KIN 335 Biomechanics
Fall 2003

Instructor: Peter F. Vint, Ph.D.
TA: Young Kwan Kim (YK)

General information

• Office Hours
  – M, F 7:30-8:30 am in the classroom
  – by appointment

• Phone Numbers
  – Cell: 480-215-9614
  – Lab: 480-965-7528

• Web Page:
  http://www.public.asu.edu/~usavb/KIN335
On-line

- http://www.public.asu.edu/~usavb/KIN335
  - syllabus materials
  - updated calendar
  - lab handouts
  - practice problems
  - e-mail me with questions or problems
  - bonus assignments (perhaps)

Course overview

- Objectives
- Textbook and assigned readings
- Evaluation: 400 points
  - Three exams (including final): 100 pts each
  - Quizzes: 60 pts total (best 6)
  - Written lab assignments: 40 pts (10 pts each)
  - Any bonus points will be added to your earned point total
Grading

• Straight 90-80-70-60-below scale
• Penalties for late work:
  – 5% deduction per day for assigned work
  – 100% deduction for missed lab quiz
• Exam and quiz format
• Lab procedures

What is biomechanics?

• Bio = “life”
• Mechanics = “motion”
  – Kinematics: descriptors of motion
    • linear and angular displacement
    • linear and angular velocity
    • linear and angular acceleration
  – Kinetics: causes of motion
    • force
    • torque
Why study biomechanics?

- Improve performance
  - Technique analysis
  - Equipment design
  - Training
- Prevent injury and improve rehabilitation
  - Technique analysis
  - Equipment design

Example:
Factors affecting “strength”
Example:
Technique analysis

Figure 176. Sequence for analysis of a standing long jump.
Example:
Long jump

Figure 16-1. Contributions to the length of a hang-style long jump.

Amaze your friends!

- “...Important insights and tips into Plyometrics and POWERmetrics, as well as how quick and how high you jump are used to improve your efficiency of motion and decrease gravitational resistance.”

- “...Arms and legs can slightly influence the direction of your center of gravity once you are airborne by kicking and swimming around to change your body position in mid-flight.”
Nerd Quest

• Did Sammy Sosa benefit by corking his bat?
• Should all athletes attempt to reproduce the techniques of star athletes?
• Why do we have so many bi-articular muscles?
• What do the arms do when running, walking, or jumping?
• Can the effects of surgery be predicted before the operation?