**CASE STUDY ANALYSES OF WASTE-TO-ENERGY PROJECTS**

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Lecture: Tuesday 17:00-17:50 (Lectures), Friday 14:00-18:00 (Field Trips)

Class room: Building #38 Room #421

Contents: The objective of this course is to understand how the waste-to-energy technologies are applied in fields and acquire the current situation of the technology development. Classes consist of lectures and field trips. Lectures are delivered by the researchers and engineers from research institutes and companies. Students can learn the research and development information, technical problems in fields and solutions. Field trips help students understand how technologies are implemented in fields. Speakers are invited by professor in charge of this course. Students are evaluated based on the exams in lectures and participations in discussion during classes.

References: This class does not require any text book. Handouts may be provided depending on subjects.

Prerequisites: No prerequisite course

Term Paper: Each student has to write a term paper. Topic of term paper is decided by student for one of the field trips in this semester. The written report is around 30 pages including figures, tables, references, and appendices. The due of the term paper is the date of final presentations. The only manuscripts submitted in due date and presented are evaluated. Manuscripts must be written in a neat and orderly fashion as a technical report. Term paper is evaluated by the students not by the instructor. Not only the final reports but also presentations, questions & answers, etc should be considered for evaluation.

Grading: Quizzes (for each lecture) 40%

Analysis reports (Field Trips) 20%

Term paper 20%

Attendance 20%

Outline (tentative):

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| **Week (Date)** | **Topics** | **Instructors** |
| 1 (Sep. 2) | Water, Non-Disposable Resource | Dr. Chang-Hoon Ahn (Deputy General Manager, Samsung C&T) |
| 2 (Sep. 9) | No Class (National Holiday, Chuseok) | - |
| 3 (Sep. 19) | [Field Trip] Yangcheon Resource Recovery Facility | Dr. Jae Young KIM (Prof., Seoul National University) |
| 4 (Sep. 23) | Polymer Pyrolysis | Dr. Seungdo Kim (CEO, KAIT Engineering) |
| 5 (Sep. 30) | Reduction of Sludge Production  - Alternative to Energy Recovery from Waste Sludge | Dr. Ki-Hoon KANG (Principle Research Fellow, Daelim Industrial Co., Ltd) |
| 6 (Oct. 14) | Application of an MBR(Anaerobic Membrane Bioreactor)  for recycling Organic wastes | Dr. Young-O KIM (Chief of Research Engineer, Hyundai E&C) |
| 7 (Oct. 17) | [Field Trip] Sludge Reduction Process  (Uijeongbu Wastewater Treatment Plant) | Dr. Ki-Hoon KANG (Principle Research Fellow, Daelim Industrial Co., Ltd) |
| 8 (Oct. 24) | [Field Trip] Biogas Energy Facility  (Docheok sludge hydrolysis demonstration plant) | Dr. Young-O KIM (Chief of Research Engineer, Hyundai E&C) |
| 9 (Oct. 28) | Status of organic waste to energy technologies and  Status of biomass fired power plant (Waste to energy) | You Geun KIM (Managing Director, Dohwa Engineering Co., Ltd.) |
| 10 (Nov. 7) | [Field Trip] Biogas Energy Facility  (LFG power and organic waste energy plant in SLC) | You Geun KIM (Managing Director, Dohwa Engineering Co., Ltd.) |
| 11 (Nov. 11) | Anaerobic digestion for organic wastes | TBA (Kolon E&C) |
| 12 (Nov. 21) | [Field Trip] New & Renewable Energy in Sewage Treatment Plants (Giheung Respia energy independence sewage treatment plant) | TBA (Kolon E&C) |
| 13 (Nov. 25) | Energy Management for Wastewater Treatment Facility | Dr. Hee Jun KIM (Chief/Director, JIU Corporation) |
| 14 (Dec. 2) | Reuse of Treated Wastewater and Sludge | Mr. Gabriel Mutto (Deputy General Manager, Samsung C&T) |
| 15 (Dec. 9) | Student Presentations on Waste to Energy Projects | Dr. Jae Young KIM (Prof., Seoul National University) |