

Washtenaw Community College Comprehensive Report

ELE 106 Renewable Energy Technology Effective Term: Fall 2023

Course Cover

College: Advanced Technologies and Public Service Careers

Division: Advanced Technologies and Public Service Careers

Department: Advanced Manufacturing

Discipline: Electricity/Electronics

Course Number: 106

Org Number: 14400

Full Course Title: Renewable Energy Technology

Transcript Title: Renewable Energy Technology

Is Consultation with other department(s) required: No

Publish in the Following: College Catalog , Time Schedule , Web Page

Reason for Submission: Inactivation

Change Information:

Consultation with all departments affected by this course is required.

Rationale: Stand alone course. Not offered in several years. No demand has been noted.

Proposed Start Semester: Fall 2023

Course Description: In this course, students will receive a comprehensive introduction to the principles and practical applications of solar, wind, micro-hydro and other renewable energy technologies.

Motivations for developing renewable energy will be examined and students will evaluate their personal energy footprint and create a plan to reduce it. Demonstrations, field trips and labs will provide direct contact with the technology. Students will complete a written design project to explore one technology in depth.

Course Credit Hours

Variable hours: No

Credits: 3

Lecture Hours: Instructor: 45 **Student:** 45

Lab: Instructor: 0 **Student:** 0

Clinical: Instructor: 0 **Student:** 0

Total Contact Hours: Instructor: 45 **Student:** 45

Repeatable for Credit: NO

Grading Methods: Letter Grades

Audit

Are lectures, labs, or clinicals offered as separate sections?: NO (same sections)

College-Level Reading and Writing

College-level Reading & Writing

College-Level Math

Level 3

Requisites

General Education

Request Course Transfer

Proposed For:

Student Learning Outcomes

1. Identify key components and principles of solar voltaic and solar thermal renewable energy technologies.

Assessment 1

Assessment Tool: Comprehensive Final Exam

Assessment Date: Fall 2021

Assessment Cycle: Every Three Years

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 students will correctly answer each outcome-related question

Who will score and analyze the data: Full-time department faculty

2. Identify key components and principles of non-solar renewable energy technologies.

Assessment 1

Assessment Tool: Comprehensive Final Exam

Assessment Date: Fall 2021

Assessment Cycle: Every Three Years

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 students will correctly answer each outcome-related question

Who will score and analyze the data: Full-time department faculty

3. Complete a simplified renewable resource assessment and design a small-scale renewable energy system.

Assessment 1

Assessment Tool: Renewable Energy Design Project

Assessment Date: Fall 2021

Assessment Cycle: Every Three Years

Course section(s)/other population: All

Number students to be assessed: All

How the assessment will be scored: Rubric

Standard of success to be used for this assessment: A minimum of 70% of the students will score 70% or higher on the Design Project

Who will score and analyze the data: Full-time department faculty

Course Objectives

1. Identify the rationale for implementing renewable energy technologies.
2. Analyze personal or family energy footprint using a carbon footprint calculator and identify ways to personally reduce carbon emissions.
3. Identify key components and principles of a solar photovoltaic system.
4. Identify key components and principles of a solar thermal system.
5. Identify key components and principles of a wind turbine system.
6. Identify key components and principles of a micro-hydro system.
7. Evaluate the economics of a renewable energy system.
8. Evaluate a home or small business site for suitability of solar photovoltaic, solar thermal, passive solar, wind turbine or micro-hydro energy.

9. Identify the energy potential, develop specifications, identify components, and determine costs for a renewable energy system for a home or small business.

New Resources for Course

Course Textbooks/Resources

Textbooks

Manuals

Periodicals

. *Home Power Magazine*, Home Power Magazine Volume 2018

Software

Equipment/Facilities

Level III classroom

Computer workstations/lab

Other: TI 143 (Industrial Electronics Lab) Equipment for weekly labs, e.g. solar panels, meters, solar pathfinders, Pathfinder Assistance software, online Apps...

