

Undergraduate TA Opportunities

Department of Geological Sciences and Geological Engineering

Fall 2023 and Winter 2024

Please note that to TA a course, you must have obtained a B grade or higher in that course.

Introductory and Cross-Disciplinary Courses

Earth Systems Engineering

APSC 151

Role: TA

An introduction to the complex Earth System (the solid earth, hydrosphere, atmosphere, and biosphere) and our interactions with it. The science behind our exploration and understanding of our planet and its ongoing evolution is explored in combination with the engineering geology of geo-materials, geo-resources, geo-dynamics and geo-risk.

The Dynamic Earth

GEOL 104

Role: TA

Introduction to the internal structure of the Earth and the processes that have shaped its surface. Global tectonics and continental movement, rock genesis, mountain building, glaciations and geological time. Laboratories include rock and mineral identification, and problem solving in historical geology, earthquakes, groundwater flow and coastal erosion.

Environmental Geology and Natural Hazards

GEOL 106

Role: Marker

The relationship between humankind and our ever-changing planet, with a focus on natural geologic hazards (volcanic eruptions, earthquakes, landslides, tsunamis, mass movement, floods, extraterrestrial impacts, etc.), and environmental impacts which result from population and land-use expansion and our increased use of water, energy and mineral resources.

Oceanography

GEOL 200

Role: Marker

Introduction to marine science. Topics include: ocean basins and their sediments; seawater chemistry/biochemistry; ocean waves, tides and currents; ocean-atmosphere interaction; polar to tropical organism communities; marine resources; environmental concerns; global change.

Structure and Petrology Courses

Geological Field Methods

GEOL 221 / GEOE 221

Role: TA

The field study of surficial deposits, rock types, and geological processes, based on the geology of the Kingston area. Descriptions, samples and measurements acquired on several field trips will be analyzed, and the results recorded in maps, sections, and reports throughout the course.

Mineralogy

GEOL 232 / GEOE 232

Role: TA

Characterization of rock- and soil-forming silicate and non-silicate minerals (their crystallography, optical and physical behaviour, and crystal chemistry), viewed at both the macroscopic and microscopic scale. The structural, chemical and genetic aspects of the crystalline state as displayed by minerals are considered.

Igneous and Metamorphic Petrology

GEOL 235 / GEOE 235

Role: TA

Introduction to the genesis and characterization of igneous and metamorphic rocks. Students will acquire skills to classify rocks and the theoretical background to place these rocks in the context of where, why, and how they form with implications for resource exploration and utilization. Macroscopic and microscopic properties will be studied.

Sedimentology, Stratigraphy, and Paleontology Courses

History of Life

GEOL 107 / GEOE 207

Role: TA, Marker

The history of life, from its inception four billion years ago to the present day, focusing on the inter-relationship between organic evolution and global change. Coevolution of early life and the atmosphere; development of marine animals and their ecosystems; invasion of the land; dinosaurs and their world; mass extinctions; the Age of Mammals; and hominid evolution.

Surficial Processes, Sedimentation and Stratigraphy

GEOL 238 / GEOE 238

Role: TA

An examination of the genetic link between surficial geological processes and the sedimentary record. Topics include origin of sedimentary rocks and sedimentary structures; depositional environments and stratigraphic successions; stratigraphic principles and their application to sedimentary basins.

Paleontology

GEOL 337 / GEOE 337

Role: TA

Review of the major groups of invertebrate fossils, emphasizing functional morphology, paleoecology, evolution, and geological significance.

Geophysics and Remote Sensing Courses

Geophysical Characterization of the Earth

GEOL 249 / GEOE 249

Role: Marker

The application of physical principles to examine and characterize the Earth at all scales. The Earth's physical properties and dynamic processes will be assessed and evaluated by integrating such topics as gravity, seismology, magnetism, geochronology, and heat flow, as related to scientific and engineering problems.

Terrain Evaluation

GEOL 333 / GEOE 333

Role: TA

An introduction to the principles of geomorphology relevant to Geological Sciences and Geological Engineering.

Identification and evaluation of terrain features using analog and digital imagery via traditional and digital (GIS) methods. Digital terrain model acquisition and analysis. Introduction to digital terrain analysis.

Geological Engineering Courses

Introduction to Geological Engineering

GEOE 281

Role: TA

Introduction to the integrated fields of Geological Engineering and the essence of engineering design in an earth-systems context. Geological properties and processes, and their impact on design, are discussed, with emphasis on scale dependency, natural variability, and risk assessment. Subdisciplines of geotechnical engineering, applied geophysics, resource engineering, hydrogeology, and geo-environmental engineering are highlighted.