# PROGRAM REVIEW

**Department: HVAC**

**Date of Program Review: 2022**

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## Recommended Timeline

- Program Review document will be completed and submitted to the Instruction Office by December 31st.
- Vice President of Academic Affairs and Director of Institutional Effectiveness will complete the summary report and send it to faculty by April 15th.
- The faculty responsible will review the report, provide any follow up information and make comments within seven days of receiving the report.
- A meeting will be scheduled with VP of Academic Affairs and Director of Institutional Effectiveness to develop an action plan within three weeks of the review.
- Programs under review will present a summary of their program findings and an Action Plan to the Cabinet Committee in August/September of the following year.

# ACADEMIC PROGRAM/DISCIPLINE REVIEW
# Fort Scott Community College

# *Introduction to Program*

# *I. Scope*

## A. Program Relation to College Mission, Core Values, and Strategic Plan:

1. **How do the goals and measurable objectives for the program/discipline help the college meet its mission, core values, and strategic plan?**
   The purpose of the program is to develop qualified HVAC Technicians to provide meaningful careers for students and meet the needs of local employers. The measurable objectives are the number of students that complete the FSCC HVAC Certificate or complete an AAS in HVAC, obtain their OSHA 10 certification, Excellence in HVAC, and EPA 608 Certificates. The HVAC program is a quality technical program that supports needs in the local workforce and has grown over the past three years in enrollment, which are key elements in the FSCC Mission and Vision statements.

2. **What specific goals of the strategic plan are affected by this? Please explain.**
   Goal 2 - This review seeks to improve the quality of the program and the education of students and improve the efficacy of instruction.

## B. Program/Discipline Demand/Need:

**If applicable, provide any advisory board meeting minutes.**

1. **Describe the need for the program/classes based on regional demands.**
   The demand for qualified technicians' remands strong with contactors contacting the program on a regular bases to inquire of student availability and arrange onsite visit.
2. **Is program revision needed? If yes, provide a detailed rationale supporting the program change.**
   The previous program review had the following revisions, upon addition input with the HVAC advisory board it was determined to develop and implement a Sheetmetal Fabrication class instead of extending the credit hours of the Heating System Fundamentals and Residential Controls classes from 3 to 4.
   The HVAC program started accepting high school students in the Fall of 2018. The addition of dual-enrolled students has precipitated a need to review and

adjust the courses offered. A streamlining of classes will allow high school students to complete the certificate in two years and provide a four-semester program of study. These changes will also reduce the cost to students and have a positive impact on post-secondary students. It will also reduce the number of overload hours and allow for a more flexible schedule without affecting the overall quality of the program. Currently, Blackboard is used, and with the addition of new online curriculum, there is also potential to have some of the courses move toward a hybrid format.

The proposed changes are as follows and were suggested in the HVAC Advisory Board meeting held in March of 2020:

Remove:

- HVC 2463-500 Air Conditioning Equipment Analysis – 3 credit hours
- HVC 2473-500 Air Conditioning Equipment Analysis Lab – 3 credit hours

Key components from these two classes would be integrated into:

- HVC 2433-500 Residential Controls – change from 3 credit hours to 4 credit hours
- HVC 2413-500 Heating System Fundamentals – change from 3 credit hours to 4 credit hours

Move:

- HVC 1633-500 Air Conditioning Design – 3 credit hours – from a fall course offering to a spring course offering. This change would benefit the student as the AC Design curriculum is challenging, and a greater foundation of classes will be beneficial to the student.

### 3. Describe how the revised program differs from the current one?

Both Certificate and AAS programs of study credit hours will be reduced, and courses worked assimilated into other current courses.

## C. Program/Discipline Analysis:

### 1. What procedures are used to ensure that course content is up-to-date?

Our courses are kept up to date by our close partnerships with businesses in our communities, the instructor working in the field as well as Advisory Board meetings each semester. Cooperation with local HVAC technicians and businesses ensures that the latest techniques and skills are being taught that are in demand locally. This also helps make sure that the equipment used is also up to the standard of the industry. The instructor attends professional development workshops on a regular basis learning about new technology in the industry.

The use of Program Reviews also provides the opportunity to reflect and review the quality of the program.
SkillsUSA membership also provides excellent opportunities to remain relevant and current with competitions as well as an extensive industry network.

