

# Technical Elective: Introduction to Ergonomics

## Fall 2024 Syllabus

### **Class:**

Time: Tuesday 8:15 am - 11:00 am,

Location: Zone 3, 3-104,  
Liberal Art Building, Jiang'an Campus

### **Instructor:**

Rong Yin, Ph.D.

Email: [rong.yin@scupi.cn](mailto:rong.yin@scupi.cn)

Office: North Zone 416  
SCUPI new building  
Jiang'an South Campus

### **TA:**

TBD

### **Office hours:**

Instructor:

- Right after each class in the classroom.
- Tuesday 13:30 - 16:30.

TA:

- TBD and by appointment
- Online via QQ Group or Tencent Meeting

**Credit Hours:** 3

### **Notes:**

- This syllabus is subject to change. Please follow updates announced during class and posted on Blackboard website. Lecture slides, reading assignments, course grades and announcements will also be provided through Blackboard.
- When emailing the instructor, please include "Introduction to Ergonomics" in the subject field of your message. Please use your university email account ([student\\_ID\\_number@stu.scu.edu.cn](mailto:student_ID_number@stu.scu.edu.cn)) if possible, since emails from other accounts might be stopped by the SCU spam filter. Thanks!
- Students are responsible for all the course materials delivered in class or posted on BB. If you have to miss any classes, please make sure you get relevant information/documents/handouts from your classmates and peers.

### **Website & tools:**

- Blackboard
- Tencent Meeting for online lectures when necessary

### **Course Description:**

This course is designed to offer a comprehensive introduction to ergonomics, equipping engineering students with the essential knowledge regarding human capabilities and limitations. Topics include anthropometry, anatomy, physiology, and psychology, all of which are crucial for the design of work, equipment, interfaces, and workplaces aimed at achieving optimal safety, efficiency, productivity, sustainability, and comfort.

### **Course Objectives:**

- To enhance students' awareness of the demand for and application of ergonomics within industrial engineering and occupational health.
- To familiarize students with foundational ergonomics knowledge to identify and assess potential risks associated with occupational injuries.
- To provide students with opportunities to apply ergonomic principles in the design and redesign of jobs, interfaces, and workstations to accommodate diverse individuals.
- To foster an understanding among students of the extensive scope and applications of occupational ergonomics.

### **Learning Outcomes:**

- An ability to identify, formulate, and solve complex engineering problems by applying principles of engineering, science, and mathematics.
- An ability to apply engineering design to produce solutions that meet specified needs with consideration of public health, safety, and welfare, as well as global, cultural, social, environmental, and economic factors.
- An ability to communicate effectively with a range of audiences.
- An ability to recognize ethical and professional responsibilities in engineering situations and make informed judgments, which must consider the impact of engineering solutions in global, economic, environmental, and societal contexts.
- An ability to function effectively on a team whose members together provide leadership, create a collaborative and inclusive environment, establish goals, plan tasks, and meet objectives.
- An ability to acquire and apply new knowledge as needed, using appropriate learning strategies.

## Course Prerequisites:

N/A.

## Textbook:

- Kodak's Ergonomic Design for People at Work, 2nd Edition., edited by Chengalur S.N., Rodgers S.H., and Bernard T.E., John Wiley and Sons Inc., 2003
- Introduction to Ergonomics, 3rd Edition., Bridger, R.S., CRC Press, 2009
- Other relevant readings posted on BB.

## Assessments:

The course grade will be determined as follows:

- Random In-class activities: 10%
- Homework: 20%
- Midterm exam: 30%
- Final project and presentation: 40%

## Grades:

Letter grades will be given as follows:

90.00 – 100.00 A	85.00 – 89.99 A-	80.00 – 84.99 B+	76.00 – 79.99 B	73.00 – 75.99 B-
70.00 – 72.99 C+	66.00 – 69.99 C	63.00 – 65.99 C-	60.00 – 62.99 D	0.00 – 59.99 F

**\*academic misconduct can result in an “F” regardless of %, such as cheating in exams**

## Homework:

Homework will be assigned regularly. Due dates for each assignment will also be posted to Blackboard. Homework and reports must be typed and professionally presented. All work will be submitted electronically through the Blackboard. Late submission will **NOT** be accepted. Students are responsible for correctly submitting the homework through Blackboard. Typically, you will be asked to write a **QQT**, including a **Q**uestion, a **Q**uotation, and **T**wo **T**alking points based on the assigned reading materials. More details about the QQT will be covered in class.

If you have any problems about your grades, please discuss the issues with me within **ONE week** from the grades are given. Any arguments about, for example, your first homework grades at the end of the semester will **NOT** be available.

## Exams:

There will be one midterm exam at the middle of this semester (**around week 8-10**). The exam will be **closed book and closed notes**. Any other materials are **NOT** allowed. If you miss an exam without prior notification, you will receive a score of **“ZERO”** for that exam except for medical emergency (with proof). Students who have not taken exams are not eligible for make-up exams. More details about the exam schedule and requirements will be covered in class. Early preparation for your exam is strongly recommended.

