

Electrical Engineering Department



Courses offered FY B. Tech.: 07

7
CORE COURSES

19
TOTAL CREDITS

2
SEMESTER

COEP Technological University Pune

Courses Offered: Semester I and II

Courses taught will build your foundation from circuit basics to hands-on workshop skills.

Semester I : Credits: 11

Compulsory Courses:

-  **1. Fundamentals of Electrical Engineering (FEE)**
Engineering Science Course (ES-I)- For Electrical Engineering

Credits: 3

Choice Based Courses:

-  **2. Electrical Energy Utilization (EEU)**
Engineering Science Course (ES-II)- For Other Programmes

Credits: 3

-  **3. Basic Electrical Engineering (BEE)**
Engineering Science Course (ES-III)- For Other Programmes

Credits: 3

-  **4. Electrical Maintenance and Safety (EMS)**
Vocational and Skill Enhancement Course- VSEC

Credits: 2

Courses Offered: Semester I and II

Courses taught will build your foundation from circuit basics to hands-on workshop skills.

Semester II : Credits: 08

Compulsory Courses:



- 1. Electrical and Electronic Measurement and Instrumentation (EEMI)**
Programme Core Course (PCC)- For Electrical Engineering **Credits: 3**

Choice Based Courses:



- 2. Electrical Energy Utilization (EEU)**
Engineering Science Course (ES-IV)- For Other Programmes

Credits: 3



- 3. Electrical Workshop (EW)**
Vocational and Skill Enhancement Course- VSEC

Credits: 2



Fundamentals of Electrical Engineering FEE

Engineering Science Course (ES-I) · Compulsory

3

CREDITS

WEEKLY STRUCTURE

L-2 T-0 P-2 S-1 TA-20 MSE-30 ESE-50



KEY LEARNING

- DC/AC circuits and transients, theorems,
- Transformers, magnetic circuits, engineering materials
- Three-phase systems, tariffs, and electric grid concepts



IMPORTANCE

- Foundation course for advanced courses such as Power System, Machines, Power Electronics Control Systems etc
- Understanding of the electrical systems
- Development of Problem Solving skills



APPLICATION AREAS

- Electrical Power Systems and Protection
- Electrical Machines and Drives
- Renewable Energy Systems
- Electrical Vehicles
- Control and Automation
- Power Electronics



Electrical Energy Utilization **EEU**

Engineering Science Elective Course (ES-II)

3
CREDITS

WEEKLY STRUCTURE

L-2	T-0	P-2	S-1
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KEY LEARNING

- Energy tariffs, sector-wise consumption, heating/welding, traction
- Illumination: LED/smart lighting design and energy-efficient lighting schemes.
- Earthing, wiring/cable ratings, batteries, and safety/first aid.
- DC / AC motor characteristics and selection



IMPORTANCE

- Develops an understanding of electrical traction systems
- Learn methods for efficient use of electrical energy
- Provides knowledge of electrical energy utilization in motors, drives, heating, welding, lighting, refrigeration, and industrial processes, illumination system

EVALUATION SCHEME (100 MARKS)

TA-20

MSE-30

ESE-50



APPLICATION AREAS

- **Mechanical Engineering:** Electric motors and drives, heating, welding, machine tools, HVAC, pumps, compressors,
- **Civil Engineering:** Building Electrification
- **Electronics, Instrumentation Engineering:** Power Supplies, UPS, Industrial Drives, Sensors
- **Computer Engineering:** Data center Power Supply, UPS
- **Manufacturing:** Mechatronics, Robotics, Industrial automation



Basic Electrical Engineering **BEE**

Engineering Science Elective Course (ES-III)

WEEKLY STRUCTURE



KEY LEARNING

- AC/DC circuit analysis, 3-phase systems, wiring & protection devices.
- Rotating machines: DC motors and induction motors construction, working, torque-speed characteristics
- Electrical Wiring Systems and components

EVALUATION SCHEME (100 MARKS)

TA-20

MSE-30

ESE-50



IMPORTANCE

- Foundation course for advanced courses such as Power System, Machines, Power Electronics Control Systems etc
- Understanding of the electrical systems
- Development of Problem-Solving skills



APPLICATION AREAS

Electronics and Instrumentation Engg: Basic Circuit and system analysis, Power Supplies, Sensor system, Signal conditioning
Civil Engineering: Elevators, Lighting, Illumination systems
Computer Engineering: Data Centre Power supply, UPS
Manufacturing: Robotics, Mechatronics, process automation



