



## COURSE OUTLINE: NRT238 - PHYSICAL GEOLOGY

Prepared: Lawrence Foster

Approved: Sherri Smith, Chair, Natural Environment, Business, Design and Culinary

<b>Course Code: Title</b>	NRT238: PHYSICAL GEOLOGY
<b>Program Number: Name</b>	5212: ADVENTURE RECREATION
<b>Department:</b>	NATURAL RESOURCES PRG
<b>Academic Year:</b>	2022-2023
<b>Course Description:</b>	Students will gain an understanding of the processes that have led to the incredible variety of formations in the rocks and soils of our region. These will be related to land use and travel patterns both contemporary and historical. Included will be rock formation, minerals, surficial geology, glaciation, soils and fossil formation and identification.
<b>Total Credits:</b>	3
<b>Hours/Week:</b>	3
<b>Total Hours:</b>	42
<b>Prerequisites:</b>	There are no pre-requisites for this course.
<b>Corequisites:</b>	There are no co-requisites for this course.
<b>Substitutes:</b>	NRT229
<b>Vocational Learning Outcomes (VLO's) addressed in this course:</b>	<b>5212 - ADVENTURE RECREATION</b>
<b>Please refer to program web page for a complete listing of program outcomes where applicable.</b>	VLO 1 Demonstrate clear, concise and industry appropriate written, spoken and visual communication skills.
	VLO 2 Identify, discuss, organize and assess common Flora & Fauna species found throughout ON, including biological and physiological characteristics.
	VLO 4 Identify and evaluate the requirements for leading and participating in expeditions or field exercises using a variety of Adventure Recreation activities.
	VLO 5 Start and manage a career in the Adventure Recreation and Parks field.
	VLO 7 Describe the scientific method and how it shapes our understanding of the ecology of the natural world.
	VLO 11 Analyze, evaluate and apply subjective and objective safety considerations for Adventure Recreation and Parks activities.
<b>Essential Employability Skills (EES) addressed in this course:</b>	EES 1 Communicate clearly, concisely and correctly in the written, spoken, and visual form that fulfills the purpose and meets the needs of the audience.
	EES 2 Respond to written, spoken, or visual messages in a manner that ensures effective communication.
	EES 3 Execute mathematical operations accurately.
	EES 4 Apply a systematic approach to solve problems.
	EES 5 Use a variety of thinking skills to anticipate and solve problems.
	EES 6 Locate, select, organize, and document information using appropriate technology



- and information systems.
- EES 7 Analyze, evaluate, and apply relevant information from a variety of sources.
  - EES 8 Show respect for the diverse opinions, values, belief systems, and contributions of others.
  - EES 9 Interact with others in groups or teams that contribute to effective working relationships and the achievement of goals.
  - EES 10 Manage the use of time and other resources to complete projects.
  - EES 11 Take responsibility for ones own actions, decisions, and consequences.

**General Education Themes:** Science and Technology

**Course Evaluation:** Passing Grade: 50%, D  
A minimum program GPA of 2.0 or higher where program specific standards exist is required for graduation.

**Other Course Evaluation & Assessment Requirements:** Academic success is directly linked to attendance. Missing more than 1/3 of class hours in a semester shall result in an F grade for the course.

**Books and Required Resources:** Mountaineering Freedom of the Hills by Ronald C. Eng  
Publisher: The Mountaineers Books Edition: 9  
ISBN: 978-1594851384

**Course Outcomes and Learning Objectives:**

Course Outcome 1	Learning Objectives for Course Outcome 1
Explain the geological development of the Earth since the beginning of its formation.	<ul style="list-style-type: none"> <li>1.1 Describe the makeup of the Earth.</li> <li>1.2 Explain the theory of plate tectonics(continental drift).</li> <li>1.3 Explain why magnetic reversals are observed.</li> <li>1.4 Explain the structure of subduction zones and their associated phenomena.</li> <li>1.5 Describe mid-oceanic ridges.</li> <li>1.6 Describe the geological time scale and how it applies to Ontario.</li> <li>1.7 Explain the development of the present-day continents.</li> <li>1.8 Explain the major dating processes used to determine the age of rocks.</li> </ul>
Course Outcome 2	Learning Objectives for Course Outcome 2
Identify common rocks and minerals of the Algoma Region.	<ul style="list-style-type: none"> <li>2.1 Adapt diagnostic tests and techniques used in determining different minerals and rocks.</li> <li>2.2 Identify common minerals found in the Algoma District using the diagnostic tests and techniques described above.</li> <li>2.3 Identify metamorphic, sedimentary and igneous rocks found in the Algoma District using the diagnostic tests and techniques described above.</li> </ul>
Course Outcome 3	Learning Objectives for Course Outcome 3
Describe the rock cycle and the associated processes, rocks and formations.	<ul style="list-style-type: none"> <li>3.1 Identify and explain the formation of sedimentary rocks.</li> <li>3.2 Describe the main types of sedimentary rock found in Ontario in relation to rock type, origin, characteristics and age.</li> <li>3.3 Identify major fossil groups found in the sedimentary rocks</li> </ul>

		of Ontario. 3.4 Identify and explain the formation of metamorphic rocks. 3.5 Identify and explain the formation of igneous rocks. 3.6 Identify and describe formations within the rock cycle. 3.7 Relate each of the above to Ontario's geological time scale.								
	<b>Course Outcome 4</b>	<b>Learning Objectives for Course Outcome 4</b>								
	Explain the major glacial events in Ontario's recent history and describe the resulting impacts on surficial geology and landforms produced.	4.1 On maps of Ontario, describe the sequences of glacial advances and associated glacial lakes. 4.2 Explain isostatic rebound and how this phenomenon has left its mark in Algoma District. 4.3 Identify and explain the formation of glacial land forms such as eskers, drumlins, kames, potholes, outwash plains and moraines. 4.4 Explain climate change in the recent epoch and its impact on animal and plant populations.								
<b>Evaluation Process and Grading System:</b>	<table border="1"> <thead> <tr> <th>Evaluation Type</th> <th>Evaluation Weight</th> </tr> </thead> <tbody> <tr> <td>Labs</td> <td>30%</td> </tr> <tr> <td>Projects</td> <td>30%</td> </tr> <tr> <td>Tests</td> <td>40%</td> </tr> </tbody> </table>		Evaluation Type	Evaluation Weight	Labs	30%	Projects	30%	Tests	40%
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<b>Date:</b>	June 30, 2022									
<b>Addendum:</b>	Please refer to the course outline addendum on the Learning Management System for further information.									