# PEMN5301 **FUEL TECHNOLOGY** (3-0-0)

**Module I (14 Hours)**

Primary energy resources of the world and India (Coal, Petroleum and Natural Gas). Classification of fuels; solid, liquid and gaseous, primary and secondary fuels.
Coal: Rank, coking and non-coking coals; Characterization of coal properties (caking and swelling indices, calorific value, proximate and ultimate analyses, etc.); Selection of coal for metallurgical industries and thermal power plants, coal washing and blending, washability curves; Coal carbonization, operational features of modern coke ovens. Testing and properties of coke, char and graphite.

**Module II (12 Hours)**
Fuel calorimetry; Testing of fuels; Definition and principle of combustion of fuels; Combustion calculations.
Alternative sources of energy - ferrocoke, formed coke, charcoal, solar, wind, tidal, etc., and their suitability for metallurgical and power industries; Renewable and non-renewable sources of energy; Activated carbon and its uses.

**Module III (12 Hours)**
Properties and uses of gaseous fuels like coke oven gas, blast furnace gas, basic oxygen furnace gas, producer gas, etc
Petroleum coke and its utilization in metallurgy; Solid energy wastes and their possible industrial applications.

**Books for reference**


1. Fuels and Combustion by M.L. Smith and K.W. Stinson, McGraw-Hill.
2. Fuels and Combustion by S. Sarkar, Orient Longman Ltd., Mumbai.
3. Elements of Fuel Technology by G.W. Himus.
4. Fuels-solid, liquid and gaseous by J.S.S. Brame and J.C. King Edward.
5. Fuels and Combustion by S.P. Sharma and C. Mohan, Tata McGraw-Hill.
6. Fuels, Furnaces and Refractories by J.D. Gilchrist.