

## **Introduction:**

The department runs B.Sc., M.Sc. and Ph.D. programs in Electrical & Electronic Engineering. The undergraduate B.Sc. program consists of five years of study, and contributes to knowledge in both fundamental and applied areas of Electrical Engineering. It provides a diverse curriculum that instills in our students the skills, talents and creativity necessary for the varied and rapidly changing requirements. This enables them to serve a wide variety of other fields that require leadership, teamwork, decision making and problem solving abilities.

The undergraduate students complete a total of 76 course units distributed as follows (including laboratories):

First year	14
Second year	16
Third year	16
Fourth year	16
Fifth year	14
-----	
Total	76
=====	

Each semester course unit has a total of 45 contact hours including lecturers and tutorials, while a laboratories course unit has 60 hours per semester. The program incorporates a practical “fourth term” assignment of eight weeks at the end of the second year of study. For the third and fourth years of study, there is industrial attachment during the long vacations.

In the course codes, the first integer after FEE denotes the year study. The second integer denotes as far as is possible, the subject area while the last integer denotes the semester in which the course is taught; 1 for the first and 2 for the second semester. Where the last integer is 0 it means that this is a course which is done throughout the two semesters such as the Engineering Project in the fifth year of study.

In order to cover this syllabus, service courses shall be provided by the following Departments.

Civil Engineering and Construction Engineering	FEE 252
Mechanical and Manufacturing Engineering	FEE 241/2, FEE 251, FEE 261/2, FEE 121/2.
School of Mathematics	FEE 111/2, FEE 121/2, FEE 271/2, FEE 471/2, FEE 571.
Department of Physics	FEE 101/2

The courses "Elements of Philosophy and "Communication Skills" and “ HIV/AIDS” are taught from the Board of Common Undergraduate Courses (BCUC).

## **COURSE UNITS**

### **FIRST YEAR**

FEE 101 Physics A  
FEE 111 Applied Mathematics A  
FEE 121 Pure Mathematics A  
FEE 131 Computer Science I  
FEE 141 CCS 001: Communication Skills  
FEE 151 CCS 008: Elements of Philosophy  
FEE 161 Mechanical Workshop Technology  
FEE 102 Physics B  
FEE 112 Applied Mathematics B  
FEE 122 Pure Mathematics B  
FEE 132 Computer Science II  
FEE 142 Electrical Measurements  
FEE 152 CCS010: HIV/AIDS  
FEE 162 Electrical Workshop Technology

### **SECOND YEAR**

FEE 201 Physical Electronics A  
FEE 221 Electrical Circuit Theory I A  
FEE 231 Computer science III  
FEE 241 Engineering Drawing A  
FEE 251 Thermodynamics for EE  
FEE 261 Mech. of Mach. & Str. of Mat. A  
FEE 271 Mathematics II A  
FEE 281 Laboratory IIA  
FEE 202 Physical Electronics B  
FEE 222 Electric Circuit Theory I  
FEE 232 Computer Science IV  
FEE 242 Engineering Drawing B  
FEE 252 Fluid Mechanics for EE  
FEE 262 Mech. of Mach. & Str. of Mat. B  
FEE 272 Mathematics II B  
FEE 282 Laboratory II B

### **THIRD YEAR**

FEE 301 Analogue Electronics A  
FEE 321 Electrical Circuit Theory IIA  
FEE 331 Digital Electronics A  
FEE 341 Electrical Machines I A  
FEE 351 Electromagnetic Fields A  
FEE 361 Mechanical Engineering for EE  
FEE 371 Mathematics III A

FEE 381 Laboratory III A  
FEE 302 Analogue Electronics B  
FEE 322 Electric Circuit Theory II B  
FEE 332 Digital Electronics B  
FEE 342 Electrical Machines I B  
FEE 352 Electromagnetics Fields B  
FEE 362 Instrumentation  
FEE 372 Mathematics III B  
FEE 382 Laboratory III B

