



ENVIRONMENTAL SOIL CHEMISTRY

PROF. SOMSUBHRA CHAKRABORTY

Department of Agricultural Engineering
IIT Kharagpur

TYPE OF COURSE : Rerun | Elective | UG

COURSE DURATION : 12 weeks (26 Jul' 21 - 15 Oct' 21)

EXAM DATE : 23 Oct 2021

INTENDED AUDIENCE : Agriculture, Environmental science, Agricultural engineering

INDUSTRIES APPLICABLE TO : 1. Soil testing services 2. Soil and environmental pollution consulting companies 3. Soil remote sensing solution services 4. Petroleum industries

COURSE OUTLINE :

This course will provide extensive discussions on the chemistry of inorganic and organic soil components, soil solution–solid phase equilibria, sorption phenomena, kinetics of soil chemical processes, redox reactions, soil pollution, pollutants-soil solution interactions, and analytical techniques for assessing soil pollution. Each topic will contain sample problems and explanations of parameters and terms. These should be very useful to students taking their first course in soil chemistry. This is a comprehensive and contemporary course for undergraduate students in soil science and for students and professionals in environmental chemistry and engineering, marine studies, and geochemistry.

ABOUT INSTRUCTOR :

Prof. Somsubhra Chakraborty is currently serving as an Assistant Professor (Soil Science) at the Agricultural and Food Engineering Department, Indian Institute of Technology Kharagpur. He was awarded various prestigious fellowships including the Australia Awards Fellowship from the Australian Department of Foreign Affairs and Trade. He did his undergraduate and M.Sc degrees from BCKV and PAU in India and PhD degree in Agronomy (Soil Science emphasis) from Louisiana State University, USA.

COURSE PLAN :

Week 1: Evolution of Soil Chemistry

Week 2: Inorganic Soil Components

Week 3: Chemistry of Soil Organic Matter

Week 4: Soil Solution–Solid Phase Equilibria and Sorption in Soils

Week 5: Ion Exchange Processes

Week 6: Kinetics of Soil Chemical Processes

Week 7: Redox Chemistry of Soils

Week 8: The Soil Pollutants

Week 9: Pollutants-Soil Solution Interactions

Week 10: Retention of Pollutants on and Within the Soil Solid Phase

Week 11: Modeling the Fate of Pollutants in the Soil, Risks and Remedies

Week 12: Analytical Techniques for Assessing Soil pollution