

॥ अंतरी पेटवू ज्ञानज्योत ॥  
उत्तर महाराष्ट्र विद्यापीठ, जळगांव.

परिपत्रक क्र. ७३ / १९९३

विषय :- सुधारित अभ्यासक्रम जून, १९९३ पासून.

विद्यापीठ अधिकार मंडळाच्या निर्णयानुसार उत्तर महाराष्ट्र विद्यापीठाशी संलग्न असलेल्या कला, विज्ञान आणि वाणिज्य महाविद्यालयांचे मा. प्राचार्य यांना कळविण्यांत येते की, जून, १९९३ पासून कला, विज्ञान आणि वाणिज्य महाविद्यालयांमध्ये खालील वर्गांसाठी त्यांच्या समोर दर्शविलेल्या विषयांचा सुधारित अभ्यासक्रम अंमलात येत आहे. आपल्या महाविद्यालयांत खालील वर्गांना त्यांच्या नावा समोर दर्शविलेले विषय शिकविले जात असल्यामुळे त्या त्या विषयांचे नवीन सुधारित अभ्यासक्रम तोबत जोडलेले आहेत.

मा. प्राचार्य, कला, विज्ञान व वाणिज्य महाविद्यालय यांना विनंती करण्यात येते की, त्यांनी या परिपत्रकाचा आशय व नवीन अभ्यासक्रम सर्व संबंधित प्राध्यापकांच्या आणि विद्यार्थ्यांच्या नजरेत आणावा.

- १] द्वितीयवर्ष कला - ✓ Applied Statistics.
- २] द्वितीयवर्ष विज्ञान - ✓ Geology, ✓ Physics.

जा. क्र. अभ्यासक्रम/९३/६/२६/ ५४५५

दिनांक : २१.५.१९९३

जळगांव.

[दे. दा. रावतोळे]

सहा. कुलसचिव.

प्रत माहितीसाठी सादर रवाना :

- १] मा. अधिष्ठाता, कला, विज्ञान विद्याशाखा.
- २] मा. प्राचार्य, सर्व संलग्न कला, विज्ञान व वाणिज्य महाविद्यालय.
- ✓ ३] मा. उपकुलसचिव, [परीक्षा विभाग, प्री/अफ्टर], उ. म. वि., जळगांव.
- ४] मा. उपकुलसचिव [प्रशासन विभाग], उ. म. वि., जळगांव.
- ५] मा. सहा. कुलसचिव, परीक्षा विभाग, उ. म. वि., जळगांव.

दुबासा. /-

N O R T H M A H A R A S H T R A U N I V E R S I T Y,

J A L G A O N -425 001.

SYLLABUS FOR S.Y.B.Sc.

GEOLOGY (With effect from June,1993)

Term I

Paper I : Mineralogy, Crystallography & mineral optics.

Paper II : Structural Geology.

Term II

Paper I : Petrology.

Paper II : Principles of stratigraphy, and Introduction to micropalaeontology and palaeobotany.

Paper III : Practicles.

Term I : Mineralogy, Crystallography mineral optics and structural problems.

Term-II : Petrology, Fossils, micro-fossils, Plant-fossils and geological maps.

Note :- Field visit should be arranged for the students during both the terms to get themselves acquainted with different for features of geological importance and a common report to be submitted at the end of the year.

-X-X-X-X-X-X-X-

NORTH MAHARASHTRA UNIVERSITY, JALGAON

SYLLABUS FOR GEOLOGY

S.Y.B.Sc. (From June, 1993)

Term-I :

Paper-I Mineralogy, Crystallography & Mineral Optics.