#### **FOURTH YEAR**

FEE 401 Electronics A  
FEE 411 Control System A  
FEE 421 Telecomms. & Electroacoustics A  
FEE 431 Electrical Power Systems I A  
FEE 441 Electrical Machines II A  
FEE 451 Electrodynamics & Ins. Mat. A  
FEE 471 Statistics  
FEE 481 Laboratory IV A  
FEE 402 Electronics B  
FEE 412 Control System B  
FEE 422 Telecomms. & Electronacoustics B  
FEE 432 Electrical Power Systems I B  
FEE 442 Electrical Machines II B  
FEE 452 Electrodynamics & Ins. Mat. B  
FEE 472 Numerical Methods  
FEE 482 Laboratory IV B

#### **FIFTH YEAR**

FEE 501 Applied Electronics A  
FEE 511 Control Engineering A  
FEE 560 Engineering Project  
FEE 571 Mathematical Methods  
FEE 591 Laboratory V A  
FEE 502 Applied Electronics B  
FEE 512 Control Engineering B  
FEE 560 Engineering Project  
FEE 582 Management for Engineers  
*FEE 592 Laboratory V B*

#### ***Elective Courses in Fifth Year (two per Semester)***

##### **Light Current**

FEE 521 Telecommunications A  
FEE 551 Microwaves and Antennas A

FEE 522 Telecommunications B  
FEE 552 Microwaves and Antennas B

### **Heavy Current**

FEE 531 Electrical Power Systems II A  
FEE 541 Power Electronics & Variable Machine Drives A  
FEE 532 Electrical Power Systems II B  
FEE 542 Power Electronics & Variable Machine Drives B

### **MSC. COURSE OUTLINE**

Core courses	FEE 600-607
Electronic Engineering Option	FEE 610-618
Electrical Engineering Option	FEE 620-629
Control Engineering Option	FEE 630-635
Research methodology	FEE 650

### **Common Core Courses**

FEE 600 Engineering Mathematics  
FEE 601 Software Engineering

### **Core Courses in Electronic Engineering**

FEE 602 Analogue Electronics  
FEE 603 Digital Electronics  
FEE 604 Signal Analysis

### **Core Courses in Electrical Engineering**

FEE 605 Electrical Power Systems  
FEE 606 Electrical Machines  
FEE 607 Power Electronics

### **Options in Electronic Engineering**

Option 1: Optics, Fields and Waves

FEE 610 Optical Electronics and Lasers  
FEE 611 Antennas and Wave propagation  
FEE 612 E/M Theory and High Frequency Devices

Option 2: Telecommunications

FEE 613 Communication Systems  
FEE 614 Digital Transmission

FEE 615 Computer Communication Network

Option 3: Electronics

FEE 616 Digital Signal Processing

FEE 617 Computer Architecture

FEE 618 Electronic Instrumentation

#### **4.5 Options in Electrical Engineering**

Option 1: High Voltage, Switchgear & Insulation

FEE 620 High Voltage Engineering

FEE 621 Switchgear and Protection

FEE 622 Insulating materials

Option 2: Electrical Power Systems Operations & Planning

FEE 623 Electrical Power Systems, Operation and Control

FEE 624 Electrical Power Transmission and Distribution Systems

FEE 625 Electrical Power Systems Planning and Management

Option 3: Electronic Machine Design, Control and Power Plants

FEE 626 Electrical Machine Design

FEE 627 Electrical machine Drives and Control

FEE 628 Electrical Power plant Equipment and Auxiliaries

#### **Options in Control Engineering**

Option 1: Optimal, Linear and Non-linear Control

FEE 630 Linear Control Systems

FEE 631 Optimal Control

FEE 632 Non-Linear Control and Stability

Option 2: Automation, Digital and Adaptive Control

FEE 633 Digital Control

FEE 634 Adaptive Control, Learning Systems and Estimation

FEE 635 Robotics and Automation

**FEE 650 Research Methodology**

### 3. STUDENT ENROLMENT

#### A. UNDERGRADUATE

First Year	142
Second Year	143
Third Year	134
Fourth Year	127
Fifth Year	105

-----  
TOTAL 651  
=====

#### B. POSTGRADUATE

First Year	14
Second Year	3

C. Ph.D: 1

-----  
TOTAL 18  
=====

### 7. NUMBER OF GRADUANDS

#### A: Masters

No MSc. Student graduated

#### B: Undergraduates

B.Sc. Electrical & Electronic Engineering	<b><u>Female</u></b>	<b><u>Male</u></b>	<b><u>Total</u></b>
	7	81	88