Electrical Maintenance and Safety EMS

Vocational and Skill Enhancement Course (VSEC)

2
CREDITS

WEEKLY STRUCTURE

L-1

T-0

P-2

S-1

EVALUATION SCHEME (100 MARKS)

KEY LEARNING

- Maintenance of wiring
- Testing and maintenance of transformers, motors, wiring systems, inverters, UPS, EV chargers
- Installation/maintenance of solar PV systems

IMPORTANCE

- Knowledge of fuses, circuit breakers, protective relays, earthing, insulation, and leakage protection
- Understand electrical hazards such as electric shock, short circuits, arc faults, fire hazards, and equipment failures
- Learn maintenance approaches that help reduce equipment failures, increase reliability and minimize downtime

APPLICATION AREAS

Electronics and Instrumentation Engg: Maintenance of UPS, power supply, Sensor system

Civil Engineering: Maintenance of Elevators, earthing, Illumination systems, HVAC

Computer Engineering: Maintenance of Data Centre Power supply, UPS

Manufacturing: Motor drive safety in Robotics, automation



Electrical Energy Utilization **EEU**

Engineering Science Elective Course (ES-IV)

3
CREDITS

WEEKLY STRUCTURE

L-2	T-0	P-2	S-1
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EVALUATION SCHEME (100 MARKS)

TA-20

MSE-30

ESE-50



KEY LEARNING

- Energy tariffs, sector-wise consumption, heating/welding, traction
- Illumination: LED/smart lighting design and energy-efficient lighting schemes.
- Earthing, wiring/cable ratings, batteries, and safety/first aid.
- DC / AC motor characteristics and selection



IMPORTANCE

- Develops an understanding of electrical traction systems
- Learn methods for efficient use of electrical energy
- Provides knowledge of electrical energy utilization in motors, drives, heating, welding, lighting, refrigeration, and industrial processes, illumination system



APPLICATION AREAS

- **Mechanical Engineering:** Electric motors and drives, heating, welding, machine tools, HVAC, pumps, compressors,
- **Civil Engineering:** Building Electrification
- **Electronics, Instrumentation Engineering:** Power Supplies, UPS, Industrial Drives, Sensors
- **Computer Engineering:** Data center Power Supply, UPS
- **Manufacturing:** Mechatronics, Robotics, Industrial automation



Electrical and Electronic Measurement and Instrumentation EEMI
Program Core Course (PCC)

3
CREDITS

WEEKLY STRUCTURE

L-2	T-0	P-2	S-1
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EVALUATION SCHEME (100 MARKS)

KEY LEARNING - Measuring instruments, DC/AC bridges, - Power/energy measurement - Instrument transformers, transducers - Sensors and transduces - R, L, C measurement	IMPORTANCE - Learn measurement of V, I, R, L, C, power, energy, frequency, power factor using suitable instruments - Provides knowledge of the construction, working principles, characteristics, limitations, and applications of analog and digital measuring instruments - Learn concepts related to digital instruments, sensors, transducers, data acquisition	APPLICATION AREAS Electrical Engineering: Meter calibration, Industrial sensing (temperature/flow/pressure), - Power quality analysis, testing - Temperature and Pressure measurement in industrial applications - Signal Measurement, Handling and using DSOs in applications
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Electrical Workshop EW

Vocational and Skill Enhancement Course (VSEC)

WEEKLY STRUCTURE

L-1	T-0	P-2	S-1
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EVALUATION SCHEME (100 MARKS)

CIE-50

ESE-50



KEY LEARNING

- Wiring, winding, PCB making, panel wiring
- Winding of motors and transformers
- Solar/inverter installation



IMPORTANCE

- Gain practical experience in handling wires, cables, switches, sockets, fuses, MCBs, relays, lamps, motors, and other electrical components
- Develops basic skills in domestic, industrial, control, and three-phase wiring



APPLICATION AREAS

- **Mechanical Engg:** Motor connections, trouble shooting, industrial electrical installation
- **Electronics and Instrumentation:** Soldering, wiring, power supplies, PCB work
- **Civil Engg:** Building electrical installation, Earthing, panel
- Solar/inverter installation for residential and small commercial setups

Strengthening the Fundamental Knowledge Base

Thank you



ELECTRICAL ENGINEERING DEPARTMENT