

Sant Gadge Baba Amravati University, Amravati

Part A

Faculty: Science and Technology

Programme: B. Sc. Part II (SEM III)

PSOs:

1. Study of Stratigraphy and Paleontology with an aspect to develop students' interests for Stratigraphy and Paleontology as a specific subject of study.
2. Acquire the knowledge of various stratigraphical units of India.
3. Acquire the knowledge of fossils and its uses
4. Study of fossil, systematic classification, geological and geographical distributions of various phylum

Part B

Syllabus Prescribed for Second Year UG Programme

Programme: B. Sc. Part II

Semester III

Code of the Course/Subject	Title of the Course/Subject	Total Number of Periods
GOG-3	Stratigraphy and Paleontology	72

COs

1. Understand the basic idea about Stratigraphy
2. Describe and interpret the various stratigraphical Supergroup and group
3. To improve the knowledge of fossils and its uses
4. Explain the characteristic features and classification of various phylum

Unit	Content
Unit I	Stratigraphy – Introduction- principles and importance. Stratigraphic classification: lithostratigraphic, chronostratigraphic and biostratigraphic units. Physiographical division of India, Geological time scale; Classification, geographic distribution, lithological characteristics, fossil content and economic importance of Archaean Supergroup, Dharwar Supergroup, Sausar Group, Sakoli Group. <p style="text-align: right;">(12 periods)</p>
Unit II	Classification, geographic distribution, lithological characteristics, fossil content and economic importance of Cuddapah Supergroup; Delhi Supergroup; Vindhyan Supergroup; Kurnool group. <p style="text-align: right;">(12 periods)</p>
Unit III	Classification, geographic distribution, lithological characteristics, fossil content and economic importance of Gondwana Supergroup; Jurassic of Kutch, Deccan Trap, Lameta Formation, Bagh Beds, Cretaceous of Narmada valley and Trichonopoly. Siwalik Group, Stratigraphy of Maharashtra. <p style="text-align: right;">(12periods)</p>
Unit IV	Paleontology: Introduction, branches, importance and scope. Fossils: definition, processes of fossilization, modes of preservation, significance of fossils, types of fossils – body fossils, plant fossils, trace fossils, index and zone fossils. Micropalaeontology – Introduction, types of microfossils, significance. <p style="text-align: right;">(12 periods)</p>
Unit V	Phylum Mollusca: characteristic features and classification. Class: Lamellibranchia or Bivalvia: characteristic features, morphology of hard parts, type of hinge lines and dentitions, ornamentation of shell. Tabular and systematic classification, Geological and geographical distributions. Class Cephalopoda: characteristic features, morphology of hard parts of Nautiloids, Ammonoids and Belemnites; type of suture lines, comparison between Nautiloids and Ammonoids. Tabular and systematic classification, Geological and geographical distributions. Phylum Brachiopoda: characteristic features, morphology of hard parts of class articulate and inarticulate. Types of brachial skeleton. Tabular and systematic Classification, Geological and

Sant Gadge Baba Amravati University, Amravati
Format and Template for Courses (Theory) of UG/PG Programmes

geographical distributions.

(12 periods)

Unit VI Phylum Echinodermata: Class Echinodea- characteristic features, morphology of hard parts of regularia and irregularia. Variations in the apical disc in echinoids. Tabular and systematic classification, Geological and geographical distributions. Phylum Arthropoda: Class Trilobita characteristic features, morphology of hard parts of trilobites, Tabular and systematic Classification, Geological and geographical distributions. Phylum Coelenterate: Class Anthozoa - characteristic features, madreporaria, polyp, medusa, types of septa. Tabular and systematic classification, Geological and geographical distributions.

(12 periods)

SEM

1. Definition, Introduction and importance of stratigraphy. Geological time scale. Physiographical division of India.
2. Fossils: definition, processes of fossilization, modes of preservation, significance of fossils, types of fossils – body fossils, plant fossils, trace fossils, index and zone fossils.

COs: 1. To improve the knowledge of stratigraphy and its uses
 2. To improve the knowledge of fossil and its uses

****Activities**

1. Assignment/ Seminar
2. Class test
3. Field work
4. Visit to the various organization.

(30 periods)

Course Material/Learning Resources

Text books:

1. Text Book of Engineering Geology: Parbin Singh, Katson Publishing, Ludhina.
2. Text Book of Geology: P.K.Mukerjee - World Press Pub., Calcutta.
3. Text Book of Geology: Santosh Garg - Khanna Publ., Delhi.
4. Text Book of Physical Geology: G.B.Mahaptra- Pub. C.B.S., New Delhi.

