MAT 521 Tribology

Time: Will be jointly determined to suit best to registered students. Venue: Will be determined based on the selected class time Instructor: Prof. Dr. Mahmut F. Aksit Email: aksit@sabanciuniv.edu

Topics:

The course covers a study of interacting surfaces, lubrication, friction and wear. In particular:

- Definition and history of Tribology
- Classification of Engineering Surfaces
- Theory and general principles of lubrication;
- Order of Magnitude Analysis to simplify complex engineering problems
- Reynolds Equation and its derivation from Navier-Stokes Equations,
- Application of Reynolds Equation:
 - Hydrostatic Bearings
 - Hydrodynamic Bearings: Thrust Bearings, Journal Bearings
 - Elastohydrodynamic Lubrication: Gears & Ball bearings
- Friction Theories
- Wear Theories
- Friction and Wear Testing
- Principles of Solid Lubrication
- Boundary lubrication and How EP additives work in oils

Text: No particular text book to be purchased. Course will follow through instructor class notes

Recommended Literature Resources:

R. D. Arnell, P. B. Davies, J. Halling ve T. L. Whomes, Tribology: Principles and Applications, Springer-Verlag, 1991

Ernest Rabinowicz, Friction and Wear of Materials, 2nd Edition, John Wiley & Sons, 1995

I.M. Hutchings, Tribology: Friction and Wear of Engineering Materials, Edward Arnold Publishing Co.

Grading:

Attendance + Midterm Takehome + Term Paper