	College of Engineering and Technology
	Department of Electrical Engineering
	Lesson Plan

COURSE CODE: EE-213
COURSE NAME: Electronic Devices and Circuits Lab
INSTRUCTOR: Engr. Ayesha Riaz
CREDIT HOURS: Theory = 0
Practical = 1
Total = 1
CONTACT HOURS: Theory = 0
Practical = 45
Total = 45

RELEVANT PROGRAM LEARNING OUTCOMES (PLOs):


The course is designed so that students achieve following PLOs:

- | | |
|--------------------------------------|-----------------------------------|
| 1 Engineering Knowledge: ■ | 7 Environment and Sustainability: |
| 2 Problem Analysis: ■ | 8 Ethics: |
| 3 Design/Development of Solutions: ■ | 9 Individual and Team Work: ■ |
| 4 Investigation: ■ | 10 Communication: ■ |
| 5 Modern Tool Usage: ■ | 11 Project Management: ■ |
| 6 The Engineer and Society: ■ | 12 Lifelong Learning: ■ |

COURSE LEARNING OUTCOMES:

Upon successful completion of the course, the student will be able to:

No.	Domain	Description
CLO-1	C2	Describe the knowledge based on lab experiments related to Different Semiconductor devices and Operational amplifiers.
CLO-2	P3	Construct and Analyze (characteristics, various configurations) different electronic devices like diodes, BJTs, FETs, MOSFETs and OP-AMP using hardware and Multisim software.
CLO-3	A2	Respond individually or as a team.


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LIST OF EXPERIMENTS:

Lab	Title
1	Introduction to Laboratory Equipment's.
2	Characteristics of Diode, half wave and full wave rectification.
3	BJTs Common Emitter input/output Characteristics and Operating Regions.
4	BJTs Common Base input/output Characteristics.
5	BJTs Common Collector input/output Characteristics.
6	BJT Voltage Divider & Emitter Feedback Configuration.
7	FET input/output Characteristics.
8	Characteristics of MOSFET in Enhancement Mode.
9	Characteristics of MOSFET in Depletion Mode.
10	MOSFET Digital-Gates Circuit.
11	Inverting and Non-Inverting Amplifiers behavior of Operational Amplifier.
12	BJTs Common Emitter Amplifier Configuration.
13	BJTs Common Base Amplifier Configuration.
14	Design Project.


Mapping of CLO's to PLO's:

Course outcomes	Program learning outcomes (PLO's)											
	1	2	3	4	5	6	7	8	9	10	11	12
CLO-1												
CLO-2												
CLO-3												

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Assessment Rubrics:

Performance	Exceeds Expectation (5-4)	Meet Expectations (3-2)	Does not meet Expectation (1)
1. Realization of Experiment	Selects relevant equipment to the experiment, develops setup diagrams of equipment connections or wiring.	Needs guidance to select relevant equipment to the experiment and to develop equipment connection or wiring diagrams.	Incapable of selecting relevant equipment to conduct the experiment, equipment connection or wiring diagrams are unrecognizable.
2. Teamwork	Actively engages and cooperates with other group members in an effective manner.	Cooperates with other group members in a reasonable manner.	Distracts or discourages other group members from conducting the experiment.
3. Conducting Experiment	Does proper calibration of equipment, carefully examines equipment moving parts, and ensures smooth operation and process.	Calibrate equipment, examine equipment moving parts and operate the equipment with minor errors	Unable to calibrate appropriate equipment and equipment operation is substantially wrong
4. Laboratory Safety Rules	Respectfully and carefully observes safety rules and procedures	Observes safety rules and procedures with minor deviation.	Disregards safety rules and procedures.
5. Data collection and Analysis	Plans data collection to achieve experimental objectives and a complete data collection. Conducts simple computations and statistical analysis using collected data.	Plans data collection to achieve experimental objectives and a complete data collection with minor error. Conducts simple computations and statistical analysis using collected data with minor error.	Does not know how to plan Data collection to achieve experimental goals and statistical analysis on collected data

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Assessment Criteria:

Lab reports/performance	60%
Quiz + assignment	10%
Semester Project	10%
End semester performance base assessment	20%
Total	100%

Written By (Lab Adviser)	Name with Sign	Engr. Ayesha Riaz
	Date	
Approved By (Instructor)	Name with Sign	Dr. Ateeq ur Rehman Shaheen
	Date	
Reviewed By (HOD)	Name with Sign	Dr. Ateeq ur Rehman Shaheen
	Date	