

# GEOS 100 PHYSICAL GEOLOGY Section 2 (ET)

## Course Outline Fall 2002

Prerequisite: English 12.

### 1. Instructor

**Dr. Tark S. Hamilton Office Fisher 344-A**

**Phone 370-3331**

Office Hours: as posted: Mon- 3:30-4:20 , Tues- 2:30-5:20, Thurs 4:30-5:20 or by appointment

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### 2. Intended Learning Outcomes

After successfully completing all components of this course students will be able to:

1. Recognise mineral names, physical properties, chemical composition, formation
2. Identify ~50 common rock-forming minerals on their physical properties
3. Infer how samples of some rocks have formed: process and conditions
4. Infer the relationship of rock-forming processes to plate tectonics
5. Describe and interpret textural features of rocks
6. Describe mineral & chemical variations of abundant rock types
7. Classify common rocks based on texture and composition
8. Relate a range of geological processes and identify their products
9. Understand the natural resources, their settings, limits, value and environments
10. Relate environmental conditions to geological settings and products
11. Apply techniques to determine the chronological order of events in Earth's history
12. Calculate absolute radiometric ages of Earth materials and events
13. Identify common geologic structures & their representation on maps.
14. Identify, describe and interpret geological structures in three dimensions
15. Determine the relationship of geological structures and plate tectonic boundaries
16. Determine the location of an earthquake from seismic data
17. Use seismograms to infer relative earth movements on faults
18. Relate the nature and distribution of major earth features such as mountains, volcanoes and earthquakes to plate tectonics.

### 3. Required Materials

#### (a) Texts

Earth, Tarbuck and Lutgens, 7<sup>th</sup> ed.;

Lab. Manual in Physical Geology, AGI, 6<sup>th</sup> ed.

Recommended reading of other geology texts, a geological glossary (dictionary), a mineral identification book and web based research, readings and virtual field trips.

**(b) Other**

Hand lens, protractor, drawing compass, coloured pencils.

**4. Instruction**

**Classroom** 3 hours

Monday – 2:30-3:20 F336, Tuesday & Thursday – 1:30-2:20 F302

**Lab** 3 hours

Thursday – 8:30-11:20, F300 and local field trips during lab time and weekend day trips.

14 weeks

**5. Assessment**

**(a) Lab exercises** 10 X 2.5%

**(b) Lab quizzes** 5%, 5%, 10%

**(c) Written exams** 15%, 15%, 25%

**6. Grading system**

Marking Scheme:

A+	100-95	A	94-90	A-	89-85		
B+	84-80	B	79-75	B-	74-70		
C+	69-65	C	64-60	D	59-50	F	<50

**7. Sequence of topics (subject to modification and repetition):**

- Introduction: Geological processes and products
- Matter and minerals: compositions, crystal structures and physical properties
- Igneous rocks, volcanoes and plutons, and resources
- Weathering, soil formation, erosion and mass wasting
- Sedimentary processes, environments, sediments, rock types and resources
- Metamorphism, metamorphic rocks settings, formation and resources
- Geologic time: relative and absolute, geologic dating techniques
- Water, ice, resources, environmental changes
- Crustal deformation, tectonics and structural geology
- Earthquakes: types, recurrence, location, effects, tectonic settings
- Earth’s interior: Core layers, Mantle and Crust, Planetary formation
- Ocean floor, basalts, active tectonics, ore formation, unique environments
- Plate tectonics, plate boundaries and motions, mantle convection
- Mountain building, evolution of continents
- Local Geology of that of western Canada

**8. Course purpose: introduction to the physical make up and natural processes on and within the earth with an emphasis to the environment and resources. Always ask what each topic has to do with resources and the environment.**