Reference Books:

1. Ravindrakumar: Fundamentals of Historical Geology and Stratigraphy of India.
2. Krishnan M.S.: Geology of India and Burma
3. Wadia, D. N.: Geology of India.
4. Deshpande G.G.: Geology of Maharashtra.
5. Ramkrishnan and Vaidyanadhan: Geology of India, Volume I and II, Geological Society of India, Bangalore.
6. M.A. Koregave (1998) Fundamentals of Invertebrate Palaeontology. Book World Enterprises, Mumbai.
7. Henry Woods (1985) Invertebrate Palaeontology. CBS Publishers.
8. R.C. Moore, C.G. Lalic
9. G. G. Deshpande (1998) Geology of Maharashtra

Part A

Faculty: Science and Technology

Programme: B. Sc. Part II SEM IV

PSOs:

1. Study of structural and tectonic geology with an aspect to develop students' structural and tectonic geology interests as a specific subject of study.
2. Acquire the knowledge of various structure in field
3. Acquire the knowledge of geomorphology and fundamental concepts of geomorphology
4. Acquire the knowledge of various landforms and drainage patterns

Part B

Syllabus Prescribed for Second Year UG Programme

Programme: B. Sc. Part II (SEM IV)

Code of the Course/Subject	Title of the Course/Subject	(Total Number of Periods)
GOG-4	Structural geology, Tectonics and Geomorphology	72

COs

1. Understand the basic idea about structure geology and plate tectonic.
2. Describe and interpret the various structure
3. To improve the knowledge of isostasy and plate tectonics
4. Acquire the knowledge of geomorphology and fundamental concepts of geomorphology
5. Acquire the knowledge of various landform and drainage patterns

Unit	Content
Unit I	Attitude of bed. Clinometer and Brunton compass and its use, Outcrop in relation to topography and structure. Erosional structures – Unconformity: formation, types and recognition. Recognition of unconformities in field and map; Outlier-inlier, onlap, offlap, windows and klippe. Nappe. <p style="text-align: right;">(12 periods)</p>
Unit II	Stress and strain: definition and types; Interrelationship of Types of deformation plastics, elastic, brittle stress-strain and time, Mohr's Circle. Fold: Definition and terminology; classification – genetic and geometric; recognition of fold in field and map, causes of folding. <p style="text-align: right;">(12 periods)</p>
Unit III	Faults: definition and terminology; classification of faults; causes of faulting, recognition of fault in field and map. Foliation and lineation – kinds and origin. Joints: definition and terminology; classification of joints; significance of joints. <p style="text-align: right;">(12 periods)</p>
Unit IV	Isostasy, Geosyncline - Definition, classification and evolution of mountains. Continental drift - evidences of drift. Plate tectonics - types of plate margins, causes of plate movement, evidences of plate tectonics. Sea floor spreading, Palaeomagnetism. <p style="text-align: right;">(12 periods)</p>
Unit V	Scope and aim of geomorphology. Fundamental concepts, Exogenic and endogenic processes, Fluvial cycle. Drainage patterns and their significance. Morphometric analysis of drainage basin and their significance. <p style="text-align: right;">(12periods)</p>
Unit VI	Soil formation and soil profile, Concept of morphometric regions, karst topography, fluvial landforms, aeolian landforms, glacial landforms. <p style="text-align: right;">(12 periods)</p>

Sant Gadge Baba Amravati University, Amravati
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SEM

Unit I- Clinometer and Brunton compass and its use. Problems on Dip, Strike, Thickness of Beds and width of outcrop maps

Unit II- definition of isostasy and geosyncline. Continental drift - evidences of drift. Fundamental concepts of geomorphology. Soil formation and soil profile

COs:

1. To improve the knowledge of structural geology and their identification in field
2. To improve the knowledge of plates tectonics and geomorphology

****Activities**

1. Assignment/ Seminar
2. Class test
3. Field work
4. Visit to the various organization.

(30 periods)

Course Material/Learning Resources

Text books:

1. Text Book of Engineering Geology: Parbin Singh, Katson Publishing, Ludhina.
2. Text Book of Geology: P.K.Mukerjee - World Press Pub., Calcutta.
3. Text Book of Geology: Santosh Garg - Khanna Publ., Delhi.