1. Mineralogy : 24 Lectures
1. Definition & Scope.
  2. Classification of minerals.
  3. Structure of silicates.
  4. General characters, chemical relationship, occurrence, physical, optical characters and uses of the following mineral groups.
    - a) Olivine.
    - b) Pyroxene clinopyroxene & Orthopyroxenes, Representation on Hess diagram.
    - c) Amphibole (Tremolite, Actinolite, Hornblende series)
    - d) Mica (Muscovite, Biotite).
    - e) Feldspar (alk feldspar & Plagioclase Series).
    - f) Silica.
    - g) Garnet.
2. Crystallography : 7 lecture.
1. Definition.
  2. Summary of Crystallographic terms.
  3. Cubic system (Pyrite & tetrahedrite type).
  4. Hexagonal system (Beryl, quartz, calcite & tourmaline type).
  5. Monoclinic (gypsum type).
  6. Triclinic (Axinite type).
  7. Introduction of the terms Hemihedral, Hemimorphic, Holohedral forms.
3. Mineral Optics : 8 Lectures
1. Properties of crystal/minerals under petrological microscope; Phenomenon of color, form, relief, refractive index, twinkling, pleochroism and pleochroic haloes iso-, and anisotropism, interference colors, extinction,

2. Study of Newton's scale of interference colors.
3. Use of quartz wedge, gypsum and mica - plates.

Term-II

Paper - I Petrology

1. Definition & scope of major branches-I of rocks.  
(Igneous, sedimentary & metamorphic)

1. Igneous petrology :

16 Lectures

1. Formation of igneous rocks.
2. Crystallisation of magma and their types.  
(Primary, secondary, Basaltic, Tholeiitic, granitic).
3. Unicomponent crystallisation of magma with example.
4. Binary crystallisation of magma  
(eutectic only) with example.
5. Different Igneous rock classification in brief  
(tabular, IUGS)
6. Microstructures and textures (porphyritic, ophitic, poikilitic, glomeroporphyritic etc. spherulitic, perlitic, perthitic structures.

2. Sedimentary Petrology :

11 Lectures

1. Definition.
2. Introduction to clastic & non-clastic sediments.
3. Textural characters, particle size, size terms, shape, roundness, mature and immature sediments, porosity, permeability.
4. Classification of sediments and sedimentary rocks based on particle size and products of weathering.
5. structures in sedimentary rocks in brief  
(Chemical, Mechanical and Biological)

3. Metamorphic Petrology

12 lectures

1. Definition.
2. Broad classification and general characters.
3. Metamorphic structures.
4. Products of cataclasis  
(State, slaty cleavage, crash breccia autoclastic conglomerate, cata clasite, angen gneiss mylonite,

- ultra mylonite, pseudotachylite,
5. Thermal metamorphism of pure Limestone & dolomite and Arenaceous rocks (with different cementing material)
  6. Dynamothermal metamorphism of ophiolite rocks, quartzo - feldspathic rocks, Basic igneous rocks.

Paper-II

Term I : Structural Geology

3 Lectures

1. Definitions and relation with other branches and objectives. 3 Lectures.
2. Concept of strike, dip (true & apparent) bedding, Lamination, stratification, outlier, inlier, true and vertical thickness of strata, width of outcrops, use of clinometer compass and Brunton compass.
3. Introductory techniques in geological mapping. 1 Lecture
4. Forces - Tensional compressional, couple & torsional forces. 2 Lectures.
5. Folds
  - 1) Definition elements of folds, axis, axial plane, limb, hinge, crestal line & plane trough line & plane) 16 Lectures
  - 2) Definition and characters of Anticline, anticlinorium, syncline, synclinerium symmetrical, asymmetrical folds.
  - 3) Definition and characters of different folds :- overturned, recumbent, isoclinal chevron, box, fan, monoclinic, homoclinal, structural terrace, open, close, drag, decollement, drapir, disharmonic, suprataneous, light, parallel, similar plunging folds.
  - 4) Fold system.
  - 5) to find out depth of folding.
  - 6) Recognition of fold in the field by
    - 1) Direct observation (toposheet study)
    - 2) Attitude of beds.
    - 3) Areal map pattern.
    - 4) Topographic characters.
    - 5) Drilling and mining data.

6. Fault :-

14 Lectures

1. Definition
2. Movements along fault - (translational, rotational, relative, absolute, apparent)
3. Slip, shift and separation along fault.
4. effects of faulting on strata in short.

