**University of Management and Technology**

**Course Outline**

Course code: EF122L Course title: Materials Engineering Lab

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| Program | BS-Mechanical Engineering |
| Credit Hours | 1 |
| Duration | 1 semester |
| Prerequisites | None |
| Resource Person | Munim Shaukat |
| Counseling Timing  (Room# ) | Monday: 10 to 12  Tuesday:10 to 12  Wednesday:10 to 12 |
| Contact | 03354467010 |

**Chairman/ signature………………………………….**

**Dean’s signature…………………………… Date………………………………………….**

**Learning Objective:**

To understand various properties of materials and perform heat treatment process in LAB...

**Learning Methodology:**

In Lab I will give understanding in following topics and will perform experiments regarding these topics.

* Introduction to properties of materials
* Basic understanding of structures
* Practical performance on muffle furnace .
* Microscopic analysis

**Grade Evaluation Criteria**

Following is the criteria for the distribution of marks to evaluate final grade in a semester.

**Marks Evaluation Marks in percentage**

Lab reports 20%

Mid Quiz/Viva 20%

Final 60%

Total 100%

**Calendar of Course contents to be covered during semester**

**Course code :** EF 122L **Course title:** Materials Engineering Lab

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| --- | --- | --- |
| **Week** | **Course Contents** | **Reference Chapter(s)** |
| 1 | To draw layout of Engineering Materials Lab. | Lab Session 1 |
| 2 | To check the hardness of given specimen by using Rockwell hardness testing machine. | Lab Session 2 |
| 3 | To prepare metallurgical specimen for microscopic examination. | Lab Session 3 |
| 4 | To study microstructure of Mild steel and view it in microscope. | Lab Session 4 |
| 5 | To study microstructure of cast Iron and view it in microscope. | Lab Session 5 |
| 6 | To carry out annealing of steel and study microstructure changes in it. | Lab Session 6 |
| 7 | To carry out Normalizing of steel and study microstructure changes in it. | Lab Session 7 |
| 8 | Mid Viva /Quiz | Lab Session 8 |
| 9 | To carry out hardening of steel and study microstructure changes in it. | .  Lab Session 9 |
| 10 | To perform compression test of given specimen. | Lab Session 10 |
| 11 | To carry out tensile test of given specimen. | Lab Session 11 |
| 12 | To carry out cold working f non ferrous metal and study its effect on hardness. | Lab Session 12 |
| 13 | To perform electroplating on steel sheets. | Lab Session 13 |
| 14 | Final Viva. | Lab Session 14 |