

# MSE2243: WORKSHOP PRACTICE

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## Effective Term

Semester A 2025/26

## Part I Course Overview

### Course Title

Workshop Practice

### Subject Code

MSE - Materials Science and Engineering

### Course Number

2243

### Academic Unit

Materials Science and Engineering (MSE)

### College/School

College of Engineering (EG)

### Course Duration

One Semester

### Credit Units

3

### Level

B1, B2, B3, B4 - Bachelor's Degree

### Medium of Instruction

English

### Medium of Assessment

English

### Prerequisites

Nil

### Precursors

Nil

### Equivalent Courses

AP2243 Workshop Practice

### Exclusive Courses

Nil

## Part II Course Details

### Abstract

To train students on materials related hardware design, computer-aided measurement and instrumentation, and advanced level of data analysis. To facilitate students' learning with project-oriented modules.

### Course Intended Learning Outcomes (CILOs)

CILOs	Weighting (if app.)	DEC-A1	DEC-A2	DEC-A3
1	Describe materials commonly used in industry and the associated manufacturing processes.		x	
2	Describe commonly used industrial inspection, testing, and quality control procedures.		x	
3	Demonstrate industrial practices with modern and computer-aided equipment and the tools used to achieve good productivity.		x	
4	Gain a conceptual overview of the need for good husbandry, well-planned workshop layouts, and codes of behaviour in terms of industrial discipline.		x	
5	Gain a conceptual overview of the general types of industrial safety hazards that exist and the factors involved with designing and implementing good industrial safety procedures.			x
6	Gain a conceptual overview of the need for good industrial communications and the factors involved in effective man-management.			x

#### A1: Attitude

Develop an attitude of discovery/innovation/creativity, as demonstrated by students possessing a strong sense of curiosity, asking questions actively, challenging assumptions or engaging in inquiry together with teachers.

#### A2: Ability

Develop the ability/skill needed to discover/innovate/create, as demonstrated by students possessing critical thinking skills to assess ideas, acquiring research skills, synthesizing knowledge across disciplines or applying academic knowledge to real-life problems.

#### A3: Accomplishments

Demonstrate accomplishment of discovery/innovation/creativity through producing /constructing creative works/new artefacts, effective solutions to real-life problems or new processes.

### Learning and Teaching Activities (LTAs)

LTAs	Brief Description	CILO No.	Hours/week (if applicable)	
1	Lecture/Tutorial	Students will engage in formal lectures to gain knowledge on the key concepts involving safety precautions, engineering practices, and others required in this practical workshop training.	1, 2, 3, 4, 5, 6	20

2	Laboratory	Students will participate and apply the knowledge from lectures in different laboratory modules.	1, 2, 3, 4, 5, 6	140
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**Assessment Tasks / Activities (ATs)**

ATs	CILO No.	Weighting (%)	Remarks ("- " for nil entry)	Allow Use of GenAI?	
1	Attendance and Task Completeness	3, 4	50	Requires 100% attendance to complete all the assigned tasks for the practical training.	No
2	Lab Notebook	1, 2, 3, 4, 5, 6	50	Students need to submit their lab notebooks to demonstrate their proficient engineering training towards the development of professional material engineers.	No

**Continuous Assessment (%)**

100

**Examination (%)**

0

**Assessment Rubrics (AR)****Assessment Task**

1. Attendance

**Criterion**

100 % attendance without any tardiness for the task completion

**Excellent (A+, A, A-)**

No tardiness

**Good (B+, B, B-)**

Slight tardiness

**Fair (C+, C, C-)**

Moderate tardiness

**Marginal (D)**

Significant tardiness

**Failure (F)**

Not 100% attendance

**Assessment Task**

## 2. Lab Notebook

**Criterion**

Demonstrate the development towards professional material engineers

**Excellent (A+, A, A-)**

High

**Good (B+, B, B-)**

Significant

**Fair (C+, C, C-)**

Moderate

**Marginal (D)**

Basic

**Failure (F)**

Not even reaching the marginal level

**Part III Other Information****Keyword Syllabus**

- Hardware design (60 hours)  
Including both mechanical and electronics design. Such as bench fitting and measurement, sheet metal work, lathe work, milling, joint design, welding, component recognition and soldering/desoldering, essentials in circuits, prototyping, printed-circuit-board assembly etc.
- Measurement and Instrumentation (40 hours)  
Including measurement theory, measurement and instrumentation technique, hardware communication method, programming, control interface design, and data acquisition approaches etc.
- Computer aided design (60 hours)  
Including CAD drawing, principle of engineering drawing, skills in computer -aided draughting to produce 2D and 3D drawing, data processing, curve fitting, and statistical analysis etc.

**Reading List****Compulsory Readings**

Title	
1	Information for Workshop Training, MSE2243, Department of Materials Science and Engineering (Lecture package distributed to each enrolled student)

**Additional Readings**

Title	
1	Md Abdul Maleque and Mohd Sapuan Salit, "Materials Selection and Design" , Springer 2013 (online access from SpringerLink).
2	Bishop, Robert H , "LabVIEW 2009 Student Edition" , Prentice Hall, Pearson Education, c2010 (available in CityU library)