KAIST Business School, 2017 Fall

GG820B: Special Topics in Green Business & Policy

<Introduction to Renewable energy & Energy storage systems>

Seong Hoon Kim (김성훈)

W, 19:00 – 21:50(2nd half-semester), Room: TBD

for MS in Green Business & Policy Program and Green MBS Programs

Version 1.0

1. Course Overview

This course explores a set of emerging concepts, technologies, applications and business models in the field of renewable energy and energy storage systems.

Students learn the most efficient and appropriate use of energy production as they explore the relevant relationships between power and energy.

The class will focus society's present needs and future energy demands, examine conventional energy sources and systems, including fossil fuels, and then focus on alternate, renewable energy sources such as solar, wind power, ocean/geothermal energy.

2. Textbook and References

Primary Readings

1. Richard A. Dunlap, "Sustainable Energy/신재생에너지", 동화기술 , 2015
2. 산업통상자원부, "신재생에너지정책방향", 에너지관리공단, 2014

References

1. Godfrey Boyle, " Renewable Energy, Power for a sustainable future", Oxford University Press, 2004.
2. Duffie, J. A. & W. A. Beckman, " Solar Engineering of Thermal Processes", 3rd ed. John Wiley & Sons, Inc., 2006

3. Contact

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4. Assessment Summary

4.1 Class Activity (30%)

- Read the assigned articles and cases before the class hour. Preview questions will be given in advance on the class folder to guide the reading.
- Post self-introduction by the 2nd week of the semester including interesting areas. Self-introduction will help in finding your project partners with common interest. You may update your interesting area as it develops.
- Class Participation is a MUST. Absence will be penalized by 2% point; late appearance or leaving the class early by 1% point.
- Case and Role Discussion and Presentations are encouraged. Active contribution will get extra credit.
- Join the evaluation of term project presentations of other teams, and suggest constructive critiques for them.

4.2 Homework Assignments (10%)

- Every lecture start with summary presentation of the previous lecture by student (3~5page ppt., 5minutes, 1 lecture/1 student, order will be given)

4.3 Mid-term Report or Special guest Talk (30%)

- In class PT : Nov. 30th

4.4 Term Project (30%)

- **Project Team**:
  - A project may be conducted by a team of two members at most or individually

- Each member should contribute equally to the team.

- **Project Subjects**: Benchmark report of leading company, Case development, Business plan development with justifications.

5. Lecture Schedule Outline

Week 1. Overview: Course Objectives and Syllabus

- Introduction to renewable energy systems and resources
- Energy, sustainability & the environment
- Barriers to implementation of renewable energies and how to overcome

Week 2 . Global Trends in Clean energy & ESS

- Fossil fuels - past, present & future and alternatives for fossil fuels
- Market perspective in clean energy & ESS
- Impact of different clean technologies on environment

Week 3. Solar – PV System

- Component of solar system and major technology
- Emerging issue and reference sites

Week 4. Wind power System

- Component of wind power system and major technology
- Emerging issue and reference sites

Week 5. Mid-Term Exam or Special guest Talk

- In class Mid-term : Nov. 30th

Week 6. Ocean & Geothermal Energy

- Principles, operation and recovery of energy
- Environmental impacts of ocean & geothermal power

Week 7. Energy Storage Systems

- Type of variety energy storage and value chain of ESS industry
- Major applications and global reference sites

Week 8. Term Project: Team Presentations

- 12 minutes presentation and 5 minutes discussion
- All students participate in the comments and scoring

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