

Module Synopsis

Specialist Diploma in Power System Planning, Operation & Protection

PDC 1: Post-Diploma Certificate in Power System Planning, Security, Transmission & Distribution		(120 hours)
1. ET1612: Power Transmission & Distribution		(60 hours)
<p>This module provides students with the knowledge related to the design and roles of electrical power transmission and distribution. It covers the principle of operation of various types of busbar arrangements, network configurations and high voltage equipment including cables, reactive power and voltage compensation devices, over-voltage and voltage transient in power systems and the concept of insulation co-ordination for high voltage equipment. This module also includes smart metering and smart grid and application of computer and CAD software packages to carry out electrical design and drafting.</p>		
2. ET1614: Power System Planning & Control with Security		(60 hours)
<p>This module covers the engineering and economic factors involved in planning, operating and controlling power systems. Topics include planning procedures for large utilities and industrial power systems, reliability and contingency analysis, economic studies and financial analysis and computerised Supervisory Control and Data Acquisition (SCADA) systems. Developing trends and the use of Artificial Intelligence in a computerised power system, and electricity market will also be discussed. This module will also cover security of SCADA which includes Vulnerability and Risk Assessments, Threats to SCADA and Industrial Control Systems (ICS), ICS Security Tools and ICS Security Architecture and Best Practices to enhanced ICS cyber defence.</p>		
PDC 2: Post-Diploma Certificate in High Voltage Operation & Protection		(120 hours)
1. ET1611: Power System Protection		(60 hours)
<p>This module covers the fundamental principles of relay operation and shows how they are applied to the protection of specific system elements. Over-current, directional, differential, pilot and distance protective relays will be described. Calculation of relay settings for the different types of relays will be explained. Also included are the fundamental application principles, special requirements of the various system elements, application practices, and methods of testing and commissioning protective schemes.</p>		
2. ET1613: High Voltage Operation		(60 hours)
<p>This module introduces high voltage equipment and accessories like high voltage switchgears, circuit breakers, transformers, metering and protection relays. Understanding of high voltage single line and control drawings will be emphasised so that the student can understand the control, instrumentation and protection functions of high voltage switchgears. The course will also cover different protection schemes, application of on-load tap changers, and high voltage testing, commissioning and maintenance.</p>		