Course no.	457.621	Class no.	001	Class name	Biological processes in environmental engineering	학점	3

Instructor				
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Office hours: Fri 5:00-6:00 / 35-307				

1. Goals	Understand the background, theories, techniques, and applications of biological approaches for the management of water, soil, and solid waste. Obtain in-depth knowledge on the biological approaches applied for wastewater treatment, study current issues of research, and discuss the future direction of research and applications. Deliberate the issue of environmental justice by performing a team project investigating a residential area in Korea with limited environmental service and suggesting appropriate solutions to improve the living condition of the residents.

2. Main references	1. Handouts 2. Rittmann, B. E. and McCarty, P. L. (2001) Environmental Biotechnology: Principles and Applications, McGraw-Hill

3. Evaluation	Attendance	Final	Paper presentation	Team project				Total
	10%	40%	25%	25%				100%

4. Lecture plan	Week	Lecture contents
	1	Introduction to biological processes / Basics of microbiology
	2	Enzyme reactivity and inhibition / Stoichiometry of biochemical reactions I
	3	Stoichiometry of biochemical reactions II & III
	4	Microbial energetics / Microbial kinetics & reactors
	5	Reactor analysis
	6	Microbial kinetics in reactors I & II
	7	Microbial kinetics in reactors III
	8	Biofilm kinetics / Wastewater treatment overview I
	9	Wastewater treatment overview II / Practical applications of biological treatment
	10	Anaerobic oxidation & tertiary treatment / Team project
	11	Team project
	12	Team project presentation
	13	In-class exercise / Final
	14	Student presentation & paper discussion
	15	Student presentation & paper discussion

5. Guideline for students	This class is run in English. At least moderate ability of English listening and reading is required. This class will be run as a "class for practicing social contribution in connection with academic major" program. The students should participate in a field trip and a team project involved in the program.
6. Policy for plagirism	80% of the lowest score of the class for every event