

# G E-GEOLOGICAL ENGINEERING

- G E 2281 Engineering Co-Op Program** **1 Credit Hour**  
(Crosslisted with AME, CH E, CEES, C S, ECE, ENGR, EPHY, I E, P E 2281)  
Prerequisite: student participation in the program. The Co-Op program provides student placement in jobs outside the University, but in a position related to the student's major. On completion of a semester work period the student submits a brief written report. One hour of credit (elective) granted for each work period, with a maximum credit of six hours. (F, Sp)
- G E 3440 Mentored Research Experience** **3 Credit Hours**  
0 to 3 hours. Prerequisites: ENGL 1113 or equivalent, and permission of instructor. May be repeated; maximum credit 12 hours. For the inquisitive student to apply the scholarly processes of the discipline to a research or creative project under the mentorship of a faculty member. Student and instructor should complete an Undergraduate Research & Creative Projects (URCP) Mentoring Agreement and file it with the URCP office. Not for honors credit. (F, Sp, Su)
- G E 3960 Honors Reading** **1-3 Credit Hours**  
1 to 3 hours. Prerequisite: admission to Honors Program. May be repeated; maximum credit six hours. Consists of topics designated by the instructor in keeping with the student's major program. Covers materials not usually presented in the regular courses. (F, Sp)
- G E 3970 Honors Seminar** **1-3 Credit Hours**  
1 to 3 hours. Prerequisite: admission to Honors Program. May be repeated; maximum credit six hours. The projects covered will vary. Deals with concepts not usually presented in regular coursework. (Irreg.)
- G E 3980 Honors Research** **1-3 Credit Hours**  
1 to 3 hours. Prerequisite: admission to Honors Program. May be repeated; maximum credit six hours. Provides an opportunity for the gifted Honors candidate to work on a special project in the student's field. (F, Sp)
- G E 3990 Independent Study** **1-3 Credit Hours**  
1 to 3 hours. Prerequisite: permission of instructor and junior standing. May be repeated once with change of content. Independent study may be arranged to study a subject not available through regular course offerings. (F, Sp, Su)
- G E 4960 Directed Readings** **1-4 Credit Hours**  
1 to 4 hours. Prerequisite: good standing in University; permission of instructor and dean. May be repeated; maximum credit four hours. Designed for upper-division students who need opportunity to study a specific problem in greater depth than formal course content permits. (Irreg.)
- G E 4970 Special Topics/Seminar** **1-3 Credit Hours**  
1 to 3 hours. Prerequisite: Senior standing or permission of instructor. May be repeated; maximum credit nine hours. Special topics or seminar course for content not currently offered in regularly scheduled courses. May include library and/or laboratory research and field projects. (Irreg.)
- G E 4990 Independent Study** **1-3 Credit Hours**  
1 to 3 hours. Prerequisite: Senior standing and permission of instructor. May be repeated; maximum credit nine hours. Contracted independent study for a topic not currently offered in regularly scheduled courses. Independent study may include library and/or laboratory research and field projects. (Irreg.)
- G E 5243 Introduction to Rock Mechanics** **3 Credit Hours**  
(Crosslisted with P E 5243) Prerequisite: Graduate standing or instructor permission. Engineering properties of rock; rock testing techniques; in-situ methods; mathematical approach to stress-strain analysis; discontinuities in rock; application for underground openings; rock slopes; foundations and drilling. (Sp)
- G E 5310 Special Problems in Geological Engineering** **1-3 Credit Hours**  
1 to 3 hours. Prerequisite: Geology 3113, permission. Special studies in stratigraphy, petrology, subsurface geology, sedimentation and petroleum exploitation problems. (F, Sp, Su)
- G E 5960 Directed Readings** **1-3 Credit Hours**  
1 to 3 hours. Prerequisite: graduate standing and permission of department. May be repeated; maximum credit twelve hours. Directed readings and/or literature reviews under the direction of a faculty member. (F, Sp, Su)
- G E 5970 Special Topics/Seminar** **1-3 Credit Hours**  
1 to 3 hours. Prerequisite: Graduate standing or permission of instructor. May be repeated; maximum credit nine hours. Special topics or seminar course for content not currently offered in regularly scheduled courses. May include library and/or laboratory research and field projects. (Irreg.)
- G E 5980 Research for Master's Thesis** **2-9 Credit Hours**  
Variable enrollment, 2 to 9 hours; maximum credit applicable toward degree, four hours. (F, Sp, Su)
- G E 5990 Special Studies** **1-4 Credit Hours**  
1 to 4 hours. Prerequisite: graduate standing in Geological Engineering. May be repeated with change of topic; maximum credit four hours. Supervised individual study or specialized research in geological engineering. (F, Sp)
- G E 6263 Advanced Rock Mechanics I** **3 Credit Hours**  
(Crosslisted with P E 6263) Prerequisite: Graduate standing or instructor permission. In-situ stress determinations, effects of stress and strain gradients, time-dependent effects, Griffith's theory, crack phenomena, fracture toughness of rocks, poroelasticity concepts. (Irreg.)
- G E 6273 Advanced Rock Mechanics II** **3 Credit Hours**  
(Crosslisted with P E 6273) Prerequisite: 6263. Stereographic projections, properties of discontinuities, fluid flow in fractures, stability and design of rock slopes (two- and three-dimensional).
- G E 6283 Seismic Reservoir Modeling** **3 Credit Hours**  
(Crosslisted with GEOL and P E 6283) Prerequisite: graduate standing or permission of instructor. This course is designed to explore the seismic response of rocks and how it is related to petrophysical parameters. This understanding is key to interpretation of seismic data in terms of subsurface rocks and fluids. (F)
- G E 6573 Advanced Reservoir Engineering** **3 Credit Hours**  
(Crosslisted with P E 6573) Prerequisite: graduate standing. Petrophysics, Formation Evaluation, Reservoir Fluid Properties, Flow in Porous Media, Reservoir Material Balance, Decline Curve Analysis and Reservoir Simulation. (F)
- G E 6583 Enhanced Oil Recovery** **3 Credit Hours**  
(Crosslisted with P E 6583) Prerequisite: graduate standing or permission. Fundamentals and principles of enhanced oil recovery; practical applications of method of characteristics to design miscible gas injection, water alternating gas flooding, and polymer flooding (Sp)
- G E 6960 Directed Readings** **1-3 Credit Hours**  
1 to 3 hours. Prerequisite: graduate standing or permission of instructor. May be repeated; maximum credit six hours. Directed readings and/or literature review under the direction of a faculty member. (Irreg.)

**G E 6970 Special Topics/Seminar 1-3 Credit Hours**

1 to 3 hours. Prerequisite: graduate standing or permission of instructor. May be repeated; maximum credit 12 hours. Special topics or seminar course for content not currently offered in regularly scheduled courses. May include library and/or research and field projects. (Irreg.)

**G E 6980 Research for Doctoral Dissertation 2-16 Credit Hours**

Research for Doctoral Dissertation. (F, Sp, Su)

**G E 6990 Independent Study 1-3 Credit Hours**

1 to 3 hours. Prerequisite: Graduate standing and permission of instructor. May be repeated; maximum credit nine hours. Contracted independent study for a topic not currently offered in regularly scheduled courses. Independent study may include library and/or laboratory research and field projects. (Irreg.)