**INSTITUT SUPERIEUR DE TECHNOLOGIES**

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Agréé par le FAFPA (ministère de l'emploi)

Diplômes reconnus par le CAMES

Vingt (20) ans au service de la formation des ressources humaines

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# Bachelor of Engineering in Electrical Engineering

## 1. TITLE OF PROGRAMME

The programme shall be Bachelor of Engineering in Electrical Engineering **B.Eng. (BEE)**

## 2 PREAMBLE

### 2.1 Background

Electrical Engineering is a branch of Engineering that deals with the study of electrics, electronic, electro-magnetic, mathematics, thermal power plant, hydro-electric plant model, electric power, electric energy system and control etc.

Students are provided practical knowledge along with theoretical knowledge on how to use the electric equipment for different electric activities

The institutions or colleges will also give you research facility in the lab and project work in the last two semester on the course.

Electrical engineers are responsible for designing new systems, solving problems, testing equipment, and working on a wide range of components and systems, including communications systems, power plants, electrical machines, navigation systems, and electrical systems for automobiles and aircraft. This practical qualification will ensure you graduate job-ready as an electrical engineering technologist in many industries such as power generation and supply, communications and media, computer systems, and robotics. Upon completion of this program, you will gain skills and knowledge in the latest electrical engineering technologies.

the course intends to cultivate the responsibility in preserving the peace by learning, creating, and selecting the appropriate technology.

### 2.2 Justification

You'll learn to design, develop and supervise the manufacture, installation, operation and maintenance of electrical systems. You'll also work on systems for the generation, distribution, utilisation, and control of electric power and electronic systems used for a variety of domestic and industrial applications.

You'll develop high-level technical and design skills and focus on a specialist area such as energy conversion, power systems or high-voltage equipment.

You'll have the opportunity to design creative solutions through inspiring and sustainable design-and-build projects, as well as taking part in the Engineers Without Borders Challenge - a humanitarian-focused course offered in all IST BURKINAFASO engineering degrees.

To ensure you graduate job-ready, you'll also have an opportunity to undertake a work-integrated learning (industry experience) elective

### 2.3 Target Group

The targeted group includes holders of:

Advanced Level Certificate of Education;
Diplomas in Engineering and other related Science and Technology fields;
Degrees in the Physical Sciences.

## 3. Programme Objectives

### 3.1. General Objectives

The general objectives of the programme are to:

1. To enable electrical engineers with the growth in health, behavior, mind, and wisdom to be ready to earn a living, support families, society, organization, and environment.
2. To develop extensive knowledge skill and vision; realization in oneself, others, and society; enthusiastic in knowledge and goodness; reasonable thinking skill; discipline to become completed electrical engineer in physical body, behavior, mind and wisdom.
3. To develop communication skills in both Thais and English.
4. To develop critical thinking skill, synthesis skill, and discretionary skill in electrical and telecommunication engineering.

### 3.2. Specific Objectives

- Students choose Bachelor in Electrical engineering, because they want to gain knowledge and to do research on how to generate power plants. The students can gain knowledge on the topic by both theoretically and practically.
- From this course, one can get to know how to design the products, how to manufacture them, how to install the machines, how to test them and make better for use.
- And how to develop and improve the devices, equipment; how to check the maintenance of the product; how to check quality and safety of using the products with their research for using in various electric work purposes.
- They can learn how to use various equipment, how to do data analysis, signal processing, designing etc. during the project work given by the department.
- There is good scope for the students of electrical engineering after the completion of course. They can apply for government and private sector jobs with good salary packages.
- The electrical engineering graduates can get their dream job after completion of the degree.
- The graduated students can do the job of electrical engineer, power project engineer, design engineer, electronics engineer, instrumentation engineer etc.

