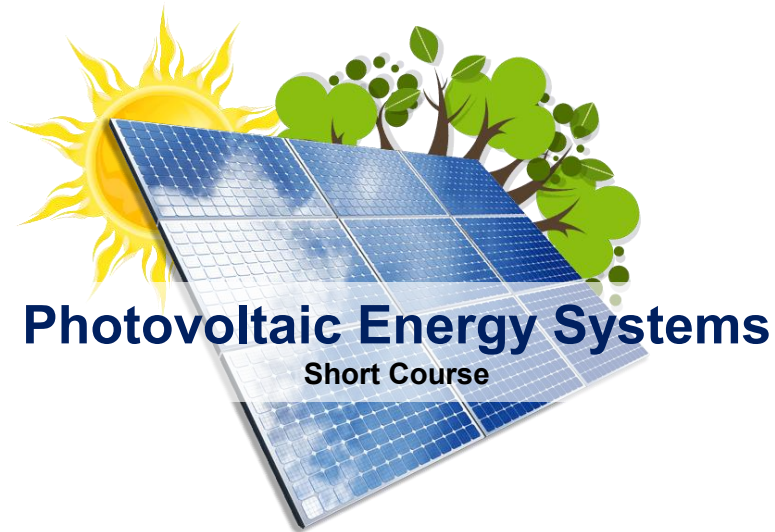


University of Mauritius



MQA APPROVED

## Photovoltaic Energy Systems Short Course

*This* course aims at introducing the principles of photovoltaics, principles of holistic PV systems' component sizing, selection, and safety requirements. Through a combination of highly interactive lecture sessions, experimental sessions with PV equipment, computer based simulations, case studies and site visits, the participants will gain in depth understanding of PV technologies and develop competence in PV energy systems. Participants will be provided with PV system design sheets and modelling tool.

**Duration** – 36 Hours (12 sessions of 3hrs), once a week on Saturdays (from 0900 – 1030 and 1100 - 1230)

**Certificate** - Certificate of Attendance issued by the University of Mauritius.

**Start Date – Saturday 16 January 2027**

**Venue** – Innovative Solar Energy Laboratory

**Resource Person** - Dr Yatindra Kumar Ramgolam

**Course Fee** – MUR 25,000

**Application Form Link:**

<https://forms.gle/CxRxbwr4hrX9zapa8>

**Application Deadline** – 15 Nov 2026

**Registration Deadline** – 15 Dec 2026



## Venue – Innovative Solar Energy Laboratory, University of Mauritius

### Tentative Planning

|           | 0900 - 1030       | 1030 - 1100 | 1100 - 1230 |
|-----------|-------------------|-------------|-------------|
| 16-Jan-27 | Lecture           | Tea break   | Lecture     |
| 23-Jan-27 | Lecture           | Tea break   | Lecture     |
| 30-Jan-27 | Lecture           | Tea break   | Lecture     |
| 13-Feb-27 | Lecture           | Tea break   | Lecture     |
| 20-Feb-27 | Lecture           | Tea break   | Experiment  |
| 27-Feb-27 | Lecture           | Tea break   | Lecture     |
| 13-Mar-27 | Lecture           | Tea break   | Lecture     |
| 20-Mar-27 | Lecture           | Tea break   | Lecture     |
| 27-Mar-27 | Lecture           | Tea break   | Lecture     |
| 03-Apr-27 | Site Visit + Demo | Tea break   | Case Study  |
| 10-Apr-27 | Case Study        | Tea break   | Case Study  |
| 17-Apr-27 | Lecture           | Tea break   | Case Study  |

# MQA APPROVED - Photovoltaic Energy Systems Short Course

| N | Topics                                                                                                                                                                                                                                                                                                                                                                          | Duration |
|---|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------|
| 1 | Need for Renewable energy and introduction to Photovoltaics<br>Status and evolution of Photovoltaics Globally and Locally<br>Solar cell technologies and evolution<br>Applications of Photovoltaics<br>Types of PV power systems (PVPS) and balance of system components                                                                                                        | 3 hrs    |
| 2 | Solar Engineering fundamentals<br>Sun path diagrams: Apparent motion of the sun<br>Estimating Solar Energy on horizontal and inclined planes<br>Sunshine hours, peak sun hours and sky clearness index<br>Sources of Solar energy data<br>Solar Maps – Solar energy and power variations in Mauritius<br>Mounting structures – Design configurations for optimised energy input | 3 hrs    |
| 3 | Technologies of Solar cells<br>Principle of operation<br>Electrical properties of Solar cells<br>Solar modules and arrays (Series /Parallel Connections)<br>Types of modules and technological characteristics<br>Reading cell/module datasheets<br>Cell efficiency tables                                                                                                      | 3 hrs    |
| 4 | Comparative analysis of commercially available cell technologies<br>Quality of Solar Panels and related standards<br>Effect of environment on cell/module performance and power output<br>Effect of shading, series and shunt resistance on electrical characteristics.<br>Protection Requirements for PV modules.                                                              | 3 hrs    |
| 5 | Balance of system (BoS) components: Module Level power electronics, Inverters, Charge Controllers, Battery Energy Storage, DC/AC switchgear.<br>Quality of BoS components.<br>Experimental session on PV technologies.                                                                                                                                                          | 3 hrs    |
| 6 | Introduction to System Design Standards and Best Practice for PV system Design<br><br>Regulatory Requirements<br>Grid CODEs/Promotion Mechanisms /Schemes                                                                                                                                                                                                                       | 3 hrs    |

| N  | Topics                                                                                                                                                                                                                                                                                       | Duration |
|----|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------|
| 7  | Component Sizing and Selection<br>System Voltage Selection<br>System selection<br>PV Component selection and sizing<br>Array Sizing<br>Battery Sizing and Selection<br>Regulator Sizing and selection<br>Inverter Sizing and Selection<br>Cable Sizing<br>Metering and Electrical Protection | 3 hrs    |
| 8  | Installation and Safety Requirements of PV systems<br>Performance monitoring and optimisation<br>Maintenance, Testing and Commissioning of PV Systems                                                                                                                                        | 3 hrs    |
| 9  | Introduction to simulation software NREL SAM and PV SYST<br>System simulation parameters<br>Performance models parameters<br>Case studies on Simulation of PV systems                                                                                                                        | 3 hrs    |
| 10 | Case study 1 - Design of Regulated stand alone with battery and DC load<br><br>Case study 2 - Design of Regulated stand alone with battery and DC/AC loads                                                                                                                                   | 3 hrs    |
| 11 | Case study 3 - Design of Grid Tied PV System (SSDG and MSDG)<br><br>Site visit to grid tied PV system. Demo of PV system equipment (Off grid, Hybrid, grid tied), Demo of PV measurement equipment                                                                                           | 3 hrs    |
| 12 | Financial Evaluation of PV Projects<br>Simple Payback Period (SPP)<br>Life Cycle Costing (LCC)<br>Annualised LCC/Unit Cost of Electricity<br>FiT/Levelised Cost of Electricity (LCOE)<br><br>Case Studies – Calculation of LCOE/FiT for PV projects                                          | 3 hrs    |