



ELEMENTARY STEREOLOGY FOR QUANTITATIVE METALLOGRAPHY

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Materials Engineering
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TYPE OF COURSE : Rerun | Elective | UG/PG
COURSE DURATION : 4 weeks (20 Jul' 20 - 14 Aug' 20)
EXAM DATE : 27 Sep 2020

PRE-REQUISITES : None

INTENDED AUDIENCE : Anyone who is interested in the quantification of microstructures

INDUSTRIES APPLICABLE TO : All materials related industries and Pathologists, Bio technologists

COURSE OUTLINE :

Quantitative metallography or stereology is concerned with the measurement of microstructural features such as grain size, and the size and spatial distribution of second phase particles from the observations made on 2-D sections through optical, scanning and transmission electron microscopy. In all cases a small sample section or thin slice of material is observed in order to derive the microstructural characteristic of a bulk material. Stereology is therefore concerned with geometrical probability.

ABOUT INSTRUCTOR :

Prof. S. Sankaran is a Professor at Department of Metallurgical and Materials Engineering, IIT Madras and his research interests are microstructure-mechanical behavior correlations in materials, Electron microscopy, Material processing and Stereology.

Prof. Sandeep Sangal is a Professor at Department of Materials Science and Engineering, IIT Kanpur and his research interests are Structure-Property Correlations, Microstructural Characterization, Stereology, Image Processing, Development of Web-Based Educational Aids.

COURSE PLAN :

Week 1: 1.Method of Stereology 2.Geometrical Probability - I 3.Geometrical Probability – II

Week 2: 4.Probability Distributions 5.Basic Stereological Parameters

Week 3: 6.Counting of grains and particles 7.Description of Polycrystalline Microstructures – derived measures

Week 4: 1.Size distribution of particles 2.Other applications of the Disector