NEW SYLLABUS FOR

M.Phil/ Ph.D Course Work

(Introduced from June 2011onwards)

Paper I

Title of the Paper--- Research methodology

Unit 1 Preparation for Field work, Field procedures in Geological mapping in Igneous, Sedimentary and metamorphic terrain, Methods used in sampling of rocks, minerals and fossils. Procedures used in water and rock analysis in laboratory.

(No. Of lectures -15)

Unit 2 Introduction to advanced laboratory techniques including Differential Thermal Analysis, X- ray diffraction method, Scanning Electron Microscopy, Emission and absorption Spectroscopy. .

(No. Of lectures -15)

Unit 3 . Remote Sensing application in geology, Basic statistical methods used in Geology, statistical soft wares. Introduction to computer Applications. Fundamentals of Computers Applications software's Browsers, word processors, spread seats.

(No. Of lectures -15)

Unit 4 Database Management Systems, Presentation graphics, Internet & Intranet communication. Writing of reports and research papers in Geology. Preparation of Minor and major research projects. Information of various funding agencies.

(No. Of lectures -15)

BOOKS

1 Manual of Field Geology By Cromption.

2 Statistics and data analysis in geology by Davis.

3 An introduction to statistical model in geology by W.C.Krumbein and F.A. Graybill.

4 Statistical analysis in geological sciences by Miller and Khan.

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Paper II

Title of Paper------ Recent trends in Geology

Unit 1 Occurrence of groundwater, Hydro geological properties of water bearing rocks. Determination of aquifer characters by pumping test. ,Fresh and salt water relationship in coastal areas. Computer application in hydro geological studies

(No of Lectures 15)

Unit 2 Application of remote sensing. Image interpretation and digital processing techniques, Principles of Terrain Analysis. Interpretation of structures, tectonic features and landforms .Application of remote sensing for rock type identification.

(No of Lectures 15)

Unit 3 Current environmental issues viz. water and soil contamination
issues, causes, remedial measures. water chemistry and its implication in monitoring the groundwater quality

(No of Lectures 15)

Unit 4 Geological hazards, seismicity, landslides, causes, mitigation, land use, planning,, development. Use of Remote Sensing and GIS in the preparation of hazard zonation maps.

(No of Lectures 15)

BOOKS

1 Ground water hydrology by Todd.
2 Hydrogeology by Kamat.
3 Environmental geology by E.K.Kellar.
4 Environmental geology by K.S.Valdiya.
5 Dynamic earth system by A.M.Patwardhan.
6 Remote sensing and image interpretation by Lilley sand.
7 Thermal and microwave remote sensing by Sabis
8 Geomorphology Remote sensing in Environmental management by S.Singh.
9 Natural Hazards by Bryant E.

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Paper III Optional paper ANY ONE PAPER OF THE FOLLOWING

Title of Paper--- Prospecting and Utilization of Groundwater Resources :

Unit 1 Hydrologic characteristics of different rock formation. Geological andGeophysical methods of groundwater prospecting.

(No of Lectures 10)

Unit 2 Well hydraulics and determination of different aquifer parameters.Chemicals quality of groundwater and groundwater pollution

(No of Lectures 10)

Unit 3 . Assessment of ground water resources. Utilization of groundwater resources, conjunctive use of surface and subsurface water resources.

(No of Lectures 10)

Unit 4 Equations governing groundwater flows, principles of analytical and numerical modelling for simulation of groundwater flows, study of available models, verification of models.

(No of Lectures 10)

BOOKS

1 Ground water hydrology by Todd.
2 Hydrogeology by Kamat K.R. Tata Mac Hil. Pub..
3Hydrogeology by S.N.Davis and R.J.M.Dewiest
4 Groundwater studies byR.H.Brown and others
5Ground water Resoursces evaluation By W.C.Walton
6 Hydrogeology by C.F.Filter
7 Handbook of applied hydrogeology Ven Te Chew.
8 Ground water and wells By Hohnson publication
9 Physical and chemical hydrogeology by Patric A.D.Dominics
10 Applied hydrogeology by Chow M. Mays Mac Hil. Publication
11 Ground water Assessment Development and management by Karanth K.R.
12 Groundwater S.Ramakrishnan

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Paper III Optional paper

Title of Paper--- Environmental Pollution and Management:

Unit 1 Air pollution, water pollution, noise pollution, marine pollution,
Radioactive pollution, thermal pollution, solid waste pollution, biomedical waste

(No of Lectures 10)

Unit 2 Concepts and origin of pollution, classification and nature of pollutants, sources, impacts of local regional and global level,

(No of Lectures 10)

Unit 3 Pollution monitoring, administrative, scientific and technical control measures. Environmental management plan (EMP),

(No of Lectures 10)

Unit 4 Environmental Impact Assessment (EIA), Environmental planning, micro and macro Planning, rural and urban planning, environmental and developmental priorities in India,

(No of Lectures 10)

BOOKS

1Principles of Environmental science by Watt.K.E.F. McGraw Hill

2 Environmental geology by K.S.Valdiya Tata McGraw Hill.

3 Environmental geology by Keller E.A.

4 Geological hazards by Bell F.G.

5 Environmental Impact Assessments by Larry W. Canter

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M.Phil/ Ph.D Course Work

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Paper III Optional paper

Title of Paper- Sedimentary Environments

Unit 1 Tectonic control of sedimentation. Detailed study of various terrestrial, transitional and marine environments.

(No of Lectures 10)

Unit 2 Sedimentary structures as indicators of environment .Palaeocurrent analysis.

(No of Lectures 10)

Unit 3 Application of different petrographic and sedimentological methods in the interpretation of provenance and environment

(No of Lectures 10)

Unit 4 Environment of deposition of major Indian sedimentary groups.

(No of Lectures 10)

BOOKS
1Sedimentary Petrology by Pettijohn F.J.
2 Origin of Sedimentary Rocks by Blatt Middleton and Murry
3Depositional sedimentary environment Rocks by Reineck and Singh.
4 An Introduction to Sedimentary Rocks R.C.Selley.
5 Sedimentary Rocks by R.K.Sukhatankar
6Paleocurrent and Basin Analysis by Potter Pettijohn and Siever.

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Paper III Optional paper

Title of Paper- Deccan basalts

Unit 1 Important flood eruptives of the world.Hypabyssal and plutonic phases associated with flood eruptives.

(No of Lectures 10)

Unit 2 Generation of Basaltic magmas. Reasons for flood volcanic eruption

(No of Lectures 10)

Unit 3 Deccan basalts,Their field, petrographic and chemical characters.Hydrogeological properties of Deccan basalts,
. (No of Lectures 10)

Unit 4 Age of the Deccan traps-paleontological, paleomagnetic and radiometric evidences.

(No of Lectures 10)

BOOKS

1) Deccan Basalt By Gondwana Geological society Nagpur
Editor S.S,Dshamukh and K.K.K.Nair
2)Geology of India By Geological society of India Vol 2,2010.
By R.Vaidyanathan and M. Ramkrishnan.
3)Geology of India and Burma By M.S.Krishnan.
4) Geology of India By D.N.WadiaS