TOKYO TECH
Pursuing Excellence

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Department of Civil Engineering
2012 Autumn Semester
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Water Quality Dynamics

Outline #7: Streeter-Phelps Equation

1. Report of the last exercise (Ex6-1 to Ex6-4)
    - Presentation (Nga, Hirano)
    - Discussion

2. Chemical Reaction Kinetics
    - Reaction order and rate constant
    - Michaelis-Menten Enzyme Kinetics
    - Arrhenius equation

3. 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

4. Equilibrium Chemical Model
    - Activity corrections
    - Equilibrium constant and temperature

5. Exercise (Ex7-1 to Ex7-4)