

**JAIPUR ENGINEERING COLLEGE AND RESEARCH CENTRE
DEPARTMENT OF CIVIL ENGINEERING**

Name of Subject Engineering Geology
Subject Code 3CE4-08
Semester III
Internal Assessment 20 Marks
External Assessment 80 Marks
Credits 2
Name of Faculty (1) Mr. Jitesh Kumar Jain, Assistant Professor
(2) Mr. Pradeep Kumar Jain, Assistant Professor

JAIPUR ENGINEERING COLLEGE AND RESEARCH CENTRE

CIVIL ENGINEERING DEPARTMENT

VISION

To become a role model in the field of Civil Engineering for the sustainable development of the society.

MISSION

- 1) To provide outcome base education.
- 2) To create a learning environment conducive for achieving academic excellence.
- 3) To prepare civil engineers for the society with high ethical values.



RAJASTHAN TECHNICAL UNIVERSITY, KOTA

SYLLABUS

II Year - III Semester: B.Tech. (Civil Engineering)

3CE4-08: ENGINEERING GEOLOGY

Credit: 2
2L+0T+0P

Max. Marks: 100 (IA:20, ETE:80)
End Term Exam: 2 Hours

SN	Contents	Hrs.
1	Introduction to objective, scope and outcome of the course.	1
2	General Geology: Branches and Scope of Geology, Types of Weathering & Geological work of natural agencies like River & Wind. Geological Time Scale. Physical Properties of Minerals.	6
3	Petrology: Formation, Texture, Structure and Classification of Igneous, Sedimentary and Metamorphic Rocks. Engineering Properties of Rocks for Building & Road Material. Laboratory and Field & in-situ Test for Site Construction.	6
4	Structural Geology: Causes, Terminology, Classification, Recognition, Effects and Engineering consideration of Fold, Fault, Joints and Unconformities.	5
5	Engineering Geology: Geophysical methods as applied to Civil Engineering for Subsurface Analysis (Electrical and Seismic methods). Terminology, Types and Geological consideration for site selection of Dam & Tunnel.	6
6	Remote Sensing & GIS: Application of Remote Sensing and GIS in Various fields of Civil Engineering.	4
TOTAL		28

Office of Dean Academic Affairs
Rajasthan Technical University, Kota

Course Outcomes

Engineering Geology (3CE4-08)

- CO-1 To understand about weathering, physical properties of minerals and geological action of river and wind.
- CO-2 To understand the different types of rocks and their properties.
- CO-3 To understand the folds, faults, joints and unconformity.
- CO-4 To understand the geophysical methods and application of remote sensing and GIS.

PROGRAMME OUTCOMES (PO)

1. **Engineering knowledge:** Apply the knowledge of mathematics, science, engineering Fundamentals and an engineering specialization to the solution of complex engineering problems.
2. **Problem analysis:** Identify, formulate, research literature, and analyze complex engineering problems reaching substantiated conclusions using first principles of mathematics, natural sciences, and engineering sciences.
3. **Design/development of solutions:** Design solutions for complex engineering problems and design system components or processes that meet the specified needs with appropriate consideration for the public health and safety, and the cultural, societal, and environmental considerations.
4. **Conduct investigations of complex problems:** Use research-based knowledge and research methods including design of experiments, analysis and interpretation of data, and synthesis of the information to provide valid conclusions.
5. **Modern tool usage:** Create, select, and apply appropriate techniques, resources, and modern engineering and IT tools including prediction and modeling to complex engineering activities with an understanding of the limitations.
6. **The engineer and society:** Apply reasoning informed by the contextual knowledge to assess societal, health, safety, legal and cultural issues and the consequent responsibilities relevant to the professional engineering practice.
7. **Environment and sustainability:** Understand the impact of the professional engineering solutions in societal and environmental contexts, and demonstrate the knowledge of, and need for sustainable development.
8. **Ethics:** Apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice.
9. **Individual and team work:** Function effectively as an individual, and as a member or leader in diverse teams, and in multidisciplinary settings.
10. **Communication:** Communicate effectively on complex engineering activities with the engineering community and with society at large, such as, being able to comprehend and write effective reports and design documentation, make effective presentations, and give and receive clear instructions.
11. **Project management and finance:** Demonstrate knowledge and understanding of the engineering and management principles and apply these to one's own work, as a member and leader in a team, to manage projects and in multidisciplinary environments.
12. **Life-long learning:** Recognize the need for, and have the preparation and ability to engage in independent and life-long learning in the broadest context of technological change.

