



Course Name:

Dynamic of Environmental Systems

Course Number: -	Credit: 3
Program: Graduate	Course Type: General Selective
Prerequisite: -	Corequisite: -

Course Description (Objectives):

The course focuses on modeling and analyzing environmental systems to address water quality and ecological challenges using numerical and computational methods.

Course Content (outline):

- Chapter 1: Introduction to MATLAB and numerical analysis
- Chapter 2: Review of Reaction Kinetics
- Chapter 3: Diffusion, Fick's Law; Distributed Systems (Steady State)
- Chapter 4: Sediments
- Chapter 5: BOD & Oxygen Saturation
- Chapter 6: Nitrogen
- Chapter 7: Pathogens
- Chapter 8: Nutrients and the Eutrophication Problem
- Chapter 9: Phosphorous Loading
- Chapter 10: Microbe/Substrate Modeling

References:

- “Surface water quality modeling”, S.C. Chapra, Waveland Press, Long Grove, IL (2008).