

## INDIAN INSTITUTE OF TECHNOLOGY KHARAGPUR

1. Name of the Academic Unit:

2. Subject Name:      Optical Mineralogy Lab L-T-P: 0-0-3 Credits:

3. Pre-requisites: Mineralogy

4. Syllabus and reference books:

### Syllabus:

General Introduction on Optical properties of minerals under plane and cross-polarised light; Optical properties of *nesosilicates* (Olivine, Garnet, Zircon, Andalusite, Kyanite, Sillimanite, Staurolite, Titanite (Sphene), Chloritoid), *sorosilicates* (epidote, zoisite, clinozoisite, lawsonite), *cyclosilicates* (Cordierite, Tourmaline), *single-* (ortho- and clinopyroxene) *and double-chain* (Tremolite, Actinolite, Hornblende, Glaucophane) *inosilicates*, *phyllosilicates* (Chlorite, Muscovite, Biotite), *tectosilicates* (Quartz, Coesite, Plagioclase, Microcline, Orthoclase, Sanidine, Nepheline, Leucite, Scapolite, Sodalite ), *phosphates* (Apatite, Monazite), *carbonates* (calcite) and *oxides* (spinel).

### Reference Books:

- (1) GUIDE TO THIN SECTION MICROSCOPY by MICHAEL M. RAITH, PETER RAASE & JÜRGEN REINHARDT; 2012.
- (2) An Introduction to the Rock-Forming Minerals by W.A. Deer, R.A. Howie, J. Zussman.
- (3) Mineralogy by Dexter Perkins, University of North Dakota; 2020;  
<https://opengeology.org/Mineralogy/5-optical-mineralogy/>

5. Lecture-wise break-up:

Sl. No.	Topic	No. of lectures
1.	General Introduction on Optical properties of minerals under plane and cross-polarised light.	6 hrs
2.	Optical properties of Nesosilicate Minerals (Olivine,	6 hrs

	Garnet, Zircon, Andalusite, Kyanite, Sillimanite, Staurolite, Titanite (Sphene), Chloritoid	
<b>3.</b>	Optical properties of Sorosilicates (epidote, zoisite, clinozoisite, lawsonite)	<b>3 hrs</b>
<b>4.</b>	Optical properties of cyclosilicates (Cordierite, Tourmaline), single - (ortho- and clinopyroxene) and double-chain inosilicates	<b>6 hrs</b>
<b>5.</b>	Optical properties of phyllosilicates (Chlorite, Muscovite, Biotite), tectosilicates (Quartz, Coesite, Plagioclase, Microcline, Orthoclase, Sanidine)	<b>6 hrs</b>
<b>6.</b>	Optical properties of tectosilicates (Nepheline, Leucite, Scapolite, Sodalite)	<b>3 hrs</b>
<b>7.</b>	Optical properties of phosphates (Apatite, Monazite), carbonates (calcite) and oxides (spinel).	<b>3 hrs</b>
<b>8.</b>	Revision of optical properties of all minerals	<b>3 hrs</b>
<b>Total number of hours</b>		<b>36 hrs</b>