the building and power industries including the National Electrical Code, the National Electrical Safety Code, Energy Code, and the International Building Codes as they apply to electrical buildings, energy production and transmission systems.

## **PCET3002 | Energy Production | Lecture/Laboratory (3 Credits)**

Investigate how electrical power is produced and distributed through the examination of conventional and renewable methods of energy production including energy storage, transmission, and distribution methods and techniques for design solutions.

## **PCET3003 | Safety Engineering | Lecture (3 Credits)**

Examination of applicable safety codes to assure that engineered systems provide acceptable levels of safety through analysis of safety codes, case studies, and best practices that provides for the safe installation, operation, and maintenance of electric power and communication utility systems and electrical construction.

## **PCET3004 | Digital Design | Lecture/Laboratory (2 Credits)**

Examine digital and electronic systems through the use of Boolean algebra, logic gates, combination and sequential logic through problem solving methods connection to real-world examples, and the design of sequential logic systems.

## **PCET3006 | Renewable Energy Systems | Lecture (3 Credits)**

Investigate the expanding energy industry with an emphasis on existing and emerging renewable energy systems, including the economics of generation and transmission with an emphasis on future usage as a design principle.

## **PCET4001 | Electrical Utility Design and Estimating | Lecture/Laboratory (4 Credits)**

Electrical design and estimate of a simulated utility project covering the generation, transmission and distribution of an electrical power system. This project will include materials, storage solutions, cost estimates with an emphasis on practical design implementations through the utilization of 2D, 3D, and other modeling and analysis software to produce a final portfolio.

## **PCET4002 | Advanced 3D Power System Design | Lecture/Laboratory (3 Credits)**

Electrical design of a complex building project. This project covers the utility to outlets, with a focus on generation and distribution of high, medium, and low voltage interfacing and protection through utilization of building and electrical codes. Practical design implementation is emphasized. Detailed documentation of all aspects of the project through the utilization of 2D, 3D, and other modeling and analysis software to produce a final portfolio.

## **PCET4003 | Power Protection and Controls | Lecture/Laboratory (4 Credits)**

Analyze the components and operation of protective devices and controls in electric utility generation stations, distribution substations, and building services and feeders. Examination of protective device functions, control systems, design perimeters, and coordination from generation to end user. Practical design implementation and coordination is emphasized with utilization of 2D and 3D modeling and analysis software.

## **PCET4004 | Power Limited Systems | Lecture/Laboratory (2 Credits)**

Examine power limited systems including fire, security, controls and information technology utilized in power plants, utility distribution, and automated systems integrated in the built environment. Practical design implementation with application of codes and standards and the utilization of 2D and 3D modeling and analysis software.

## **PCET4005 | Integrated Field Systems | Lecture/Laboratory (2 Credits)**

Application of the principles of geographic information systems for electrical utility and building electrical systems with data modeling, integration methods, and various geospatial analysis utilizing 2D and 3D mapping and modeling software.

## **PCET4006 | MEP Integration | Lecture/Laboratory (2 Credits)**

Employing a holistic approach, integrate electrical design through coordination with mechanical and plumbing (MEP) systems into building information modeling (BIM) software for design decision-making, production of accurate documentation, predicting performance, cost-estimating and construction planning.

## **PCET4007 | Existing Buildings & Structures | Lecture/Laboratory (3 Credits)**

Design medium, low-voltage, and power-limited systems that integrate with existing building electrical systems employing electrical codes and standards and energy appraisals. Practical design implementation is emphasized with utilization of 2D and 3D modeling and analysis.

## **PCET4100 | Capstone | Capstone (3 Credits)**

Integration of all knowledge gained in previous coursework to create a real-world comprehensive electrical construction project. Working in teams, the capstone project is presented and reviewed by industry experts and leaders, providing valuable feedback from their own experiences.