**Bharathidasan University, Tiruchirappalli – 620 024**

**M.Phil. Geology [FT/PT] Programme**

(For the candidates to be admitted from the academic year 2009-2010 onwards)

<table>
<thead>
<tr>
<th>Semester I</th>
<th>Title of the Course</th>
<th>Marks</th>
<th>Credits</th>
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<tbody>
<tr>
<td>Course -I</td>
<td>Research Methodology</td>
<td>40 IA 60 UE 100</td>
<td>4</td>
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<tr>
<td>Course - II</td>
<td>Recent Research in Geology</td>
<td>40 IA 60 UE 100</td>
<td>4</td>
</tr>
<tr>
<td>Course- III</td>
<td>Paper on Topic of Research (Guide will prepare the syllabus and it will be sent to the COE)</td>
<td>40 IA 60 UE 100</td>
<td>4</td>
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<tr>
<td>Course – IV</td>
<td>Teaching and Learning skills (Common Paper)</td>
<td>40 IA 60 UE 100</td>
<td>4</td>
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<thead>
<tr>
<th>Semester II</th>
<th></th>
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<tbody>
<tr>
<td></td>
<td>Dissertation and Viva-Voce</td>
<td>200</td>
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<tr>
<td></td>
<td>Viva Voce 50 marks</td>
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<td></td>
<td>Dissertation 150 marks</td>
<td>8</td>
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**For each Course other than the Dissertation**

- Continuous Internal Assessment (CIA) – 40 Marks
- End Semester Examination (ESE) – 60 Marks
- Total – 100 Marks

**Question paper pattern for Course IV**

- 5 Questions, 05 x 12 = 60 Marks (either or type, one from each unit)

**CIA components**

- Tests (2x10) - 20 Marks
- Term Paper – 10 Marks
- Seminar - 10 Marks
COURSE – I - RESEARCH METHODOLOGY

UNIT I
Library research and preparation of research report-Use of Libraries and information retrieval systems-Use of abstracts-Abstraction-Preparation of index cards-Methods of editing-preparation of Manuscript-title-introduction-Review of Literature-objectives and purposes of Experimental Methods-Results, tables and figures-Discussion-References-Style of Writing-Field methods of geological investigations-Preparation of Field Reports.

UNIT II

UNIT III
Modern techniques of chemical investigation of minerals and rocks using spectrophotometer, Flame photometer, and Atomic Absorption Spectrometer. Inductively Coupled Plasma-Coal petrography-Ore microscopy and Ore petrography-Nuclear Geology-Nuclear devices and techniques-Isotope age dating Stable Isotope-Cosmic ray induced radioactivity.

UNIT IV
Sedimentological techniques-Size and shape determination of grains in Clastic rocks and their graphic representations-Heavy mineral analysis-Palaeontological and Micropaleontological techniques pertaining to microfossils (Foraminifera,Ostrocodas,Spores and Pollen)-Field sampling and collection Separation of microfossils.

UNIT V

REFERENCE BOOKS

QUESTION PAPER PATTERN

1. Total Duration of time each paper is three hours
2. Total number of questions to be asked with internal choice for each question is FIVE.
3. All the five questions are to be answered.
4. All questions carry equal marks i.e., 5X12 = 60 marks.
5. Each answer should not exceed 2000 words.
6. Each question (including either/or choice) should be selected from each unit.

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COURSE – II - RECENT RESEARCH IN GEOLOGY

Unit-I  Geochemistry

Geochemistry and its application to geological problems in Archean rocks- Distribution of Trace elements in different rock types and their significance in Petrological studies of Igneous, Sedimentary and Metamorphic rocks-Gneiss-Granulite terrain-Distribution in space and time – Geochronology and Isotope data-Different rock Formations and their geochemical aspects- Origin and evolution of Gneiss- Granulite terrain – Mineralization in the Archean High grade regions.

Unit-II - Hydrogeology


Unit-III  (Environmental Geology)

Fundamental concepts of Environmental Geology- Renewable energy sources- Geothermal resources- solar energy- Atomic energy+y-Tidal energy-Water power-Wind power- Energy from Biomass-Energy and water demand-Energy for tomorrow-
Unit IV


Unit - V - Geostatistics

Introduction-Plotting a semi – Variogram on a graph- Experimental semi- Variogram with reference to Vein deposits – measured rainfall at rain gauge sites – Volume variance calculations – Kriging – Sampling errors

Reference Books:
4. R.A.Freeze and J.A. Cherry- Ground water-Priintice Hall,inc.NJ

QUESTION PAPER PATTERN

1. Total duration of time each paper is three hours.
2. Total number of questions to be asked with internal choice for each question is FIVE.
3. All the five questions are to be answered.
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6. Each question (including either/or choice) should be selected from each unit.

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COURSE –IV – TEACHING AND LEARNING SKILLS

Objectives:

- acquaint different parts of computer system and their functions
- understand the operations and use of computers and common accessories
- develop skills of ICT and apply them in teaching learning context and Research
- appreciate the role of ICT in teaching, learning and Research
- acquire the knowledge of communication skill with special reference to its elements, types, development and styles
- understand the terms communication Technology and Computer mediated teaching and develop multimedia / e-content in their respective subject
- understand the communication process through the web
- acquire the knowledge of Instructional Technology and its Applications
- develop different teaching skills for putting the content across to targeted audience
Unit I – Computer Application Skills


Unit II – Communication Skills

Communication: Definitions – Elements of Communication: Sender, Message, Channel, Receiver, Feedback and Noise – Types of Communication: Spoken and written; Non-verbal communication – Intrapersonal, Interpersonal, Group and Mass communication – Barriers to communication: Mechanical, Physical, Linguistic & Cultural – Skills of communication: Listening, Speaking, Reading and writing – Methods of developing fluency in oral and written communication – style, Diction and Vocabulary – Classroom communication and dynamics

Unit III – Communication Technology


Unit IV – Pedagogy


Unit V – Teaching Skills

Teaching skill: Definition, Meaning and Nature – Types of Teaching skills: Skill of Set Induction, Skill of Stimulus Variation, Skill of Explaining, Skill of Probing Questions, Skill of Black Board writing and Skill of Closure – Integration of Teaching Skills – Evaluation of Teaching Skills
References:

1. Bela Rani Sharma (2007), Curriculum Reforms and Teaching Methods, Sarup and sons, New Delhi
2. Don Skinner (2005), Teacher Training, Edinburgh University Press Ltd., Edinburgh
3. Information and Communication Technology in Education: A Curriculum for Schools and programme of Teacher development, Jonathan Anderson and Tom Van Weart, UNESCO, 2002

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