## 2. What is the process for textbook review? Please list the book(s) and ISBN for each course.

Textbooks are reviewed and adopted on a 3-year rotating base and when publishers issue new editions. Content is evaluated based on how well it relates to course and program outcomes. Books that address the broadest outcomes across most courses are typically selected to reduce the quantity of textbooks that students have to purchase.
We have adopted the updated edition of the current textbook (4th Edition of Fundamentals of HVACR, Pearson) we have looked at an expanded edition and an online digital version of this text as well as the Cengage Refrigeration & AC Technology textbook. Both have animated workbook capabilities, and digital formats that would allow some expanded interactive and focused remediation and enhancement exercises based on student performance.

## 3. What methods of instruction are used to meet the goals and objectives of courses in the program/discipline? Please describe two different sample lessons used within different courses in the program.

Lecture, presentations, videos, and demonstrations are used throughout the instruction of this program. There is extensive use of hands-on learning opportunities as students work in the lab.

Heating Fundamentals:
All major furnace components are described along with their function both in a classroom presentation/lecture as well as in the lab.
Students are expected to then go to equipment in the lab, and both locate and identify each component as well as describe the purpose of each component.

Refrigeration Fundamentals:
Oxy/Acetylene torch safety, setup, lighting, use, and shut down are demonstrated.
Students then demonstrate the ability to safely set up and light the torch as well as use it for brazing or soldering and then safely shutdown and store the torch.

4. **How do you ensure appropriate academic rigor and consistency of course content in all modalities?**
   Rigor is maintained by evaluating classes against 3rd party testing outcomes. Consistency is maintained by adhering to course topics as outlined in the syllabus, as well as the curriculum that is used for each class.

## D. Program Assessment:

1. **What are the program outcomes?**
   Students successfully completing the HVAC program of study should be able to:
   - Evaluate residential AC and Heating system operation against the manufacturer and recognized industry performance standards and implement corrective actions to optimize performance.
   - Apply best practice service procedures to heating & AC systems.
   - Demonstrate an understanding of current EPA section 608 laws and guidelines.

2. **What is the process for program and course level assessment?**
   Instructor evaluation every three years and semiannually, the Advisory Board assesses the program. The courses are assessed using traditional tests as well as demonstrations and tests in the lab.

3. **What are the findings of outcomes assessment reports from the department since the last program review? (Program Compilation Summaries/Course Assessment Reports)**

   **For CTE programs only:**

   **Program majors/Current concentrators**

   **Unduplicated prior 3 year graduates**

4. **Please list any third party accreditation.**

While the program is not accredited by any third party, students complete nationally recognized certificates from third-party entities such as the EPA 608, OSHA 10, and Excellence in HVAC.

5. **List any additional needs for the program (facilities, personnel, technology, student support, etc.).**
   None at this time

## *II. Institutional Support*

## A. Support:

1. **How does this program support other academic areas of the college and/or how is it supported by other academic areas?**
   This program supports and is supported by various other academic areas of the college by providing a practical application to the things they are learning in these courses.
   - Math is directly applied in our classes in multiple ways through drafting, blueprints, detailed drawings, cost sheets, layout, material calculations, and geometric calculations that are integral in HVAC design.
   - English is also supported as students are encouraged to complete job applications, as well as resumes and instructors, have developed English lesson plans for students that are relevant to their field.
   - Science is integral to the program; for example, students learn about Boyle's Law as it pertains to freon in a refrigeration system.

2. **What learning resources are utilized for instruction and supporting the institutional outcomes?**
   Blackboard is used as well as presentation software, textbooks demonstrations, and practice on HVAC equipment, simulation/trainers, and vendor training sessions.

## B. Community Engagement:

1. **Please provide examples of how the program/discipline fosters relationships within the communities FSCC serves (community partnership, participation, advisory board, etc.)**

Advisory Board meetings are held twice a year, and the HVAC program participates in local Habitat for Humanity houses designing and installing HVAC systems.

For the past two years, CTEC has hosted a job fair that has attracted over 25 businesses and provided opportunities for students who are graduating from FSCC. This helps with placing students; in addition, instructors often discuss with business partners work opportunities for students.

The local industry is very supportive of donations to the program as well as providing internship opportunities for students.

# C. Program Development:

## 1. What marketing/recruiting strategies are used by the program/discipline?

FSCC promotes the program extensively through advertising and on its website. Local representatives work extensively with local high schools to encourage enrollment, and the local KansasWorks organization also promotes the FSCC HVAC program.

## 2. How, and by what means, does the discipline use external professional and community resources to enhance discipline practices?

Local businesses donate material to the program, which is extremely beneficial to the program. Through the Advisory Board meetings, local leaders discuss new trends, tools, or technology that needs to be addressed with the program. Students also have the opportunity to tour of local facilities, participate in a job shadow opportunities or work in the field as an intern.

## 3. Does the discipline have a means for students to assess the program outside of the official student evaluations? If so, explain.

None at this time