**University of Management and Technology**

School of Engineering

Department of Electrical Engineering

**Course Outline**

Course code: **EE112** Course title: **Workshop Practice**

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| --- | --- | --- | --- |
| Program | BSEE | | |
| Credit Hours | 2 | | |
| Duration | One semester | | |
| Prerequisites | Nil | | |
| Resource Person(s) | **EE** | **IE/ME** | **Section** |
| Maryam Ali, Asma Umar  Ayesha Iqbal, Muhammad Shoaib  Ammar Akhlaq | Basit, Munim Shoukat  Ozair, Usman  Zaid, Saba Noor | A  B  C |
| Counseling Timing | See office window | | |
| Contact | [maryam.ali@umt.edu.pk](mailto:maryam.ali@umt.edu.pk)  [asma.umar@umt.edu.pk](mailto:asma.umar@umt.edu.pk)  [ayesha.iqbal@umt.edu.pk](mailto:ayesha.iqbal@umt.edu.pk)  [muhammad.shoaib@umt.edu.pk](mailto:muhammad.shoaib@umt.edu.pk)  ammar.akhlaq@umt.edu.pk | | |

**Chairman/Director signature………………………………….**

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

**Learning Objective:**

Upon completion of this Lab, students will be able to:

* Learn and recognize the basic tools of electric shop
* Learn about cables and earthing
* Learn series and parallel wiring, residential wiring, fluorescent wiring and stair-case wiring
* Learn and understand Proteus (ISIS and ARES)
* Learn thorough practical implementation of Printed Circuit Board (PCB) including ething and soldering
* Learn and practice various tools and jobs of machine, fitting and carpentry shop

**Learning Methodology:**

Software, Hardware, Participative, Viva voce

**Grade Evaluation Criteria**

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

**Marks Evaluation Marks in percentage**

Weekly Lab performance 40

Final Viva and Performance 60

Total 100

**Reading Material:**

Lab Manuals

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

**Course code:** EE112  **Course title:** Workshop Practice

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| **LAB** | **EXPERIMENT TITLE** | **TOPICS INCLUDED** |
| **Electric Shop** | | |
| 1 | Safety Precautions and Basic Tools of Electric Shop | -Safety Precautions in Electric Shop  -Electric shock and Treatment  -Tools used in Electric Shop |
| 2 | Introduction to Cables and Earthing | -Cables, their sizes and current ratings  -Switchgear used on domestic installations  -Earthing, its importance and methods of Earthing  -Measurement of resistance to earth an electrical equipment |
| 3 | Series and Parallel Wiring and Residential Wiring | -Series and Parallel Connections in Electrical circuits  -Residential house wiring using switches, fuse, indicator, lamp and energy meter |
| 4 | Fluorescent Lamp Wiring and Stair-Case Wiring | -Fluorescent lamp wiring  -Stair-Case wiring |
| 5 | Implementation of Circuits on PROTEUS (ISIS) | -Basic Circuit Implementation on Proteus (ISIS) |
| 6 | Exporting a Circuit to ARES and Drawing the PCB (Printed Circuit Board) Layout | -Basic Circuit Implementation and PCB Layout on Proteus (ARES) |
| 7 | Soldering Practice and Implementation of Circuits on PCB | -Practical Implementation of PCB  -Soldering Practice using General Circuit Components |
| **Machine Shop** | | |
| 1 | Safety Precautions and Basic Tools of Machine Shop | -Safety Precautions in Machine Shop  -Introduction and use of simple & precision measuring tools |
| 2 | Study of Machining Operations and Study of Lathe Machine | -Different machining operations  -Detailed study and sketching of Centre Lathe Machine and Accessories |
| 3 | Cutting Tools and Grinding Techniques | -Cutting Tools and their Grinding Techniques |
| 4 | Plain, Tapper Turning and Simple Screw Cutting | -Plain and Tapper Turning  -Simple Screw Cutting |
| 5 | Introduction of Shaper, Slotter, Planner, Pillar and Radial Drilling Machines | -Shaper, Slotter, Planner, Pillar and Radial Drilling Machines |
| 6-7 | To Make a Work Piece According to Given Dimensions | -Practical Implementation of the Study of Machine Shop |
| **Fitting Shop** | | |
| 1 | Safety Precautions and Basic Tools of Fitting Shop | -Safety Precautions in Fitting shop  -Use and care of fitter’s tools and sketching of Fitter’s Tools & Accessories |
| 2 | Introduction and Study of Power Hacksaw, Arbor Press, Bending and Shearing Machine | -Power Hacksaw  -Arbor Press  -Bending and Shearing machine |
| 3-4 | Hands on exposure to Metal Filing, Sawing and Drilling Operations | -Metal Filing  -Sawing  -Drilling |
| 5-6 | Hands on exposure to Die, Tap and Reamer Operations | -Die, Tap and Reamer Operations |
| 7 | Development and Manufacturing of Complex Sheet-metal Components | -Development and manufacturing of complex sheet-metal components such as funnel etc. |
| **Carpentry Shop** | | |
| 1 | Safety Precautions and Basic Tools of Carpentry Shop | -Safety Precautions in carpentry shop  -Use and care of carpentry tools and sketching of tools & accessories |
| 2 | Introduction and Study of CNC Router and Combined Planner | -CNC Router  -Combined Planner |
| 3 | Introduction to Timber, its Defects and Preservation Method | -Timber  -Its defects and preservation method  -Seasoning of timber |
| 4 | Study of Different Types of Wood Joints | -Different Types of Wood Joints |
| 5-6 | Hands on Experience on Wood Work | -Wood Work  -Joints by Sawing, Planning and Cutting |
| 7 | To make a Wooden Box | -Practical Implementation of the Study of Carpentry Shop |