Programme	B. Sc. Geology				
Course Code	GEL1FM102				
Course Title	**EXPLORING THE MOTHER EARTH**				
Type of Course	Foundation – Multi Disciplinary Course				
Semester	1				
Academic Level	100-199				
Course Details	Credit	Lecture per week	Tutorial per week	Practical per week	Total Hours
	3	3	-	0	45
Pre-requisites	NIL				
Course Summary	A brief introduction to Earth and the geological processes				

Course Outcomes (CO):

CO	CO Statement	Cognitive Level*	Knowledge Category#	Evaluation Tools used
CO1	Understand the fundamental concepts and principles of geology as a scientific discipline.	U	F	Exam
CO2	Describe the processes involved in Earth's formation, including differentiation and early geological history.	Ap	C	Quiz
CO3	Explain the principles and techniques of geochronology used to determine the ages of rocks and geological events.	An	P	Assignment
CO4	Interpret the geological time scale and recognize major landforms and geological features.	E	M	Viva
CO5	Identify the driving forces behind tectonic activity and plate movements.	Ap	F	Assignment
CO6	Identify geological hazards associated with plate tectonics	E	M	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: EXPLORING THE MOTHER EARTH

Module	Unit	Content	Hrs	Marks
I		**Introduction to Geology**	10	15
	1	Overview of Geology as a Science		
	2	Branches of Geology: Physical Geology vs. Historical Geology		
	3	Earth's Structure: Core, Mantle, Crust		
	4	Rock Cycle and Types of Rocks		
	5	Origin of the Solar System and Earth		
	6	Nebular Hypothesis and Planetesimal Accretion		
	7	Differentiation of Earth's Interior: Core, Mantle, and Crust		
	8	Earth's Spheres: Lithosphere, Hydrosphere, Atmosphere, Biosphere		
	9	Measurement of Earth's Dimensions: Circumference, Diameter, Mass		
II		**Early Earth Differentiation and Geochronology**	8	10
	9	Early Earth Conditions: Hadean, Archean, and Proterozoic Eons		
	10	Differentiation Processes: Formation of Earth's Layers		
	11	Principles of Radiometric Dating and Isotopic Decay		
	12	Geological Time Scale: Eons, Eras, Periods, and Epochs		
III		**Geological Time Scale and Landforms**	8	10
	13	Geological Time Scale: Overview and Major Events		
	14	Relative Dating Methods: Stratigraphy, Superposition, Cross-Cutting Relationships		
	15	Absolute Dating Methods: Radiometric Dating Techniques		
	16	Major Landforms and Geological Processes: Mountains, Plateaus, Valleys, Plains		
	17	Geomorphic Agents: Weathering, Erosion, Deposition, Tectonic Activity		
IV		**Tectonics and Plate Movements**	10	15
	18	Plate Tectonics Theory: Historical Development and Evidence		
	19	Types of Plate Boundaries: Divergent, Convergent, Transform		
	20	Geological Features Associated with Plate Boundaries: Mid-Ocean Ridges, Subduction Zones, Faults		
	21	Tectonic Forces and Earthquakes		
	22	Volcanic Activity and Geological Hazards		
V		**Open Ended Module**	9	5
	Discussing the new trends in exploring the Universe. Eg. James Web Space Telescope. Different Missions to various planetary bodies.			

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: 50 marks. Internal Evaluation: 25 marks

INTERNAL MARK SPLIT-UP (TOTAL 25 MARKS)			
	Components of Internal Evaluation	**4 Theory Modules (20)**	**Open ended Module (5)**
1	Test paper/ Mid semester Exam	10	2.5
2	Seminar/ Viva/ Quiz	6	1.5
3	Assignment/ Group Discussion	4	1

Mapping of COs to Assessment Rubrics:

	Internal Exam	Assignment	End Semester Examinations
CO 1	✓	✓	✓
CO 2	✓	✓	✓
CO 3		✓	✓
CO 4		✓	✓
CO 5		✓	✓
CO6		✓	✓

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