Electrical Engineering

Introduction

Pioneers in the field of power in organizations, in addition to the design and control of power generating equipment.

Professional Profile

The Electrical Engineering Program seeks to train professionals with expertise in power and control systems, competent, analytical, creative, capable of generating knowledge, solve problems, and make decisions, with high sense of professional and social responsibility, with a rational and efficient use of resources.

Occupational Profile

Power Generation

Design, operation and maintenance of power equipment, protection and control of central power generation. Comparative study of alternative energy sources.

Transmission and Distribution Systems

Design, planning and building of networks of medium and high voltage through the power system modeling, considering the demand projection studies, load flow and optimization.

Reliability of electrical systems

Modeling registered electrical systems in a framework of quality and continuity, given the national standards (CREG) and international standardization.

Systematic control and electrical systems

Using modern techniques of digital control, design and construction of systems for monitoring and automation of power grids: SCADA systems, Remote control, Control.

Electrical and lighting systems

Design, construction and maintenance of electrical, industrial, commercial, residential and official facilities within the intelligent building concept. Design, construction and maintenance of public, industrial, commercial, residential lighting systems while optimizing the power system.

Industrial Maintenance

While keeping in optimal conditions of production and service, plan the maintenance of the strength, control and protection of energy equipment involved in industrial processes.

Systematization and instrumentation

Design and implementation of software and hardware using new technologies to improve competitiveness and efficiency of the industrial processes.

Instrumentation and control

Using modern techniques of acquisition and signal processing, design and build measurement and control systems for monitoring and automation of industrial processes.

Formulation and evaluation of power projects

Formulation, evaluation, control and management of projects in the Colombian electricity system. Develop conceptualization of economic, financial and social evaluation of a power project.

Mission

The Faculty of Electrical Engineering focuses its work on the development and dissemination of scientific knowledge in the fields of electricity, electronics and communications. As a unit of an official academic institution of Higher Education, it provides quality teaching and promotes research, continuing education and outreach to the community thus contributing to the scientific, technological, cultural and humanistic development of our society.

Objectives

Consistent with the Mission of the Universidad Tecnologica de Pereira, the Electrical Engineering program seeks to train high academic professionals, leaders in social dynamics, with ethical, critical and investigative capacity, enabling them to interpret the phenomena surrounding the electrical energy and preparing them to develop scientific and technical methods that make possible its production and practical, useful and affordable usage.

Lines of Research and Development

- Electrical Power Systems
- Electrical Systems Planning
- Control applied to Electrical and Industrial Systems
- Virtual Instrumentation
- Automation
- Control Systems
- Power System Simulation
- Power Electronic

Laboratories

The program currently has 5 physical spaces that are used to teach laboratory workshops. Each laboratory is equipped with a range of tools that cover certain topics of electrical engineering such as:

- The electrical circuits
- The Electronics
- The industrial automation
- The electrical machines
- Communications

The rooms are currently used by 8 undergraduate programs and 1 postgraduate program and are opened Monday to Saturday from 7 am to 10 pm. The rooms are named for their primary use, but are similarly equipped. These rooms are:

1. Electrical Circuits Laboratory: basic electricity subjects are taught, such as: Electrical, Circuit Lab I, II and III, Analog Electronics.

2. Electronics Laboratory: Subjects related to analog and digital electronics are taught; such as: electronics laboratories, microcontrollers, and communications.

3. Electrical Machines Laboratory: This room is equipped with motor-generators that serve as workshops for the subjects of electrical power and electrical machines and transformers.

4. Electrical Measurements Laboratory: In this lab students are educated about sensors, electrical measurements, electronics, electronic design, digital systems, and control.

5. Automation Laboratory (also used as normal classroom): This room is used for the teaching of industrial automation systems, programmable logic automation, programmable digital systems and also as a normal classroom for subjects such as industrial relief, generation, and so on.

In addition to these rooms, there are also 3 other areas which are:
1. Control Laboratory, in charge of the Engineers Eduardo Giraldo and Didier Giraldo.

2. Power Electronics / Robotics Lab. Lead by the engineers Alfonso Gomez Alzate and Luis Hernando Rios.

3. New Technologies Laboratory under the surveillance of the engineer Alvaro Angel Orozco.
These rooms are used by research groups working on research projects, thesis papers and some faculty offices belonging to these groups.

Fuente: http://www2.utp.edu.co/english/academic-programs/169/electrical-engineering