

OVER-VIEW

Add-on course on Manufacturing and repairing of LED Bulb

Offered by: Department of Electronics, Digboi College, Digboi

Course Details

1. Name of the course	Manufacturing and repairing of LED Bulb
2. Duration of the course	90 days
3. No of students enrolled	10
4. No of students Pass	10
5. Course coordinator	Dr. Nabadweep Chamuah

LED bulbs are electric lamps that produce light through light emitting diodes and are used in lighting fixtures. These contain a cluster of LEDs, which are mounted on a single base and are packed in diffuser lenses to spread light across a defined space. LED bulbs produce light approximately 90% more efficiently than incandescent bulbs. These bulbs are based on solid-state lighting, which emits the light from semiconductor chip, thereby generating lesser heat than incandescent bulbs. The useful life of these lamps is defined differently than other light sources such as compact fluorescent light (CFL) or incandescent bulbs. LED bulbs do not fail or burn out, instead they face lumen depreciation in which the brightness of the bulb decreases over time. The global LED bulbs market is expected to expand at a significant growth rate owing to the strict regulation norms regarding the banning of inefficient light bulbs.

Owing to the longer durability and higher efficiency it is expected that the light market will be occupied by LED bulb very soon. However, production of LED bulbs needs to increase, and cost should be reduced. Keeping this in mind the course is designed to train young people for production of LED bulb locally. It is believed that this course will help in generation of entrepreneur and energy conservation.

Objective(s) of the Course:

1. To understand the basics of power electronics and its usages in lighting controls, or LED power supplies and LED drivers.
2. To know about Special safety and handling precautions to be taken during LED Luminary testing.
3. Identify dysfunctional components through visual inspection and by use of multi-meter
4. To understand, various electronic & electrical components, materials and their specific properties & usages.

Syllabus:

Unit1: Basic Electronics: Identification of circuit components, Understanding the electrical properties of different components, Understand the functionality of coil, winding of coil, diode and its uses, Transistor, Biasing of transistor, Current amplification circuit, Designing of filter. Understand the functionality of multi-meter, Explain different modes of testing in multi-meter. Handling of regulated power supply, precautions dealing with AC & DC current.

Unit 2: SMT machine, reflow oven, Soldering of semiconductor devices, Manual screen printer, Soldering Iron, Soldering and Desoldering, AC to DC regulated power supply, AC to AC regulated power supply, LED Driver Tester.

Unit 3: Principal of illumination from a LED, properties of LED, identifying the reason of LED malfunctioning, various blocks of a LED, Analyzing the fault by approaching each block, Selection of alternate spare in case of unavailability of components. PCB Design.

EVALUATION PROCESS:

1. Written Examination
2. Practical and Viva voce
3. Attendance

At the end of the course a certificate will be provided to the students depending upon their performance in the evaluation process. Course Coordinator determines the grading of the students based on the evaluation process. The gradation in the certificate ranges from 'O' (for outstanding) to 'F' (unsatisfactory) in 10 points grading system.

J. Handique