Fond du Lac Tribal and Community College

COURSE OUTLINE FORM

Updated 9/23/14

Please return this form to the college vice president of academic affairs and the chairperson of the Academic Affairs and Standards Council (AASC)

1. Prepared by: ________________________________________________

2. Date submitted: ____________________________________________


4. Department/discipline: Electric Utility Technicians

5. Department(s) endorsement(s): ________________________________
   (Signatures of the person(s) providing the endorsement are required.)

6. Course Title: Photovoltaic Energy Systems
   Abbreviated course title (25 characters or less):

7. Course Designator: EUT

8. Course Level: 1035

9. Number of Credits: Lecture: 2 Lab: 1

10. Control Number (on site): 20
    Control Number (online): 0

11. Catalog/Course description:

    Photovoltaic (PV) systems for the generation of electricity, for home use and for business, will be covered in theory and practice with emphasis on covering practical implementation measures. The course will explore current advancements in PV as a component of this course, and how it fits with developing renewable energy technology.

12. Course prerequisite(s) or co-requisite(s):
    Prerequisite(s): None
    Co-requisite: None

13. Course Materials (Recommended course materials and resources. List all that apply, e.g. textbooks, workbooks, study guides, lab manuals, videos, guest lecturers).

    1. Practical workshops will be a component of this course. Appropriate text, videos, and other resources will be selected to provide up-to-date content. Access
to the internet will be necessary, and will be listed on the syllabus

14. **Course Content** (Provide an outline of major topics covered in course)

1. Theory and Fundamentals of Photovoltaic Energy Systems
2. Site Assessment
   a. Measuring the sun
   b. Calculating energy output
3. Design Practices
   a. Modules
   b. Inverters
4. Installation Procedures
   a. Mounting systems
   b. Electronics
5. Commissioning, Servicing, and Maintenance

15. **Learning Goals, Outcomes, and Assessment**

   At FDLTCC we have 4 Competencies Across the Curriculum (CAC) areas. They are as follows:

   A. Information Literacy (the ability to use print and/or non-print tools effectively for the discovery, acquisition, and evaluation of information)

   B. Ability to Communicate (the ability to listen, read, comprehend, and/or deliver information in a variety of formats.)

   C. Problem Solving (the ability to conceptualize, apply, analyze, synthesize, and/or evaluate information to formulate and solve problems.)

   D. Culture (knowledge of Anishinaabe traditions and culture, knowledge of one’s own traditions and culture, knowledge of others’ traditions and cultures, culture of work, culture of academic disciplines and/or respect for global diversity.)

   *Course learning outcomes will fulfill the identified competencies:*

   **Course Learning Outcomes:**

   Upon completion of this course, students will be able to:

   1. Demonstrate knowledge of PV cell technology. (A, B)
   2. Perform a site assessment including annual solar insolence. (A, B, C)
   3. Calculate the electrical output of a solar array. (A, C)
   4. Demonstrate knowledge of mounting methods (B)
   5. Mount and connect an inverter and demonstrate operation. (A, B, C)
16. **Minnesota Transfer Curriculum (MnTC):** If this course fulfills an MnTC goal area, state the goal area and list the goals and outcomes below:

See [www.mntransfer.org](http://www.mntransfer.org)

Goal Area(s): **N/A**

Goal and Outcomes:
- Goal: N/A
- Outcome:
Complete the following only if you are proposing a new course:

1. Planned pattern of offering:
2. Rationale for course: If this course is an ADDITION or replacement to current offerings, add a detailed explanation of the necessity for the change.
3. Does this course overlap with any course(s) offered at FDLTCC? If so, justify such duplication or indicate other adjustments to be made. Obtain signatures from affected departments.
4. What is the apparent or expressed student need for this course?
5. If this course includes a Native American or specifically Anishinaabe component list campus resource person/s—i.e., campus cultural/spiritual resource person/s and, if necessary, elder/s—consulted and include specific comments and written responses as appropriate.
6. Are there any additional licensing/certification requirements involved?
   a. Provide a copy of the required licensing/certification standards to the AASC chair and to the vice president of academic affairs.
   b. Attach the required documentation to show course meets required licensing/certification standards.
7. What types of tutoring will be made available through the CAA to students taking this course?
8. How will the course be evaluated?
9. Special resources—e.g. faculty, space, equipment, library, etc
10. Special course fees:
11. Relationship of course to the college mission statement and goals.
12. Relationship of course to the department’s mission statement and goals.
13. Relationship of course to colleges/university offerings (include tribal colleges).

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