

SYLLABUS :-

Physics of photovoltaic energy conversion in P-N junctions. Effect of physical properties of photovoltaic converters; Performance characteristics of different types of photovoltaic devices; Design considerations and manufacturing processes; Regulations and efficiency of conversion. Charge carriers and thermoelectric phenomena; Thomson, Peltier, Seebeck effect; Kelvin's relations; Thermoelectric energy conversion; Materials, size and capacity; Performance analysis and optimized design of thermoelectric devices. Physics of thermionic emission; Operation of high level vacuum and low pressure thermionic converters; Vacuum and gas-filled converters; Thermionic nuclear reactors; Heat pipes. Basic principles of Magnetohydrodynamic power generation; Hall effect; Ionization and seeding; Faraday, Segmented electrode, Hall and Cross-connected generators, Open and closed cycles; Liquid metal MHD. Fuel cells, Thermodynamics of Fuel Cells. Performance Analysis. Low, medium, high temperature Fuel Cells.