Swami Ramanand Teerth Marathwada University, Nanded

Distribution of credits for B.Sc. Geology (optional)

Under Faculty of Science

B. Sc. Syllabus structure

Semester Pattern effective from June 2016

Subject: Geology

Semester	Paper No.	Name of the Course	Instruction Hrs/ week	Total period	Internal Evaluation	Marks of Sem	Total Marks	Credits
I	CCG-I (Section A)	Earth as a Planet and Dynamic Geology (PI)	03	45	10	40	50	2
	CCG-I (Section B)	Mineralogy & Crystallography (PII)	03	45	10	40	50	2
II	CCG II (Section A)	Physical Geology and Palaeontology (PIII)	03	45	10	40	50	2
	CCG II (Section B)	Petrology (PIV)	03	45	10	40	50	2
	CCGP I [CCG I & II (Section A & B)]	Practical's based on Section A & Section B of CCG I & CCG II (PV)	04	20 Practical	--	100	100	4
							Total credits semester I and II: 12	
III	CCG III (Section A)	Optical and Descriptive Mineralogy (PVI)	03	45	10	40	50	2
	CCG III (Section B)	Dynamics of the Earth and Igneous petrology (P-VII)	03	45	10	40	50	2
	CCGP III [CCG III (Section A)]	Practical's based on P-VI & P-VII (P-X)	04		10	40	50	2
	SECG I [CCG III (Section B)]	SECG- I (Skill/ optional)			15×3 = 45	-	-	(02)*
IV	CCG IV (Section A)	Structural geology P-VIII)	03	45	10	40	50	2
	CCG IV (Section B)	Sedimentary and Metamorphic Petrology (P-IX)	03	45	10	40	50	2
	CCGP IV [CCG IV (Section B)]	Practical's based on P-VIII & P-IX (P-XI)	04	10 practical	10	40	50	2
	SECG II [CCG IV (Section B)]	SECG II (Skill / optional)			15×3 = 45	-	-	(02)*
							Total credits semester III and IV	12(04)*

Semester	Course No.	Name of the Course	Instruction Hrs/ week	Total period	Internal Evaluation	Marks of Sem	Total Marks	Credits
V	DECG I (Section A)	Geomorphology and Photo-Geology (P-XII)	03	45	10	40	50	2
	DECG I (Section A)	Engineering and Hydrology (P-XIII)	03	45	10	40	50	2
	DECG I [(Section B) Elective -I]	Remote Sensing and GIS (P-XIII)	03	45	10	40	50	2
	DECCGP I [DECG I & II (Section A)]	Practical's based on P- XII & PXIII (P-XVI)	04	10 Practical	10	40	50	2
	SECG-I II	SEC III (Skill/ optional)			15×3 = 45	-	-	(02)*
VI	DECG II (Section A)	Stratigraphy of India (P-XIV)	03	45	10	40	50	2
	DECG II (Section A)	Economic Geology and Prospecting (P-XV)	03	45	10	40	50	2
	DECG II [(Section B) Elective -II]	Groundwater exploration and Management (P-XV)	03	45	10	40	50	2
	DECGP II) [DECG I & II (Section B)]	Practical's based on P- XIV & P-XV (P-XVII)	04	10 Practical	10	40	50	2
	DECGP - II (Section B)	SEC IV (Project)			50	-	50	(2)*
Total credits semester V and VI								12(04)*

B.SC. I Year
Semester-I
(CCG-I) : Core Course Geology –I

Section A -Earth as a planet and Dynamic Geology -(Credits -2)

Unit-I Earth as a planet. (Periods 25, Marks 25)

Geology and its Perspective. Earth in the solar system: Origin, Size, Shape, Mass, density rotational and revolution of the earth. Relief features of the earth surface and interior of earth as core, mantle, crust and introduction to hydrosphere, atmosphere and biosphere and elemental abundance in each constituent. Age of the Earth.

Unit-II Dynamic Geology. (Periods 20, Marks,25)

Earthquake, Volcanoes and their distribution.

Section B - Mineralogy, Crystallography (Credits -2

Unit-I Mineralogy. (Periods-25, Marks 25)

Chemical bonding and compound formation. Minerals : definition, classification and composition. Physical properties of mineral Introduction to common groups of rock forming minerals such as Olivine, Pyroxene, Amphibole, Mica, Silica and Feldspar.

Study of Common ore minerals, industrial minerals and atomic minerals.

Unit – I Crystallography:- (Periods-20, Marks 25)

Elementary ideas about crystal structure. Crystal: faces, edges, solid angles. Crystallographic axes and axial angles. Parameters and indices. Crystal symmetry. Classification of crystals into six normal classes such as Cubic, Tetragonal, Hexagonal, Orthorhombic, Monoclinic and Triclinic systems and their forms, Twin and Twin laws.

