

MINIMUM CORE SUBJECT AREAS: ENERGY ENGINEERING

AREA	SUBJECTS / DESCRIPTION	RECOMMENDED CONTACT HOURS
A minimum of 5 out of the 9 areas below, totalling no less than 200 hours.		
1. Fluid Mechanics	- potential flow, laminar flow, turbulence flow, internal flow, etc.	30
2. Heat Transfer	- conduction, convection, radiation, heat exchangers, etc.	30
3. Thermodynamics	- first law of thermodynamics, second law of thermodynamics, Carnot cycle, Rankine Cycle, refrigeration cycle, etc.	30
4. Energy Conversion and Storage	- thermal storage, phase change materials, battery, supercapacitor, fuel cell, flywheel, pumped hydroelectric storage, etc.	30
5. Renewable Energy	- solar thermal energy, photovoltaic cell, wind power, tidal energy, wave energy, geothermal energy, biomass energy, hydrogen energy, etc.	30
6. Building Energy	- heating, ventilating and air conditioning (HVAC), heat pump, lighting, lifts and escalators, electrical power quality, energy management, carbon and energy audit, carbon reduction, etc.	30
7. Power Engineering	- thermal power plants, turbines, nuclear power, electric power transmission and distribution, etc.	30
8. Engineering Control	- dynamic modelling techniques, integrative modelling techniques, numerical simulation, energy systems, etc.	30
9. Electrical Services	- power supply and distribution, load estimation, electrical safety and protective devices, earthing and bonding system, emergency and standby power, overcurrent protection, protection against electric shock, Electricity (Wiring) Regulations, Code of Practices, Energy Efficiency Design and Requirements for Electrical Installation under Building Energy Code, etc.	30