Engineering Program

Specialization	**Energy Technology**
Course Number	020304252
Course Title	**Solar energy technology workshop**
Credit Hours	**2**
Theoretical Hours	**0**
Practical Hours	**6**

Brief Course Description:
Students learn about current solar collection and conversion equipment, and sizing of Grid-Interactive and to install with maximum performance. They will layout and orient these systems using standard industry tools and testing equipment. Conduit bending,wiring and roof attachments are part of the course as well. Students explore the trouble areas as they might encounter while servicing a PV system.

Course Objectives:

Upon successful completion of this course, the student should be able to:
1. Demonstrate and conduct a site survey/analysis
2. Draw a site plan
3. Draw a photovoltaic system on a site plan
4. Install a Grid Interactive Photovoltaic System
5. Demonstrate commissioning of an installed PV system

□ **Detailed Course Description:**

Unit Number	Unit name	Unit Content	Time Needed
1.	**Site Survey**	▪ Demonstrate compass use ▪ Demonstrate site selection ▪ Demonstrate Solar Pathfinder use ▪ Draw a site plan ▪ Demonstrate resource assessment ▪ Demonstrate layout of system on structure	
2.	**Installation of PV modules**	▪ Demonstrate rack attachments to structure ▪ Demonstrate racking assembly/ Installation ▪ Demonstrate module attachments to racking ▪ Demonstrate equipment grounding of modules.	
3	**Electrical Connections**	▪ Demonstrate installation of electrical panels and disconnects ▪ Demonstrate installation of overcurrent devices ▪ Demonstrate installation of wire of correct sizes/diameters/insulation requirements	

4	**System Commissioning**	▪ Demonstrate a visual inspection ▪ Demonstrate final wire connections from modules (power source) ▪ Demonstrate Voltage testing at wire terminations ▪ Demonstrate operation of Inverter ▪ Demonstrate interaction with Grid power ▪ Demonstrate system operation in relation to irradiance and temperature	

□ **Evaluation Strategies:**

		Percentage	Date
Exams	Midterm Exam	20%	--/--/----
	Reports	30%	
	Final Exam	50%	--/--/----

□ **Teaching Methodology:**

Laboratory

Text Books & References:

1. Photovoltaic Systems, Second Edition, James P. Dunlop, ISBN: 978-0-8269-1308-1
2. Photovoltaics Design and Installation Manual, Solar Energy International, ISBN:978-0-86571-520-2