

**Course Assessment Report
Washtenaw Community College**

| Discipline | Course Number | Title |
|---|------------------------|---|
| Electricity/Electronics | 106 | ELE 106 02/17/2019- Renewable Energy Technology |
| Division | Department | Faculty Preparer |
| Advanced Technologies and Public Service Careers | Advanced Manufacturing | Dale Petty |
| Date of Last Filed Assessment Report | | |

I. Review previous assessment reports submitted for this course and provide the following information.

1. Was this course previously assessed and if so, when?

No

2. Briefly describe the results of previous assessment report(s).

3.

4. Briefly describe the Action Plan/Intended Changes from the previous report(s), when and how changes were implemented.

5.

II. Assessment Results per Student Learning Outcome

Outcome 1: Identify key components and principles of renewable energy technologies

- Assessment Plan
 - Assessment Tool: departmental exam
 - Assessment Date: Winter 2011
 - Course section(s)/other population: all
 - Number students to be assessed: all
 - How the assessment will be scored: answer key
 - Standard of success to be used for this assessment: A minimum of 70% of the students will correctly answer 70% or more of the questions

- Who will score and analyze the data: full time ELE faculty

1. Indicate the Semester(s) and year(s) assessment data were collected for this report.

| Fall (indicate years below) | Winter (indicate years below) | SP/SU (indicate years below) |
|-----------------------------|-------------------------------|------------------------------|
| 2017, 2016, 2018 | | |

2. Provide assessment sample size data in the table below.

| # of students enrolled | # of students assessed |
|------------------------|------------------------|
| 19 | 17 |

3. If the number of students assessed differs from the number of students enrolled, please explain why all enrolled students were not assessed, e.g. absence, withdrawal, or did not complete activity.

Not all students took the final exam.

4. Describe how students from all populations (day students on campus, DL, MM, evening, extension center sites, etc.) were included in the assessment based on your selection criteria.

All students in 3 semesters

5. Describe the process used to assess this outcome. Include a brief description of this tool and how it was scored.

An "open book" Final Exam was given on Blackboard, with 3 hours to complete.

There were 50 questions with approximately even distribution across all units. 2 - 3 weeks of class time are spent on Solar Photovoltaic so there were more questions in that area.

Scored according to answer key. (some automatic scoring by Blackboard)

6. Briefly describe assessment results based on data collected for this outcome and tool during the course assessment. Discuss the extent to which students achieved this learning outcome and indicate whether the standard of success was met for this outcome and tool.

Met Standard of Success: Yes

In the 9 areas assessed, Renewable Economics, Electricity Fundamentals, Energy Conservation, Heat Pumps, Micro-Hydro systems, Solar Hot Water systems, Solar Photovoltaic systems, Why consider Renewable Energy, and Wind systems, the average score per area ranged from .67 to .86 (out of 1). The lowest score, and the

only area that did not reach an average score of 70% (.70) was .59 in Micro Hydro systems. Overall I feel that the Standard of Success was reached in 8 of 9 areas.

I have revised the course considerably since creating it and this is the first formal assessment. therefore I am not following the original assessment plan. My revised assessment plan will look at average scores above 70% for the key areas of the course.

7. Based on your interpretation of the assessment results, describe the areas of strength in student achievement of this learning outcome.

In the 9 areas assessed, Renewable Economics, Electricity Fundamentals, Energy Conservation, Heat Pumps, Micro-Hydro systems, Solar Hot Water systems, Solar Photovoltaic systems, Why consider Renewable Energy, and Wind systems, the average score per area ranged from .67 to .86 (out of 1). The lowest score, and the only area that did not reach an average score of 70% (.70) was .59 in Micro Hydro systems. Overall I feel that the Standard of Success was reached in 8 of 9 areas.

8. Based on your analysis of student performance, discuss the areas in which student achievement of this learning outcome could be improved. If student met standard of success, you may wish to identify your plans for continuous improvement.

The lowest score, and the only area that did not reach an average score of 70% (.70) was .59 in Micro Hydro systems. This area is harder to do 'hands on' learning so I feel students have a harder time grasping the information. This unit also comes at a time in the semester where students are also working on their projects, so they may not have as much time to spend on the 'classroom' work. I will spend a little more time in class emphasizing the key areas of micro-hydro.

Outcome 2: Identify key reasons why renewable energy technology has the potential to help solve environmental and economic problems in Michigan and around the world.

- Assessment Plan
 - Assessment Tool: departmental exam
 - Assessment Date: Winter 2011
 - Course section(s)/other population: all
 - Number students to be assessed: all
 - How the assessment will be scored: answer key

- Standard of success to be used for this assessment: A minimum of 70% of the students will correctly answer 70% or more of the questions
- Who will score and analyze the data: full time ELE faculty

1. Indicate the Semester(s) and year(s) assessment data were collected for this report.

| Fall (indicate years below) | Winter (indicate years below) | SP/SU (indicate years below) |
|-----------------------------|-------------------------------|------------------------------|
| | | |

2. Provide assessment sample size data in the table below.

| # of students enrolled | # of students assessed |
|------------------------|------------------------|
| | 17 |

3. If the number of students assessed differs from the number of students enrolled, please explain why all enrolled students were not assessed, e.g. absence, withdrawal, or did not complete activity.

not all students took the final

4. Describe how students from all populations (day students on campus, DL, MM, evening, extension center sites, etc.) were included in the assessment based on your selection criteria.

