

**Course Assessment Report**  
**Washtenaw Community College**

Discipline	Course Number	Title
Heating, Ventilation, Air Conditioning and Refrigeration	201	HVA 201 04/13/2017- Energy Audits
Division	Department	Faculty Preparer
Advanced Technologies and Public Service Careers	Heating, Ventilation and A/C	Michael Kontry
Date of Last Filed Assessment Report		

**I. Assessment Results per Student Learning Outcome**

Outcome 1: Identify energy efficiency standards as they pertain to energy auditing.

- Assessment Plan
  - Assessment Tool: Departmental multiple-choice final.
  - Assessment Date: Fall 2012
  - 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: 70% of the students will score 70% or higher.
  - Who will score and analyze the data: Departmental 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)
2016, 2015, 2014		

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

# of students enrolled	# of students assessed
31	30

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.

One student in 2015 only attended first day of class.

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 selected.

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

Multiple choice questions from final exam using an answer key.

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

Students scored 88% as an average on this outcome and 86.7% of students scored a minimum of 70% or better.

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

Students exhibited a good knowledge of energy efficiency as it applies to a structure's construction and appliance usage.

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.

A slight amount of extra time could be spent on the energy ratings required by the government.

Outcome 2: Identify mechanical, electrical and building equipment that can be used or recommended to building owners to increase overall building efficiency.

- Assessment Plan
  - Assessment Tool: Departmental multiple-choice final.

- Assessment Date: Fall 2012
- 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: 70% of the students will score 70% or higher.
- Who will score and analyze the data: Departmental 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)
2016, 2015, 2014		

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

# of students enrolled	# of students assessed
31	30

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.

One student in 2015 only attended first day of class.

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 selected.

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

Multiple choice questions from final exam using an answer key.

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  
 Students scored an 84.7% average on this outcome with 83.3% achieving a score of 70% or better.

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

Students exhibited a good knowledge of the steps necessary to increase efficiency in a structure.

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.

Some concepts of the effectiveness of multi-pane glass and heat loss/gain could use a bit more time.

Outcome 3: Perform efficiency evaluations of thermal delivery systems.

- Assessment Plan
  - Assessment Tool: System Checklist
  - Assessment Date: Fall 2012
  - 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: 70% of the students will score 70% or higher.
  - Who will score and analyze the data: Departmental 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)
2016, 2015, 2014		

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

# of students enrolled	# of students assessed
31	30

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.

One student in 2015 class only attended first day of class.

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 selected.

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

Departmentally developed checklist requiring students to conduct an energy audit.

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

Students scored 95.5% average on this outcome and 100% achieved a score of 70% or better

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

Students did very well on the actual analysis of a structure's energy efficiency.

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.

Course should continue to emphasize the importance of the physical energy audit and how to perform a complete and through analysis.

## II. Course Summary and Action Plans Based on Assessment Results

1. 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?

This course seems to be doing a very good job of educating the students on the importance of energy efficiency and the procedures to evaluate and correct energy problems involving various types of structures.

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

All instructors of the HVA 201 class will be verbally informed of this information in a department meeting.

3.

Intended Change(s)

Intended Change	Description of the change	Rationale	Implementation Date
No changes intended.			

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

No

### III. Attached Files

[HVA 201 - assessment results](#)

**Faculty/Preparer:** Michael Kontry **Date:** 04/13/2017

**Department Chair:** Robert Carter **Date:** 04/24/2017

**Dean:** Brandon Tucker **Date:** 05/03/2017

**Assessment Committee Chair:** Michelle Garey **Date:** 09/27/2017

**COURSE ASSESSMENT REPORT**

**I. Background Information**

1. Course assessed:  
 Course Discipline Code and Number: HVA 201  
 Course Title: Energy Audits  
 Division/Department Codes: Vocational Technology/HVAC

2. Semester assessment was conducted (check one):

- Fall 2008  
 Winter 20\_\_  
 Spring/Summer 20\_\_

3. Assessment tool(s) used: check all that apply.

- Portfolio  
 Standardized test  
 Other external certification/licensure exam (specify):  
 Survey  
 Prompt  
 Departmental exam  
 Capstone experience (specify):  
 Other (specify):

**Original assessment plan was designed to use a project. Because artifacts were not available the assessment was done using the final exam.**

4. Have these tools been used before?

- Yes  
 No

If yes, have the tools been altered since its last administration? If so, briefly describe changes made.

