

CLASS SYLLABUS

SOLAR PHOTOVOLTAIC DESIGN AND INSTALLATION

Learning outcome:

1. Analyze solar photovoltaic system energy and building resources.
2. Critically assess solar photovoltaic system applications, site evaluation.
3. Investigate solar photovoltaic systems and their relationship with energy conservation.
4. Compare and contrast solar photovoltaic system energy sources and applications.

Learning objectives:

1. Analyze solar photovoltaic system applications.
2. Identify various energy technologies, codes, certifications and their relationship with solar photovoltaic system.
3. Apply contemporary energy products and technologies to solar photovoltaic systems and energy conservation.
4. Explain the layout and design requirements for solar photovoltaic systems in residential and commercial constructions.
5. Compare and contrast solar photovoltaic system materials and methods.

Content:

1. Overview of Photovoltaics.
2. Photovoltaic Electric Principles.
3. The Solar Resource.
4. Electric Load Analysis.
5. Photovoltaic Modules.
6. Batteries.
7. PV Controllers.
8. Inverters.
9. Photovoltaic System Wiring.
10. Sizing Stand-alone Photovoltaic Systems.
11. Grid-tied Photovoltaic Systems.
12. Mounting Photovoltaic Modules.
13. Photovoltaic Applications for the Developing World.
14. Photovoltaic System Installation.
15. Maintenance and Troubleshooting.
16. Safety and PV Installation.

In-class assignments:

1. Analyze photovoltaic system principles, codes and theories.
2. Compare and contrast the various photovoltaic system options.
3. Develop alternative solutions.
4. Students will be assessed through demonstrations of problem solving ability.
5. Demonstrations of writing skills: written homework and exams.
6. Problem solving demonstrations: quizzes.
7. Practical skill demonstrations: class performances.
8. Critically evaluate photovoltaic systems and their social-economic relationship to the environment.
9. Select commercial or residential PV installation project. Discussion and prepare layout of the project.
10. Class presentation of the project proposal.

Out-of-class assignments:

1. Reading assignments.
2. Written questions from reading assignments and handouts.
3. Collect data and information on selected project.
4. Compile the project on presentable proposal format.