Sree Narayana Mangalam College Maliankara

(Affiliated to Mahatma Gandhi University, Kottayam)

CERTIFICATE COURSE SYLLABUS

LED MAKING

Sree Narayana Mangalam College
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Objectives of the Course:

- To provide basic information about the LED working principle.
- To gain knowledge about various aspects of LED making.
- To familiarize students in hands on training (through practical sessions).
- To inculcate entrepreneurship skills in students.

Course Overview:

- Development of overall knowledge about different types of LEDs and its manufacturing techniques.
- Development of innovative skills in LED design and making.
- To understand new horizons of LED applications.

Duration of the course: 30 Hours (12 Hours Theory + 18 Hours Practical)

Module 1: Fundamentals of LED

Basic principles of light sources	(Theory: 1 hour)
Light measurement techniques and its units.	(Theory: 1 hour)
Series and Parallel Connection of LEDs	(Practical: 3 hours)
White light production from LED	(Practical: 2 hours)

Module 2. Designing of LED

Types of LEDs and light sources	(Theory: 2 hours)
Reliability parameters for LED designing	(Practical: 1 hour)
Design Fundamentals of LED Driver	(Practical: 2 hours)
LED switching using LDR	(Practical: 1 hour)
LED Lighting Design	(Practical: 1 hour)

Module 3. Testing & Safety Requirements of LED Lights

Standards of LED Lights	(Theory: 2 hours)
Testing requirements of LED Lights	(Theory: 2 hours, Practical: 5 hours)
Safety Requirement of LED Lights	(Practical: 3 hours)

Module 4. Benefits and Applications of LEDs

(Theory: 4 hours)

Medical applications
Commercial applications
Household applications

Suggested Readings

1. https://www.electronicshub.org/light-emitting-diode-basics/
2.https://m.littelfuse.com/~/media/electronics/design_guides/led_protectors/littelfuse_led_lighting_design_guide.pdf.pdf?la=en
3.https://www.energystar.gov/sites/default/files/asset/document/Lighting_Test_Methods_and_Standards-Jiao.pdf
4. https://fppn.biomedcentral.com/articles/10.1186/s43014-022-00086-0
5.https://www.ledinside.com/knowledge/2007/12/Advantages_and_weaknesses_of_LED_Application_200712
6. https://testbook.com/physics/uses-of-led
7. The Fundamentals and Applications of Light-Emitting Diodes, Govind B. Nair, Sanjay J. Dhoble, Elsevier 2020.