Topics and Chapter Sections Covered for Test 1

Related homework: 1 - 3

1 Chapter 4 - Load and Stress Analysis

Sections covered: 4.20

Topics covered: The following topics are included:

1. Concepts and assumptions of Hertzian contact
2. Point contact for spheres
3. Line contact for cylinders

2 Wear

Sections covered: 7.16, and additional material not in book

Topics covered: The following topics are included:

1. Surface fatigue wear (rolling surfaces)
2. Surface fatigue strength ($S_c$), ultimate strength ($S_u$) and Brinnel hardness ($H_b$) relationships
3. Load-stress factor of safety relationships (spheres/cylinders)
4. Adhesive wear (sliding surfaces)
5. Abrasive wear (sliding surfaces)

3 Chapters 13-14 - Gears


Topics covered: The following topics are included:

1. Terminology for spur gears
2. Geometry of spur gears
3. Gear trains
4. Forces on spur gears
5. Bending stresses in spur gears, Lewis formula (static)
6. AGMA bending stress and strength of spur gears (fatigue)
7. Contact stresses in spur gears - two cylinders in contact (static)
8. AGMA contact stress and strength in spur gears (fatigue)