<u>Reviewer</u>	<u>Action</u>	<u>Date</u>
Faculty Preparer:		
<i>Allan Coleman</i>	<i>Faculty Preparer</i>	<i>Jan 06, 2023</i>
Department Chair/Area Director:		
<i>Allan Coleman</i>	<i>Recommend Approval</i>	<i>Jan 06, 2023</i>
Dean:		
<i>Jimmie Baber</i>	<i>Recommend Approval</i>	<i>Jan 09, 2023</i>
Curriculum Committee Chair:		
<i>Randy Van Wagnen</i>	<i>Reviewed</i>	<i>Feb 08, 2023</i>
Assessment Committee Chair:		
Vice President for Instruction:		
<i>Victor Vega</i>	<i>Approve</i>	<i>Feb 09, 2023</i>

Washtenaw Community College Comprehensive Report

ELE 106 Renewable Energy Technology Effective Term: Winter 2020

Course Cover

Division: Advanced Technologies and Public Service Careers
Department: Advanced Manufacturing
Discipline: Electricity/Electronics
Course Number: 106
Org Number: 14400
Full Course Title: Renewable Energy Technology
Transcript Title: Renewable Energy Technology
Is Consultation with other department(s) required: No
Publish in the Following: College Catalog , Time Schedule , Web Page
Reason for Submission:
Change Information:

Consultation with all departments affected by this course is required.

Rationale: three year review

Proposed Start Semester: Fall 2019

Course Description: In this course, students will receive a comprehensive introduction to the principles and practical applications of solar, wind, micro-hydro and other renewable energy technologies. Motivations for developing renewable energy will be examined and students will evaluate their personal energy footprint and create a plan to reduce it. Demonstrations, field trips and labs will provide direct contact with the technology. Students will complete a written design project to explore one technology in depth.

Course Credit Hours

Variable hours: No

Credits: 3

Lecture Hours: Instructor: 45 **Student:** 45

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Repeatable for Credit: NO

Grading Methods: Letter Grades

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Are lectures, labs, or clinicals offered as separate sections?: NO (same sections)

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College-level Reading & Writing

College-Level Math

Level 3

Requisites

General Education

Request Course Transfer

Proposed For:

Student Learning Outcomes

1. Identify key components and principles of solar voltaic and solar thermal renewable energy technologies.

Assessment 1

Assessment Tool: Comprehensive Final Exam

Assessment Date: Fall 2021

Assessment Cycle: Every Three Years

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 students will correctly answer each outcome-related question

Who will score and analyze the data: Full-time department faculty

2. Identify key components and principles of non-solar renewable energy technologies.

Assessment 1

Assessment Tool: Comprehensive Final Exam

Assessment Date: Fall 2021

Assessment Cycle: Every Three Years

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 students will correctly answer each outcome-related question

Who will score and analyze the data: Full-time department faculty

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Assessment Tool: Renewable Energy Design Project

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Course section(s)/other population: All

Number students to be assessed: All

How the assessment will be scored: Rubric

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New Resources for Course

Course Textbooks/Resources

Textbooks

Manuals

Periodicals

. *Home Power Magazine*, Home Power Magazine Volume 2018

Software

Solar Pathfinder Assistant. Solar Pathfinder, 5 ed.

shade analysis software to use with Solar Pathfinder

Equipment/Facilities

Level III classroom

Computer workstations/lab

Other: TI 143 (Industrial Electronics Lab) Equipment for weekly labs, e.g. solar panels, meters, solar pathfinders, Pathfinder Assistance software, online Apps...

<u>Reviewer</u>	<u>Action</u>	<u>Date</u>
Faculty Preparer:		
<i>Dale Petty</i>	<i>Faculty Preparer</i>	<i>Feb 17, 2019</i>
Department Chair/Area Director:		
<i>Thomas Penird</i>	<i>Recommend Approval</i>	<i>Mar 08, 2019</i>
Dean:		
<i>Brandon Tucker</i>	<i>Recommend Approval</i>	<i>Mar 11, 2019</i>
Curriculum Committee Chair:		
<i>Lisa Veasey</i>	<i>Recommend Approval</i>	<i>Jul 10, 2019</i>
Assessment Committee Chair:		
<i>Shawn Deron</i>	<i>Recommend Approval</i>	<i>Jul 18, 2019</i>
Vice President for Instruction:		
<i>Kimberly Hurns</i>	<i>Approve</i>	<i>Jul 26, 2019</i>