HIGH VOLTAGE ENGINEERING

Module-I **[8 Hours]**

University Portion (80%): (7 Hours)

Generation of high voltage, Generation of high direct current- voltage, Alternating Current-voltage, Impulse voltage and Impulse currents. [Text Book 1:6.1, 6.2,6.3]

College/Institute Portion (20%): (1 Hour)

Tripping and control of impulse generators [Text Book 1:6.5] Or related advanced topics as decided by the concerned faculty teaching the subject.

Module-II **[12 Hours]**

University Portion (80%): (10 Hours)

Electrical breakdown in gas solid and liquid, Collision processes, Gaseous breakdown in uniform and non-uniform fields and corona. Ionisation process. Townsend's current growth equation. Townsend's criterion for breakdown. Determination of coefficients α and γ. Streamer's theory of breakdown in gases. Paschen's Law. Conduction and breakdown in pure and commercial liquid. Breakdown mechanism in solid and dielectric
[Text Book 1:2.2, 2.3, 2.4, 2.6, 2.7, 2.10, 2.11, 2.12, 3.4]

College/Institute Portion (20%): (2 Hours)

Post-Breakdown Phenomenon and Application, Testing of transformer oil [Text Book 1:2.13, 3.5] Or related advanced topics as decided by the concerned faculty teaching the subject.

Module-III **[12 Hours]**

University Portion (80%): (10 Hours)

Study of over voltage in electrical power system and measurement of high voltage :
Causes of overvoltage and its effect on power system. Lightning and switching surges and temporary high voltage, protection against over voltage. Measurement of high voltage and high current. [Text Book 1:8.1,8.2]

College/Institute Portion (20%): (2 Hours)

Digital technique in high voltage measurement. .Cathode-Ray Oscillographs for Impulse Voltage and current Measurement [Text Book 1:7.4] Or related advanced topics as decided by the concerned faculty teaching the subject.

Module-IV **[8 Hours]**

University Portion (80%): (7 Hours)

High voltage testing and insulation coordination
High voltage testing of electrical apparatus [Insulator, Bushing, Isolator, Circuit breaker, Transformer, Surge Arrester, Cable] [Text Book 1:10.1, 10.2, 10.3, 10.4, 10.5]

College/Institute Portion (20%): (1 Hour)

Radio Interference Measurement, Testing HVDC valves and equipment [Text Book 1:10.6, 10.7] Or related advanced topics as decided by the concerned faculty teaching the subject.

Text book:

1. *M.S Naidu and V. Kamaraju, 'High Voltage Engineering'. Tata McGraw Hill,6th Edition 2015.*

Reference book:

2. *:E. Kuffel and W. S Zaengel,' High voltage engineering Fundamentals', Pergamon Press Oxford, London, 1986*