Reference Books:

Structural Geology:

1. Bilings, M.P. (1997) Structural Geology. Prentice-Hall of India Pvt. Ltd., New Delhi.
2. Park, R.G. (1989) Foundations of Structural Geology. Blackie, New York.
3. Gokhale, N.W.(2001) Theory of Structural Geology. Blackie, New York.
4. Gokhale, N.W.(1991) A Manual of Problems of Structural Geology. CBS Publishers.
5. Lahi, F.H. (1987) Field Geology, CBS Publishers.
6. Gokhale, N.W. (2001) A Guide to Field Geology. CBS Publishers.
7. Chiplonkar G.W: Geological Maps, Dastane Ramchandra Publication, Pune

Tectonics:

1. Dynamic Earth - Skinner Potter - Pub.John, Wiley.
2. Dynamic Earth – Patwardhan A.M., E E.E Publications, New Delhi.
3. Dynamic Earth- Wiley, John Wiley and Sons, New York.
4. General Geology, Radhakrishnan N. ,V.V.P Pub, Vellore.

Geomorphology:

1. Savindrasingh (1998): Geomorphology, Prayag Pushpak Bhavan, Allahabad.
2. Thornbury William D.: Principles of Geomorphology, Wiley Eastern, Pune.
3. Negi B.S.: Geomorphology, Kedarnath Ramnath, Meerut.
4. Sharma V.K.: Geomorphology, Earth processes and forms, Tata McGraw Hill Publishing Co., New Delhi.
5. Worcester P.G.: Text book of Geomorphology. Allied Publ.N.Delhi

Sant Gadge Baba Amravati University, Amravati

Syllabus Prescribed for First Year UG Programme

Programme: B. Sc Part 2

Semester 3

Code of the Course/Subject **Stratigraphy and Palaeontology** **(No. of Periods/Week)**
GOG- Lab 3 **06 Period per week**

COs

1. Physiographic division of India
2. Major stratigraphic division
3. fossil identification

*** List of Practical/Laboratory Experiments/Activities etc.**

- 1 Physiographic division of India
- 2 Exercises showing major stratigraphic divisions of India
- 3 Detailed description including classification, characteristic features, age and sketch diagram of important fossils of different Phylums and classes (as in theory)

Practical examination will be of 50 marks and comprises internal and external examination

Practical Internal will have 25 Marks and Practical examination will be of 25 Marks

Practical Examination will be of 3 hours duration and Carry 25 Marks.

The Distribution of marks for Practical will be as follows.

Semester – 3

- | | |
|---|----------|
| i) Physiographic division of India with description | 05 marks |
| ii) Major stratigraphic division with description | 05 marks |
| iii) Identification of fossils | 10 marks |
| iv) Record | 03 marks |
| v) Viva-voce | 02 marks |

Total – 25 marks

Sant Gadge Baba Amravati University, Amravati

Syllabus Prescribed for first Year UG Programme

Programme: B. Sc. Part 2

Semester 4

Code of the Course/Subject	Title of the Course/Subject	(No. of Periods/Week)
GOG- Lab 4	Structural geology, Tectonics and Geomorphology	06 Periods per week

COs

1. Problems on Dip, Strike, Thickness of Beds and width of outcrop maps.
2. Section drawing and interpretation.
3. Morphometric Analysis.

*** List of Practical/Laboratory Experiments/Activities etc.**

- 1 Use of Clinometer and Brunton compass
- 2 Outcrop- its true and apparent thickness, width of outcrop; problems on dip, strike, thickness of beds and width of outcrop (at least 10 problems)
- 3 Completion of outcrop - problems for conformable series and its structures (at least 05 maps).
- 4 Section drawing- Identification and interpretation of various landforms, geological successions, structures and geological history. Geological section drawing and interpretation for conformable series (at least 10 maps with different structures).
- 5 Geomorphology: Computation of gradient of a stream. Morphometric Analysis from topographic maps - determination of linear, aerial and relief aspects

Practical examination will be of 50 marks and comprises internal and external examination

Practical Internal will have 25 Marks and Practical examination will be of 25 Marks

Practical Examination will be of 3 hours duration and Carry 25 Marks.

The distribution of Marks for Practicals will be as follows :

i) Problems on Dip, Strike, Thickness of Beds and width of outcrop maps (One problem)	05 marks
ii) Completion of outcrop maps (One map)	05 marks
iii) Section drawing and interpretation. (One section)	05 marks
iv) Morphometric Analysis	05 marks
v) Record	03 marks
vi) Viva-voce	02marks

Total – 25 marks