

# NOC: Fundamentals of optical and scanning electron microscopy - Video course

## COURSE OUTLINE

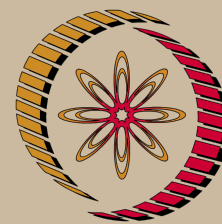
It is a first course at the under graduate level on microstructural characterization of materials. This course will cover the basic principles and techniques of optical and scanning electron microscopy along with demonstrations on the instrument details and imaging experiments through videos. This course also deals with the sample preparation techniques for the microstructural analysis with practical examples through videos.

## COURSE DETAIL

ModuleNo.	Topics
1.	1. Fundamentals of optics 2. Optical microscope and its instrumental details 3. Variants in the optical microscopes and image formation
2.	4. Phase contrast, Polarised light, Differential interference contrast, Fluorescence microscopy 5. Sample preparation and applications
3.	6. Introduction to Scanning electron microscopy 7. Instrumental details and image formation
4.	8. Various imaging techniques and spectroscopy 9. Sample preparation and Applications

## References:

'Fundamentals of light microscopy and electronic imaging' Douglas B. Murphy, 2001, Wiley-Liss, Inc. USA 'Encyclopedia of Materials Characterization, Surfaces, Interfaces, Thin Films,' Editors C. Richard Brundle, Charles A. Evans, Jr., Shaun Wilson, Butterworth-Heinemann, Boston, USA



NP-TEL

# NPTEL

<http://nptel.ac.in>

## Metallurgy and Material Science

### Coordinators:

**Dr. S. Sankaran**  
 Department of  
 Metallurgical &  
 Materials  
 Engineering IIT  
 Madras