

Ryerson University
Department of Mechanical and Industrial Engineering

COURSE OUTLINE

IND 406 - ERGONOMICS AND SAFETY ENGINEERING

Prerequisite: (IND 303 or IND 301), CPS 125, MTH 141, MEC 222, MTH 240, MTL 200, PCS 211, PCS 213

Required Text: **A Guide to Human Factors and Ergonomics 2nd edition**
Martin Helander
Taylor & Francis, 2006
ISBN: 0-415-28248-9

Additional supplementary material will be provided via BLACKBOARD

Course Synopsis:

This course covers methods which equate human capabilities and limitations with functionality of displays, controls, hand tools, manual material handling systems, and the levels of environmental design factors such as illumination, sound and heat. Anthropometry is studied and applied in the workstation design. Elements of safety engineering such as exclusion and prevention design for reduction of human errors in the operation of machines, accident related behaviour models, analysis of data for reducing accidents and injuries, and occupational health and safety management aspects are introduced.

Course Evaluation:

Term Work	15%
Term Project & Presentation	25%
Midterm	20%
Final Exam	40%
Bonus Work	max 2.5%

Note:

All of the required course specific written reports/labs/assignments/tests will be assessed not only on their technical/academic merit, but also on the communication skills exhibited through these reports.

For free technical assistance with writing visit Ryerson's writing centre:
www.ryerson.ca/writing-centre.

Late Assignments will be penalised.

ACADEMIC MISCONDUCT

Committing academic misconduct, such as plagiarism and cheating, will trigger academic penalties, including failing grades, suspension and possibly expulsion from the University. As a Ryerson student, you are responsible for familiarizing yourself with the Student Code of Academic Conduct, which can be found online at:
<http://www.ryerson.ca/senate/policies/pol60.pdf>

Course Content:**Main Topics**

Chapter 1: Introduction to Human Factors and Ergonomics

Chapter 2: Cost Benefit Analysis

Chapter 3: Conducting a Human Factors Investigation

Chapter 4: Vision and Illumination Design

Chapter 5: Human Information Processing

Chapter 6: Design of Controls, Displays & Symbols

Chapter 7: Design of Human Computer Interaction

Chapter 8: Anthropometry

Chapter 9: Work Posture

Chapter 10: Manual Materials Handling

Chapter 11: Hand Tools

Chapter 12: Physical Workload and Heat Stress

Chapter 13: Noise and Vibration

Chapter 14: Ergonomics of Computer Workstations

Chapter 15: Training, Skills, and Cognitive Task Analysis

Chapter 16: Shift Work

Chapter 17: Design for Manufacture and Maintenance

Chapter 18: Accidents, Errors, Safety

Faculty Course Survey: Students will be required to complete this survey during the weeks of 10, 11 or 12.

Prepared by: _____
C.Searcy

Date: _____

Approved by: _____
S. Zolfaghari

Date: _____