

Course Type	Course Code	Name of Course	L	T	P	Credit
DC	GLC207	Descriptive Mineralogy	3	0	0	9

**Course Objective**

The primary objective of the course is to introduce fundamental understanding of mineral composition and their occurrence in different rock.

**Learning Outcomes**

- Upon completion of the course, students will be able to
- Various aspects of crystal chemistry
  - Different types of silicates and their classification principles
  - Structure and property of common nesosilicate minerals
  - Structure and property of common phyllosilicate and framework silicate minerals
  - Structure and property of common sorosilicate, ring silicate and inosilicate (single chain) minerals.

Unit No.	Topics to be Covered	Lecture Hours	Learning Outcome
1	Basics of mineralogy: Definition, coordination number, chemical bonding, Pauling's rule	8	Various aspects of crystal chemistry
2	Silicate Structure: Basis for classification of silicates with example	2	Different types of silicates and their classification principles
3	Silicate minerals: Composition, structure, paragenesis and property of different silicate minerals Neso silicate – Olivine, Zircon, Sphene, Garnet, $Al_2SiO_5$ , Topaz, Staurolite, Chloritoid their physical and optic properties.	8	Structure and property of common nesosilicate minerals
4	Soro and ring silicates (Epidote, Beryl, Cordierite, Tourmaline) Inosilicate (Single Chain) Pyroxene, Wollastonite, Amphibole,	8	Structure and property of common phyllosilicate and framework silicate minerals
5	Phyllosilicates-Mica Group, Clay minerals, Framework Silicate- Feldspar group, Silica Minerals, Nepheline group, Scapolite, Zeolite group	8	Structure and property of common sorosilicate, ring silicate and inosilicate (single chain) minerals
6	Non silicate Minerals: Oxides, hydroxides, Sulphides, Sulphates, Carbonate, Phosphate, Halides	5	Structure and property of common non-silicate minerals
7	Introduction to equipments related to rock and mineral analysis	3	Basic equipment required for mineral identification and characterization

**Text Books:**

1. William D. Nesse. *Introduction to Mineralogy*. Oxford University Press, 2000.
2. W. A. Deer, R. A. Howie and J. Zussman. *An Introduction to Rock Forming Minerals*. Upper Saddle River, NJ: Pearson, 1992.

**Reference Books:**

1. Manual of Mineralogy (Revised) by Klein C., Hurlbut C. S. Jr., 1985, John Wiley & Sons.
2. W. H. Blackburn and W. H. Dennen. *Principles of Mineralogy*. Universal Book Stall, New Delhi, 1990.
3. Dexter Perkins. *Mineralogy*. PHI Learning Private Ltd., New Delhi, 2012.