

**Department of Public Health
Institute of Social & Cultural Studies
Faculty of Behavioral & Social Sciences
University of the Punjab, Lahore**

Course Outline

Programme	BS Workplace Health & Safety Promotion	Course Code	WHSP 205	Credit Hours	3
Course Title	Ergonomics				

WHSP 205- Ergonomics

Course Description

- The aim of this course is to let students understand the basic ergonomics and to enable them to understand that how certain postures and muscular position affect health

Course Objectives

Upon completing this course, students will be able to:

1. Increase awareness of the need for and role of ergonomics in occupational health.
2. Obtain basic knowledge in the application of ergonomic principles to design of industrial workplaces and the prevention of occupational injuries.
3. Understand the breadth and scope of occupational ergonomics

Course Content

1. Introduction to Ergonomics,

- Definition and History of Ergonomics,

2. Introduction to Systems Design and Task Analysis Definitions of ergonomics and its history

- Ergonomics in systems design, and steps to performing a task analysis.

3. Muscle Use and Anthropometry and Workspace Design

- Use of anthropometric data in ergonomics.
- Principles of workspace design, including seated work, standing work, work reaches and
- Working heights, the office environment and visual work.

4. Activity-related soft tissue disorders (ASTDs)

- Definition of astds, examples of astds accepted by WCB

- how injuries are adjudicated
- Pathology of disorders
- Psychosocial factors
- Risk factors (repetition, awkward posture, forceful exertions, hand-arm vibration, etc.)
- Defined, and guidelines in literature for risk factors.

5. Analysis of Risk of ASTDs in the Workplace Assessing a workplace for risk of ASTDs

- Various tools and techniques available qualitative to quantitative.
- Developing solutions to jobs with ASTD risks.
- Psychosocial and Organizational Aspects of Work Discussion of the influence of work organization and psychosocial factors such as control over work, supervisory support and skill discretion in the workplace

6. Analysis of Risk for Back Injuries in the workplace

- Mechanism of injury for back and shoulder overexertion injuries,
- compensation for such injuries,
- Major risk factors (eg. manual materials handling, awkward postures, prolonged standing and sitting, whole body vibration, etc).

7. Assessing the Risk of Back Injuries in the Workplace Assessing a workplace for risk of overexertion injuries

- Tools and techniques for quantifying injury risk (NIOSH, Snook tables, Mitel tables) - advantages and disadvantages.
- Developing risk control solutions for overexertion injury risk.

8. Skilled Work, Control-Display Design and Mental Activity;

- Shiftwork Stages of information processing,
- skilled behavior,
- Memory, attention, and stereotypes.

9. Analysis of information processing demands and minimizing cognitive overload and under-load

- Design of systems considering mental workload.
- Design of controls and displays, including coding and inspection.

10. Ergonomics Programs

- How to develop an ergonomics program?
- Overview of WCB Ergonomics Regulations.

Practical Contents

- Industrial visits to observe implementation of ergonomics concepts
- Ergonomics risk assessment and development and designing a workplace as per the ergonomics standards (Assignment)

Teaching-Learning Strategies

Teaching will be a combination of class lectures, class discussions, and group work. Short videos/films will be shown on occasion.

Assignments

The sessional work will be a combination of written assignments, class quizzes, presentation, and class participation/attendance.

Assessments and Examination

Sessional Work: 25 marks

Midterm Exam: 35 marks

Final Exam: 40 marks

Recommended Readings

1. Bridger, R.S. (2009). Introduction to Ergonomics, Third Edition. CRC Press.
2. Kroemer, K. H. (2008). *Fitting the human: Introduction to ergonomics*. CRC Press.
3. Konz, S. & Johnson, S. Work Design: Occupational Ergonomics (Paperback).
4. Feyen, R., Liu, Y., Chaffin, D., Jimmerson, G., & Joseph, B. (2000). Computer-aided ergonomics: a case study of incorporating ergonomics analyses into workplace design. *Applied ergonomics*, 31(3), 291-300.
5. Halpern, M. (1992). Prevention of low back pain: basic ergonomics in the workplace and the clinic. *Baillière's clinical rheumatology*, 6(3), 705-730.
6. Corlett, E. N., & McAtamney, L. (1988). Ergonomics in the Workplace. *Physiotherapy*, 74(9), 475-478.
7. Reinhold, K., Tint, P., Tuulik, V., & Saarik, S. (2008). Innovations at workplace: improvement of ergonomics. *Engineering economics*, 60(5).
8. Afroz, S., & Haque, M. I. (2021). Ergonomics in the workplace for a better quality of work life. In *Ergonomics for Improved Productivity: Proceedings of HWWE 2017* (pp. 503-511). Springer Singapore.