

MANONMANIAM SUNDARANAR UNIVERSITY
TIRUNELVELI – 627 012
Common Course Structure for B.Sc., GEOLOGY – 2020-2021
(For those who joined the course from the academic year 2020-2021 onwards)

Sem	Part I/II/III IV/ V	Sub. No	Subject Status	Subject Title	Course/Paper	Hrs./Week	L Hrs/Week	T Hrs/Week	P Hrs/Week	C Credits
Semester I	I	1	Language	Tamil / Other Languages	1	6	6	0	0	4
	II	2	Language	Communicative English	1	6	6	0	0	4
	III	3	Core-Theory	General Geology	1	4	4	0	0	4
	III	4	Core-Theory	Professional English for Physical Sciences-I	1	4	4	0	0	4
	III	5	Major Practical-I	Practical- General Geology	1	2	0	0	2	2
	III	6	Allied-I	Chemistry	1	4	4	0	0	3
	III	7	Allied Practical-I	Practical- Chemistry	1	2	0	0	2	2
	IV	8	Common	Environmental Studies	1	2	2	0	0	2
			Total		8	30	26		4	25
Semester II										
	I	9	Language	Tamil / Other Languages	1	6	6	0	0	4
	II	10	Language	English	1	6	6	0	0	4
	III	11	Core-Theory	Palaeontology	1	4	4	0	0	4
	III	12	Core-Theory	Professional English for Physical Sciences -II	1	4	4	0	0	4
	III	13	Major Practical-II	Practical- Palaeontology	1	2	0	0	2	2
	III	14	Allied-II	Chemistry	1	4	4	0	0	3
	III	15	Allied Practical-II	Practical- Chemistry	1	2	0	0	2	2
IV	16	Common	Value based education/ சமூக மதிப்பு அடிப்படையிலான கல்வி/ Social Harmony	1	2	2	0	0	2	
			Total		8	30	26		4	25

*L- Lecture *T- Tutorial *P- Practical *C- Credit

I SEMESTER

GENERAL GEOLOGY

L	T	P	C
4	0	0	4

Objective:

- To know about the basic principles of Geology, various earth's surface geological processes such as erosion, transportation, deposition and various landforms and endodynamic processes like earthquake, volcanoes & tectonic process.

Prerequisites:

- Any person with a good grasp of the basic science or equivalent should be able to undertake the subject.

Outcome:

- The students will be able to understand the importance of geological knowledge such as earth, weathering, glaciers, volcanoes and the action of various geological agencies.

UNIT-I Introduction about the earth

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Definition and branches of Geology - **Solar system:** components- nebular, planetesimal and tidal hypothesis of origin of the earth. **Interior of the Earth:** an outline of the composition and constitution of the interior of the earth. **Age of the earth:** an outline of the important methods for determining the age of the earth.

UNIT-II Weathering

15

Rock Weathering: Geology and weathering- agents of weathering, processes of weathering-mechanical weathering: Frost wedging, frost heaving, salt action and sheeting, chemical weathering: solution, hydration, hydrolysis, oxidation/reduction, carbonation and chelation. Biotic weathering: biophysical and biochemical. Mixed processes: spheroidal, exfoliation and differential weathering. Land forms by weathering.

Geological work of wind: Erosional methods- deflation, corrosion and its impact. Erosional features- By abrasion: undercut hills, cave rock, mushroom rock, mesa, yardang, vertifacts. By Deflation: desert pavement, deflation hollows. Transportation- saltation, suspension and traction. Deposition- causes and types, sheets-loess, volcanic ash and dust, piles-dunes formation, migration and types. Desert-description and kinds, desert features- plains, bajadas, pediment.

UNIT-III River and Ground water

15

Development of drainage system and work of stream: channel characteristics- stream erosion characteristics, types of stream, drainage patterns, Erosional features- valleys, river piracy, waterfalls, cascade, water gaps, pot holes and plunge pools, river terraces, meanders, ox-bow lakes, pediments and peneplains, transportation methods, causes of stream deposition, depositional features- deltas, point bars, natural levees, alluvial fans, flood plain, back swamps, and braided rivers. Types of streams and drainage patterns.

Work of Ground water: movement of ground water due to gravity and pressure difference- ground water discharge- springs, wells and artesian wells and springs, thermal springs. Erosion by ground water and erosional features. Transportation by ground water, deposition by ground water and forms of deposits.

