Risk Assessment: Syllabus 2002

1. August 29 Introduction/Overview
   a. Overview and extent of the field
   b. Terminology
   c. Measurement
   d. Multi-factoral and multi-level nature of risk
   e. Issues and controversies; measurement, epidemiological, "confounders" (gender, age, class) and political/economic

   Homework: Kroemer & Grandjean, Chapters 1 & 2
   Exercise: person/machine system

2. September 5 Morphology & Physiology of Neuromuscular System; Normal Function
   a. Issues and Controversies
   b. Muscle morphology and physiology
      1) Mechanism of contraction
      2) length/tension relationship
   c. Tendon morphology
   d. Ligaments
   e. Nerve structure and physiology
      1) Nature of nerve impulse
   f. Bone & cartilage

   Homework: Putz-Anderson chapter; MSDs
   Armstrong et al model
   Other pathology readings

3. September 12 Don Peterson. Laboratory Methods for Quantifying Biomechanical Risk I:
   a. Infra-Red Digital Motion Capture
   b. Force Sensitive Resistors

4. September 19 Don Peterson. Laboratory Methods for Quantifying Biomechanical Risk II:
   a. Electromyography
   b. Accelerometry

5. September 26 MSD Disorders; Pathology of Neuromuscular System
   a. History of Definition and Recognition
   b. Extent of the MSD problem
   c. Musculo-tendonous Pathophysiology
   d. Neurological pathophysiology
   e. Bone and joint pathophysiology

   Homework: Metabolic Load reading; Chapter 3, Kodak Vol. 2
   Kroemer 6, 11

6. October 3 Metabolic Load; Cardio-respiratory physiology and energy consumption
   a. Lab work; measurement of energy consumption, rest times
   b. Work scheduling

   Homework: Epi and lab articles on biomechanical risk
   Kroemer, Chapter 3, 4, 5, 7
   Exercise: calculating metabolic load
   Section B from Health Effects section, OSHA

7. October 10 Risk Factors; Biomechanical
   a. Issues and Controversies:
      1) Exposure and outcome
      2) Measurement issues
      3) Terminology issues
      4) Work-relatedness
      5) Multifactoral causation
   b. Definition and identification of risk factors
   c. Definition and identification of modifiers
   d. Anthropometry design considerations
   e. Back anatomy and risk

   Homework: Kroemer pp 346-354 (vibration)
   ANSI vibration standard
   2 epidemiological articles: Bovenzi; Chetter et al.

8. October 17 Physical Risk Factors: Vibration
   Homework: Biomechanical Risk articles: Corlett, Armstrong, Karhu, RULA

9. October 24 Physical Risk Factors (continued); Measurement of Biomechanical Risk
   a. Types of measurement & their uses: Epidemiology, laboratory, psychophysical
      1) Questionnaire instruments; issues of self-report
      2) "Objective" instruments: checklists, maps
         a) RULA
         b) Posture Targeting
         c) PATH
      3) Computer-based measurement (review classes 3 & 4)

   Homework: readings on social and economic consequences
   Quiz next week

10. October 31 Social and Economic Costs of MSDs (TM) (Ergonomic Standards and Control Strategies (Quiz)
    Ergonomic Programs , Multi-factoral and multi-level interventions
    Homework: Bongers article, , Kroemer, Chapter 12-16

11. November 7 — Risk Factors: Psychosocial and Organizational
Homework: Kroemer chapters 12-16,
Faucett article
Excerpts from Healthy Work

12. November 14 — Risk Factors: Identifying and Quantifying Psychosocial Risk
Homework: OSHA Standard Excerpts
Kodak books, Cox,
Kroemer 177-190 (10); 219-239 (13, 14)

13. November 21 — Macro-Level Risk Factors
Standards
Homework: skim Kroemer 18, 20, 21, also pp 319-345

(November 28; Thanksgiving)

14. December 5 — a. Anne Bracker: Environmental Ergonomics: Illumination, temperature, humidity, noise, chemicals
b. Human Factors & Mental Workload

15. December 12 — Class Project Presentations