



Syllabus for Written Examination

Post: **Assistant Professor/Lecturer**

Subject: **Environment Science/Climate Science/Environment Technology**

- **Wastewater treatment Engineering:** Point and non-point source pollution; select the most suitable technological process for wastewater treatment based on the process of selection steps. Criteria for technology selection, application of mechanical, physical and chemical principles, chemistry, biology, and formula for calculating wastewater treatment facilities.
- **Advance in solid waste treatment:** Integrated solid waste management; characteristics of the composition of solid waste; researches on solid waste treatment technologies (Artisanal collection, recycling, landfilling, heat treatment; biotechnology).
- **Organic and biochemical analytical separations:** Modern separation methods, and their applications in different fields of environmental industry. Basic principles of chromatography and electrophoresis, capillary gas chromatography, HPLC capillary, electrophoresis, supercritical fluid chromatography, mass spectrometry.
- **Industrial energy processes:** Advanced applied thermodynamics of importance, primarily to the environmental and safety issues in connection with heat and power production. Knowledge and skill in using modern methods for the economic evaluation of the energy requirements in industrial energy processes. Development in research and application in the field of industrial ecology. Role of industrial ecology applied to strategic sustainable development on a global scale. Energy conversion for the different technical thermodynamic processes. New energy technology and its importance to process industry. Economic aspects and consequences of heat and power production. Measures to improve the efficiency in energy use. Environmental and safety matters in connection with energy conversion processes
- **Renewable fuel production:** Problems created by fossil materials. Evaluate strategies for development of new technologies and/or products taking into account for environmental and process safety issues in the chemical industry. Compare and judge different raw materials for production of a product, considering environmental and safety issues. Compare, in particular, fossil and renewable raw materials taking into account the different process systems needed for production of a specified product.
- **Electrochemical technology in pollution control:** Emergence of electrochemical technologies as important approaches for effective and efficient pollution remediation. Electrochemical Remediation Technologies for polluted soils, sediments and groundwater. Fundamentals, field applications, as well as opportunities and challenges in developing and implementing electrochemical remediation technologies.
- **Environmental modeling:** Idea, methods and basic tools of environmental modeling. Different modeling approaches, their scope and limitations. Fate and transport of pollutants. Applications of modelling in environmental management & decision making.
- **Recent advances in environment science/technology:** Advanced research methods and its application. Role of LAPA in adaptive measures related to climate change hazards.