## Projects and Presentations:

Students will form groups to work on projects and presentations. You can build groups by your own if you wish. For each project, each group is required to submit a project report that properly summarize and discuss your work and findings, as well as providing your insights on project.

Beginning date and Due date of projects will be announced shortly during our following classes. The project provides you an opportunity to apply the methodologies and skills gained in this course to analyze practical problems. Each group member is required to actively participate and contribute equally to the projects. Each student may be asked to submit a peer evaluation form about the efforts of your peers in the project. All groups will submit their final project reports and present their projects at the end of this semester.

## Class Policy:

Class attendance is expected and important for your success in this course. Not keeping up with the course will hurt your grade in a general way. Valid excuses for absence may be accepted **before** class. Important dates and plans will be announced during class. Each student is responsible for all assigned work in class and for maintaining awareness of all announcements posted to Blackboard and all e-mails sent to his or her SCU e-mail address. It is the students' responsibility to obtain all class materials (e.g., handouts). **Video/audio recording is strictly prohibited** during class to maintain a free discussion atmosphere. Please silence your cell phones to prevent disturbing your classmates in class.

You are free in this course to discuss any aspect of the homework with anyone, such as your classmates and your friends, but the written responses must be your own. **Please be aware that all your submissions will go through tools for plagiarism issues.** Academic dishonesty will not be tolerated.

### **Academic honesty:**

Students are responsible for mastering all course material, including both graded and ungraded assignments posted on Blackboard. Work submitted for grading—such as homework, lab reports, design projects, and tests—should represent your individual effort. Studying and collaborating with peers on assignments outside of class is not only acceptable but also highly encouraged. Forming study groups can provide significant benefits, and you are encouraged to participate in them.

However, submitting work copied from others is considered academic misconduct. This includes plagiarism of ideas or work and the unauthorized exchange of information during examinations. All instances of academic misconduct will be addressed strictly and may result in a failing grade for the course. For full details on your rights and responsibilities, refer to the school's policy and the student handbook.

### **Violations include, but are not limited to:**

- Cheating on an examination, such as copying from another's paper, using unauthorized notes or calculators, or giving or receiving unauthorized assistance, including trading examinations, whispering answers, passing notes, or using electronic devices to transmit or receive information (e.g., copying another student's Word, PowerPoint, or Excel assignments).
- Violation of proctor guidelines and compromising the "chain of custody" by copying or sharing exam questions before or after an exam is considered cheating and may result in failure of the course.

### **Plagiarism:**

- Plagiarism involves using someone else's work without proper attribution. This includes using ideas, phrases, papers, laboratory reports, computer programs, or data—whether copied verbatim or paraphrased—that you did not originate. Sources can include published works such as books, movies, websites, and unpublished works like other students' papers or material from research services. In short, presenting someone else's work as your own is academically dishonest. To avoid plagiarism, clearly indicate the source of any major or unique idea or wording that you did not create, either through footnotes or within the text itself. Sources must always be cited, whether the material is quoted directly or paraphrased.

### **Unauthorized Collaboration:**

Unauthorized collaboration involves working with or receiving help from others on graded assignments without the specific approval of the instructor. If unsure, seek permission from the instructor before collaborating. Students are encouraged to learn from one another: form study groups and discuss assignments. However, each assignment must be individual work unless specifically stated and submitted as a group assignment.

- Copying another student's assignment and submitting it as your own is plagiarism.
- You are encouraged to discuss your assignments with one another, but all assignments must be completed individually unless explicitly designated as a "team" assignment.

## **Tentative Course Schedule**

**\*\*\*Please be aware that the following schedule is subject to change\*\*\***

WEEK1	Introduction to Ergonomics, Definition and History of Ergonomics
WEEK2	Ergonomics Design Philosophy
WEEK3	Applied Anatomy, Part I: General Descriptions
WEEK4	Applied Anatomy, Part II: Shoulder, Wrist, Elbow, Hand (A)
WEEK5	Applied Anatomy, Part II: Shoulder, Wrist, Elbow, Hand (B)
WEEK6	Applied Anatomy, Part III: Hip, Knee, Ankle, Foot (A)
WEEK7	Applied Anatomy, Part III: Hip, Knee, Ankle, Foot (B)
WEEK8	Mid-term Exam (TBD, Check announcement in class and BB)
WEEK9	Human Spine (Possible Guest Speaker)
WEEK10	Evaluation of Job Physical Demands, Part I
WEEK11	Evaluation of Job Physical Demands, Part II
WEEK12	Applied Anthropometry and Work-space Design
WEEK13	Hand Tool Design and Illumination
WEEK14	Possible Guest Speaker (TBD)
WEEK15-17	Final Project Presentations

TBD: to be determined