3rd SEMESTER
SKILL ENHANCEMENT COURSE

GL318S: MEGASCOPIC AND MICROSCOPIC TECHNIQUES IN IDENTIFICATION OF MINERALS

CREDITS: THEORY: 02, PRACTICAL: 02

THEORY: 02 CREDITS

Unit-1

Mineral definition, Crystalline and amorphous substances, structure, form, cleavage, colour, luster, transparency, streak, hardness, sp. gravity, tenacity, feel, taste, odour. Electrical, Magnetic and Thermal Properties. Empirical and Structural formula of minerals. Isomorphism, polymorphism and pseudomorphism. Non-crystalline minerals. Fluorescence in minerals.

Unit-2

Plane polarized light-Double refraction-Snells law. Optical properties of minerals: Colour, Form, Cleavage, Refractive Index, Relief, Alteration, inclusions, Zoning, Pleochroism, Pleochroic haloes, Twinkling, Isotropism and anisotropism, Extinction, Polarisation colours, Birefringence, Twinning.

PRACTICAL: 02 CREDITS

Unit-1

Megascopic identification of some important minerals: Quartz, Mica, Tourmaline, Topaz, Beryl, Zircon, Rutile, Apatite. Calcite, Gypsum, Garnet, Cordierite, Kyanite, Sillimanite, Andalusite, Sphene, Staurolite, Chondrodite.

Unit-2

Microscopic study of some important minerals: Quartz, Mica, Tourmaline, Topaz, Beryl, Zircon, Rutile, Apatite. Calcite, Gypsum, Garnet, Cordierite, Kyanite, Sillimanite, Andalusite, Sphene, Staurolite, Chondrodite.

Suggested Readings:

W. A. Deer, R. A. Howie and J. Zussman, 1966, An Introduction to the Rock Forming minerals, Longmans.

Alexander N. Winchell, 1968, Elements of Optional Mineralogy, Parts I and II, Wiley Eastern (P) Ltd.,

Ernest, E. Walhstrom, 1960, Optional Crystallography, John Wiley and Sons.

E. S. Dana, 1935, A Text Book of Mineralogy, John Wiley & Sons.

L. G. Berry Mason, 1961, Mineralogy, W. H. Freeman & Co.,

Kerr, B. F., 1995, Optical Mineralogy 5th Ed. Me Graw Hill, New York.

S. Mitra, 1994, Fundamentals of Optical, Spectroscopic and X-ray Mineralogy, S. R. Technico Book House, Ashok Raj Path, Patna.