Module Synopses

Semester 1 - PDC 1 High Voltage Operation and Protection

Module 1 - ET1653 High Voltage Operation

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 high voltage testing and high voltage operation.

Module 2 - ET1651 Power System Protection

This module teaches 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.

Semester 2 - PDC 2 Power System Planning, Transmission and Distribution

Module 3 - ET1654 Power System Planning and Control

An introduction to 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 will also be discussed.

Module 4 - ET1652 Power Transmission and Distribution

This module provides students with an understanding of the principles of operation of various types of busbar arrangements, network configurations and high voltage equipment including cables, reactive power and voltage compensation devices. Overvoltages and voltage transients in power systems and the concept of insulation co-ordination for high voltage equipment are introduced. The application of computer and CAD software packages to carry out electrical design and drafting will also be included. Smart metering and smart grid will also be discussed.

Semester 3 - PDC 3 Electricity Acts and Regulations and Project

Module 5 - ET1655 Electricity Overview, Acts and Regulations

This module introduces the electricity market, electricity acts and regulations. An overall view of how electrical power is generated, transmitted and distributed technologies and system, components and basic workings of electric transmission and distribution network.

Module 6 - ET1656 Project

Students will be assigned project(s) by their supervisor/mentor. This project(s) will be related to his area of work and serves to reinforce the knowledge and skills acquired through the modules learnt in PDC 1 and 2 in this NAPE course.