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Department of Civil Engineering  
2012 Autumn Semester  
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## Water Quality Dynamics

### Outline #6: Chemical Reaction Kinetics

1. Report of the last exercise (Ex5-1 to Ex5-5)
    - Presentation (Aleksi, Ran)
    - Discussion
  2. Difference Method
    - Courant number, CFD condition
  3. Chemical Reaction Kinetics
    - Concept and basics of reaction kinetics
    - Reaction in batch reactor
    - Reaction order and rate constant
    - Michaelis-Menten Enzyme Kinetics
    - Arrhenius equation
  4. Streeter-Phelps Equation
    - Mass balance of BOD and DO in plug-flow system
    - First-order reaction
    - Deoxygenation rate constant
    - Reaeration rate constant
    - Effect of temperature on rate constants
  5. Exercise (Ex6-1 to Ex6-5)
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