

Programme	B. Sc. Geology				
Course Code	GEL1CJ101				
Course Title	INTRODUCTION TO GEOLOGY				
Type of Course	Major				
Semester	I				
Academic Level	100 - 199				
Course Details	Credit	Lecture per week	Tutorial per week	Practical per week	Total Hours
	4	3	-	2	75
Pre-requisites	NIL				
Course Summary	This course serves as an introduction to the field of geology, covering fundamental concepts related to Earth's formation, dimensions, dynamic evolution, geochronology, and major geological hazards.				

Course Outcomes (CO):

CO	CO Statement	Cognitive Level*	Knowledge Category#	Evaluation Tools used
CO1	Students will have an understanding of the basic principles and concepts of geology, including the formation of Earth and its dimensions.	U	F	Exam
CO2	Students will be able to explain the theories of Earth's formation and its physical dimensions, including the structure and composition of Earth's interior layers.	Ap	C	Home assignments
CO3	Students will analyze the dynamic processes that have shaped Earth's surface and interior over geological time scales, including plate tectonics, mountain building, erosion, and sedimentation.	An	P	Seminar presentations
CO4	Students will be able to interpret geochronological data and understand the methods used to determine the ages of rocks	E	M	Home assignments
CO5	Students will identify and describe major geological hazards, including earthquakes, volcanic eruptions, and understand the geological processes that cause them.	Ap	F	Assignment
CO6	Students will evaluate strategies for mitigating the impacts of geological hazards on society and the environment.	E	M	Practical Assignment
* - Remember (R), Understand (U), Apply (Ap), Analyse (An), Evaluate (E), Create (C) # - Factual Knowledge(F) Conceptual Knowledge (C) Procedural Knowledge (P) Metacognitive Knowledge (M)				

Detailed Syllabus: INTRODUCTION TO GEOLOGY

Module	Unit	Content	Hrs	Marks
I	Introduction to Geology		10	15
	1	Geology: The Science of Earth	2	
	2	The Development of Geology	3	
	3	The Nature of Scientific Inquiry	2	
	4	Plate Tectonics and Scientific Inquiry	3	
II	Earth's Formation and Dimensions		15	20
	5	Earth's Spheres	3	
	6	Earth System	3	
	7	Evolution of Earth	2	
	8	Formation of Earth's layered structure	2	
	9	Earth's Internal Structure	2	
III	Changing Earth & Geochronology		10	15
	11	The Rock Cycle	2	
	12	The face of Earth. Mountain building. Origin & evolution of ocean floor	2	
	13	Age of the earth	2	
	14	Dating methods: Absolute (radiometric) and relative (stratigraphy)	2	
	15	Application of dating methods in constructing the Geological Time Scale	1	
	16	Overview of eras, periods, epochs – major geological events.	1	
IV	Introduction to Major Geological Hazards		10	20
	17	Volcanoes & Volcanic Hazards	1	
	18	Nature of Volcanic Eruptions and Products	1	
	19	Types of Volcanoes & Volcanic Landforms	2	
	20	Earthquakes & Earthquake Hazards	2	
	21	Seismology, Seismic Waves, Earthquakes & Plate Boundaries	2	
	22	Earthquake Destruction. Prediction, Forecast and Mitigation	2	
V	Practical		30	20
	1	Lab exercises to apply the concepts of interior of earth, earth's magnetism and plate tectonics. Exploring geologic features using Google Earth.	20	
	2	Introduction to Topographic Maps. Exercises involving contour lines.	4	
	3	Application of Gt.Aide (Academy) Freeware	6	

Mapping of COs with PSOs and POs:

	PSO1	PSO2	PSO3	PSO4	PSO5	PSO6	PO1	PO2	PO3	PO4	PO5	PO6	PO7
CO 1	1	-	-	-	-	-							
CO 2	2	3	-	-	-	-							
CO 3	-	-	1	-	-	-							
CO 4	-	-	2	3	-	-							
CO 5	-	1	-	-	-	-							
CO 6	-	-	-	3	-	-							

Correlation Levels:

Level	Correlation
-	Nil
1	Slightly / Low
2	Moderate / Medium
3	Substantial / High

Assessment Rubrics:

External evaluation: 70 marks. Internal Evaluation: 30 marks

INTERNAL MARK SPLIT-UP (TOTAL 30 MARKS)			
	Components of Internal Evaluation	4 Theory Modules (10)	Practical (20)
1	Test paper/ Continuous Evaluation of Practical Exercises	5	10
2	Seminar/ End Sem Exam & Viva-Voce	3	7
3	Assignment / Lab Record	2	3

Mapping of COs to Assessment Rubrics:

	Internal Exam	Assignment	Seminar	End Semester Examinations
CO 1	✓			✓
CO 2	✓			✓
CO 3	✓			✓
CO 4		✓		✓
CO 5		✓		✓
CO 6			✓	

References:

1. Condie, K.C., 2015. *Earth as an Evolving Planetary System*, 3rd Edition, Academic Press, USA.
2. Hudson, T., 2012. *Living with Earth – An Introduction to Environmental Geology*. Pearson Education Inc., New Jersey, USA
3. Marshak, S., 2001. *Earth: Portrait of a Planet*. W.W. Norton & Co., Inc., USA
4. Wicander, R. and Monroe, J., 2006. *Essentials of Geology*. 4th Edition, Thomson Learning Inc., USA.
5. Tarbuck, E.J. and Lutgens, F.K., 2008. *Earth: An Introduction to Physical Geology*. 9th Edition, Pearson Education, Inc., New Jersey, USA