

MSE-473 Novel Techniques in Surface Engineering

Credit Hours: 3-0

Pre-requisites: None

Course Objectives

- To know about the Numerical Parameters for Characterization of Surface Topography.

Course Contents

- Numerical Parameters for Characterization of Surface Topography
- Novel Characterization techniques
- Gaussian filters, multi scalar filtration methods, calibration procedures for stylus and optical instrumentation
- Calibration procedures for Atomic Force Microscopes
- Interrelationship of 2D and 3D characterization
- 3D Surface Metrology and Characterization of Automotive Engine performance
- Theory of deformation and Flow in Gels, Surface Chemistry and Modification
- Sintering of Gels, Comparison of Sol gel Derived and Conventional Coatings
- Applications of Thin Films and Coatings

Course Outcome

- Students will be able to study the numerical parameters of characterization of surface Topography,

Suggested Books

- Liam Blunt and Xiang Jiang, *Advanced Techniques for Assessment of Surface Topography: Development of a Basis for 3D Surface Texture Standards*, Kogan Science, 2003.
- C. Jeffrey Brinker and George W. Scherer, *Sol-Gel Science: The Physics and Chemistry of Sol-Gel Processing*, Gulf Professional Publishing, 1990.