

Program Outcomes Guide

Program Title: Geothermal energy Installation & Service

Program Team/Course Instructor(s):

- Greg Betz, Coordinator/Instructor
- David Hildebrand, Adjunct Instructor
- Joel Bussard, Adjunct Instructor
- Tadd Forrest, Adjunct Instructor

Cross Walk: Learning Outcomes and Relevant Courses

Learning Outcome	Relevant Course
Outcome #1: Knowledge of geothermal energy. <ul style="list-style-type: none">• Identify specifications for geothermal energy systems.• Perform test procedures (start-up) for geothermal energy systems.• Perform data collection and evaluation for geothermal energy systems.• Maintain and troubleshoot geothermal energy systems.• Recognize standard safety procedures in the workplace.	AET 102 Introduction to Alternative Energy INT 110 Fundamentals of Electricity INT 107 Introduction to HVAC INT 105 Plumbing and Pipefitting
Outcome #2: Recognize standard safety procedures in the workplace.	INT 104 Facilities Safety and Compliance
Outcome #3: Communicate effectively with customers	BUS 145 Customer Service
Outcome #4: Perform basic electrical and thermal load calculations.	MAT 114 Introduction to Applied Algebra

Assessment (How do students demonstrate achievement of these outcomes?)

- Final Project: Students will install components, test and start-up systems, and collect and analyze data.
- Satisfactory scores on exams and projects.
- Satisfactory scores on exams modeled after industry standard certification exams.

Validation (What methods are used to validate your assessment?)

1. Approval by Industrial Technology/Alternative Energy Technology Advisory Committee
2. Tests comparable to Industry Standard Certification Exams.
3. Faculty Review
4. Project similar in scope real world experience/installation.

Results (What do the data show?)

Data and feedback show student performance is meeting targeted outcomes. New Testing results and employment activities, as well as hands-one practices show that the majority of the students are achieving desired program outcomes. Feedback, as well as multiple calls for part-

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time, and a few full-time student workers from regional businesses, indicate that we are addressing the needed skills related to Alternative Energy Technology in our region.

Internship Evaluation Results

- No recent internships

Follow-up (How have you used the data to improve student learning?)

- Course content is continually modified and content increased and decreased based on advances in technology and shifts in demand.
- The course syllabus reflects these changes, as required each semester.
- New resources and support materials are adopted to meet the outcomes.

Budget Justification

(What resources are necessary to improve student learning?)