Faculty of Earth and Environmental Sciences

- Department of Geology
- Department of Geography
# DEPARTMENT OF GEOLOGY

1. **Introduction**

1.1. Geology is the science of earth dealing with rocks, minerals, the origin, history and structure of the earth. It plays an important role in the economy of a nation. It is one of the most important subjects of basic and applied sciences, particularly with reference to the Balochistan province, which provides excellent opportunities for the development and exploitation of natural resources. Balochistan has high prospects for geological research and exploration of economic mineral deposits, petroleum, groundwater and other natural resources.

1.2. The Department of Geology is one of the seven departments, established at the raising of the University of Balochistan in 1971. During the initial years, the department offered only M.Sc. courses. Now BS 4-Years (Applied Geology) Program is also offered.

2. **Objectives**

2.1. To prepare high quality professionals in the field of geology through 4-Years B.S. (Applied Geology) and 2-Yars M.Sc. (Geology) programs in order to meet the national and international needs.

2.2. To prepare professional and skilled manpower in the field of Applied Geology, capable of carrying out geological field and analytical work independently.

2.3. To provide training to plan and conduct goal-oriented research projects and assess their socio-economic aspects, achieve targets, write technical reports and scientific research papers and provide consultancy services.

3. **Vocational Job Opportunities / Marketability of Graduates**

3.1. The graduates will have opportunities to work in the following organizations:
- Geological Survey of Pakistan (GSP),
- Pakistan Atomic Energy Commission,
- Hydrocarbon Development Institute of Pakistan,
- Water and Power Development Authority (WAPDA),
- Oil and Gas Sector,
- Pakistan Mineral Development Corporation (PMDC),
- Balochistan Development Authority (BDA),
- Public Health Engineering Department,
- Various educational institutions (mostly Universities and Colleges) and
- Various national and international mineral exploration companies.

3.2. The opening of new projects, such as Saindak Metals Limited, Rikho-Dic Copper-Gold Project, Gwadar Port, construction of dams, development of gas pipeline from Iran to India, development of water reservoirs and thermal (coal-based) power stations in the country, have high potential for new job opportunities.

4. **Faculty**

<table>
<thead>
<tr>
<th>S.No</th>
<th>Name</th>
<th>Designation</th>
<th>Qualification</th>
<th>Specialization</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Mr. Muhammad Ayub Baloch</td>
<td>Chairperson</td>
<td>M.Phil</td>
<td>Petroleum Geology</td>
</tr>
<tr>
<td>2</td>
<td>Dr. Akhter Mohammad Kasi</td>
<td>Meritorious Professor</td>
<td>Ph.D UK</td>
<td>Igneous &amp; Matamorphic</td>
</tr>
<tr>
<td>3</td>
<td>Dr. Mehrab Khan Baloch</td>
<td>Professor Dean Earth &amp; Environmental Science</td>
<td>Ph.D UoB</td>
<td>Igneous &amp; Matamorphic</td>
</tr>
<tr>
<td>4</td>
<td>Dr. Abdul Tawab Khan</td>
<td>Professor Fulbrighter</td>
<td>Ph.D.</td>
<td>Ingenious Petrology</td>
</tr>
<tr>
<td>5</td>
<td>Dr. Muhammad Ibrahim Baloch</td>
<td>Asst. Professor</td>
<td>Ph.D Ukraine</td>
<td>Hydrogeology</td>
</tr>
<tr>
<td>6</td>
<td>Mr. Din Mohammad Kakar</td>
<td>Asst. Professor</td>
<td>M.Phil</td>
<td>Sedimentology</td>
</tr>
</tbody>
</table>
5. Programs of Study