This outcome not assessed. I have revised the course considerably since creating it and the original assessment plan is not appropriate.

5. Describe the process used to assess this outcome. Include a brief description of this tool and how it was scored.

This outcome not assessed. I have revised the course considerably since creating it and the original assessment plan is not appropriate.

6. Briefly describe assessment results based on data collected for this outcome and tool during the course assessment. Discuss the extent to which students achieved this learning outcome and indicate whether the standard of success was met for this outcome and tool.

Met Standard of Success: No
 This outcome not assessed. I have revised the course considerably since creating it and the original assessment plan is not appropriate.

7. Based on your interpretation of the assessment results, describe the areas of strength in student achievement of this learning outcome.

This outcome not assessed. I have revised the course considerably since creating it and the original assessment plan is not appropriate.

8. Based on your analysis of student performance, discuss the areas in which student achievement of this learning outcome could be improved. If student met standard of success, you may wish to identify your plans for continuous improvement.

This outcome not assessed. I have revised the course considerably since creating it and the original assessment plan is not appropriate.

Outcome 3: Analyze personal energy consumption and identify ways to move to a ?greener? personal energy footprint.

- Assessment Plan
 - Assessment Tool: Project
 - Assessment Date: Winter 2011
 - Course section(s)/other population: all
 - Number students to be assessed: all
 - How the assessment will be scored: departmentally-developed rubric
 - Standard of success to be used for this assessment: A minimum of 70% of the students will score an average of 3 or higher on the project.
 - Who will score and analyze the data: full time ELE faculty

1. Indicate the Semester(s) and year(s) assessment data were collected for this report.

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Met Standard of Success: No

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7. Based on your interpretation of the assessment results, describe the areas of strength in student achievement of this learning outcome.

This outcome not assessed. I have revised the course considerably since creating it and the original assessment plan is not appropriate.

8. Based on your analysis of student performance, discuss the areas in which student achievement of this learning outcome could be improved. If student met standard of success, you may wish to identify your plans for continuous improvement.

This outcome not assessed. I have revised the course considerably since creating it and the original assessment plan is not appropriate.

Outcome 4: Design a renewable energy system for a home or small business.

- Assessment Plan

- Assessment Tool: Project
- Assessment Date: Winter 2011
- Course section(s)/other population: all
- Number students to be assessed: all
- How the assessment will be scored: departmentally-developed rubric
- Standard of success to be used for this assessment: A minimum of 70% of the students will score an average of 3 or higher on the project.
- Who will score and analyze the data: full time ELE faculty

1. Indicate the Semester(s) and year(s) assessment data were collected for this report.

| Fall (indicate years below) | Winter (indicate years below) | SP/SU (indicate years below) |
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6. Briefly describe assessment results based on data collected for this outcome and tool during the course assessment. Discuss the extent to which students achieved this learning outcome and indicate whether the standard of success was met for this outcome and tool.

Met Standard of Success: No

This outcome not assessed. I have revised the course considerably since creating it and the original assessment plan is not appropriate.

7. Based on your interpretation of the assessment results, describe the areas of strength in student achievement of this learning outcome.

This outcome not assessed. I have revised the course considerably since creating it and the original assessment plan is not appropriate.

8. Based on your analysis of student performance, discuss the areas in which student achievement of this learning outcome could be improved. If student met standard of success, you may wish to identify your plans for continuous improvement.

This outcome not assessed. I have revised the course considerably since creating it and the original assessment plan is not appropriate.

III. Course Summary and Intended Changes Based on Assessment Results

1. Based on the previous report's Intended Change(s) identified in Section I above, please discuss how effective the changes were in improving student learning.

no previous reports

2. Describe your overall impression of how this course is meeting the needs of students. Did the assessment process bring to light anything about student achievement of learning outcomes that surprised you?

I feel this course is meeting the needs of students who are there to learn.

It gives them an overview of some of the serious environmental problems we face and some solutions. It also helps students learn to distinguish real technology from 'starry eyed' approaches. It also gives 'non-technical' students a taste of technology and may help them take an interest in the tech area.

Several students have actually taken their design project to the next step and installed solar on their home or other building. I have gotten good feed back from students as well as faculty who have taken the course. The course serves the community as well as the 'normal' student population. The main difficulty is getting enrollment. the only program ELE 106 is associated with is Sustainable Construction which has few students, so the only students who take it are those with an interest and money beyond trying to get a degree. this includes 'community members', wcc faculty and staff, students trying to get accepted by the

IBEW apprentice program, students with an interest outside their listed program, and those exploring different career paths.

3. Describe when and how this information, including the action plan, was or will be shared with Departmental Faculty.

Will share by email and in a department meeting.

- 4.

Intended Change(s)

| Intended Change | Description of the change | Rationale | Implementation Date |
|------------------|---|-------------------------------------|---------------------|
| Outcome Language | Revise student learning outcomes to reflect current course content. | Course has changed since developed. | 2019 |

5. Is there anything that you would like to mention that was not already captured?

6.

III. Attached Files

[ELE 106 assessment F2016-F2017 Final Exam.xlsx](#)

[Sample Test Questions: Outcomes](#)

[Sample Test Questions: Objectives](#)

Faculty/Preparer: Dale Petty **Date:** 02/17/2019

Department Chair: Thomas Penird **Date:** 03/08/2019

Dean: Brandon Tucker **Date:** 03/11/2019

Assessment Committee Chair: Shawn Deron **Date:** 07/18/2019