Washtenaw Community College Comprehensive Report

UAT 146 Introduction to Microturbines (UA 6011)
Effective Term: Spring/Summer 2019

Course Cover

Division: Advanced Technologies and Public Service Careers
Department: United Association Department
Discipline: United Association Training
Course Number: 146
Org Number: 28200
Full Course Title: Introduction to Microturbines (UA 6011)
Transcript Title: Intro to Microturbines 6011
Is Consultation with other department(s) required: No
Publish in the Following: College Catalog
Reason for Submission: New Course
Change Information:
Rationale: New U.A. course
Proposed Start Semester: Spring/Summer 2019
Course Description: In this course, students will study the operation and installation of Combined Heat and Power (CHP) systems using microturbines. Students will calculate heat and power applications as well as identify adaptions needed to retrofit standard heating systems in commercial buildings and industrial settings. It is recommended that students have prior knowledge of the operating principals of CHP systems to participate in the course. Limited to United Association program participants.

Course Credit Hours

Variable hours: No
Credits: 1.5
The following Lecture Hour fields are not divisible by 15: Student Min ,Instructor Min
Lecture Hours: Instructor: 22.5 **Student:** 22.5
The following Lab fields are not divisible by 15: Student Min, Instructor Min
Lab: Instructor: 1.5 **Student:** 1.5
Clinical: Instructor: 0 **Student:** 0

Total Contact Hours: Instructor: 24 **Student:** 24
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

Requisites

General Education

Degree Attributes
Below College Level Pre-Reqs

Request Course Transfer

Proposed For:

Student Learning Outcomes

1. Identify the installation, maintenance and interfacing of microturbines.
   Assessment 1
   Assessment Tool: Written Exam
   Assessment Date: Spring/Summer 2019
   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: 80% of the students will score 100%
   Who will score and analyze the data: UA Training Coordinator

2. Determine the benefits and calculate the efficiency of Combined Heat and Power applications of microturbines in an overall maintenance program.
   Assessment 1
   Assessment Tool: Written Exam
   Assessment Date: Spring/Summer 2019
   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: 80% of the students will score 100%
   Who will score and analyze the data: UA Training Coordinator

Course Objectives

1. Describe the fundamentals of combined heat and power (CHP) systems currently used in the industry.
2. Identify and describe microturbine basics including the engine, inverter, and internal controls.
3. Identify fuels and uses for microturbine operation.
4. Describe CHP systems used for heat recovery and output recovery performance.
5. Identify microturbine connections to related equipment such as heat exchangers and absorption chillers.
6. Set up interface controls for proper operation.
7. Review maintenance and troubleshooting techniques for microturbines.
8. Describe retrofitting piping arrangements for adaptation for CHP systems to standard hydronic heating systems including mode and hybrid operations.
9. Describe six different installations and review Washtenaw Community College's installation.

New Resources for Course

Course Textbooks/Resources

Textbooks
Manuals
Periodicals
Software

Equipment/Facilities

Reviewer	Action	Date
Faculty Preparer:		

Tony Esposito	*Faculty Preparer*	*Jan 02, 2019*
Department Chair/Area Director:		
Marilyn Donham	*Recommend Approval*	*Jan 03, 2019*
Dean:		
Brandon Tucker	*Recommend Approval*	*Jan 16, 2019*
Curriculum Committee Chair:		
Lisa Veasey	*Recommend Approval*	*Apr 17, 2019*
Assessment Committee Chair:		
Shawn Deron	*Recommend Approval*	*Apr 18, 2019*
Vice President for Instruction:		
Kimberly Hurns	*Approve*	*Apr 22, 2019*