5.1 M.Sc.

5.1.1. Program is running under annual system

5.1.2 Duration: 2 years

6. Description of Courses

6.1. M.Sc. Programme

<table>
<thead>
<tr>
<th>Course No.</th>
<th>Title</th>
<th>Marks</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td><strong>M.Sc. Previous</strong></td>
<td></td>
</tr>
<tr>
<td>I</td>
<td>Structural Geology and Tectonics</td>
<td>75+25</td>
</tr>
<tr>
<td>II</td>
<td>Sedimentology</td>
<td>75+25</td>
</tr>
<tr>
<td>III</td>
<td>Economic Geology &amp; Field Geology office</td>
<td>75+25</td>
</tr>
<tr>
<td>IV</td>
<td>Igneous and Metamorphic Petrology</td>
<td>75+25</td>
</tr>
<tr>
<td>V</td>
<td>Mineralogy</td>
<td>75+25</td>
</tr>
<tr>
<td>VI</td>
<td>Micropaleontology and Biostratigraphy</td>
<td>75+25</td>
</tr>
<tr>
<td>VII</td>
<td>Geophysics and Geomorphology</td>
<td>75+25</td>
</tr>
<tr>
<td>VIII</td>
<td>Field Work, Report and Viva Voce (Fieldwork is compulsory)</td>
<td>100</td>
</tr>
<tr>
<td></td>
<td><strong>M.Sc. Final</strong></td>
<td></td>
</tr>
<tr>
<td>X</td>
<td>Geology of Pakistan</td>
<td>75+25</td>
</tr>
<tr>
<td>XI</td>
<td>Research Project, Thesis and Viva</td>
<td>50+50</td>
</tr>
<tr>
<td>XII</td>
<td>Four courses to be chosen from a number of Groups of Specialization, depending on the availability of facilities in the Department. Two courses (out of the 4 chosen) must be directly relevant to the Thesis.</td>
<td>75+25 (each)</td>
</tr>
</tbody>
</table>

6.1.3 Groups of Optional Courses

Group 1 Mineralogy and Petrology
Group 2 Palaeontology and stratigraphy
Group 3 Economic Geology
Group 4 Engineering Geology
Group 5 Petroleum Geology
Group 6 Sedimentology
Group 7 Hydrology
Group 8 Industrial Mineralogy
Group 9 Environmental Geology
Group 10 Structure, Tectonics and Neotectonics
7. Eligibility Criteria

7.1. M.Sc. (Geology) Programme

7.1.1. Passed B.Sc. Examination with the subject of Geology,

7.1.2. Medically fit. Beside general health, the student should be capable of undertaking climbing mheights during field work and should not suffer from color blindness for the purpose of optical work,

7.1.3. 1. The Candidate must have passed B.Sc with the subject of Geology.

2. The Candidate has to appear in the entry test conducted by NTS and qualify on merit.

8. Facilities

8.1. Departmental Library Library of the Department contains more than 2500 textbooks, reference books, geological encyclopedias, field reports and audiovisual materials (i.e. geological videos, CDs, slides and Transparencies).

8.2. Laboratories

8.2.1. Geochemistry Laboratory: This laboratory has some facilities for geochemical analysis. It is equipped with glassware and chemicals.

8.2.2. Petrography Laboratory: The petrography lab has facilities for megascopic analysis of minerals and rocks.

8.2.3. Microscopic Laboratory: This laboratory is well equipped for the microscopic analysis of the rocks and minerals. It contains transmitted and reflected research microscopes, polarizing microscopes and projected microscopes. One of the research microscope has attached computer, display monitor and camera for obtaining microphotographs.

8.2.4. Thin Section Workshop: This workshop contains facilities for preparation of thin sections of rocks and is equipped with rock cutting machine, polishing machine, grinder with different mesh sizes, abrasive sands and other chemicals used for the preparation of thin sections of rocks. Other equipments include crusher, water distal plant, and micro grinder.

8.2.5. Computer Laboratory: This laboratory is equipped with fifteen computers, a Laser Printer, a Scanner and a Photocopier. Computers have connection with the main network of the University and internet. A large number of international research journals are also available on the Digital Literary provided by the Higher Education Commission, where students can download research articles of their interests.

