Course Review: Final Exam (20%)

- Design process, Materials and Processes, Optimization, Finite Elements

Static Failure

- **Brittle Failure Theories**
  - MNST
  - Columb-Mohr

- **Ductile Failure Theories**
  - DET
  - MSST

Fatigue Failure

- Goodman Diagram
- Marin Factors
- Endurance Limit (corrected vs. uncorrected)
- Stress concentration factors

Shaft Design

- ASME
- General
- Assumptions involved

Bearings

- Computing equivalent loads for thrust
- Static Load Rating
- Dynamic Load Rating
- L10 Life

Gears

- Spur, Helical, Bevel
- Gear stresses - Lewis equation (bending stress)
- Trains
  - Simple
  - Compound
  - Reverted
  - Epicyclic

  Gear terminology and nomenclature

Kinematics

- Skeletons
  - position
  - velocity
  - acceleration analysis
  - toggle--range of motion

Cams

- good dynamic characteristics--what does the engineer look for
  SHM, constant acceleration, cycloidal, polynomial

3/4 of the exam will be kinematics

cams + mechanisms

1/4 will from past material

Not likely:

Optimization
FEA
Gear terminology

Exam is in Room 171 Durham
7:00 - 9:00 p.m.
Tuesday, May 1