

## Course Syllabus

### **IE\_Technical Elective - Introduction to Ergonomics**

Sichuan University-Pittsburgh Institute

Fall 2020

Section 2

Tuesday 8:15 am – 11:00 am, Zone 3, 3-101

#### **COURSE DESCRIPTION: (3 semester hours)**

This course provides a broad based introduction to ergonomics affording engineering students the necessary knowledge about human capabilities and limitations, such as anthropometry, anatomy, physiology, and psychology, essential for the design of work, equipment, interface, and the workplace to achieve optimal safety, efficiency, productivity, sustainability, and comfort.

#### **PREREQUISITES:**

None

#### **COURSE OBJECTIVES:**

- (1) to increase students' awareness of the demand for and the role of ergonomics in industrial engineering and occupational health
- (2) to acquaint students with basic knowledge in ergonomics that can be used to recognize and evaluate potential risks of occupational injuries
- (3) to offer students opportunities to apply ergonomic principles to design and redesign jobs, interfaces, and workstations to fit various individuals
- (4) to help students understand the breadth and scope of occupational ergonomics

#### **INSTRUCTOR:**

Ruoliang (Rio) Tang, PhD,

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Mobile: 19136151636

#### **TAs:**

TBD

#### **TEXT or REFERENCE BOOKS:**

- (1) **Kodak's Ergonomic Design for People at Work**, 2<sup>nd</sup> Edition., edited by Chengalur S.N., Rodgers S.H., and Bernard T.E., John Wiley and Sons Inc., 2003
- (2) **Introduction to Ergonomics**, 3<sup>rd</sup> Edition., Bridger, R.S., CRC Press, 2009

#### **OFFICE HOURS:**

Tuesday: 1 pm – 3 pm

Thursday: 12:30 pm – 1:30 pm

#### **ATTENDANCE:**

It is your decision whether or not to attend class. However, you are responsible for all materials covered in class. Please refer to student handbook for information on absence excuses. If you are absent for any non-excused reason, please obtain the handouts from Blackboard and contact your classmates for any pertinent material. **DO NOT** see the instructor for notes or handouts or a "review" of unexcused absences.

#### **EVALUATION:**

Students' performance will be evaluated base on attendance, homework assignments, a mid-term exam, and a final project. Students will choose either a research paper or a practical project for their final project. The final grade will be based on the **score**. The score is a number between 0 and 100 determined by

***Attendance 10% Homework: 10% Mid-term 40% Final Project: 40%***

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The final letter grade is determined from the following table.

A: 85 – 100	B: 70 – 85	C: 60 – 70	F*: < 60
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**\*academic misconduct can result in an "F" regardless of score**

Homework and computer assignments will be given in the lectures. Due dates for each assignment will also be posted to Blackboard. Homework assignments and reports must be typed and presented in a professional manner. Unless otherwise stated, homework assignments are to be completed on an individual basis. Homework assignments may require presentation to the class (a subset will be selected for class discussion – you should be prepared to present your work). Semester project reports require a written report and a final presentation to the class (or video presentation). Late work will receive a penalty of up to 10% per day. Work (presentations/exams) from unexcused absences cannot normally be made up. However, *at the instructor's discretion*, some work may be made up with penalty. You are responsible for ALL materials posted to Blackboard (assignments and lecture notes). These materials may include: papers, videos, lectures, HW problems/explanations, classmate presentations, and reference materials. Some optional/supplemental materials may also be posted to Blackboard. These optional materials will NOT be directly tested, but may represent extra credit questions on the exams. These materials are intended to supplement and enhance the materials presented in class and discussed in the text.

The lecture schedule shows the text material to be covered each class period. It is recommended that students read the text prior to the class lecture. Due dates, holidays, and exam dates are also listed. The schedule will be adhered to as closely as possible; however, some changes will undoubtedly be required (particularly to schedule any guest lecturers). Changes to the schedule (due dates, additional information provided, etc.) will be announced during the lecture period. You are responsible for noting these changes.

Extra credit may be earned (up to 2.5%). You can earn up to 1% by providing classroom demonstrations, props/models, or case studies. Participating and sharing ideas in Blackboard online forums can earn up to 1% and demonstrating an Ergonomic solution to a problem for someone else (at work, home, or play) can earn up to 1%.

### ACADEMIC HONESTY:

Students are responsible for all material covered as part of this class (including both graded and ungraded assignments posted on Blackboard). The work (homework, design projects, reports, and tests) submitted for grading should represent your individual effort. However, studying and working with your peers (on outside class assignments) is not only acceptable, but greatly encouraged. Study groups can provide an extremely valuable resource to students, and you are encouraged to form one.

Submitting work copied from others is considered academic misconduct. Plagiarism of ideas or work as well as giving or receiving unauthorized information on examinations is considered academic misconduct. **All academic misconduct will be dealt with severely** and may result in a course grade of "F." Refer to school policy and the student handbook for complete information on your rights and responsibilities as a student.

### ACCOMMODATIONS:

Students who need accommodations are asked to arrange a meeting during the first week of classes.

### COURSE SCHEDULE

WK1	Introduction to Ergonomics, Definition and History of Ergonomics
WK2	Ergonomics Design Philosophy
WK3	Applied Anatomy, Part I: General Descriptions
WK4	Applied Anatomy, Part II: Shoulder, Wrist, Elbow, Hand (A)
WK5	Applied Anatomy, Part II: Shoulder, Wrist, Elbow, Hand (B)
WK6	Applied Anatomy, Part III: Hip, Knee, Ankle, Foot (A)
WK7	Applied Anatomy, Part III: Hip, Knee, Ankle, Foot (B)
WK8	Mid-term Exam
WK9	Human Spine (Possible Guest Speaker)
WK10	Evaluation of Job Physical Demands, Part I
WK11	Evaluation of Job Physical Demands, Part II
WK12	Applied Anthropometry and Work-space Design
WK13	Hand Tool Design and Illumination
WK14	Possible Guest Speaker
WK15-18	Final Project Presentations