## MGE 457: GEOSCIENCES (Open Elective Paper)

**Skills, employability and entrepreneurship:** This paper is useful to the sister departments of the Earth Science, such as chemistry, physics, life sciences, statistics, computer as well as computing sciences. Usually science students other than earth science qualify NET exams/interviews in the institutes join earth science related organizations. They learn earth science in their area of research. However, with the knowledge of this subject (earth science), students can perform better in their career thereby utilizing the intension of studying the interdisciplinary science. Students have employability in many branches of science in different government organizations and MNCs. Students can start their own entrepreneurship.

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| **Unit 1** | Introduction to Geology, Earth and its environment - lithosphere, hydrosphere and atmosphere. | 6 hrs |
| **Unit 2** | Geological time scale. Origin and evolution of life, fossils, fossilization and their applications. | 6 hrs |
| **Unit 3** | Geological Agents and hazards: Weathering, Erosion, Transportation and Deposition. Volcanoes, Earthquake, Landslide, Salt water intrusion, Floods and droughts. | 6 hrs |
| **Unit 4** | Geomorphology: Description of Earth surface features. Landforms, Physical divisions of India. Structure and composition of the Earth's interior: Crust, Mantle and Core. | 6 hrs |
| **Unit 5** | Structural Geology: Primary structures, secondary structures - folds, faults, joints and unconformities. | 8 hrs |
| **Unit 6** | Natural Resources: Renewable and non-renewable resources. Water as a resource. Origin, occurrence and distribution of oil and gas. Minerals, rocks. Soil. Economically and strategically important metallic and non-metallic mineral deposits of India.<br><br>Interactive sessions of teaching to enhance students-teacher interactions through hands-on demonstrations and exercises in the recent advancement of the subject related to the curriculum. | 8 hrs |

**List of References:**


1. Fundamentals of Historical Geology and Srtatigraphy of India, Ravindrakumar New Age International Pub.
2. Principles of Paleontology – Raup and Stanley – CBS Publications
3. Principles of Invertebrate Paleontology – Shrock and Twenhofel – CBS
4. Fossil Invertebrates, Cambridge Univ.- Lehmann, U and Hilimer, G. (1983)
5. Micropalaeontology, Graham and Trotman - Bignot, G. (1985)
6. An introduction to Paleobotany - Arnold, Chester R
7. Field Geology – McGraw Hill Book Co. - Lahee, F.H. (1961)
8. Structural Geology – 3rd edition, Prentice Hall - Billings M.P. (1977)
9. Stratigraphy and Sedimentation, W.H. Freeman – Krumbein and Sloss (1963)
10. Economic Mineral Deposits – Bateman

11. India’s Mineral Wealth - Oxford Univ. Press - Brown and Dey (1975)
12. Industrial Minerals and Rocks of India - Allied Publishers - Deb, S. (1987).
13. Hydrogeology – K. R. Karanth – Tata McGraw Hill Publishing Co. Ltd.
14. Groundwater – H. M. Raghunath – Wiley Eastern Limited
15. Elements of Hydrology – V. P. SinghCourses in Mining Geology – R.N.P. Arogyaswamy, Oxford and IBH Publishing Co.