8.2.6. Museum is one of the attractive places of the University. It contains about 1000 specimens of Rocks, minerals and fossils of foreign and local collections.
1. Introduction
Geography deals with the formulation of the laws governing the spatial distribution of various phenomena both in Physical and Human environments. It aims to interpret that how environment shape human activities and vice versa. The major essence of Geography is to explain and map the terrestrial processes at various scales on the surface of the earth from place to place. It means that the main focus is to interpret the locational or spatial variations at earth’s surface and simultaneously seeks the reasons behind the patterns and processes of human built and natural environment. The contemporary Geography has become highly dynamic and integrated subject that encompasses various new disciplines, techniques like KIS, RS and computer based cartography. Geography has three basics discipline including Physical Geography, Cultural/Human Geography and Practical Geography.

The Department of Geography was established in 1985. It caters formal education and research in the fields of Human and Physical Geography with a focus on spatial dimensions of human activities and physical landscapes and awards Master’s degree in two years study programme. Keeping is view the available teaching and research resources now the department is going to initiate the M.Phil and PhD programme.

2. Objectives
2.1. To provide educational programmes which encourage students to think creatively, constructively and to communicate ideas effectively.
2.2. To foster an environment that promotes learning through quality teaching and research while encouraging mutual respect, tolerance and sensitivity.
2.3. To provide qualified and focused professionals in the subject of Geography to meet the future needs of educational institutions and field oriented research departments enthusiastically.
2.4. To prepare researchers to meet the needs of research organizations and administration.
2.5. To keep the society aware regarding socio-cultural, environmental and economic problems spatially located.

3. Job Opportunities/ Marketability of Graduates
3.1. Planning and Development Departments at National and Provincial level.
3.2. Firms consulting on environmental problems
3.3. Small Scale Industries: As a Locational and Retail site Planner
3.4. Institutions needing Environmental Analysts
3.5. As a GIS Analyst in Corporation Operating GIS.
3.6. Census Organizations: Population, Agricultural and etc.
3.7. Government Strategic Policy Analysis Departments
3.8. GSP and Survey of Pakistan
3.9. Meteorological Observatories
3.10. Tourism Departments
3.11. Crisis Management Cells
3.12. Educational Institutions
3.13. SUPARCO
3.14. As a Social organizer in NGOs.
3.15. Rural Development & Local Government
4. Faculty

<table>
<thead>
<tr>
<th>S.No</th>
<th>Name</th>
<th>Designation</th>
<th>Qualification</th>
<th>Field of specialization</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Dr. Ifthkhar Ahmed</td>
<td>Assistant Professor &amp; Chairman</td>
<td>M.Sc (Peshawar, M.S (COMSAT Islamabad), MS (Meteorology), PhD (China))</td>
<td>M.Sc (Physical Geography), MS (Meteorology), PhD (Climate variability).</td>
</tr>
<tr>
<td>2</td>
<td>Dr. Muhammad Nawaz</td>
<td>Assistant Professor</td>
<td>M.Sc. Peshawar adolescent (Karachi)</td>
<td>M.Sc (Urban &amp; Regional Planning), PhD (Climate variability).</td>
</tr>
<tr>
<td>3</td>
<td>Dr. Ahmed Saeed</td>
<td>Assistant Professor</td>
<td>Ph.D</td>
<td>M.Sc (Physical Geography), PhD in Progress (Agriculture &amp; Environments Resource Management)</td>
</tr>
<tr>
<td>4</td>
<td>Mr. Taleem Badshah Khattak</td>
<td>Assistant Professor</td>
<td>M.Sc. Peshawar</td>
<td>Urban &amp; Regional Planning</td>
</tr>
<tr>
<td>5</td>
<td>Dr. Romana Ambreen</td>
<td>Lecturer</td>
<td>M.Sc. Peshawar PhD (China)</td>
<td>M.Sc (Physical Geography), PhD (System &amp; Global Change)</td>
</tr>
<tr>
<td>6</td>
<td>Mrs. Abida</td>
<td>Lecturer</td>
<td>M.Sc. Balochistan</td>
<td>M.Sc (Physical &amp; Human Geography), Regional Planning</td>
</tr>
<tr>
<td>7</td>
<td>Dr. Syed Ali ud Din</td>
<td>AP-TTS</td>
<td>M.Sc. Balochistan M.S &amp; PhD</td>
<td>M.Sc (Human Geography), MS &amp; PhD (Disaster Management)</td>
</tr>
<tr>
<td>8</td>
<td>Dr. Said Qasim</td>
<td>AP-TTS</td>
<td>M.Sc.Peshawar PhD Thailand</td>
<td>M.Sc (Physical Geography), MS &amp; PhD (Natural Resource Management)</td>
</tr>
<tr>
<td>9</td>
<td>Mr. Sanaullah Mr. Khattak</td>
<td>Lecturer</td>
<td>M.Sc.</td>
<td>M.Sc (Human Geography), Currently on Study leave</td>
</tr>
</tbody>
</table>

