Master in Electrical Engineering

Introduction

Power system planning, design, operation and maintenance of control systems.

Mission

The Master program in Electrical Engineering of the Universidad Tecnologica de Pereira is conceived as a space for research and technological innovation in the efficient and optimal use of power and its components, as an essential asset for the development of our society.

Objectives

- Promote research in science and technology focused on the needs of the country in the area of ??Electrical Engineering
- To train creative professionals capable of generating and adapting knowledge on electrical engineering
- To train teachers and researchers in the field of electrical engineering.
- To train researchers with enough scientific bases to enable those to work with renowned research groups.

Awarded Title Master in Electrical Engineer

Lines of Specialization

1. **Planning in Power Electrical Systems**

1.1 Research Groups

Planning in electrical systems

This line develops engineering and mathematics applications that are present in real-life problems. One of its main research areas are financial and economic aspects and of production related to electricity markets. Another aspect studied is the production in industrial environments, i.e. in flexible manufacturing related problems, problems with task assignments, transportation, schedule assignments and packaging problems.

Research Interests:

- Transmission Planning
- Distribution Planning
- Hydrothermal distribution
- Electrical Quality service

- Stability of Power Systems
- Electrical Machines (Modeling and control)
- Electrical protection
- Soft computing applications to power systems

Line of Computer Sciences

It includes the study of the theoretical foundations of information and computation and their implementation in computer systems. The different fields emphasize in specific results of computing, of the properties of algorithms and of the theory of programming languages.

Operations Research

This line develops engineering and mathematics applications present in real-life problems. One of its main research areas are financial and economic aspects of production related to electricity markets. Another aspect studied is the production of industrial environments, for example, flexible manufacturing related problems, problems with assignments, transportation, assignment schedules and packaging problems.
Areas of research:

- Planning and optimum management of processes
- Risk Analysis
- Applied Mathematics
- Neural Networks
- Optimization (accurate and combinatorial)
- Probabilistic models
- Assignment and packing problems.

2. Control in Industrial Electrical Systems

2.1 Lines

Line in Instrumentation and Control

It seeks to strengthen research through the creation, assimilation and adaptation of technologies applied to the solution of problems related to control and instrumentation of industrial process and modeling and of the development of modern models for the control of industrial facilities.

Industrial Electronics Line

This line is responsible for the power devices in solid state, different types of converters based on them and their application in electric power systems, improving reactive compensation or through methods to improve power quality, also the study of static power converters in industrial systems.

Line in Bioelectronics

Bioelectronics is the branch of electronics that is responsible for studying the behavior of biological organisms and how to model, analyze and characterize the functions and processes of the parts that belong to it by means of mathematical models, circuital and digital processing of signals.

Mechatronics Line

It's the integration of mechanical engineering with electronics and with the control of intelligent computers for the design and manufacture of products and processes.

Fuente: http://www2.utp.edu.co/english/masters/183/master-in-electrical-engineering