

Master Course Syllabus  
Department of Chemistry, Geosciences, and Environmental Science

**Subsurface Methods (GEOL 4123)**

Catalog Description: **Subsurface Methods (2-3)** An introduction to methods used to investigate the Earth's subsurface environment. Includes seismic reflection and refraction, gravity, magnetics, and electrical properties of the Earth. The course focuses on practical applications of these methods and advantages and limitations of each. Prerequisite: Math 1093. Lab fee \$10. Course fee \$10.

Prerequisites: MATH 1093

Expanded Course Description: This is an upper-level course that is recommended for multiple support areas in the Geoscience program. It is intended for students majoring or minoring in Geoscience, and especially those within the support areas of Geology, Environmental Science, and Hydrogeology. The course is an introduction to the theory and practice of using geophysical investigations in the practice of field studies. Several geophysical techniques for investigating the earth's interior are introduced. For each method, students will learn to design field experiments, collect and reduce data, and interpret results.

Intended Knowledge, Skill, and Value Outcomes: Students who successfully complete this course will be able to: describe physical rock properties (as opposed to compositional properties); name several geophysical techniques for investigating the earth's subsurface; describe the proper contexts in which each of the studied geophysical techniques is used; design and conduct field experiments with most of the geophysical techniques studied in the course; collect the proper information to be able to reduce data from the field experiments; produce the proper output for each type of geophysical experiment; interpret results for each type of geophysical technique; and understand the utility of geophysical equipment and techniques in many subdisciplines of the earth sciences.

Course Requirements: The course grade is determined by a combination of the following elements, subject to the instructor's discretion: non-comprehensive lecture exams, a comprehensive final exam, homework grades, and quizzes; and the laboratory grade (consisting, subject to the instructor's discretion, of weekly laboratory exercises, field exercises, and laboratory exams).

Department Head Signature/Date:

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Signature

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Date