

## Certificate Programme in Electronics & Instrumentation

Purpose of this program is to prepare aspirants for being able to handle Electronic Instrumentation-based systems apart from providing a foundation for preparing them for being able to take up higher level courses in the related areas.

Course Title
<b>First Semester</b>
Electrical & Electronics Technology (Course Code : PAENE ZC103)
Electrical Science (Course Code : PAENE ZC102)
English Language Skills (Course Code : PAENE ZC101)
<b>Second Semester</b>
Digital Electronics and Microprocessor (Course Code : PAENE ZC203)
Instrumentation & Control (Course Code PAENE ZC202)
English Communication Skills (Course Code : PAENE ZC201)

### Course Description

**Digital Electronics and Microprocessors** : Binary logic gates; logic circuits; Boolean algebra and K-map simplification; number systems and codes; arithmetic logic units; flipflops; registers and counters; introduction to microprocessors; architecture; instruction set and programming; memory and I/O interfacing examples of system design.

**Electrical and Electronics Technology:** Electric circuit, electromagnetism, magnetic circuit, electrostatics, AC voltage and current, single phase circuits, semiconductor devices, amplifiers, digital systems, microprocessors, DC machines,

polyphase circuits, transformers, synchronous machines, induction motors, power electronics, measurements, illumination.

**Electrical Science:** Introduction; basic circuit elements; sources (dependent and independent); Kirchoff's current and voltage law, source representation and conversion; Network theorems; response of RL, RC and RLC circuits; diodes and its applications; transistors - BJT & FETs; amplifiers: biasing and small signal analysis; OPAMPS; Digital Logic gates; Basics of Combinational and Sequential circuits.

**English Communication Skills:** Listening skills: Barriers to listening, academic listening, listening to talks, news, conversations, etc. - Communication basics: Overview, communicating in various situations- Telephone skills- Written communication: e-mail, reports, note taking/ making - Career skills: Resumes, Interviews, Presentations, Persuasion

**English Language Skills:** Fundamentals of grammar, Sounds of English, Word structure, Word order and effective sentences, Vocabulary extension, Phrasal verbs, Listening comprehension, Reading comprehension, Paragraph writing, Précis writing, Dicto-composition, Term paper

**Instrumentation & Control** : Measurement systems, transducers, feedback control, components: electrical, hydraulic, pneumatic; Signal conditioning and processing, controllers, display, recording, direct digital control, programmable logic controllers, PC based instrumentation.