

**Department of Industrial Engineering
and Logistics Management**

**IEEM 213: ERGONOMICS AND SAFETY MANAGEMENT
(Fall Semester 08 Course Vector: 2-0-3:3)**

**Dr Richard H.Y. So
Rm5540, Tel: 2358 7105,
E-mail: rhyso@ust.hk**

Aims:

To examine how knowledge about humans and their capabilities will (i) assist the design of workplace; (ii) optimize the health, safety and well being of workers; and (iii) improve productivity.

After this course, students should have the following learning outcomes:

- (i) the ability to identify workplace and work process in which further optimization can be performed using knowledge about the users and the task(s);
- (ii) the ability to know what ergonomic data are available; where to find them; and how to use them to improve safety; and
- (iii) the ability to use knowledge and research technique in ergonomics to help industry to respond to the Noise at Work regulation, Manual Handling Operation regulation, and Display Screen regulation in HKSAR

	Session 2	Session 1
Lectures:	Tue, 11:00 - 12:50, LtE	Tue, 11:00 - 12:50, LtE
Labs:	Tue, 15:00 - 17:50, IS Lab.	Fri, 17:00 - 19:50, IS Lab.

Office hours: appointments via email (rhyso@ust.hk)

Reference Text:

Full lecture notes will be put in the course Web site and library reserve. The following two books will be used as reference texts (1 copy each will be put in the reserve collection):

Human Factors in Engineering and Design by Sanders, M.S. and McCormick, E.J. 7th Edition (International), McGraw-Hill, Inc. 790 pages [in Reserve]
(HKUST bookstore - about HK\$170.0).

A Guide to the Ergonomics of Manufacturing by Martin Helander. 1995 Edition. Taylor & Francis, 205 pages (HKUST bookstore – about HK\$280.0) [in Reserve]

Supplementary Reading:

Chaffin, D.B. and Andersson, G.B. (1991) Occupational Biomechanics. John Wiley & Sons, ISBN 0-471-60134-9. (QP301.C525 1991) [The 1999 edition is in the reserve]

Pheasant, S. (1986) Bodyspace: anthropometry, ergonomics. Taylor & Francis, ISBN 0-85066-352-0. (TA166.P49 1988) [in Reserve]

Berger, E.H. (1986) Noise and hearing conservation manual. American Industrial Hygiene Association. ISBN 0932627-21-8. (TD892.N64 1986) [in Reserve]

Course Grading:

Mid-Term Exam	30%	(Open-book exam.)
Final Exam	40%	(Open-book exam.)
Lab assignments	25%	(NO copying)
Class & Lab Participation	5%	

Total:	100%	

Course Syllabus (Below is schedule for lectures only – there will be another lab schedule maintained by the TAs)

Week	Topic	Corresponding Labs
Wk1 Tue Fri 3/9	Topic 1: Introduction to Ergonomics	No lab. in Wk1
Wk2 Tue 7/9 Fri 10/9	Topic 2: Design of Experiment and Applied Statistics	Lab#1-Part A
Wk3 Tue 14/9 Fri 17/9	Topic 3: Environment design I - Noise at work - noise measurement - human hearing - noise at work regulation - noise assessment	Lab#1-Part B
Wk4 Tue 21/9 Fri 24/9	Topic 3 continued.	Lab#2 – Noise at Work in Wk 4,5,6,7 (see rota)
Wk5 Tue 28/9 Fri 1/10	Topic 3 continued	Lab#2-Noise at Work in Wk 4,5,6,7 (see rota) No lab on Fri 1/10
Wk6 Tue 5/10 Fri 8/10	Topic 4: Workstation design – anthropometry - static and dynamic anthropometry - data representation - risks and criteria - some practical tips	Lab#2-Noise at Work in Wk 4,5,6,7 (see rota)
Wk7 Tue 12/10 Fri 15/10	Topic 4 continued	No lab on Tue Lab#2-Noise at Work on Fri (see rota)
Wk8 Tue 19/10 Fri 22/10	Midterm will be scheduled on Tue 19 Oct at 7pm	No lab in Wk 8
Wk9 Tue 26/10 Fri 29/10	Topic 4 continued	Lab#3-Workstation Design-Part I

Week	Topics	Corresponding Labs
Wk10 Tue 2/11 Fri 5/11	Topic 5: Task design I – workload on muscle - manual handling operations regulations in HK - muscle metabolism - physiological strain	Lab#3-Workstation Design-Part II
Wk11 Tue 9/11 Fri 12/11	Topic 5 continued.	Lab#4-Workload assessment in Wks 11, 12, and 13 (see rota)
Wk12 Tue 16/11 Fri 19/11	Topic 6: Task design II – workload assessment - work load assessment - work-rest cycle	Lab#4-Workload assessment in Wks 11, 12, and 13 (see rota)
Wk13 Tue 23/11 Fri 26/11	Topic 7: Environment design II – Lighting at work	Lab#4-Workload assessment in Wks 11, 12, and 13 (see rota)
Wk14 Tue 30/11 Fri 3/12	Topic 7 continued.	No lab.
Wks15,16	Study Break and Final Examination (See ARR's time table)	

Lab sessions (Lab schedule will be announced by TAs):

(No lab in Week 1)

Lab#1a: SAS and Applied Statistics (Part I in Wk 2)

Lab#1b: SAS and Applied Statistics (Part II in Wk3)

Lab#2: Noise at work assessment (see schedule – in Wks 4 to 7)

(No lab in Week 8 NB: mid-term in Wk8)

Lab#3a: Anthropometry: workstation design – Part I (Wk 9)

Lab#3b: Anthropometry: workstation design – Part II (Wk 10)

Lab#4: Safety with physical work (see schedule – in Wks 11 to 13)

=====

IMPORTANT NOTE

NB: Although you may not have lab. scheduled for some Tue or Fri (see rota), please **do NOT** pre-booked yourselves with other activities during your lab. time as these time slots are scheduled for IELM213. As the course progresses, the lab schedule may needed to be changed and you are expected to be available for the lab timeslots that you are currently registered in.

=====

==

NB: Lecture notes and lab instructions can be download from
“<http://www.ielm.ust.hk/dfaculty/so>” (username: ielm; password: ergonomics).