N/A

5. Indicate the number of students assessed/total number of students enrolled in the course.

**15 of 15 students**

6. Describe how students were selected for the assessment.

**All students completing the fall 2008 session of this course will be used in this assessment.**

**II. Results**

1. Briefly describe the changes that were implemented in the course as a result of the previous assessment.

N/A

2. List each outcome that was assessed for this report exactly as it is stated on the course master syllabus.

**Explain the energy audit process including collection and analysis of data, research, and determining recommendations.**

**Perform an effective energy audit using appropriate tools and methods.**

**Recommend modifications/improvements to HVAC systems that will optimize performance and yield maximum energy efficiency.**

**COURSE ASSESSMENT REPORT**

3. Briefly describe assessment results based on data collected during the course assessment, demonstrating the extent to which students are achieving each of the learning outcomes listed above. *Please attach a summary of the data collected.*

Students met the standard of success in all of the above listed outcomes.

4. For each outcome assessed, indicate the standard of success used, and the percentage of students who achieved that level of success. *Please attach the rubric/scoring guide used for the assessment.*

Standard of success: 65% of students meet all outcomes

Percentage of comprehension for Outcomes		
1	2	3
70%	79%	78%

5. Describe the areas of strength and weakness in students' achievement of the learning outcomes shown in assessment results.

**Strengths:** Students had a strong ability to identify control systems and their uses in the energy auditing process.

Weaknesses:

- Outcome 1 questions: 4, 17, 18, 19, 22, 23, and 57
- Outcome 2 questions: 50, 54, 55, 60, and 68
- Outcome 3 questions: 8, 49, 59, and 66

**III. Changes influenced by assessment results**

1. If weaknesses were found (see above) or students did not meet expectations, describe the action that will be taken to address these weaknesses.
- Include a course handout that will discuss the commissioning process and how the commissioning of an HVAC system can influence the energy auditing process.
  - Produce a homework or in class assignment that will have students identify high efficiency devices which can be recommended to building owners (i.e. light fixtures, HVAC, and building envelope). <sup>that</sup>
  - Include a course handout that will discuss the commissioning process and how the commissioning of an HVAC system can influence the energy auditing process.
2. Identify intended changes that will be instituted based on results of this assessment activity (check all that apply). Please describe changes and give rationale for change.
- a.  Outcomes/Assessments on the Master Syllabus  
Change/rationale:
  - b.  Objectives/Evaluation on the Master Syllabus  
Change/rationale:
  - c.  Course pre-requisites on the Master Syllabus  
Change/rationale:
  - d.  1<sup>st</sup> Day Handouts  
Change/rationale:

A handout on building commissioning will give student further information on the questions with shortcomings in outcome 1 and 3



COURSE ASSESSMENT REPORT

- e.  Course assignments  
Change/rationale:

Producing an exercise on high efficiency devices will make students apply what the textbook and lectures have told them and hopefully will increase the student's retention of what they have learned.

- f.  Course materials (check all that apply)
  - Textbook
  - Handouts
  - Other:

- g.  Instructional methods  
Change/rationale:

- h.  Individual lessons & activities  
Change/rationale:

3. What is the timeline for implementing these actions? **Fall 2009**

IV. Future plans

- 1. Describe the extent to which the assessment tools used were effective in measuring student achievement of learning outcomes for this course.

Student semester projects were not given to the section being assessed so objective 2 was assessed using a final exam.

- 2. If the assessment tools were not effective, describe the changes that will be made for future assessments.

Switch to final exam

- 3. Which outcomes from the master syllabus have been addressed in this report?

All  Selected \_\_\_\_\_

If "All", provide the report date for the next full review: **Winter 2012**

If "Selected", provide the report date for remaining outcomes: \_\_\_\_\_

Submitted by:

Print: Les Pullins Faculty/Preparer Signature: Les Pullins Date: 2/17/09

Print: Les Pullins Department Chair Signature: Les Pullins Date: 2/17/09

Print: Bruce Greene Dean/Administrator Signature: [Signature] Date: 2/23/09