ME 320  Micro- and nano-mechanical properties of surfaces

Instructors: Professors Leon M. Keer, Y.W. Chung, and Jane Wang

3/31 Lecture 1  Fundamentals of atomic and molecular bonding (Chung)
4/2  Lecture 2  Fundamentals of atomic and molecular bonding (Chung)
4/7  Lecture 3  Tribological effects of interfacial bonding interactions (Chung)
4/9  Lecture 4  Classic theories of interfacial forces (Wang)
4/10 IGERT symposium (noon to 5:00 pm, Norris, Indiana rm)
4/14  Lecture 5  Classic theories of interfacial forces (Wang)
4/16  Lecture 6  Adhesion, the JKR theory and Greenwood approach (Wang)
4/17 IGERT Seminar (LR4, 12:00-1:00pm): Prof. Ken Ludema
4/21  Lecture 7  Principles of micromechanics (Keer)
4/22 Lab tour (7:00 pm, NG31)
4/23  Lecture 8  Principles of micromechanics (Keer)
4/28  Buffer
4/30  Buffer
5/5  Lecture 9  The integral method (Keer)
5/7  Lecture 10  Contact simulation (Wang)
5/8 IGERT Seminar (LR4, 12:00-1:00pm): Dr. Y.T. Cheng and round-table discussion on life in leading industries (B211, 2:00-3:00pm)
5/12  Lecture 11  Contact simulation (Wang)
5/14  Lecture 12  Surface statistics (Wang)
5/19  Lecture 13  Fractal analysis (Keer)
5/21  Lecture 14  Fractal analysis (Keer)
5/22 IGERT Seminar (LR4, 12:00-1:00pm): Dr. Miyoshi and round-table discussion on life in national labs (B211, 2:00-3:00pm)
5/26-6/4  Project weeks
Week 10  Final project presentation

Notes:
0. All classes are at Tech L251, MW 4-5.20 pm.
1. Buffer classes may be used when more lectures are needed.
2. Course evaluation:
   Each student will write one-page summary critiques for assigned papers, any two talks in the IGERT Symposium and three IGERT seminars. These critiques will account for 50% of course grade and will be graded on a binary basis. During the tenth week of class, each student will submit a term paper (30%) on a topic of his/her choice and make an oral presentation (20%).