

SPRING QUARTER 2008

- Professor:* Eric Herbst
Office: PRB 4144; Telephone 292-6951; herbst@mps.ohio-state.edu
Office Hours: feel free to drop in anytime
Class web page:
<http://www.physics.ohio-state.edu/~eric>
- Required text:* SURFACE SCIENCE: Foundations of Catalysis and Nanoscience, by Kurt W. Kolasinski (Wiley & Sons)
- Suggested text:* SURFACE CHEMISTRY, by Elaine M. McCash (Oxford University Press)
- Grading:* There will be homework assignments, a midterm examination, and a comprehensive final. Homework assignments will be handed out biweekly. The grading will be apportioned as follows:

Homework	30%
Midterm	30%
Final	40%

SYLLABUS

- I. Surface Structure
Introduction, Bravais Lattices, Planes, Ideal Surfaces, Reconstructions, Defects, Band Structure
- II. Experimental Probes
Scanning Probes, LEED, Electron Spectroscopy, Vibrational Spectroscopies
- III. Chemisorption, Physisorption, Dynamics
Physisorption, Chemisorption, Diffusion, Activation, Reaction Mechanisms
- IV. Thermodynamics and Kinetics of Surface Processes
Isotherms, Heats, Rate and Order of Desorption, Transition State Theory, Adsorption Kinetics, TPD
- V. Small Particles
Processes on Nanoparticles, Stochastic Methods, Formation of H₂