

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

Lectures: Tu, Th 12³⁰-1²⁰ pm in Arts & Humanities Bldg room IR40

Labs: 2hr slots: Tu 1³⁰-3³⁰; W 9³⁰-11³⁰, 11³⁰-1³⁰, 3³⁰-5³⁰; Th 10³⁰-12³⁰; 1³⁰-3³⁰, 3³⁰-5³⁰ 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 661-2111x82147 about an accommodation.