

# MAJOR IN GEOSCIENCES, GEOPHYSICS CONCENTRATION

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The Geophysics concentration within the Geosciences major provides students with the applied skills needed to explore Earth's interior, and the theoretical knowledge needed to understand the process that shape the planets' chemical and mechanical structures and behaviors. The concentration combines a strong foundation in geology with additional depth in geophysics, physics, mathematics, and associated computer skills.

## Learning Objectives

Upon successful completion of this program, students will be able to:

1. Demonstrate foundational skills and knowledge in all sub-disciplines of geology (physical and historical geology, earth materials, sedimentology and stratigraphy, structural geology)
2. Exhibit valuable skills in scientific reasoning, quantitative data analysis and reasoning; field, analytical, and remote sensing skills; spatial thinking and map use enabling them to contribute effectively to professional work and engage in original research.
3. Use visualization tools, theory, computation, and simulations to explain field observations and experimental results, make interpretations and test hypotheses.
4. Obtain, organize, and critically evaluate geologic information, and effectively present it through oral and written discourse with specialists and non-specialists.
5. Ethically and responsibly engage their knowledge of geology to address current global and scientific challenges.
6. Apply sustainability principles that incorporate complex environmental, economic, and social factors.
7. Demonstrate knowledge of Earth's physical and chemical structure and how that has evolved through Earth's four and a half billion year history.
8. Demonstrate understanding of the physical and chemical processes that shape and govern evolution and behavior of Earth's interior.
9. Demonstrate knowledge of the tools used to probe Earth's interior for knowledge of its' composition and physical state. Describe how these tools are useful for understanding earth structure on all scales, and how these are used in an academic environment, governmental labs, and private businesses.
10. Differentiate between what is known vs. what is hypothesized regarding Earth's interior composition and behavior, and understand what methods and data are used to test and refine our modern hypotheses.