

SPECIALIZATION

GIS/Remote Sensing
GPS Geodesy

RELATED COURSES (GENERAL)

M.Phil./MS students enrolled in all the 4 Degree Programs are required to complete 6 CHs from the following **Related Courses (General)**.

Course No.	Title of Course	Cr. hrs.
Geol.500	Computer Application for Earth Sciences	2
Geol.501	Computing with MATLABORATORY	3
Geol.505	Mathematics / Statistics	2
Geol.510	Geostatistics	2
Geol.515	Technical Writing	2
Geol.520	Chemical Methods of Rock Analysis	2
Geol.525	Advance Instrumentation	3

MAJOR SPECIALIZED COURSES (GEOSPATIAL SCIENCES)

- The scholars enrolled in MS/M.Phil. Degree program are required to complete at least 12 CHs from the following **Specialized Major Courses**
- The scholars enrolled in MS/M.Phil. Leading to Ph.D. degree program are required to complete 21 CHs Courses from the Major Courses (12 CHs courses prior and 9 CHs courses after completing comprehensive exam.
- The scholars who earned MS/M.Phil.degrees and are directly enrolled in Ph.D. degree program are required to take 12 CHs courses from the following **Specialized Major Courses** (preferably other than those courses taken in their MS/M.Phil. degree program).

Course No.	Title of Course	Cr. Hrs.
Geos.700	Global Positing System	2
Geos.705	Geographical Information Systems (GIS)	3
Geos.710	Remote Sensing	3
Geos.715	Digital image processing	3
Geos.720	Cartography	3
Geos.725	Land Surveying	3
Geos.735	Geodesy	3
Geos.800	Spatial Data Modeling using GIS	3
Geos.805	Advance Remote Sensing	3
Geos.810	Application of GIS and RS to Hazard Mapping	3
Geos.815	Application of Geo-informatics in Natural Resource Management	3

MAJOR RELATED COURSES

- The scholars enrolled in MS/M.Phil. degree program are required to complete at least 6 CHs from the following Major Courses:

- The scholars enrolled in MS/M.Phil. leading to Ph.D. degree program after successful completion of 24 CH Courses and passing the Comprehensive Examination are required to complete additional 9 CHs Courses from the following Major Courses:
- The scholars who earned MS/M.Phil. degrees and are directly enrolled in Ph.D. degree program are required to take 12 CHs courses from the following Major Courses:

ENVIRONMENTAL GEOSCIENCES		
Envg.700	Geological Waste Management	3
Envg.705	Soil Classification	3
Envg.710	Geology of Earthquakes	3
Envg.715	Disaster Mitigation	3
Envg.720	Land Contamination and Remediation	2
Envg.725	Environmental Geology (Part I)	3
Envg.726	Environmental Geology (Part II)	3
Envg.735	Seismic Hazard Analyses◆◆	3
Envg.740	Geo-environmental Mapping	3
Envg.750	Natural Hazards: Assessment, mapping and Mitigation Tools	3
Envg.810	Paleoclimatology (Part-I)	3
Envg.811	Paleoclimatology (Part-II)	3
Envg.815	Environmental Geochemistry	3
Envg.820	Climate Change	3
GEOPHYSICS		
Geop.700	Geophysics	3
Geop.705	Applied geophysics	3
Geop.710	Formation Evaluation (theory+Laboratorys)	3
Geop.730	Seismic Stratigraphy	3
Geop.735	Geophysical Techniques in Hydrogeology (theory+Laboratorys)	3
Geop.740	Rock Magnetism	3
Geop.805	Engineering Seismology	3
Geop.810	Earthquake Seismology	3
GEOLOGY		
Geol.700	Depositional Environments	3
Geol.701	Transitional Environments & Facies	3
Geol.705	Basin Analysis	3
Geol.710	Industrial Mineralogy	3
Geol.712	Carbonate Microfacies	2
Geol.718	Neotectonics◆◆	3
Geol.719	Soil mechanics	3
Geol.720	Geological Site Investigations	3
Geol.721	Tectonics of Foreland Basins of Pakistan◆	2
Geol.722	Coal Geology	2
Geol.723	Rock mechanics◆◆◆	3
Geol.730	Hydrogeology	3
Geol.731	Engineering Geology	3

Geol.732	Quaternary Geochronology	3
Geol.733	Techniques in Structural Geology	3
Geol.734	Kinematic and Dynamic Analyses	3
Geol.735	Ore Microscopy	3
Geol.736	Mineral Processing and Benification	3
Geol.740	Invertebrate Paleontology	3
Geol.741	Vertebrate Paleontology	3
Geol.742	Stratigraphic Analysis	3
Geol.743	Microplaeontology	3
Geol.745	Alkaline Igneous Rocks	2
Geol.750	Tectonics of Northern Pakistan	3
Geol.751	Interpretation of Geological Maps	3
Geol.752	Tectonics	3
Geol.753	Low-Temperature Geochemistry	3
Geol.755	Thrust Tectonics	2
Geol.757	Genesis of Ore Deposits	2
Geol.760	Exploration Geochemistry	3
Geol.761	Mineralogy	3
Geol.765	Ore Deposits Geology	3
Geol.767	Metallogeny and Mineral Deposits of Pakistan.	2
Geol.770	Metamorphic Structures	3
Geol.771	Gemology	3
Geol.772	Techniques in Field Geology	3
Geol.775	Specialized Field & Laboratory. Techniques in Structural Geology	3
Geol.777	Igneous Petrology	3
Geol.780	Geochemistry	3
Geol.783	Sedimentary Petrology	3
Geol.785	Metamorphic Petrology	3
Geol.788	Petroleum Geology	3
Geol.789	Petroleum Engineering	3
Geol.792	Petroleum Geochemistry	3
Geol.795	Non-Clastic Sedimentology	3
Geol.798	Clastic Sedimentology	3
Geol.799	Seminar (Teaching/Research of selected topics)	1-3
Geol.800	Diagenesis of Sediments	3
Geol.801	Techniques in Paleontology	2
Geol.802	Sequence stratigraphy	3
Geol.803	Micro-tectonics	3
Geol.806	Biostratigraphy	3
Geol.807	Palynofacies analyses	3
Geol.808	Instrumental Techniques in Organic Geochemistry	3
Geol.810	Continental Environments and Facies	3
Geol.812	Marine Depositional Environments	3
Geol.814	Gold Exploration and Evaluation	3
Geol.815	Geochronology	3

Geol.820	Regional Tectonics	3
Geol.821	Tectonic Geomorphology	2
Geol.825	Metallogeny and Plate Tectonics	3
Geol.830	Economic Evaluation in Exploration	3
Geol.835	Geological Data Analysis in Mineral Exploration	3
Geol.840	Plate Tectonics & Kinematic of Plate Movements	3
Geol.841	Fission Track Dating of Rocks and Minerals	3
Geol.845	Mesoscopic Structures	2
Geol.850	Advanced Igneous Petrology	3
Geol.851	Advance Hydrogeology	3
Geol.852	Advance Soil Mechanics	3
Geol.855	Advanced Geochemistry	3
Geol.860	Advanced Metamorphic Petrology	3