

LESSON PLAN- CE1003- ENGINEERING GEOLOGY
Academic year 2015-16
(Semester commencing in June 2015)

Instructional objectives no.	Instructional objectives (IO)
1.	To study the origin, development and ultimate fate of various surface features of the earth
2.	To understand the basic building units of which the solid crust of the earth
3.	To understand the nature of geographic distribution of rocks and engineering properties of rock on the earth
4.	To understand the nature of geological structures and their importance on the civil engineering structures
5.	To know the importance of geology in civil engineering practices

Student outcomes

Student outcome number	Student outcome (SO)
(a)	an ability to apply knowledge of mathematics, science, and engineering
(d)	an ability to function on multidisciplinary teams
(e)	an ability to identify, formulate, and solve engineering problems
(h)	the broad education necessary to understand the impact of engineering solutions in global, economic, environmental, and societal context
(j)	A knowledge of contemporary issues
(k)	an ability to use the techniques, skills, and modern engineering tools necessary for engineering practice.

Mapping of Instructional Objectives (IOs) with Student Outcomes (SOs)
CE1003- ENGINEERING GEOLOGY

Instructional objectives		Student Outcomes					
		(a)	(d)	(e)	(h)	(j)	(k)
To study the origin, development and ultimate fate of various surface features of the earth		X	X		X		
To understand the basic building units of which the solid crust of the earth		X	X	X	X		
To understand the nature of geographic distribution of rocks and engineering properties of rock on the earth		X	X		X	X	
To understand the nature of geological structures and their importance on the civil engineering structures				X		X	X
To know the importance of geology in civil engineering practices		X	X	X	X	X	X
CE0302	Structural Analysis - II	Lecture Hours (L)	Tutorial Hours (T)		Practical Hours (P)	Credits (C)	
	NIL	2	2		0	3	

Lesson Plan – 2015-16

Revision: 0 Dated 26/06/2015

Lecture No.	Topic	No. of hours	IOs	SO	Reference
UNIT I - GENERAL GEOLOGY					
1.	Introduction, Scope of geology in Civil engineering	1	1,2	a,d,h	1,2,3
2.	Branches of Geology Physical structure of the Earth	1	1,2	a,d,h	1,2,3
3.	Internal structure of the earth- Composition	1	1,2	a,d,h	1,2,3
4.	Weathering- Physical-chemical- Biological-Products of weathering	1	1,2	a,d,h	1,2,3
5.	Natural Agencies - Geological Works of Wind	1	1,2	a,d,h	1,2,3

