

CE530 – APPLIED AND ENERGY GEOPHYSICS

<http://kwon.kaist.ac.kr> or klms.kaist.ac.kr

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Lecture:	Tue Thr 1:00 pm – 2:30 pm		tpark9@kaist.ac.kr
Office Hrs:	Mon Wed 1:00 pm – 6:00 pm (or by appointment)		

Prerequisites: CE230 or an equivalent geotechnical engineering course, or consent of instructor.

Course Text:

- Santamarina, J.C., Klein, K.A., and Fam, M.A., 2001, *Soils and Waves*, John Wiley & Sons, 488 pages.
- Santamarina, J.C. and Fratta, D., 1998, *Introduction to Discrete Signals and Inverse Problems in Civil Engineering*, ASCE Press, 327 pages.

Additional References:

- Selected readings and complimentary publications.

Course Objectives:

The objectives are to learn fundamentals of geophysics, as they are applied in civil engineering practice and to develop problem-solving skills in geophysical characterization and non-destructive testing for geo-materials.

Homework:

- Individual Submission
- All homework will be due one week after the day it is assigned. Homework will be considered late if it is not received *in class* on the due date. Late Homework will be accepted up to a week after the due date for 50% of the grade. All homework, however, must be submitted before finals week to pass the course.

Test Policy:

- There will be one mid-term exam and a *comprehensive* final. No class on the exam days.
- Mid-term Exam – TBD (10/20–10/26; 8th week)
- Final Exam (comprehensive) – TBD (12/15–12/21; 16th week)
- *Sorry, strictly no make up exams.*

Course Grading Policy:

Final grade is based on homework and exams. No exception will be given. The final course average determines the letter grade.

Grading:

Quiz	10 %
Homework and Project	40 %
Mid-term Exam	20 %
Final Exam	30 %

Honor Code:

- Students are expected to uphold the KAIST standard of conduct relating to academic dishonesty (KAIST Student Handbook, page 67-68 in Korean version, page 70-72 in English version; http://www.kaist.edu/html/en/campus/campus_0508.html). Cheating of any kind is unethical and unacceptable. See ACADEMIC INTEGRITY section below.
- Do not cut and paste any part of your homework or reports. Quote and attribute any words that are not your own.
- Wireless communication system of all kinds must be turned off while in the classroom.

STUDENTS WITH DISABILITIES: Reasonable accommodations are available for students with a documented disability. If you have a disability and may need accommodations to fully participate in this class, contact the instructor individually.

ACADEMIC INTEGRITY: Cheating or plagiarism in any form will not be tolerated. Cheating includes, but is not limited to, copying work or allowing your work to be copied. Plagiarism includes resubmitting previously graded homework or lab reports from a previous semester, even if they were your own work. All incidences of cheating will be reported to the Office of Student Affairs. The first incidence of cheating will result in an F for the course. A second incident of cheating will result in possible dismissal from the University.

SAFETY: Safety is a shared responsibility in which each member of the University community has a personal role. Each of us should know the appropriate actions to take when an emergency arises. For emergency preparedness, students are strongly encouraged to visit https://www.kaist.ac.kr/html/etc/safety/safety_010301.html. Everyone is also encouraged to visit this site https://www.kaist.ac.kr/html/etc/safety/safety_010201.html for information about emergencies & the communication resources KAIST will use during emergencies.

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Course Outline

Week	Dates	Description	Chapter
1	9/1-9/7	I. Elastic Waves in Continuum	6
2	9/8-9/14	I. Elastic Waves in Continuum (<i>Thr: Chuseok</i>)	6
3	9/15-9/21	II. Elastic Waves in Particulate Media	7
4	9/22-9/28	III. Velocity and Attenuation	8
5	9/29-10/5	Introduction to signal processing (Chs.3-5)	
6	10/6-10/12	Introduction to signal processing (Chs.6,7)	
7	10/13-10/19	IV. Laboratory Measurement Methods: Elastic Waves	9
8	10/20-10/26	<i>Mid-term Exam</i>	
9	10/27-11/2	V. Electromagnetism	10
10	11/3-11/9	VI. Electromagnetic Properties: Description and Model	11
11	11/10-11/16	VI. Electromagnetic Properties: Description and Model	11
12	11/17-11/23	VII. Electromagnetic Properties: Data and Empirical Relations	12
13	11/24-11/30	VII. Laboratory Measurement Methods: Electromagnetic Waves	13
14	12/1-12/7	VIII. Process Monitoring with Elastic and EM waves	14
15	12/8-12/14	Term project symposium	
16	12/15-12/21	<i>Final Exam</i>	