5. Programs of Study

5.1. M.Sc.
5.1.1. The Master's Degree programme covers two years. During 1st year, core courses are offered, while in the 2nd year candidates can opt for any one of the given fields of specialization with two papers conditioned to the availability of staff and resources. Furthermore, the department has in process to approve curricula and registration of M.Phil / MS. And Ph.Ds.

6. Description of Courses

6.1. M.Sc. PREVIOUS

6.1.1. Theory Papers
6.1.1.1. Functional English
6.1.1.2. Geomorphology
6.1.1.3. Climatology and Oceanography
6.1.1.4. Geography of Pakistan
6.1.1.5. Geography of Settlements
6.1.1.6. Economic geography

6.1.2. Practical
6.1.2.1. Cartography
6.1.2.2. Topographic Survey
6.1.2.3. Maps & Air Photos Interpretation
6.1.2.4. Computing

6.2. M.Sc. Final
6.2.1.1. Geographic Thought
6.2.1.2. Population Geography/GIS and Remote Sensing
6.2.1.3. Fieldwork Report/Thesis Research
Optional Papers

6.3.1. **Physical Geography (Group-I)**
   - 6.3.1.1. Techniques in Geomorphology
   - 6.3.1.2. Applied Geomorphology
   - 6.3.1.3. Quaternary Geology

6.3.2. **Area Planning (Group-II)**
   - 6.3.2.1. Regional Planning
   - 6.3.2.2. Environmental Planning & Management / Urban Planning
   - 6.3.2.3. Urban Planning
   - 6.3.2.4. Environmental Impact Assessment

**Practical**
- 6.3.3.1.1. Quantitative Methods
- 6.3.3.1.2. Field Techniques
- 6.3.3.1.3. Advance Cartography
- 6.3.3.1.4. Geographic Information System & Remote Sensing

7. **Field Research:**
   Field research is aimed to produce human resource (students) be skillful, technical and more professional in writing, analysis of data, interpretation and expertise in conversion of spatially located data into regional study.

8. **Eligibility Criteria For Admission**
   **8.1. B.A./B.Sc with Geography**

9. **Facilities**
   9.1. **Laboratories:** The department has the facilities of various laboratories like;
   - 9.1.1. GIS and RS Laboratory
   - 9.1.2. Cartographic Lab
   - 9.1.3. Geomorphologic Lab. (Combinedly use the Geology Department's Museum for identification of rock samples and other geomorphological purposes)

9.2. **Departmental Library:** The departmental library is managed by a qualified librarian and has a collection of books covering a wide range of disciplines in Geography. The existing library provides services to both students and professionals belonging to different environment related departments/institutions within and outside the campus.

9.3. **Internet facility:** The internet facility is available in the department. A large numbers of national and international journals is available on Digital Library provided by HEC. The downloading of these research articles of your interests is free of cost.