

Generic Elective Curriculum Structure



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A. Evaluation Scheme for the courses

	CO1	CO2	CO3	Total
Internal	14	13	13	40
External	20	20	20	60
Total	34	34	32	100

B. Mapping Course Outcome with Internal Assessment (40 Marks)

	CO1	CO2	CO3
Assignments	4	3	3
Seminar	4	4	4
Test	5	5	5
Attendance	1	1	1

C. Mapping CO with External Assessment (60 Marks)

Category	CO1	CO2	CO3
Part – A (Objective - 10 x 1 = 10 marks)	3	4	3
Part – B (Short Answer - 5x 4 = 20 marks)	8	4	8
Part – C (Essay- 3 x 10 = 30 marks)	10	10	10
Total	20	20	20

D. Common Rubric for Assignments

Sl. No.	Criteria	100%	75%	50%	25%	0%	Relation to COs
1	Content 50%	Ideas are detailed, well developed, supported with specific evidence & facts and examples	Ideas are detailed, Developed and supported with evidence and facts mostly specific.	Ideas are presented but not particularly developed or supported.	Content is not sound	Not attended	CO1, CO2, CO3



2	Organization 50%	Includes title, introduction, statement of the main idea with illustration and conclusion.	Includes title, introduction, statement of main idea and conclusion.	organizational tools are weak or missing	No organization	Not attended	CO1, CO2, CO3
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E. Common Rubric for Seminar

Sl. No	Criteria	100%	75%	50%	25%	0%	Relation to COs
1	Knowledge and Understanding 50%	Exceptional knowledge of facts, terms and concepts	Detailed knowledge of facts, terms and concepts	Considerable knowledge of facts, terms and concepts	Minimal knowledge of facts, terms and concepts	Not Attended	CO1, CO2, CO3
2	Presentation 50%	Well Communicated with logical sequences, examples and references	Communicated with sequences	Just Communicated	No coherent communication	Not Attended	CO1, CO3



F. Common Model Question Paper

Part A

[10 x 1= 10]

(Objective type: multiple choice, fill in the blanks, one word answer)

Answer ALL the questions. Each Question carries one mark.

- 1.
- 2.
- 3.
- 4.
- 5.
- 6.
- 7.
- 8.
- 9.
- 10.

Part B

[4 x 5= 20]

(Short answer type: answer should not exceed 200 words)

Answer ALL the questions. Each Question carries five marks.

11. (a) or (b)
12. (a) or (b)
13. (a) or (b)
14. (a) or (b)

Part C

[3 x 10 = 30]

(Essay answer type: answer should not exceed 400 words)

Answer ALL the questions. Each Question carries ten marks.

15. (a) or (b)
16. (a) or (b)
17. (a) or (b)

**SEMESTER - I**

Course Code	Course Name	L	P	Credits
GLYGE01	Earth System Sciences	3	-	3

a. Course Outcome (CO)

On the successful completion of the course, the student will be able to

	Course Outcome	Level
CO1	Understand the origin of Earth, its position in universe and various Earth processes that modify the Earth surface.	Understand
CO2	Understand the evolution of Geological structures, their importance to the society and explain the natural hazards	Understand
CO3	Identify the common rock-forming minerals and different rock types.	Understand

b. Syllabus

Units	Content	Hrs.
I	Introduction to Earth System Science, Solar System, Earth's History and its place in the universe, Earth's Material, Earth's Endogenic and Exogenic Processes; Erosion and Weathering; Orogeny and Epeirogeny; Geomorphological Landforms and its importance: fluvial, eolian, glacial, volcanic and coastal; Geomorphology of India: Peninsular, Extra Peninsular, Indo-Gangetic Plain; Relationship between climate and geomorphic landforms.	15
II	Fundamental Principles; Types of Deformation; Types and development of Geological Structures: Importance to Society; Plate Tectonics: Continental Drift, Plates and boundaries, Plate Tectonics Model-Paleomagnetism, Sea Floor Spreading, Polar Wandering and Reversal of Earth's Magnetic Field; Mechanism of plate tectonics and its societal importance; Earthquakes and associated Hazards-Landslides, Tsunami, and volcanism.	15
III	Definition of mineral; common rock forming minerals and their properties; Distribution and use of common metallic, non-metallic, and precious minerals. Types of Igneous rocks; origin of igneous rocks; identification of different igneous textures, intrusive and extrusive structures associated with the igneous rocks; Types of metamorphism; textures, structures and origin of different types of metamorphic rocks; classification of sediments, texture, structure and classification of different types of sedimentary rocks.	15

Tasks and Assignments:

Each student is required to undergo the following:

- ✓ Assignments
- ✓ Seminars
- ✓ Class Tests



References

1. Anthony R. Philpotts and Ague, J. J. (2009) Principles of Igneous and Metamorphic Petrology. Cambridge
2. Bangar, K. M., 2005, Principles of engineering geology, Standard Publishers Distributors.
3. Carlson, D. and Plummer, C. C., 2008, Physical Geology, McGraw- Hill.
4. Duff, P. M. D., & Duff, D. (Eds.), 1993, Holmes' principles of physical geology, Taylor & Francis
5. Davies, G.F. (1999). Dynamic Earth: Plates, Plumes and Mantle Convection. Cambridge University Press.
6. Fossen, H., 2010, Structural Geology, Cambridge University Press.
7. Perkins, D., 2010. Mineralogy, Pearson.

Department of Geology, CUTN

**SEMESTER – II**

Course Code	Course Name	L	P	Credits
GLYGE02	Advances in Earth System Sciences	3	-	3

a. Course Outcome (CO)

On the successful completion of the course, the student will be able to

	Course Outcome	Level
CO1	Understand the formation of coal, petroleum, and economic minerals	Understand
CO2	Understand the Water resource and its importance for society	Understand
CO3	Understand the importance of geological knowledge in construction of dams, reservoirs and tunnels	Understand

b. Syllabus

Units	Content	Hrs.
I	Introduction to fuel geology and its economic strength. Petroleum-transformation of organic matter into kerogene; Characteristics of reservoir rocks, traps, and seals; Oil and gas fields of India; porosity, permeability, and texture. Fundamentals of coal petrology. Origin of coal; macroscopic ingredients and microscopic constituents. Rank, grade, and type of coal; coal gasification, Coal bed – methane, Shale gas. Indian coal deposits; Metallic and non-metallic ores; Distribution of economic deposits in India.	15
II	Introduction to Water resources, surface and groundwater, groundwater occurrences and its movements, water budget, water quality mapping (Cations and Anions) – Bureau of Indian (BIS) and World Health Organization (WHO standard). Groundwater contamination, water pollution and impact on environment, agriculture, and humans. Salt water intrusion and Ghyben-Herzberg relations, Water quality in India. Groundwater drought and its mitigation.	15
III	Geology and civil engineering; importance of engineering geology for industrial projects. Geological investigations of dam, reservoir, tunnel, and bridge sites: Landslides: types, causes and prevention, slope stability analysis. Building stones and their properties.	15



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References

1. Bangar, K. M., 2020. Principals of Engineering Geology, Standard Publishers Distributors.
2. Chandra, D., Singh, R.M. and Singh, M.P. 2000. Textbook of Coal (Indian context), Tara Book Agency, Kamachha, Varanasi.
3. Fetter, C.W., 2007. Applied Hydrogeology, 2nd edition, CBS Publishers and Distributors.
4. Jain. et al., 2007. Hydrology & Water Resources of India (HB), Springer.
5. Singh, P., 2013. Engineering and General Geology, S.K. Kataria & Sons.