INSTITUTION'S INNOVATION COUNCIL
(Ministry of Education Initiative)

DEPARTMENT OF ENERGY SCIENCE AND TECHNOLOGY

PEEC
ENERGIZE THE GLOBE

VALUE ADDED COURSE
ALTERNATE FUELS AND EMISSIONS (23UPESTVA01)

SYLLABUS :

IC engines classifications (SI & CI engine, 2-stroke & 4-stroke engine), Thermodynamic Cycles Combustion in IC engine: Thermo chemistry of Fuel-Air mixture, characterization of flame, Combustion stoichiometry, Chemical equilibrium, Chemical kinetics Properties of fuel and its effect on combustion: Engine knock & detonation, abnormal combustion CNG, LPG, H2, Hythane, Di-Methyl Ether, Ethanol, Biodiesel.

Homogeneous charge CI (HCCI) engines, Premixed Charge Compression Ignition (PCCI), Emission control technologies (EGR, SCR, DOC, DPF etc.) (To be updated periodically with new technologies and strategies).

ALTERNATIVE FUELS :

Alternative fuels, also known as non-conventional and advanced fuels, are fuels derived from sources other than petroleum. Alternative fuels include gaseous fossil fuels like propane, natural gas, methane, and ammonia; biofuels like biodiesel, bioalcohol, and refuse-derived fuel; and other renewable fuels like hydrogen and electricity.

EMISSION OF AIR POLLUTANTS :

Flue gas, gas exiting to the atmosphere via a flue. Exhaust gas, flue gas generated by fuel combustion. Emission of greenhouse gases, which absorb and emit radiant energy within the thermal infrared range. Emission standards, limits on pollutants that can be released into the environment. Emissions trading, a market-based approach to pollution control.

COURSE OUTCOME :

✦ The student can identify different areas of alternate fuels and energy system.

✦ Can find the applications of all the areas in day-to-day life.

✦ Will understand the emission norms

Total Hours 36 Hours