AG-311 Geology & Tectonics of Pakistan Credit Hours 3

Prerequisite: AG-108

Learning Outcomes

This course is designed to acquire the knowledge about the tectono-stratigraphy of Pakistan with special emphasis on the tectonic elements and minerals and fuel deposits. This will help the students to learn about the interaction of regional plates and blocks such as Indian Plate, Arabian Plate, Karakoram Plate, and Afghan Block through geological times and their influence on the stratigraphy and mineral deposits of Pakistan.

Course Contents

Geological framework and Principal geological divisions of Pakistan

The Chagai and Ras Koh area, The Dalbandin Trough, The Ras Koh Geanticline and Ras Koh-Mirjawa Flysch Belts, The Mashkhel depression, The Makran-Khojak-Pishin Flysch zone, The Makran, Khojak, and Pishin Flysch segment, The Fold and Thrust belts of Pakistan, Indus basin, Tethyan belt, The Sub, Lesser and Higher Himalayas, The KIA complex, The Karakorum block, The Hindu Kush elements.

Precambrian to Quaternary Sedimentary sequence of Pakistan

Igneous and metamorphic rocks of Pakistan: Igneous and metamorphic rocks of the Tethyan belt, Indo-Pakistan plate, south of MMT, south of MCT, Alkaline igneous province, Post Hercynian events, KIA Complex, Karakorum Block, Eastern Hindukush, Elements of the Indian Craton, South of the Himalyas, Fold and thrust belt, Chagai-Ras Koh Volcanic Arc.

Tectonics and structure

Plate boundaries and regional fabric, Tectonic zones, Shield elements and buried ridges, Indus Basin, The Fold and thrust belt, Khuzdar block, Sulaiman block, The Bela-Waziristan Ophiolite Zone, The Chagai-Ras Koh Volcanic Arc, The Makran-Khojak-Pishin Flysch Zone.

Palaeogeographic and geodynamic evolution of Pakistan

TEACHING – LEARNING STRATEGIES

- Lecture based examination
- Presentation/seminars
- Class discussion
- Quizzes

ASSIGNMENTS – TYPE AND NUMBER WITH CALENDAR

It is continuous assessment. The weightage of Assignments will be 25% before and after midterm assessment. It includes:

- classroom participation,
- attendance, assignments and presentation,
- homework
- attitude and behavior,
- hands-on-activities,
- short tests, quizzes etc.

ASSESSMENT AND EXAMINATIONS

Sr. No.	Elements	Weightage	Details
1.	Mid Term Assessment	35%	It takes place at the mid-point of the semester
2.	Formative Assessment	25%	It is continuous assessment. It includes: classroom participation, attendance, assignments and presentation, homework, attitude and behavior, hands-on-activities, short tests, quizzes etc.
3.	Final Assessment	40%	It takes place at the end of the semester. It is mostly in the form of a test, but owing to the nature of the course the teacher may assess their students based on term paper, research proposal development, field work and report writing etc.

Books Recommended

1. Tectonics by Moores, E.M. & Twiss, R.J., 1995, W.H. Freeman and Co.
2. Global Tectonics by Keary, P. & Vine, F.J., 1996, Blackwell.
3. Plate Tectonics: How It works by Cox, A. & Hort, R.B., 1986, Blackwell
4. The Evolving continents by Windley, B.F., 1984, John Wiley & Sons.
5. Geology of Pakistan Ed.: Bender, Friedrich; Raza, Hilal A. 2006, Gebr. Borntraeger Verlagsbuchhandlung, Science Publishers, Stuttgart.