Kerala Technological university KTU First year B.tech Syllabus
for **EC110Electronics Engineering Workshop**

Course No. : EC110

Course Name: Electronics Engineering Workshop
L-T-P-Credits: 0-0-2-1

Year of Introduction: 2015

Course Objectives,Syllabus:

This course gives the basic introduction of electronic hardware systems and provides hands-on training with familiarization, identification, testing, assembling, dismantling, fabrication and repairing such systems by making use of the various tools and instruments available in the Electronics Workshop.

List Of Exercises / Experiments (Minimum Of 8 Mandatory)

Familiarization/Identification of electronic components with specification (Functionality, type, size, colour coding, package, symbol, cost etc. [Active, Passive, Electrical, Electronic, Electro-mechanical, Wires, Cables, Connectors, Fuses, Switches, Relays, Crystals, Displays, Fasteners, Heat sink etc.)

Drawing of electronic circuit diagrams using BIS/IEEE symbols and introduction to EDA tools, Interpret data sheets of discrete components and IC's, Estimation and costing.

Familiarization/Application of testing instruments and commonly used tools. [Multimeter, Function generator, Power supply, CRO etc.] [Soldering iron, De-soldering pump, Pliers, Cutters, Wire strippers, Screw drivers, Tweezers, Crimping tool, Hot air soldering and de- soldering station etc.]

Testing of electronic components [Resistor, Capacitor, Diode, Transistor, UJT and JFET using multimeter.]

Inter-connection methods and soldering practice. [Bread board, Wrapping, Crimping, Soldering - types - selection of materials and safety precautions, soldering practice in connectors and general purpose PCB, Crimping.]

Printed circuit boards (PCB) [Types, Single sided, Double sided, PTH, Processing methods, Design and fabrication of a single sided PCB for a simple circuit with manual etching (Ferric chloride) and drilling.]

Assembling of electronic circuit/system on general purpose PCB, test and show the functioning(Any Four circuits)

Fixed voltage power supply with transformer, rectifier diode, capacitor filter, zener/IC regulator.

LED blinking circuit using a stable multi-vibrator with transistor BC 107.

Square wave generation using IC 555 timer in IC base.

Sine wave generation using IC 741 OP-AMP in IC base.

RC coupled amplifier with transistor BC 107. 6. AND and NAND gates in diode transistor logic.

Familiarization of electronic systems (Any three systems)

Setting up of a PA system with different microphones, loud speakers, mixer etc.

Assembling and dismantling of desktop computer/laptop/mobile phones.

Coil/Transformer winding.

Identify the subsystems of TV, DTH, CCTV, Cable TV, CRO, Function generator etc.

Screen printing and PCB pattern transfer

Soldering & de-soldering of SMD using hot air soldering station.

Introduction to robotics- Familiarization of components (motor, sensors, battery etc.) used in robotics and assembling of simple robotic configurations.

Expected outcome

Student can identify the active and passive electronic components. Student gets hands-on assembling, testing, assembling, dismantling, fabrication and repairing systems by making use of the various tools and instruments available in the Electronics Workshop.