Lecture No.	Topic	No. of hours	IOs	SO	Reference
6.	Geological action of River,	1	1,2	a,d,h	1,2,3
7.	Geological action of Sea & Ground Water.	1	1,2	a,d,h	1,2,3
8.	Earthquake, Plate Tectonics- Plate boundaries	1	1,2	a,d,h	1,2,3
9.	Landslide	1	1,2	a,d,h	1,2,3
CLASS TEST I					
UNIT II - MINERALS OF THE EARTH'S CRUST					
10.	Rock Forming Minerals	1	1,2	a,d,h	1,2,3
11.	Physical Properties of Minerals	1	1,2	a,d,h	1,2,3
12.	Feldspar group -Orthoclase, Microcline-Albite-Anorthite	1	1,2	a,d,h	1,2,3
13.	Quartz group-Varieties of quartz and Uses	1	1,2	a,d,h	1,2,3
14.	Mica Group-Biotite, Muscovite. Calcite and Uses	1	1,2	a,d,h	1,2,3
15.	Clay Minerals and its importance	1	1,2	a,d,h	1,2,3
16.	Coal-Formation, varieties, Indian resources	1	1,2	a,d,h	1,2,3
17.	Petroleum- Formation, Indian resources	1	1,2	a,d,h	1,2,3
UNIT III - ROCKS OF THE EARTH'S CRUST					
18.	Petrology- Rock Cycle –Major classification of Rock	1	2,3	a,d,e	1,2,3
19.	Igneous Rocks –Types-Plutonic, Hypabyssal and Volcanic	1	2,3	a,d,e	1,2,3
20.	Texture, Engineering properties, Uses and occurrences in India	1	2,3	a,d,e	1,2,3
21.	Sedimentary Rocks – origin, Types Structure, Texture	1	2,3	a,d,e	1,2,3
22.	Engineering Properties Uses and occurrences in India	1	2,3	a,d,e	1,2,3
23.	Metamorphic Rocks –Kinds of Metamorphism	1	2,3	a,d,e	1,2,3
24.	Texture and Classification of Metamorphic Rocks,	1	2,3	a,d,e	1,2,3
25.	Engineering Properties and Indian occurrences	1	2,3	a,d,e	1,2,3
26.	Important Rock types-Igneous-Granite, Basalt, Dolerite, Gabbro	1	2,3	e,j,k	1,2,3
27.	Sedimentary Rocks-Sandstone, Limestone, Shale, Breccia, Conglomerate	1	2,3	e,j,k	1,2,3
28.	Metamorphic Rocks- Quartzite , Marble Slate, Gneiss, Schist,	1	2,3	e,j,k	1,2,3
CLASS TEST II					
UNIT IV - STRUCTURAL FEATURES OF ROCKS					
29.	Structural Geology- Factors, Types of structure	1	3,4	e,j,k	1,2,3
30.	Outcrop – Attitude of a rock-Dip-Strike	1	3,4	e,j,k	1,2,3
31.	Geological Map - Clinometer Compass	1	3,4	e,j,k	1,2,3
32.	Folds - Terminology - Classifications	1	3,4	e,j,k	1,2,3
33.	Faults - Terminology- Classifications	1	3,4	e,j,k	1,2,3
34.	Joints - Terminology - Classifications	1	3,4	e,j,k	1,2,3
35.	Engineering Considerations of Fold Faults and Joint	1	3,4	e,j,k	1,2,3
SURPRISE TEST					
UNIT V - GEOLOGY FOR ENGINEERING PROJECTS					
36.	Geological Investigations	1	3,4,5	a,d,h	1,2,3
37.	Surface investigation-Sub Surface investigations	1	3,4,5	a,d,h	1,2,3
38.	Geophysical Investigations- Electrical and seismic Methods	1	3,4,5	e,j,k	1,2,3
39.	Dam-Terminology-Classification , Reservoirs	1	3,4,5	e,j,k	1,2,3
40.	Effect of Geological Structural on Dam and Reservoir	1	3,4,5	e,j,k	1,2,3
41.	Tunneling-Soft ground Tunneling and Hard rock Tunneling	1	3,4,5	e,j,k	1,2,3
42.	Geological Consideration of Tunneling	1	3,4,5	e,j,k	1,2,3
43.	Remotes Sensing-Principle-Types	1	3,4,5	a,d,h	1,2,3

Lecture No.	Topic	No. of hours	IOs	SO	Reference
44.	Applications in Civil Engineering-Geology, Water resources,	1	3,4,5	e,j,k	1,2,3
45.	Applications in Urban planning and Environmental Impact Assessment, Disaster studies.	1	3,4,5	e,j,k	1,2,3
Model Examination					
	Total hours	45			

The faculty members handling the course may conduct surprise test according to their convenience. However a question paper in hard copy as well as key shall be made available for the surprise test. The process shall be same as that of cycle tests.

TEXT BOOKS

1. Annadurai R and Nagalakshmi R, "Text Book of Engineering Geology," Ane Books, New Delhi, 2015
2. Garg .S.K, "Physical and Engineering Geology", Khanna Publication, New Delhi, 2003.
3. Parbin Singh, "Engineering and General Geology", Katson Publication House, 2010 .

REFERENCES

1. Maruthesha Reddy .M.T, "Engineering Geology Practical", New Age International Pvt Ltd, 2003.
2. Legeet, "Geology and Engineering", McGraw-Hill Book Company, 1998.
3. Blyth, "Geology for Engineers", ELBS, 1995. Faculty members handling

Course Coordinator

Prof. Dr. R Annadurai

Faculty Name Group 1	Faculty Name Group 2
Dr. R. Annadurai	Dr. R. Sivakumar
Dr. Christopher Samuel	Mr. Sachikanta Nanda
Mr. Magendran T	Dr. Aparna S Bhaskar
Dr. J Sathiskumar	Dr. R Nagalakshmi

Prepared and approved

HOD/Civil