DISCIPLINE SPECIFIC CORE COURSE– 6 (DSC-6): Elements of Geochemistry

Credit distribution, Eligibility and Pre-requisites of the Course

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Elements of Geochemistry DSC-6	**4**	**3**	**0**	**1**	**12th Pass**	**---**

Learning Objectives

The Learning Objectives of this course are as follows:

- To develop an understanding of the chemical nature of the earth and other planetary material and relate mineralogy, geochemistry and bulk chemistry.

Learning outcomes

The Learning Outcomes of this course are as follows:

- Students will be able to appreciate the field of geochemistry and understand the properties of the elements - Nucleosynthesis; Cosmochemistry; Principles of isotope geochemistry; Solid earth geochemistry: Core, Mantle, Crust. Near-surface geochemical environment, Chemical weathering of minerals and rocks. Examples of instrumentation, data collection and analyses

SYLLABUS OF DSC-6

UNIT – I (09 Hours)

The abundance of elements in the cosmos, solar system and earth. Meteorites, distribution of elements in core, mantle, crust.

UNIT – II (12 Hours)

Introduction to properties of elements: periodic table, chemical bonding, states of matter and atomic environment of elements, geochemical classification of elements, the concept of elemental fractionation.

UNIT – III (12 Hours)

Geochemistry of igneous rocks: geochemical variability of magma and its products. Near-surface geochemical environment: Chemical weathering of minerals and rocks.

UNIT – IV (12 Hours)

Introduction to isotope geology: use of stable and radiogenic isotopes in earth science.

Practical component: - 30 Hours

- Geochemical analysis of geological materials (analytical methods, concept of normalization)
- Geochemical variation diagrams, common geochemical plots, and their interpretations.
- Basic idea about handling and interpretation of isotope data.

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Essential/recommended readings

Mason, B (1986). Principles of Geochemistry. 3rd Edition, Wiley New York.
Faure, G., 1986. Principle of Isotope Geology, J. Wiley & Sons.

Suggestive readings

Mason, B (1986). Principles of Geochemistry. 3rd Edition, Wiley New York.
Rollinson H. (2007). Using geochemical data evaluation. Presentation and interpretation. 2nd Edition. Publisher Longman Scientific & Technical.
Walther John, V., 2009 Essentials of geochemistry, student edition. Jones and Bartlett Publishers
Albarede, F, 2003. An introduction to geochemistry. Cambridge University Press.
Faure, G., 1986. Principle of Isotope Geology, J. Wiley & Sons.
Geochemistry by William M White, Wiley-Blackwell (2013).

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.