CO – PO Mapping

CO/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	3	2	2	1	1	2	-	-	1	2	-	2
CO2	3	3	3	2	3	2	3	2	3	3	3	3
CO3	3	3	2	1	2	2	-	-	2	2	-	2
CO4	3	2	2	1	2	2	-	-	-	2	2	2

JECRC

Department of Civil Engineering

Course Coverage (Session- 2020-2021)

Course Name: ENGINEERING GEOLOGY

Course code: 3CE4-08

Year/Semester: II / III

No. of Lecture Req./ (Avl.):/ (28/28)

Semester starting: 01 – Jul – 2020

Semester Ending: - 24 – Nov – 2020

Unit No./ Total Lect. Req.	Topics	Lect. Req.	Expected Date of Delivery.	Actual Date of Delivery	Remark/ Actual Lect. Taken
I / 1	Introduction to objective, scope and outcome of the course.	1			
II / 6	Branches and Scope of Geology	1			
	Types of Weathering	1			
	Geological work of natural agencies like River	1			
	Geological work of natural agencies like Wind	1			
	Geological Time Scale	1			
	Physical Properties of Minerals	1			
III / 6	Formation, Texture, Structure and Classification of Igneous rocks	1			
	Formation, Texture, Structure and Classification of Sedimentary Rocks	1			
	Formation, Texture, Structure and Classification of Metamorphic Rocks	1			
	Engineering Properties of Rocks for Building & Road Material	1			
	Laboratory test for Site Construction	1			
	In-situ Test for Site Construction	1			

Unit No./ Total Lect. Req.	Topics	Lect. Req.	Expected Date of Delivery.	Actual Date of Delivery	Remark/ Actual Lect. Taken
IV / 5	Causes, Terminology, Classification, Recognition of Fold.	1			
	Effects and Engineering consideration of Fold.	1			
	Causes, Terminology, Classification, Recognition, Effects and Engineering consideration of Fault.	1			
	Causes, Terminology, Classification, Recognition, Effects and Engineering consideration of Joints.	1			
	Causes, Terminology, Classification, Recognition, Effects and Engineering consideration of Unconformities.	1			
V / 6	Geophysical methods as applied to Civil Engineering for Subsurface Analysis (Electrical methods)	1			
	Geophysical methods as applied to Civil Engineering for Subsurface Analysis (Seismic methods)	1			
	Terminology for site selection of Dam	1			
	Terminology for site selection of Tunnel	1			
	Types and Geological consideration for site selection of Dam	1			
	Types and Geological consideration for site selection of Tunnel	1			
VI / 4	Application of Remote Sensing in Various fields of Civil Engineering...	1			
	...Application of Remote Sensing in Various fields of Civil Engineering	1			
	Application of GIS in Various fields of Civil Engineering...	1			
	...Application of GIS in Various fields of Civil Engineering	1			

Text / Reference Books

1. Engineering Geology by Parbin Singh (ISBN: 9789350142677)
2. Engineering Geology by S L Solanki (ISBN: 9788184445459)

Content Beyond Syllabus

1. Internal Structure of the Earth.

Source: Engineering Geology by Parbin Singh (ISBN: 9789350142677)

Page no. 28 – 33.

2. Improvement of Sites.

Source: Engineering Geology by Parbin Singh (ISBN: 9789350142677)

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