ME 56600
MECHANICS OF MACHINERY

Course Outcomes

1. Develop ability to design and analyze high speed mechanisms.
2. Develop ability to design and analyze mechanisms with deformable members.
3. Understand effects of mechanism design on transient and steady state response and stability.

Analysis of High Speed Mechanisms (6.5 wks)
1. Kinematics of single-loop mechanisms
2. Harmonic motion linkages
3. Dynamics of single degree-of-freedom mechanisms
4. Balancing

Design of High Speed Mechanisms (3 wks)
1. Motion of lamina in plane
2. Planar synthesis
3. Harmonic motion linkages

Elastic Mechanisms (5.5 wks)
1. Modeling
2. Dynamic response (transient and steady state)
3. Parametric instability
4. Design considerations

Revision Date: 6/18/2013
1. **COURSE NUMBER AND NAME:** ME 56600 Mechanics of Machinery

2. **CREDITS AND CONTACT HOURS:** 3 credits  
   a. Lecture – 3 days per week at 50 minutes for 16 weeks

3. **COURSE COORDINATOR OR INSTRUCTOR:** J. Starkey

4. **TEXTBOOK:**  

5. **SPECIFIC COURSE INFORMATION:**  
   a. **Catalog Description:** Selected topics in machine analysis and design for high-speed applications. Rigid-body kinematics and dynamics of mechanisms, and balancing of machinery. Cam-follower mechanisms. Mathematical modeling of mechanisms comprised of elastically deformable elements. Transient and steady-state vibration response and parametric instability inelastic mechanisms. Typically offered in the fall (alternate years).
   
   b. **Prerequisites:**  
      ME 56300 – Mechanical Vibrations  
      First Semester Senior Standing or Higher
   
   c. **Status:** Elective

6. **SPECIFIC GOALS FOR THE COURSE:**  
   a. **Course Outcomes:**  
      1. Develop ability to design and analyze *high speed mechanisms*.
      2. Develop ability to design and analyze *mechanisms with deformable members*.
      3. Understand effects of mechanism design on *transient and steady response and stability*.
   
   b. **Related ME Program Outcomes:**  
      A1. Engineering Fundamentals; B3. Prof/Ethical Responsibility;  
      A3. Experimental Skills; B5. Life-Long Learning;  
      A4. Modern Engr Tools; C1. Leadership;  
      A5. Design Skills; C2. Global Engineering Skills;  
      A6. Impact of Engr Solns; C3. Innovation;  
      B1. Communication Skills; C4. Entrepreneurship  
      B2. Teamwork Skills

7. **LIST OF TOPICS:** See following page.

**PREPARED BY:** J. Starkey  
**REVISION DATE:** June 18, 2013