5. classification of faults (geometrical & genetic).
6. Recognition of fault in the field and map symbols.

7. Joints : 5 Lectures

1. Definition.
2. General characters.
3. Classification (genetic & geometrical).

Term-II

Paper II Principles of stratigraphy and introduction to - c -  
micropaleontology and palaeo botany.

1. Micropalaeontology - 21 Lectures

1. Introduction, definition, branches & scope.
2. Sampling, collection, chemical & mechanical separation of fossils and laboratory techniques.
3. Morphology of hard parts, geological and geographical distribution and uses of Ostracoda and foraminifera.

2. Palaeobotany :
- 1) Definition and general characters.
  - 2) Classification, systematic position generic definition, geological distribution and uses of
    1. Glossopteris
    2. Gangamopteris.
    3. vertibraria
    4. Ptillophyllum.
    5. Nilsonia.

3. Principles of stratigraphy - 20 Lectures.

1. Principles of stratigraphy
  - i) Uniformitarianism.
  - ii) Order of superposition.
  - iii) Faunal succession.
2. Processes controlling stratification.
  - i) vertical succession.
  - ii) lateral succession.
3. Unconformity -
  - 1) Definition,
  - 2) Structural and environmental classification.
  - 3) Importance, recognition and evidences of unconformity.
4. Principles of correlation.
5. Outline to code of nomenclature in stratigraphy.
6. Stratigraphic (geological) time scale.

Paper - III

PRACTICALS

1. Mineralogy :- Megascopic :- chlorite, staurolite, Appophyllite, stilbite, malachite, Agurite, Bronzite, wolframite, in addition to F.Y.B.Sc. minerals.  
Microscopic : optical properties & identification of Quartz, calcite, Orthoclase, olivine, Biotite, plagioclase, garnet, microcline, hornblende, Augite.
2. Crystallography :-  
Crystal model study of
  - i) Cubic system (Pyrite, tetrahedrite type).
  - ii) Hexagonal (beryl, calcite, tourmaline and quartz type).
  - iii) Monoclinic (gypsum type)
  - iv) Triclinic (axinite type).
3. Petrology : Megascopic :- F.Y.B.Sc. rocks and Dunite, diorite, Graphic granite, Ditchstone, obsidian, syenite, sand-stone (freestone, flagstone) arkose, coral limestone, crinoidal limestone, shell limestone, laterite, bauxite, Actinolite schist, mica-schist mica gneiss; mica garnet schist, marble, quartzite, slate, augen gneiss, chlorite schist.  
Microscopic :- Granite, Gabbro, basalt, pitchstone, sandstone, fossil limestone, marble, Quartzite, Hornblende schist, mica schist, micagneiss, mica-garnet schist, hornblende gneiss, augen gneiss.
4. Fossils
  1. Megafossils as studied in F.Y.B.Sc.
  2. Microfossils (Ostracoda, foraminifera)
  3. Plant fossils (glossopteris, vertibraria, gangamopteris Nilsonia).
5. Structural problems :
  1. Involving true and apparent dip in gradient.
  2. Involving true and vertical thickness, width of outcrop (with and without hill slope)
  3. Three point problem used to find out strike, direction true dip amount and direction only.

6. Geological maps :

1. One conformable series.
2. two conformable series and unconformity.
3. one/two conformable series with vertical dyke
4. one/two conformable series with fault.
5. one/two conformable series with fault and vertical dyke.

7. Field work :- To undertake field training to understand the basics of geological concepts in an area and submission of report will constitute a compulsory part of this practical course.

8. Oral based on field report :-

BOOKS :-

1. Elements of mineralogy - Rutley.
2. Text book of mineralogy - Doma.
3. Petrology - Tyrell.
4. Structural Geology - Billings.
5. Stratigraphic Principles & Practice - Weller.
6. Text book of palaeobotany - Arnold.
7. Principles of micropalacontology - Brassier.
8. Principles of palacontology - Woods.
9. Igneons sedimentary and metamurphic letrology - Best.
10. Field Geology - Lahee.

-x-x-x-x-x-x-x-