



Introduction to Environmental Engineering

Course Code	457.210A (College of Engineering)		
Class Times	Mon/Wed/Thu 09:00-12:00	Classroom	Bld.35 Rm. 432
Equivalent Year Level	2	Course Credit	3

Instructor I	Jong Kwon Choe	Sessions	1-14
Office	Bld.35, Rm. 402	Email	jkchoe@snu.ac.kr

□ Instructor's Profile (Sessions 1-14)



Jong Kwon Choe

Assistant Professor, Department of Civil and Environmental Engineering, Seoul National University

Jong Kwon Choe has worked as an assistant professor in the Department of Civil and Environmental Engineering at Seoul National University since Fall 2016. Prior to joining SNU, he worked as a post-doctoral research fellow at Stanford University and as an assistant professor at Clarkson University in the U.S. He majors in environmental engineering with a specific interest in water and wastewater treatment technologies, application of green chemistry, sustainability analysis, and synthesis and characterization of advanced materials for environmental application. In addition to the undergraduate class of [Environmental Engineering], he teaches [Physicochemical Processes in Environmental Engineering] and [Advanced Water Quality] courses for graduate students.

Education

Ph.D., Dept. of Civil and Environmental Engineering, University of Illinois at Urbana Champaign

M.S., Dept. of Civil and Environmental Engineering, University of Illinois at Urbana Champaign

B.S., Dept. of Civil Engineering, The Cooper Union for Advancement of Science and Art

Expertise

Water treatment technologies, catalysis, life cycle assessment, x-ray spectroscopic characterization

Most Recent Works

"A New Bioinspired Perchlorate Reduction Catalyst with Significantly Enhanced Stability via Rational Tuning of Rhenium Coordination Chemistry and Heterogeneous Reaction Pathway" *Environmental Science & Technology*, Vol. 50, 5874-5881.

"Evaluation of a Hybrid Ion Exchange-Catalyst Treatment Technology for Nitrate Removal from Drinking Water" *Water Research*, Vol 96, 177-187.

"Degradation of Amino Acids and Secondary Structure in Model Proteins and Bacteriophage MS2 by Chlorine, Bromine and Ozone" *Environmental Science & Technology*, Vol 49, 13331-13339



□ Course Information

Course Description	This course is an introductory class of environmental engineering designed for benefit of any students at college level. For those who seeks for environmental engineering as a major, the class will help build up general background on the subject for future in-depth study. For others, the class will provide college-level knowledge to help understand environmental issues in everyday life. Beginning with an introduction of chemistry and biology background useful to understand environmental processes and environmental engineering practices, the class will discuss causes, effects, and monitoring of environmental concerns, and engineering solutions for the concerns. The class encompasses most of the sub-topics of environmental engineering including water quality and quantity, air quality, solid and hazardous waste management, and noise pollution.
Course Evaluation	Class participation 30% Midterm exam 35% Final exam 35% Attendance will be important for keeping up with class. Good attendance and active participation will be reflected in grade.
Course Materials	Hand-outs
Class Policy	Plagiarism is strictly prohibited.
Etc. (e.g. Guidelines)	Please be advised that questions for mid-term and final exam will be based on lecture given in class, not text book.

□ Course Schedule

* The class will be run with hand-outs only, which is designed to be stand-alone. In other words, students will be able to understand the class topics without the help of any texts other than the hand-outs. However, those who want supplementary readings may obtain the textbook "Davis, M. L. and Masten, S. J. (2014) Principles of Environmental Engineering and Science, 3rd ed., McGraw-Hill." The hand-outs are organized and written based on the textbook.

Session	Description	Etc
1	Introduction to environmental engineering & Basic Chemistry Concepts (1)	
2	Basic Chemistry Concepts (2) & Basic Biology Concepts	
3	Mass balance and Reactor Analysis	
4	Ecosystem and Risk perception, assessment, and management	
5	Hydrology	
6	Water Quality	
7	<i>Mid-term Exam</i>	
8	Water Treatment	



9	Wastewater Treatment	
10	Air Quality and Pollution	
11	Solid and Hazardous Waste Management	
12	Noise Pollution	
13	Sustainability	
14	Discussion on current environmental issues	
15	Final Exam	