18UESL100/18UESL200 Basic Engineering Skills Lab (0-0-2) 1

Contact Hours: 25

Course Learning Objectives (CLOs):

The student is expected to acquire basic minimum engineering skills with hands on in multiple disciplines of engineering like Civil, Mechanical, Electrical, electronics, computer Science etc. Further, the student will come to know about the role of different streams of engineering in practical systems.

Course Outcomes (COs):

Description of the Course Outcome: At the end of the course the student will be able to:		**Mapping to POs(1,12)**		
		Substantial Level (3)	**Moderate Level (2)**	**Slight Level (1)**
CO-1	Recite the general Engineering principles, laws and applications		1,2	
CO-2	Perform skill exercises to implement simple engineering systems in Civil, Mechanical, Electrical, electronics, computer Science and demonstrate the working	4	3	9
CO-3	Use computer skills to generate/prepare technical write up/report.			10

PO's	**PO-1**	**PO-2**	**PO-3**	**PO-4**	**PO-5**	**PO-6**	**PO-7**	**PO-8**	**PO-9**	**PO 10**	**PO 11**	**PO 12**
Mapping Level	2.0	2.0	2.0	3.0					1.0	1.0		

Contents:

Skill Exercises:

1) Acquire the skills of soldering, develop scheme to charge battery

employing transformer & conversion circuits and make observations using suitable display equipment.

2) Acquire the skills of setting up of simple circuits with power control, measure electrical quantities, understand electrical behavior of different types of load along with safety and protection aspects.

3) Acquire the skills to set up a circuit to run 3 phase electrical motor and demonstrate the operation with load, record the speed and establish the relation between speed and load.

4) Acquire engineering skills to select sensors (temperature, flow, level etc.), develop an application set up to demonstrate the use of sensors.

5) To Calculate area of a given map/ plan

6) To understand and carry out plumbing activity

7) To prepare a building plan for given requirements

8) To make a fit from given raw material as given in the model drawing.

9) To make sheet metal model using GI sheet as given in development drawing.

10) Disassembling and assembling of components of a given system

Demonstration:

11) Demonstration of working of Public Address (PA) system, different electrical appliances, report generation using word, Excel and interfacing of computer peripherals (Demonstration only).

12) To determine water quality of the given sample of water

13) Demonstration of welding process

Reference Material/Books:

1) Write up prepared by the Departments

2) E. Hughes - Electrical Technology, 8th edition, Pearson, 2006.

Mode of carrying out the skill exercises:

1. There shall be three faculty members one each from Civil, Mechanical and Circuit stream (preferably from Electrical &Electronics Engineering department) to train the students.
2. The contents are developed taking inputs from Chemical, Civil, Mechanical, E&E, E&C, Computer Science &Engg., Information Science &Engineering.

3. There shall be 10 skill exercises and 2 demonstration sessions
4. Three exercises from Civil, three exercises from Mechanical and four exercises from circuit streams form the list of 10 exercises. One each from circuits and Mechanical / Civil will form demonstration list.
5. A common facility shall be created in the department of Mechanical Engineering to carry out this course.
6. Preparation to carry out all 10 exercises shall be done and kept ready for the students to work
7. A batch of about 35 students will come to this lab once in every week during the allotted time of 2 hrs as per the time table.
8. A batch will be divided in to 10 sub batches each batch consisting of 3 to 4 students
9. All the 10 exercises shall be implemented in cyclic fashion.
10. A total of three faculty members, one each from Civil, Mechanical and Electrical will train the students in their related skill exercise.
11. The students shall prepare the report on the skill exercises conducted using word / excel (computer skills) and submit at the end of the semester for evaluation.
12. There shall be Semester End Examination consisting of one examiner from Civil, one from Mechanical and one from Electrical Engineering. Preferably the examiners shall be the faculty involved in training the students.
13. The students are expected to wear boiler suit and should use insulated shoes.