**Duration of the Programme:** 4 years and one Year for advanced Diploma student

**Programme Structure**

| Courses codes | Courses Names | Credit Units |
|---|---|---|
| | **Year one** | |
| | **Semester one** | |
| CS 002 | General english I | 3 |
| CEN 402 | Engineering Mathematics I | 4 |
| CEN 400 | Communication skills for technology | 3 |
| CCA 532 | Information and communication technology | 4 |
| OB 011 | Electrical fundamentals | 4 |
| BEE110 | Basic engineering science I | 4 |
| BEE119 | Basic electronics and domestic installation | 4 |
| BEE111 | Engineering technical drawing | 4 |
| | **Semester Two** | |
| BEE120 | Electricity and magnetism | 4 |
| BEE121 | Engineering Mathematics II | 4 |
| BEE122 | Electrical network analysis and fundamentals | 4 |
| BEE123 | C-programming | 3 |
| BEE124 | Analog and digital electronics | 4 |
| BEE125 | Basic engineering science II | 4 |
| BEE126 | Fundamental of mechanics and thermodynamics | 3 |
| BEE127 | Control and switching system | 4 |
| | | **60** |
| | **Year Two** | |
| | **Semester one** | |
| BBA210 | English for engineers | 4 |
| BEN211 | Engineering mathematics III | 4 |
| BEE212 | Electromagnetics Engineering II | 4 |
| BEE213 | Industrial electrical schemes analysis | 4 |
| BEN214 | Electrical machines I | 4 |
| BEE215 | Electrical power plants | 5 |
| MEE216 | English for engineers | 5 |
| | | 60 |
| | **Semester Two** | |
| BEE220 | Signal and system | 5 |
| BEN221 | Microprocessor and microcontroller | 5 |

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|---|---|---|
| BEE222 | Introduction to matlab programming | 5 |
| BEE223 | AC &DC generator repair and servicing | 5 |
| BEE224 | Electrical power utilization | 5 |
| BEE225 | Electrical machines II | 5 |
| | | **60** |
| | **Year Three** | |
| | **Semester One** | |
| BEN310 | Entrepreneurship and development | 5 |
| BEE311 | Industrial safety and maintenance | 5 |
| BEE312 | Electrical power transmission and distribution | 5 |
| BEE313 | Principles of mechatronics and applications | 5 |
| BEE314 | Smart grid technology | 5 |
| BEE315 | Robotics technology | 5 |
| | **Semester Two** | |
| BEN320 | Automation and control systems | 5 |
| BEE321 | Hydraulics and pneumatics automation systems | 5 |
| BEE322 | Motor rewinding and maintenance | 5 |
| BEE323 | Mechatronics based system installation and maintenance | 5 |
| BEE324 | Energy utilisation and instrumentation | 5 |
| BEE325 | Signal theory and digital circuit | 5 |
| | | **60** |
| | **Year Four** | |
| | **Semester One** | |
| BEE410 | Research methods and communication skills | 2 |
| BEE411 | Energy production | 2 |
| BEE412 | Electrical automation | 2 |
| BEE413 | Power system dynamics and control | 2 |
| BEE414 | Electrical services design and GIS | 2 |
| BEE415 | Computer networking | 2 |
| BEN416 | Power electronics I | 2 |
| BEE417 | Power electronics II | 2 |
| BEE418 | Electrical Drives and Tradition | 2 |
| BEE419 | Engineering Economic and Finance | 2 |
| BEE420 | Measurement and Industrial Technology | 2 |
| | **Semester Two** | |
| BEE420 | Computer simulation and modeling | 2 |

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|---|---|---|
| BEE421 | Economics of Power System | 1 |
| BEE422 | Theory for Electromagnetic Radiation | 1 |
| BEE423 | Electrical power systems management | 2 |
| BEE424 | Logic Circuits | 2 |
| BEE425 | Embedded system | 2 |
| BEE426 | Power Systems III | 2 |
| BEE430 | Safety Engineering and Management | 1 |
| BEE429 | Electromechanical Drive Systems | 1 |
| BEE427 | Internship | 4 |
| BEE428 | Thesis and Defense | 20 |
| | | **60** |
| GCU | | **180** |