ELECTRICAL MEASUREMENT AND ELECTRONIC INSTRUMENTS

TYPE OF COURSE: Rerun Core I UG
COURSE DURATION: 12 weeks (26 Jul’21 - 15 Oct’21)
EXAM DATE: 23 Oct 2021

PRE-REQUISITES: Basic Principles of Electrical Engineering (Circuit Theory), Basic Digital and Analog Electronics

INTENDED AUDIENCE: Mainly Electrical/Instrumentation Engineering; also interested students from Electronics, Physics and similar disciplines

INDUSTRIES APPLICABLE TO: Must for Power generation industry, Power distribution industry, Electronics industry; Also highly required for Automotive industry, Rail industry, Aerospace industry, Telecommunications industry, Oil and gas industry, Construction industry, Defense industry, Marine industry, Materials and metals industry

COURSE OUTLINE:
It is a core course for all UG Electrical Engineering students. The content of this course is also aligned to the syllabus for the GATE EE exam. The course has two halves:
(1) Electrical Measurements
(2) Electronic Instruments
Differential Amplifier, Op-Amp Circuits, Analog DC and AC instruments, ADC and DAC, Digital instruments, Function Generator, Oscilloscope

ABOUT INSTRUCTOR:
Avishek Chatterjee received the degree of B.E.E from Jadavpur University, Kolkata in 2009 followed by the degree of M.E. and PhD. From Indian Institute of Science in 2011 and 2016 respectively. He teaches this subject in IIT Kharagpur.

COURSE PLAN:
Week 1: Measurement Error, Accuracy and Instrument grades, Electromechanical Instruments
Week 2: Electromechanical instruments, (contd) Electromechanical Ammeters, Voltmeters and Ohmmeters
Week 3: Electromechanical Wattmeter and Energy Meter
Week 4: Resistance Measurement, Impedance Measurement: AC Bridges
Week 5: Potentiometers: DC and AC
Week 6: Instrument Transformers: CT & PT, Magnetic Measurement
Week 7: Analog Instrumentation Basics
Week 8: Analog Instrumentation
Week 9: Digital Instrumentation Basics
Week 10: Digital Instrumentation
Week 11: Signal and Function Generators
Week 12: Oscilloscope and Electronic probes