Core Course Geology –Practical-I (Credits -2)

1. Reading of topographical maps (SOI).
2. Study of physical properties of minerals in hand specimen.
3. Study of elements of symmetry and forms form normal classes of six crystal system.

B.SC. I Year
Semester-II
(CCG-II) : Core Course Geology –II

Section A - Physical Geology and Paleontology (Credits -2)

Unit-I Physical Geology:- (Periods-25, Marks 25)

Geological work such as erosion, transportation and deposition by river, wind, glaciers, ocean and sea.

Unit-II Palaeontology :- (Periods-20, Marks 25)

Definition and scope of palaeo-biology, processes of fossilization and preservation. Potential of organisms. Elementary ideas about origin of life, evolution and fossil record. Systematic classification of organisms, their characters, environmental and geological distribution of phylum Arthropoda (Trilobites), Coelentrata (Graptolites), Mollusca (Lamellibranchia, Gastropoda and Cephalopoda), Brachiopods and Echinodermata.

Section B- Petrology (Credits -2)

Unit – I Igneous and Sedimentary Petrology (Periods-25, Marks 25)

Igneous Petrology: Definition, composition origin of magma. Texture, structure and classification of igneous rocks and study of common igneous rocks.

Sedimentary Petrology: Weathering, soil formation, soil profile, soil types and soil properties. Origin, transportation, deposition, consolidation and digenesis of sediments. Sedimentary textures. Classification of sedimentary deposits and study of common sedimentary rocks.

Unit – II Metamorphic Petrology :- (Periods-20, Marks 25)

Agents and kinds of metamorphism, metamorphic minerals, texture and structures of metamorphic rocks, processes of formation of various metamorphic rocks such as Cataclastic, Thermal, Dynamothermal and plutonic metamorphism, study of common metamorphic rocks.

Study of common rocks occurring in Maharashtra.

Core Course Geology –Practical-II (Credits -2)

1. Study of megascopic characters of important rocks types of igneous, sedimentary and Metamorphic origin.
2. Study of morphological characters of phylum included in theory syllabus.
3. Geological Field Work (Three Days)
   Students will be required to carry out fieldwork for three days in a suitable geological area to study elementary aspects of field geology and submit report thereon.

B.Sc. I
GEOLOGY
PRACTICAL QUESTION PAPER

(CCGPI) : Core Course Geology –Practical-I (Credits -2)

Reading of topographical maps (SOI).

2. Study of physical properties of minerals in hand specimen.
3. Study of megascopic characters of important rocks types of Igneous, Sedimentary and Metamorphic origin.

Core Course Geology –Practical-II (Credits -2)

4. Give axial character, elements of symmetry and forms form normal classes of crystal models from item No. 1 to 6.
   (b) Identify Twin crystal models from item No. 7 to 8.
5. Describe morphological characters and geological distribution of Shells/fossils from item No. 9 to 14.
6. Geological Field Work (Three Days)
   Record Book.

Books Recommended for B.Sc. I

1. Arthur Holmes, 1992. Principles of Physical Geology. Chapman and Hall, London.
2. Miller, 1949. An Introduction to Physical Geology. East West Press Ltd.
3. Spencer, E.V., 1962. Basic concepts of Physical Geology. Oxford & IBH.
4. Mahapatra, G.B., 1994. A text book of Physical geology. CBS Publishers.
5. Flint, Y., 1975. Essential of crystallography, Mir Publishers.
6. Phillips, F.C., 1963. An introduction to crystallography. Wiley, New York.
7. Berry, L.G., Mason, B. and Dietrich, R.V., 1982. Mineralogy. CBS Publ.
8. Nesse, D.W., 1986. Optical Mineralogy. McGraw Hill.
9. Read, H.H., 1968. Rutley's Element of Mineralogy (Rev. Ed.). Thomas Murby and Co.
10. Principles of Petrology. Methuren and Co (Students ed.).
11. Ehlers, WG, and Blatt, H., 1987. Petrology, Igneous, Sedimentary and Metamorphic rocks, CBS Publishers
12. Shrock, R.R. & Twenhoffel, W.H., 1952. Principles of Invertebrate Paleontology. CBS Publ.
13. Swinerton, HH., 1961. Outlines of Paleontology. Edward Arnold Publishers
14. Jain, P.C. & Anantharaman, M.S., 1983. Paleontology: Evolution & Animal Distribution. Vishal Publ.
15. Lehmann, U., 1983. Fossil Invertebrate. Cambridge Univ. Press.
16. Arthur Holmes, 1992. Principles of Physical Geology. Chapman and Hall, London.
17. Miller, 1949. An Introduction to Physical Geology. East West Press Ltd.
18. Spencer, E.V., 1962. Basic concepts of Physical Geology. Oxford & IBH.

Mahapatra, G.B., 1994. A text book of Physical geology. CBS Publishers.