

The Use of Gravity and Magnetic Data in Exploration (3 credit hours): This course comprises 4 sections: (I) basic principles, (II) regional studies, (III) local studies, and (IV) special applications/recent developments. The emphasis of the course is on the practical utility of gravity and magnetic survey data in exploration including its use in conjunction with other geophysical approaches especially seismic reflection. The aim of the course is to provide participants with a better overall understanding of when, where and how to use potential field data to the best advantage when exploring for hydrocarbons and minerals.

Course Outline

1. Fundamentals of potential theory
2. Instrumentation & field procedures
3. Routine data processing
4. Geological mapping
5. Basin wide investigations
6. Basement & structure mapping
7. Anomaly filtering - regional/residual separation
8. Local feature identification and delineation
9. Integration with seismic reflection
10. Forward and inverse model construction
11. Special problem areas - salt provinces, overthrust areas, etc
12. Gravity gradiometry
13. Wavelet processing
14. Sedimentary magnetism