UNIT-IV Glacier

8

Glaciers and their classification- **Work of sea** and its deposits: waves, breakers, rip-current, long-shore current. Processes of erosion, erosional features, transportation and depositional features.

UNIT-V Earth dynamics

12

Volcanoes- types-phases, products and origin. Earthquakes- classification - distribution-scales – effects – causes - seismogram and seismograph. **Plate Tectonics.** Elementary knowledge of Plate Tectonics – Historical background, Elements of tectonics, characteristics of plates, world plates, different plate boundaries.

TOTAL : 60 PERIODS



Text Book:-

1. Radhakrishnan, V., 1996. General Geology V.V.P. Publishers, Tuticorin.
2. Holmes .A .1992 Principles of physical geology.
3. Thornbury. 1969. Principles of geomorphology.

References:-

4. Strahler A.M ., The Earth Sciences.
5. Donald R. Coates 1981 .,Environmental Geology (Willey).
6. Peter T. Flawan 1970 ., Environmental Geology, Harper and Row.
7. Arthur N. Strahler and Alan H. Strahler 1973 ., Environmental Geoscience.

8. Valdiya, K.S. (1987) Environmental geology – Indian Context’ Tata McGraw Hill New Delhi 583p.
9. Keller. G., 1979 Environmental geology. 7th Edition. Printice Hall.560p.
10. Lindgren,L 1998. Environmental geology. . Printice Hall.511p.

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2020-21/MSU/51th SCAA/Affili. Coll./UG./B.Sc.(Geo)/Sem.-1/Part-III/Add on Major/Ppr./-

**I SEMESTER PROFESSIONAL ENGLISH FOR PHYSICAL
SCIENCES**

L	T	P	C
4	0	0	4

OBJECTIVES:

- To develop the language skills of students by offering adequate practice in professional contexts.
- To enhance the lexical, grammatical and socio-linguistic and communicative competence of first year physical sciences students
- To focus on developing students’ knowledge of domain specific registers and the required language skills.
- To develop strategic competence that will help in efficient communication
- To sharpen students’ critical thinking skills and make students culturally aware of the target situation.

LEARNING OUTCOMES:

- Recognise their own ability to improve their own competence in using the language
- Use language for speaking with confidence in an intelligible and acceptable manner
- Understand the importance of reading for life
- Read independently unfamiliar texts with comprehension
- Understand the importance of writing in academic life
- Write simple sentences without committing error of spelling or grammar

(Outcomes based on guidelines in UGC LOCF – Generic Elective)

NB: All four skills are taught based on texts/passages.

UNIT 1: COMMUNICATION

Listening: Listening to audio text and answering questions

- Listening to Instructions

Speaking: Pair work and small group work.

Reading: Comprehension passages –Differentiate between facts and opinion

Writing: Developing a story with pictures.

Vocabulary: Register specific - Incorporated into the LSRW tasks

UNIT 2: DESCRIPTION

Listening: Listening to process description.-Drawing a flow chart.

Speaking: Role play (formal context)

Reading: Skimming/Scanning-

Reading passages on products, equipment and gadgets.

Writing: Process Description –Compare and Contrast

Paragraph-Sentence Definition and Extended definition-

Free Writing.

Vocabulary: Register specific -Incorporated into the LSRW tasks.

UNIT 3: NEGOTIATION STRATEGIES

Listening: Listening to interviews of specialists / Inventors in fields
(Subject specific)

Speaking: Brainstorming. (Mind mapping).

Small group discussions (Subject- Specific)

Reading: Longer Reading text.

Writing: Essay Writing (250 words)

Vocabulary: Register specific - Incorporated into the LSRW tasks

UNIT 4: PRESENTATION SKILLS

Listening: Listening to lectures.

Speaking: Short talks.

Reading: Reading Comprehension passages

Writing: Writing Recommendations

Interpreting Visuals inputs

Vocabulary: Register specific - Incorporated into the LSRW tasks

UNIT 5: CRITICAL THINKING SKILLS

Listening: Listening comprehension- Listening for information.

Speaking: Making presentations (with PPT- practice).

