**EQUIPMENT AND MACHINE MUSCULOSKELETAL HAZARDS (7444)**

**ELECTORICAL AND FIRE HAZARDS**

***Supplementary Material***

***Spring, 2025***

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**ALLAMA IQBAL OPEN UNIVERSITY**

Department of Environmental Design, Health & Nutritional Sciences

**ALLAMA IQBAL OPEN UNIVERSITY**

*Department of Nutritional Sciences & Environmental Design*

**Course: Equipment and Machine-related Musculoskeletal Hazards (7444) (EDHN6009)**

**Semester: Spring 2025 Credits: 3(3+0)**

**Level: PGD**

### Course Brief

In order to understand the course content it is vital to know its aims and objectives properly, let’s go through its aims and objectives first.

**Course Objectives**

1. To learn the core concept of Musculoskeletal Disorders (MSD).
2. Imparting factors contributing to MSD and its impacts on the health of users & Mitigation strategies.
3. To develop skills for documentation & evaluation of MSD events and developing records management.

**COURSE OUTLINES**

**REFERENCE BOOKS:**

1. Niskanen, T. (2015). Integrated Occupational Safety and Health Management.

2. Alston, F., & Millikin, E. J. (2015). Guide to Environment Safety and Health Management: Developing, Implementing, and Maintaining a Continuous Improvement Program. CRC Press.

**Unit — 1: Work related upper limb disorders:**

1.1 Musculoskeletal Disorders (MSD) and Work related upper-limb Disorders

1.2 MSD Risk Factors

1.3 Matching the Workplace to Individual Needs

1.4 Control Measures

**Unit — 2: Manual Handling Hazards:**

2.1 Common Types of Manually Handling Injury

2.2 Assessing Manually I-kindling Risks

2.3 Avoiding or Minimizing the Manually Handling Risks

2.4 Efficient Movement Principles

**Unit —3: Manually Operated Powered Load Handling equipment:**

3.1 Hazards and Safe Use of Manually Operated Load-Handling Equipment

3.2 Powered Load-Handling Equipment

3.3 Requirements for Safe Lightning Operations

3.4 Requirements for Statutory Examination of Lifting Equipment

**Unit — 4: lland Tools and Portable Power Tools:**

4.1 Hazards and Controls for Hand Tools

4.2 Hazards and Control for Portable Power Tools

4.3 Training

4.4 Reporting systems

**Unit — 5: Machinery hazards:**

5.1 Mechanical Ilazards

5.2 Non-Mechanical Hazards

5.3 Issues of non-compliance

5.4 Health concerns and safety

**Unit - 6: Control Measures for Machinery Hazards:**

6.1 Machinery Safeguarding Methods

6.2 Specific Machinery Examples-Hazards and Control Measures

6.3 Requirements for Guard and Safety Devices

6.4 Control measures

**Unit — 7: Other General Requirements for Work Environment:**

7.1 Preventing Access to Dangerous Parts of Machinery

7.2 Restricting Use

7.3 Maintenance Requirements

7.4 Monitoring

7.5 Equipment Controls and Environmental Factors

**Unit — 8: Training and Education:**

8.1 Types of Work Equipment

8.2 Suitability

8.3 Information

8.4 Instruction and Training

**Unit — 9: Follow up procedure:**

9.1 Monitoring and Assessment

9.2 Documentation

9.3 Evaluating Risk Factors

9.4 Control Measures

**Details of the Course**

**Unit no. 1** discusses upper limb Musculoskeletal Disorders during work.

**Unit no. 2** explains different types of manual handling hazards.

**Unit no. 3** describes the safe use of manually operated heavy load and equipment handling.

**Unit no. 4** explains hand tool control and the hazards related to it.

**Unit no. 5** discusses the hazards related to Machinery.

**Unit no. 6** helps to understand the control measures for machinery hazards.

**Unit no. 7** expresses the general requirements for the work environment and identifies the factors that help to control equipment.

**Unit no. 8** focuses on training and education related to work equipment and its suitability.

**Unit no. 9** demonstrates the follow-up procedure related to monitoring, assessment, and documentation for evaluating risk factors.

This course will, therefore, address these concerns with a focus on how these accidents can be avoided and mitigated through design and monitoring.

**Assignments**

The course includes two assignments, which are compulsory for successful completion of the whole course. Each assignment is of 100 marks and out of these students obtaining 50 marks will be declared passed.

