

MFE 5841. MTE 5841. ME 5370. SURFACE METROLOGY

Surface Metrology is about measuring, characterizing, and analyzing surface topographies or textures. This course covers conventional measurement and characterization of roughness. It emphasizes research and covers a wide variety of applications, including, adhesion, friction, fatigue life, mass transfer, scattering, wear, manufacturing, food science, wetting, physical anthropology, and archeology. Surface metrology has applications in practically all engineering disciplines and sciences. Research principles are applied to critical evaluations of research methods. Students learn multiscale methods for discriminating surface textures supposed to be different because of their performance or manufacture, and for discovering correlations between processing, textures, and behavior. Results support product and process design, and quality assurance. Students create detailed project proposals on topics of their choosing, including literature reviews, preparation and testing of surfaces, measurements, characterizations, and analyses. No previous knowledge of surface metrology is required. Students should have backgrounds in engineering, math, or science. Students cannot get credit for this course and Fundamentals of Surface Metrology, a 2 credit, single-term course offered online.