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**DEPARTMENT OF ELECTRICAL ENGINEERING**

**Lab Descriptive File**

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| 1 | Lab Title | Workshop Practice |
| 2 | Course Code |  |
| 3 | Credit Hours | 1 |
| 4 | Pre-requisites |  |
|  5 |  Co-requisites |  |
| 6 | Semester | 2nd |
| 7 | Resource Person | Ms. Rimsha Musharraf |
| 8 | Contact Hours (Theory) | 00 |
| 9 | Contact Hours (Lab) | 48 |
| 10 | Office Hours  | 48 |
| 11 | Email | ramshakhan794@gmail.com |
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| 12 | Lab Outline as per Scheme of Studies ( SoS) |
| Introduction to various technical facilities in the workshop including mechanical and electrical equipment. Concepts in electrical safety, safety regulations, earthing concepts, electric shocks and treatment. Use of tools used by electricians, wiring regulations, types of cables and electric accessories including switches, plugs, circuit breakers, fuses etc., symbols for electrical wiring schematics e.g. switches, lamps, sockets etc., drawing80and practice in simple house wring and testing methods, wiring schemes of two-way and three-way circuits and ringing circuits, voltage and current measurements. Electric soldering and soldering tools; soldering methods and skills, PCB designing, transferring a circuit to PCB, etching, drilling and soldering component on PCB testing. |
| 13 | Lab Objectives as per SoS |
| Upon successful completion of all the labs, Student will be able to:1. Acquire the basic knowledge of Electric circuit, its components. Electrical Power System, process of Electrical power Generation, Transmission and Distribution.
2. To Explain Electrification System, how to get Electric supply both single and three phase from the Transformer, its protection
3. Acquire the basic knowledge about Electric Shocks, types and its effects on the human body. First Aid procedures.
4. To Solve simple electric wiring circuits for electrification of buildings, Selection of different components.
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| 14 | Books  |
| 1. Choudhury, "Elements of Workshop Technology", Vol. 1, MPP. 2. Chapman, "Workshop Technology", Part-I,II,III, CBS.  |
| 15 | Course Learning Outcomes (CLOs) |
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| Ser | CLO | Domain | Taxonomy Level | PLO |
| 1 | Acquire the basic knowledge of Electric circuit, its components. Electrical Power System, process of Electrical power Generation, Transmission and Distribution | Psychomotor | 1 | 1 |
| 2 | To Explain Electrification System, how to get Electric supply both single and three phase from the Transformer, its protection | Psychomotor | 2 | 2 |
| 3 | Acquire the basic knowledge about Electric Shocks, types and its effects on the human body. First Aid procedures | Psychomotor | 1 | 1 |
| 4 | To Solve simple electric wiring circuits for electrification of buildings, Selection of different components. | Psychomotor | 2 | 2 |

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| 16 | Marks Breakup  |
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| Lab Assessments | 10 |
| Lab Sessional Exams( Lab performance + Lab Assessments) | 20 |
| Lab Terminal Exam  (%Viva +%Project+%Paper) | 20 |
| Total (lab) | %50 |

Lab

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| Final marks | Lab marks \* 0.50 |

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| **19** | **Course Learning Outcomes (CLOs) and Assessment Plan (LAB)** |
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| CLOActivity  | CLO L1 | CLO L2 | CLO L3 | CLOL4 |
| Lab 1 |  C1 |  |  |  |
| Lab 2 | C1 |  |  |  |
| Lab 3 | C1 |  |  |  |
| Lab 4 | C1 |  |  |  |
| Lab 5 | C1 |  |  |  |
| Lab 6 | C1 |  |  |  |
| Lab 7 | C1 |  |  |  |
| Lab 8 | C1 |  |  |  |
| Lab 9 |  |  | C3 |  |
| Lab 10 |  | C2 |  |  |
| Lab 11 |  |  |  | C4 |
| Lab 12 |  |  |  | C4 |
| Term Project |  |  |  | C1, C4 |
| Session Test |  |  |  | C1,C2,C3, C4 |
| Final Lab paper |  |  |  | C1, C2, C3, C4 |
| Viva |  |  |  | C1, C2, C3, C4 |

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| **20** | **Lab Details** |
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| **Laboratory Resources** |
| * Hardware based
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| **21** | **Mapping of CLOs to PLOs**  |

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| PLOCLOs | PLO1 | PLO2 | PLO3 | PLO4 | PLO5 | PLO6 | PLO7 | PLO8 | PLO9 | PLO10 | PLO11 | PLO12 |
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| LAB CLO1 |  |  |  |  |  |  |  |  |  |  |  |  |
| LAB CLO2 |  |  |  |  |  |  |  |  |  |  |  |  |
| LAB CLO3 |  |  |  |  |  |  |  |  |  |  |  |  |
| LAB CLO4 |  |  |  |  |  |  |  |  |  |  |  |  |

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| **22** | **List of Experiment With Objectives as Per OBE Format**  |
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| Sr. No. | Statement | Taxonomy level | CLO | PLO |
|  | Introduction to Different Tools Used in Workshop | C2 | 1 | 1 |
|  | Study of Different Power Tools | P2 | 1 | 1 |
|  | Introduction to Breadboard  | P3 |  | 1 |
|  | Introduction to Veroboard, Soldering, De-soldering and Re-soldering of components on Veroboard | P3 | 1 | 1 |
|  | Soldering of a simple polarity tester on Vero board | P4 | 1 | 2 |
|  | Introduction to Drill Press | P2 | 1 | 2 |
|  | Introduction to Software Proteus (ISIS & ARES) | P2 | 1 | 2 |
|  | PCB Manufacturing: Etching of PCB layout, Drilling holes and soldering of components | P2 | 1 | 2 |
|  | Study of different Electrical terms, electrical hazards, electrical shocks and Treatment, Safety Regulations, Earthing concept and types of Wires | P2 | 3 | 2 |
|  | Study of different symbols for electrical wiring schematics e.g switches, lamps, sockets, etc. and Electrical Accessories including Switches, plugs, Circuit Breakers, Fuses etc | P2 | 2 | 2 |
|  | Control of single lamp with one switch on 220V single phase electricity source | P3 | 4 | 2 |
|  | Use of dimmer to control the light intensity of single incandescent bulb 220V single phase electricity source. | P3 | 4 | 2 |
|  | Control of multiple lamps in series combination on 220V single phase electricity supplied | P3 | 4 | 2 |
|  | Control of multiple lamps in parallel combination on 220V single phase electricity supplied | P3 | 4 | 2 |
|  | Term Project  |  |  |  |

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