

교과목번호 Course No.	459.632	강좌번호	-	Title	에너지환경 지오메카닉스 특론 - 인공저류층 지열시스템 Topics in Energy and Environmental Geomechanics - Enhanced Geothermal Systems	credit	3
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담당교수 Instructor	Name: Min, Ki-Bok	Homepage : http://rockeng.snu.ac.kr
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	Office Hours : Through prior appointment	

강의목표 Objective	<ul style="list-style-type: none"> - This course deals with theory and practice of geomechanics applied to conventional energy resources, unconventional energy resources, geothermal energy and geoenvironmental engineering such as underground storage of CO2 and geological repository for nuclear waste. - This year, the focus is given to the Enhanced Geothermal Systems (EGS) Geomechanics although much of the content covered in this context is directly applicable to other applications.. - Students are expected to understand the methodology applied to EGS geomechanics and the state of the art in EGS Geomechanics research.
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교재 Textbook and references	<ul style="list-style-type: none"> - Lecture Notes - Jager JC, Cook NGW and Zimmerman RW, 2007, Fundamentals of rock mechanics, Blackwell Publishing - Fjaer E, Holt RM, Horsrud P, Raaen AM, Risnes R, 2008, Petroleum Related Rock Mechanics, Elsevier. - Zoback MD, 2007, Reservoir Geomechanics, Cambridge University Press. - Economides MJ, Nolte KG (eds), 2000, Hydraulic stimulation, 3rd ed., Wiley - Valkó P, Economides MJ, 1995, Hydraulic fracture mechanics, 1995, Wiley - Shearer PM, Introduction seismology, 2nd ed., 2009, Cambridge Press - Tester et al., 2006, The future of geothermal energy - Impact of Enhanced Geothermal Systems (EGS) on the United States in the 21st century, US Department of Energy, MIT Press, http://geothermal.inel.gov/publications/future_of_geothermal_energy.pdf
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평가방법 Evaluation	Participation	Homework	Final Exam	term-paper	Sum
	10 %	30 %	30 %	30 %	100%
	비고				

수강생 참고사항 Note to the students	<ul style="list-style-type: none"> - Lecture will be given in English with some explanations in Korean from time to time. - An overnight field excursion to the first Korean EGS project site at Pohang is planned which includes invited lectures and students' presentations of the progress on their term papers. - Students will select their own topics, submit their term papers, and present their work during the student conference. - Students with diverse backgrounds are very welcome to attend this course (expected work load excepting lectures: 12 hr/week). - Invited lectures will be arranged as necessary. - Extensive reading assignments (per every other week) will be given covering the EGS Geomechanics. - Grading range (from A to F). - Teaching Assistant: Hanna Kim (38-324), tel. 880-7232, kyhn1123@snu.ac.kr <p style="text-align: right;">Syllabus last updated: 1 Sept 2013</p>
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부정행위자에 대한 처리 Note about Plagiarism	<ul style="list-style-type: none"> - Plagiarism is strictly prohibited. - Home assignments and term papers must include 'statement of originality'.
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	주(기간)	강의내용
강의 계획 Schedule	week 1 9/2	- Introduction of the course & Enhanced Geothermal Systems (EGS) - Climate Change and Emerging Subsurface Engineering Applications (Enhanced Geothermal Systems, CO ₂ Geosequestration, Underground Storage/Disposal System and Shale gas production by hydraulic fracturing)
	week 2 9/9	- Fundamentals of Geomechanics
	week 3 9/16	- Borehole stability analysis
	week 4 9/23	- Borehole stability analysis - Student Presentations
	week 5 9/30	- No lecture due to a business trip
	week 6 10/7	- Hydraulic Stimulation
	week 7 10/14	- Hydraulic Stimulation - Student Presentations
	week 8 10/21	- Induced Seismicity
	week 9 10/28	- Induced Seismicity - Student presentations - submission of term paper proposal (~ 1 page)
	week 10 11/4	- Drilling Engineering (invited lecture) - Overnight Field Trip (11/8-9, tentative) (Invited lectures, field trips to a geothermal site in Pohang and presentations of the term project proposal)
	week 11 11/11	- Well logging (invited lecture)
	week 12 11/18	- EGS Case studies in the past 40 years
	week 13 11/25	- EGS Case studies in the past 40 years - Students Presentations
	week 14 12/2	- Student Conference (Presentation of Term Papers), Deadline for term paper.
	week 15 12/9	- Final Exam (closed book or take home exam)