

**MADANAPALLE INSTITUTE OF TECHNOLOGY SCIENCE  
(AUTONOMOUS)**

**M. Tech I Year - I SEMESTER (SPS)**

<b>P</b>	<b>T</b>	<b>C</b>
<b>3</b>	<b>0</b>	<b>2</b>

**SOLAR PHOTOVOLTAIC LAB  
(14SPS11P01)**

**Course Objectives:-**

1. To obtain a practical knowledge and hands-on-experience on SPS by working on Photovoltaic panels, Sun Tracking System, Solar inverters.
2. To obtain a fundamental knowledge on Sun Tracking System.
3. To understand different characteristics of Solar Cells, Batteries, DC-DC converters, DC Motor & Inverters.

**Course Outcomes:-**

**After Completion of this course students will be able to**

1. Analyze the Solar Cell characteristics for MonoCrystalline & Thin-film Solar Modules  
Calculate the power, efficiency & fill factor of solar cells
2. Appreciate the Sun Tracking System and Maximum peak power tracking of Solar Panel
3. Analyze the characteristics of DC motor when driven by Photovoltaic panel
4. Finding methods for Charging and discharging battery to analyze the characteristics of it
5. Realize the effect of shadow on solar PV panel and effect of surrounding temperature on PV panel

**List of Experiments :**

1. Solar cell I –V characteristics and calculation of power, efficiency and fill factor
2. Study of temperature and solar intensity dependent of solar cell characteristics.
3. Series-parallel Connection of solar panels and effects of Shading.
4. Study of Sun Tracking system.
5. Study of Characteristics of DC motor when driven by Photovoltaic panel.
6. Study of Battery charge controller
7. Fuel cell characteristics experiment.
8. Study the solar inverter characteristics
9. Charging and discharging characteristics of a battery
10. Study of DC-DC converter characteristics for solar system
11. Study of Effect of tilt angle on solar PV panel
12. Comparison of Solar panel characteristics (MonoCrystalline Solar Module vs Thin-film Solar Module)
13. Study of Maximum peak power tracking of Solar Panel
14. Effect of shadow on solar PV panel
15. Study of Effect of surrounding temperature on PV panel