

# Louisiana Delta Community College

## Academic Affairs Master Syllabus

**Course Name:** SOLAR FUNDAMENTALS

**Course Number:** SOLR 1000

**Credit Lecture hours:** 3    **Credit Lab Hours:** 0    **Contact Hours:** 45

**Textbook, Author, and Publisher:** To be provided by College Campus

**Instructor Information:** To be provided by College Campus

**Class Location:** To be provided by College Campus

**Course Description:** The student will gain a basic knowledge of photovoltaic systems, thermal systems, and stand-alone systems. The course will include a study of system components, electrical circuits, site assessments, as well as system design and sizing. The course is designed around the learning objectives associated with the North American Board of Certified Energy Practitioners (NABCEP) Photovoltaic (PV) Entry Level Certificate of Knowledge Exam.

**Prerequisites:** None

**Co-requisites:** None

### **Learning Outcomes:**

On completion of this course, the student should be able to perform the following with a proficiency that complies with the minimum standard of industry:

1. Describe Solar markets and Applications
2. Learn Safety Basics (First Aid & CPR)
3. Explain and define basics of electricity
4. Learn fundamentals of solar energy including terms, solar movement, and irradiation, and demonstrate use of Solar Pathfinder.
5. Explain fundamentals of PV module including: how a solar cell converts sunlight, key points on IV curve, key output values of solar modules, effects of environmental conditions as well as effects of series/parallel connections on IV curve, expected output values of module, construction of solar cells, performance of various technologies, construction of flat plate solar module, calculation of efficiency of solar module, purpose and operation of bypass diode, deterioration/failure modes of solar modules, and major qualification tests and standards.
6. Describe and compare PV & Thermal System Components
7. Demonstrate basics of site survey and shading analysis.
8. Identify appropriate system designs/configurations based on customer needs, expectations and site conditions.
9. Estimate sizing requirements for major components.
10. Analyze estimated monthly and annual energy output/savings.
11. Determine appropriate electrical design
12. Determine appropriate mechanical design
13. Learn to conduct performance analysis & troubleshooting techniques

**Assessment Measures:** To be provided by the College Campus.

**Library Resource Center:**

The Delta Library and Learning Resource Center is committed to providing quality information and learning resources and services, including technology, in supporting the overall mission of Delta Community College and its commitment to lifelong learning.

**Special Accommodations:**

Louisiana Delta Community College complies with Section 504 of the Rehabilitation Act, as well as the Americans with Disabilities Act. Students with disabilities who attend the Monroe campus may make a request by contacting the Director of Counseling and Disability Services (See College Directory for contact information.) at the beginning of each semester. Reasonable accommodations will be attempted for students with documented disabilities. If an impairment is identified later in the semester, a non-retroactive accommodation plan will be developed. Students at satellite campuses should contact the Coordinator of Student Affairs at their particular campus.

**Title IX:**

Louisiana Delta Community College is committed to protecting the rights of students, which includes compliance with Title IX requirements. As such, the institution and members of our community will not tolerate the offenses of dating violence, domestic violence, sexual assault, and stalking. Students with Title IX concerns should contact the College's Title IX Coordinator (See College Directory for contact information.) Students are required to complete Sexual Assault Awareness and Prevention Online Training. Access to this online course will be sent out through the Delta email account.

**Student Code of Conduct:**

Louisiana Delta Community College encourages an environment of academic integrity and mutual respect. Students should read and follow both academic and behavioral expectations identified in the Code of Student Conduct that can be found online at [www.ladelta.edu](http://www.ladelta.edu). Students are expected to act with integrity, respect the rights of others, and conduct themselves in a professional manner. The Honor Code prohibits academic misconduct such as cheating, engaging in unauthorized collaboration, and plagiarism. Violations of the Code of Student Conduct may result in disciplinary action as provided in the Code. Incidents are reported through the online Student Conduct system.