Reading: Comprehension passages –Note making.
 Comprehension: Motivational article on Professional Competence,
 Professional Ethics and Life Skills)
Writing: Problem and Solution essay– Creative writing –Summary writing
Vocabulary: Register specific - Incorporated into the LSRW tasks

2020-21/MSU/51th SCAA/Affili. Coll./UG./B.Sc.(Geo)/Sem.-1/Part-III/Major Practical-1/Ppr.-/

I SEMESTER PRACTICAL-I- General Geology

	L	T	P	C
	0	0	2	2
Problems related to				
Earth density, Isostasy				
Relative and absolute age determination				
River activity				
Sea wave activity				
Seismic waves, Earthquake				
Problems related to Plate Tectonics				

Total Hours: 30Hours



II SEMESTER Palaeontology

L	T	P	C
4	0	0	4

Objective

To know about the general outline of the vertebrate, invertebrate and plant fossils, their mode of preservation, classification and characters of various important phyla, morphology, distribution and geologic range.

Prerequisites:

- Any person with a good grasp of the basic science or equivalent should be able to undertake the subject.

Outcome:

- The students will be able to understand the consequence of fauna and flora in paleontological study.

UNIT-I Introduction to Paleontology 8

Divisions, Scope – relation to other disciplines – Fossil – Definition – conditions and modes of preservation – Uses of fossils – General classification of animals and plants relevant to the study of fossils.

UNIT-II Foraminifera Porifera and Coelenterata 10

General Morphology of Foraminifera, Classification, Geological history, Uses of Foraminifera – some fossils of Foraminifera – Textularia, Nodosaria, Lagena, Globigerina, Ammonia. Phylum-Porifera – canal systems, skeleton of sponges, classification, geological history. Some fossils of sponges – Ventriculites, Siphonia. Phylum – Coelenterata – Coral morphology, classification and geological history, Coral fossils – Montlivaltia, Calceola, Zaphrentis.

UNIT-III Brachiopod and Pelecypoda 12

General Morphology of Phylum – Brachiopod, classification and Geological History – Fossils – Productus, Spirifer, Terebratula, and Rhynchonella. General Morphology of Pelecypoda, Classification and geological history, Fossils – Arca, Spondylus, Trigonia, Meretrix, Venus, Alectryonia, Ostreae, Gryphaea, Exogyra.

UNIT-IV Gasteropoda and Cephalopoda

15

General Morphology of Gasteropoda, classification and geological history – Fossils – Physa, Turritella, Fusus, Trochus. General morphology of Cephalopoda, classification and geological history. Fossils – Nautilus, Goniatite, Ceratite, Acanthoceras, and Belemnites.

UNIT-V Trilobita, Echinoidea and plant fossils

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General morphology of Class-Trilobita – classification and geological history. Fossils – Paradoxides, Calymene. General morphology of Echinoidea, classification and geological history – Fossils –Cidaris, Hemiaster, Micraster, Stigmatopygous. Morphology of plant fossils – Glossopteris, Gangamopteris, Ptillopyllum.

TOTAL : 60 PERIODS

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Text Book:-

1. Woods, H. 1963, Invertebrate Paleontology, Cambridge University Press, VIII Edition.
2. . Twenhofel and Shrock. 1953. Invertebrate Palaeontology, McGraw-Hill Book Co. Inc.
3. Moore, R.C, Lalicker C.G and A.G. Fisher. 1952, Invertebrate Fossils Mc raw Hill Book Co.

References:-

4. Alfred S.Romer Vertebrate Palaeontology,1963. University of Chicago press.
5. Bigot .G. 1985, Elements of micropaleontology, Graham & Trotman, London.
6. Derek V.Ager, 1963, Principles of Palaeoecology, McGraw Hill Book Co.
7. Raup, O.M. and Stanley, S.M., 1985. Principles of Paleontology, CBS Publishers and Distributors, II Edition

H.H.Swinerton.,1961. Outlines of Paleontology, Edward Arnold Publisher Reference

.....**TOTAL : 60 Hours**.....

II SEMESTER PRACTICAL-II- PALAEOLOGY

		L	T	P	C
		0	0	2	2
Identification and Description of Following Fossils.					
Coelenterata	: Montlivaltia Zaphrentis				
Brachiopoda	: Productus Spirifer, Terebratula, Rhynchonella				
Pelecypoda	: Arca, Spondylus, Trigonia, Meretrix, Venus, Alectryonia, Ostreae, Gryphaea, Exogyra				
Gasteropoda	: Physa, Turritella, Fusus, Trochus, Conus.				
Cephalopoda	: Nautilus, Ceratite, Aconthoceras Belemnites				
Trilobites	: Paradoxides, Calymene.				
Echinoids	: Hemiaster, Micraster, Stigmatopygous.				
Plant Fossils	: Glossopteris, Gangamopteris, Ptillophyllum, Wood fossil.				

Total Hours: 30Hours