SEDV 609: AIR POLLUTION AND ITS IMPACT ON THE ENERGY SECTOR

Population growth and energy options. Meteorological parameters, physical and chemical properties of the atmosphere. Nature of pollutants present: man-made sources; stationary and mobile. Generation, methods of control and effects of photochemical smog. Global warming and greenhouse gas emission. Particulates, acid rain gases, carbon monoxide, hydrocarbons and their emission control. Pollution monitoring and instrumentation. Environmental regulations. Tail gas clean-up. Health impacts. Industrial site selection. Pollutant dispersion.

Instructor:

TBD

Course Objective:

The objective of the course is to help the student understand the basic nature of the atmosphere, the nature and sources of air pollutants, the mechanism of fuel combustion, energy options and to know how these interact in the formation of the type and extent of air pollutants. The student will also learn the techniques to prevent formation of pollutants and the methods for reduction of the level of pollutant's emissions from mobile and stationary sources. The course further exposes the student basic considerations for the selection of best sites for creation of new industries, select and design processes in energy industries, which would result in manufacturing fuel products that help energy conservation and environmental protection in their end uses.

Topics Covered (Selected):

- Meteorological parameters, greenhouse gas effect, global warming,
- Sustainable development and energy strategies
- Global warming and greenhouse gas emission
- Atmospheric conditions and dispersion of pollutants in the atmosphere
- Control of gaseous air pollutants in stationary sources
- Acid rain gases, carbon monoxide and hydrocarbon vapors
- Fundamentals of particulates and their control
- Incineration and flares
- Sensory pollution (odor, noise and sight)
- Mobile Sources – developments in the fields of automotive and fuels in response to energy conservation and environmental protection
- Automobiles, catalytic converters, and automotive fuels
- Photochemical smog, sampling and monitoring of gaseous pollutants
- Selection of Industrial sites with minimum adverse environmental effects