

Course Title	Electronic Workshop
Course Code	EC202
Course Credit	Lecture : 00
	Practical : 01
	Tutorial : 00
	Total : 01

Course Learning Outcomes

After completing the course students will be able to:

- **Identify** basic Electronics Components and circuits.
- **Measure** various electronics quantities.
- **Gain** knowledge about the fundamentals of various electronics laws and Power regulator ICs.
- **Learn** troubleshoot methods in electronics circuits.
- **Know** steps for designing of Printed Circuit Board (PCB).
- **Know** various techniques of soldering and Desoldering.
- **Learn** various Simulation and PCB layout Tools.

Detailed Syllabus

Sr. No.	Name of chapter & Details
1.	Introduction of Datasheets IC78XX, IC79XX and LM317
2.	Component Identification Resistors and its value marking (colour coding) ,Capacitors and its value marking (colour coding), Diodes, Transistors, MOSFETS, Relays, ICs, Rotary potentiometer, Switches and wires.
3.	Component Testing Resistors, Diodes, Transistors, Relays, Switches and wires
4.	Soldering and Desoldering Types of soldering and desoldering.
5.	PCB Designing Steps of PCB Designing, Layout, Etching, Drilling, Mounting, Soldering
6.	Circuit Simulation tool Introduction, Component selection and Configuration, PCB schematic design, AC, DC, and Transient analysis.
7.	PCB Layout tool Introduction of toolbar, Preliminary consideration for design layout drawing.
8.	Circuit Troubleshooting Component fault finding, open circuit and short circuit fault finding

Instructional Method and Pedagogy:

- Laboratories will be conducted with the aid of multi-media projector, black board, OHP etc.
- Assignments based on course content will be given to the students at the end of each unit/topic and will be evaluated at regular interval.
- Surprise tests/Quizzes/Seminar will be conducted

Reference Books:

- J. B. Gupta, “*Electronics Devices and Circuits*”, 2nd Edition, S. K. Kataria & Sons Delhi, ISBN-81-85749-75-2, 2007.
- Nirupama guptaBobin, “*Electronics Design and Drawing*”, BPB Publication, ISBN 13-978-81-8333-110-4, 2008.
- R. S. Khandpur, “*Trouble shooting Electronics Equipment*”, 2nd Edition, Tata McGRAW HILL, ISBN-0-07-048357-4, 2005.

List of Circuit simulator and PCB layout tool:

Circuit Simulation tools:

- Multisim
- Pspice
- Tina
- Ngspice
- OSCAD circuit simulator

PCB Layout tools:

- Eagle
- Ultiboard
- OSCAD layout tool

List of Experiments

Subject Code : EC202

Subject Name: Electronics Workshop

Sr. No	Aim of experiment
1	To learn datasheet of 78XX and 79XX power regulator ICs.
2	To identify various electronic components.
3	To test various electronic components using Multimeter and CRO.
4	To perform soldering and disordering of various electronics circuits on general purpose PCB.
5	To design a special purpose PCB for power supply circuit.
6	To understand basics step of circuit simulation software and circuit layout tool.
7	To demonstrate Ohm’s law, KCL and KVL using Simulation tool.
8	To design multilayer PCB for variable power supply (LM317).
9	To learn troubleshooting of various electronic circuits: <ol style="list-style-type: none"> 1. Rectifiers 2. Star and Delta connection circuits 3. RC series and parallel circuits
10	To prepare Mini Project.