

Earth Sciences 1022A Course Outline: Earth Rocks!

Objectives: We will study what the Earth is made of (minerals and rocks), how it works (plate tectonics), and how it affects us. Focus is on surface processes, landforms, resources of our planet – natural features and actions that we can see including natural disasters such as earthquakes, volcanoes, landslides, tsunamis, and floods.

No prerequisites; **Anti-requisites:** ES1070a/b, ES1081a/b; the former ES 020, ES082a/b
Lectures: Tu, Th 12³⁰-1²⁰ pm in Natural Sciences Room 1 (downstairs by the tunnels)
Labs: 2hr slots:T1³⁰-3³⁰; W9³⁰-11³⁰, 11³⁰-1³⁰, 3³⁰-5³⁰; Th10³⁰-12³⁰; 1³⁰-3³⁰, 3³⁰-5³⁰, 6-8 in BGS1015
Instructor: Dr S.R. Hicock BGS 1076; shicock@uwo.ca; <https://owl.uwo.ca/portal>
Recommended Text: Earth (4th Can Ed. 2015); no manuals or electronic devices required
Marks etc.: weekly labs 10%, Oct lab quiz 10%, Oct midterm 20%, Nov lab exam 20%, Dec exam 40%; contact the Prof. if you miss a test; no electronic devices allowed in tests

Content

Orientation: course layout, marks; how Earth formed, global tectonics, the rock cycle
Minerals: what they are, structures and bonds, common mineral groups and uses
Igneous rocks: how they form, magma types, igneous textures, rock types and uses
Volcanoes: how they erupt, resulting landforms and rock types; igneous intrusions
Weathering: what it is, how it works, mineral and rock susceptibility, soil development
Sedimentary rocks: how they form, sedimentary features, rock types and uses
Metamorphic rocks: how they form, metamorphic textures, rock types and uses
Geologic time: correlation, time gaps, dating methods, geologic column and time scale
Rock deformation: stress and strain, rock strength, resulting structures and landforms
Earthquakes: causes, protection, seismic waves, Earth's crust, mantle, and core
Ocean floor: submarine volcanoes, continental shelves, coral islands, hot spots
Plate tectonics: what it is, continental drift, sea floor spreading, plate boundaries
Mountain building: where and how mountains form, isostasy, cratons and shield areas
Landslides: where and why they happen, consequences, classification and protection
Streams: the water cycle, stream flow, erosion, transport, deposition, and landforms
Groundwater: distribution, movement, wells, springs, geysers, caves, and pollution
Glaciation: glacier movement, erosion, transport, deposition, landforms, and causes
Wind: wind erosion, transport, deposition, desert weathering, and effects of water
Coasts: waves, currents, beaches, landforms, shoreline erosion and protection
Resources: sources, formation, and common uses of energy and mineral resources

Laboratory: weekly lab exercises on minerals, rock types, strata, rock structures, maps

Scholastic offenses are taken seriously and students are directed to read the appropriate policy, specifically, the definition of what constitutes a Scholastic Offense, at the following Web site: http://www.uwo.ca/univsec/handbook/appeals/scholastic_discipline_undergrad.pdf

Accommodation for missed work worth less than 10% of the total course grade due to illness will not require medical documentation; instead, contact the professor and refer to the Policy on Accommodation for Medical Illness at <https://studentservices.uwo.ca/secure/index.cfm>

Please contact the professor if you require material in an alternate format, or any other arrangements to make this course more accessible to you. You may also wish to contact Services for Students with Disabilities (SSD) at 661-2111 x82147 about an accommodation.