**Assignments no. 1** and **2** are theory-based assignments and must be submitted through the online Aaghi LMS portal before the due date. The schedule for submitting the assignment will be provided accordingly. The tutor will upload the assignment marks online on the Aaghi portal as well.

**Final Examination**

At the end of the semester there will be a final examination, all the students will be expected to take this examination in the examination halls especially established for this purpose. For any queries, you can write to the course/program coordinator. Suggestions for improvement will also be welcomed.

We wish you all the best.

**Programme Coordinator**

**Department of NS & ED**

**AIOU, Islamabad**

**ALLAMA IQBAL OPEN UNIVERSITY**

**Department of Environmental Design, Health & Nutritional Sciences**

**WARNING**

1. **PLAGIARISM OR HIRING OF GHOST WRITER(S) FOR SOLVING THE ASSIGNMENT(S) WILL DEBAR THE STUDENT FROM THE AWARD OF DEGREE/CERTIFICATE IF FOUND AT ANY STAGE.**
2. **SUBMITTING ASSIGNMENT(S) BORROWED OR STOLEN FROM OTHER(S) AS ONE’S OWN WILL BE PENALIZED AS DEFINED IN THE “AIOU PLAGIARISM POLICY”.**

**Course: Equipment and Machine-related Semester: Spring, 2025**

**Musculoskeletal Hazards (7444)**

**Level: PGD**

## **Please read the following instructions for writing your assignments. (AD, BS, BEd, MA/MSc, MEd) (ODL Mode).**

1. All questions are compulsory and carry equal marks but within a question the marks are distributed according to its requirements.

2. Read the question carefully and then answer it according to the requirements of the questions.

3. Avoid irrelevant discussion/information and reproducing from books, study guides or allied material.

4. Handwritten scanned assignments are not acceptable.

5. Upload your typed (in Word or PDF format) assignments on or before the due date.

6. Your analysis and synthesis will be appreciated.

7. Late assignments can’t be uploaded at LMS.

8. The students who attempt their assignments in Urdu/Arabic may upload a scanned copy of their handwritten assignments (in PDF format) on University LMS. The size of the file should not exceed 5MP.

**Total Marks: 100**   **Pass Marks: 40**

**Assignment No. 1**

**(Units: 1-4)**

Q.1 Define Musculoskeletal Disorders (MSD). How can workplace ergonomics help in reducing the risk of upper limb disorders? (20)

Q.2 How can workplace ergonomics help in reducing the risk of upper limb disorders? What control measures can be implemented to prevent MSDs in the workplace? (20)

Q.3 What are the most common types of manual handling injuries in the workplace? What are some strategies for minimizing manual handling risks? (20)

Q.4 How does powered load-handling equipment reduce workplace risks? What are the statutory requirements for examining lifting equipment? (20)

Q.5 How can portable power tool hazards be controlled in the workplace? Why is training important for workers using hand and power tools? (20)

**Total Marks: 100 Pass Marks: 40**

**Assignment-2**

**(Units: 5-9)**

Q.1 What are the main mechanical hazards associated with machinery? How do non-mechanical hazards impact workplace safety? (20)

Q.2 What are the key methods of safeguarding machinery to prevent accidents? Why is it important to have safety guards on machinery? (20)

Q.3 How does regular maintenance contribute to workplace safety? What factors should be monitored to ensure a safe work environment? (20)

Q.4 What is the importance of continuous monitoring and assessment in workplace safety? How does documentation contribute to maintaining a safe work environment? (20)

Q.5 Select the industry in your area and highlight the risk factors associated with machine as well as manual handling. Suggest control methods to overcome these risks. Provide your recommendations with reference to your case study. (20)

**General Instructions**

Assignment 2, Q 5 is of a practical nature, you have to prepare a presentation and present it to your tutors.

The presentation component is mandatory for all the students. You cannot sit in the final examination without completing this project and presenting it.

Your presentation should cover both theoretical and practical components.

You should prepare slides or other illustrative material for effective presentation.

You are advised to consult with source material frequently as you undertake your design project. If you need any guidance you may contact your tutor or write to the Program / Course Coordinators.

**Marking Guide**

It is anticipated that the tutors mark the assignments carefully and follow a similar marking standard for all the students. Please follow the guidelines below:

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| S. No. | Assignment Number | Component | Marks | Total Marks |
| 01 | 01 | Theoretical Questions | 100 | 200 |
| 02 | 02 |  | 100 |
| 03 |  | Presentation | Presentation and  attendance is mandatory |  |
|  |  | Attendance | 70% |

Teachers are expected to stick to the guidelines provided to maintain standardization and uniformity.