

**Dr Bhimrao Ambedkar University, Agra**  
**Department of Physics Institute of Basic Science**  
**Value Added Course**  
**on**  
**SOLAR PANELS DESIGN AND ASSEMBLY**

**Designed By Prof B P Singh**

**Duration 30 hrs..**

**What you'll learn**

- Solar Energy Conversion
- Modelling of the Solar Resource
- Solar System Design and Energy Yield Simulations
- Solar System Components

**Skills you'll gain**

- Renewable Energy
- Solar Cells
- Energy Yield Simulations
- The Solar Resource
- Solar System Design

I	Introduction to Photovoltaics	3 hrs..
II	Why Solar Energy	2 hrs.
III	Power from Solar Energy	3 hrs.
IV	History of Solar Cells	3 hrs.
V	Physics of Solar Cell	3 hrs.
VI	How do Solar Cells Work	3 hrs.
VII	Solar Panels, types & Efficiency	3 hrs.
VIII	Modelling & Array of Solar Panels	2 hrs.
IX	Solar Panels Manufacturing Technologies	2 hrs.
X	Safety & Precautions of Solar Panels	2 hrs.
XI	Field Work & Site Visit	4 hrs.

**Note: The Certificate for the Course will be given on the basis of written test, attendance and active participation in the class.**

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**Department of Physics, Institution of Basic Science**  
**Value Added Course**

**on**

**Safety measurements of cell and Battery**

Developed By: Prof. (Dr.) B P Singh

**Duration 30 hours**

**Learning Outcome:**

- What are cells & Batteries
- What are cells & Batteries types
- How cells & Batteries work
- Able to know the safety measures of cells & Batteries

**Objectives of the course:**

- Know about cells & Batteries
- Working of cells & Batteries
- What are safety measures of Cells & Batteries

**Course Details**

**Introduction & Working (10 hrs.)**

- Introduction of the Course
- Basic concepts of cells and batteries
- Types and Applications
- Advantages and Limitations
- Importance of safety precautions
- Battery components
- Working principle

**Practical battery safety Hazard and Risk (10 hrs.)**

- Battery Safety by Thermal effects
- Battery Safety by Electrical Abuses
- Battery Safety by Overheat charging hazards
- Potential risks related to batteries and cells
- Understanding the risks and consequences of mishandling or misuse

**Safety Guidelines and Precautions (5 hrs.)**

- Proper handling and storage procedures
- Importance of using the correct charger and compatible batteries
- Charging safety practices
- Safe disposal and recycling methods

**First Aid and Emergency Response: (5 hrs.)**

- Basic first aid techniques for battery-related accidents
- Responding to battery leakage or exposure incidents
- Contacting emergency services and seeking professional help

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