

Course Type	Course Code	Name of Course	L	T	P	Credit
DE	NGPD513	Geoelectromagnetism for Crustal and Lithospheric Architecture	3	0	0	3

Course Objective

Electromagnetic signature for understanding the crustal and lithospheric architecture. Different electromagnetic models explaining the geothermal reservoir. Electromagnetic signature for hydrothermal exploration.

Learning Outcomes

Provides comprehensive understanding of geophysical phenomenon of deep earth and gives an overview of dynamics of planetary interiors. The purpose of this course is to familiarise students with the imaging and observing the electric moho, LAB. In addition, the course discusses the case histories related to geothermal and hydrocarbon exploration.

Unit No.	Details of Lectures	Lecture Hrs.	Learning Outcome
1.	Brief Introduction of Interpretation techniques in Electromagnetic Method	03	Fundamental knowledge on Electromagnetic method.
2.	Definition of the lithosphere and common proxies used to estimate its thickness.	04	Understanding of Lithosphere and its associated components.
3.	LAB beneath Kaapvaal craton, Slave craton, Fennoscandian Shield, Singhbhum.	10	Understanding of LAB and cratonic structure.
4.	Controlled-source electromagnetic sounding of the oceanic lithosphere	04	Principle of CSEM and its applications.
5.	Imaging and observing the electric Moho	06	Understanding of MOHO geo-electromagnetism
6.	Concept of Window to Mantle, Implication of resistive lower crust	04	Understanding of application of windowing technique for Mantle and Crustal boundary.
7.	Electromagnetic signatures over Geothermal Province.	05	Application of geo-electromagnetism for geothermal exploration.
8.	Electromagnetic method for Hydrocarbon Exploration.	06	Application of geo-electromagnetism for hydrocarbon exploration.
	Total Classes	42	

Text Books

1. Eaton et al. (2009), The elusive lithosphere–asthenosphere boundary (LAB) beneath cratons: Lithos, 109, 1-22.

Reference Books

1. Jones, Alan, and Simpson, I., 2001, The electric Moho, Nature, 409(6818):331-3.