HVAC

Cycles included in report:
Cycle #3 8/1/14 to 7/31/15

Program Name: HVAC
Program Cycle: #3 8/1/14 to 7/31/15

1 Program Summary

HandbookProgramReviewFall2014 [PDF 2,136 KB 9/8/14]
HVAC [PDF 716 KB 9/8/14]
Program Summary [DOC 26 KB 10/7/14]

1.1 Degree Offerings AAS Degree

Currently: Heating, Ventilation, Air Conditioning, and Refrigeration Technology
Previously: HVAC Commercial Service Tech and HVAC Residential Service Tech

1.2 Certificate Offerings Certificates

Currently: Heating, Ventilation, and Air Conditioning Technology Certificate
Previously: Commercial Service Technician, General Basic HVAC Installation and Duct Fabrication, Residential Service Technician, General Basic HVAC, General Basic HVAC Sales, Design, and Estimating, General Basic HVAC Maintenance, and Installation Technician

2 Program Resources

Program Review #2 HVAC Program Resources
Student who are enrolled in the HVAC courses have the use of an open computer lab with 17 updated computers. The HVAC program supports Air Conditioning Contractors of America (ACCA) and by which the HVAC department is given free access to their software in which allows the students to complete load calculations for residential and commercial applications, the use of an electronic psychrometric charts, and access to the ESCO tests that are being required from KBOR for the HVAC students who are in the program.

Another resource that is a contribution to the success of the HVAC students is the HVAC lab. When a student is enrolled in an HVAC class, they are able to use the lab with their class to perform any number of functions associated with the installation, service, or replacement of HVAC equipment.

The HVAC program also has a full functioning sheet metal area in the lab. The sheet metal classes build and manufacture any number of projects during the semester. The HVAC lab also has two functioning boilers; a low pressure boiler and a 95 percent condensing boiler. These resources are important to the HVAC program for it creates another teaching methodology of how to provide heat to either a commercial business or a residential home.

Faculty Names for 2013/ 14
Full-time
Gordon Anderson, Dan Eberle, Howard Hendren, Jason Lamping, and Glenn Smith
Part-time
Gordon Anderson, Tracy Bedell, James Clyde, Doug Crouch, James Jones, Jason Lamping, Shawn Leikam, Gerald Reno, Michael Steinmetz, Duane Wood, and Harold Zuck

Student credit hours
full-time faculty part-time faculty TOTAL
2011/12: 854 1,037 1,891
2012/13: 927 983 1,910
2013/14: 688 934 1,622

Enrollment credit hours
full-time faculty part-time faculty TOTAL
2011/12: 272 353 625
2012/13: 283 349 632
2013/14: 230 305 535

3 Reflection on Institutional Data

Program Review #3 Reflection on IR data

HVAC FACULTY
According to the IR report, the HVAC program has 15 faculty members, five of which are full-time and ten are part-time. The faculty members for the academic year 2014/2015 are as follows;

Full-time: Howard Hendren, the HVAC department chair.
Full-time temporary: Gordon Anderson who will be on staff until May 2015.

Part-time:
James Clyde teaches two classes per semester.
Harold Zuck teaches two classes per semester.
Doug Crouch teaches one class per semester.
Shawn Leikam teaches one class per semester.
Jason Lamping teaches one class per semester.
Tracy Bedell no longer teaches classes for the HVAC department, currently she is in the INDT department.
James Jones retired spring 2014 due to health problems.
Gerald Reno resigned summer 2014, but may return to JCCC. He is no longer teaching classes for the fall 2014.
Michael Steinmetz class did not make, but will continue to teach one class per semester.
Duane Wood is not teaching this semester, he may continue to teach at JCCC.

Other full-time faculty listed by IR
Glenn Smith retired from JCCC in December 2013.
Dan Eberle is on sabbatical from JCCC for the academic year of 2014/2015.
Jason Lamping was full-time temporary from 8-2013 to 10-2013 but resigned to take another full time position.
Gordon Anderson will be on staff as a full-time temporary until May 2015.

HVAC STUDENT CREDIT HOURS
The number of student credit hours for the three most recent years were 1,891, 1,910, and 1,622. The number of credit hours dropped significantly in the past year due to the fact that the previous year; (a) the HVAC department lost two full-time faculty members: Willy Hickerson and Glenn Smith of which neither has been replaced, (b) the HVAC program went through the Kansas Board of Regents (KBOR) program realignment, and (c) the HVAC program addressed all of its courses in JCCCs Educational Affairs. In Educational Affairs, the HVAC department addressed each course by either by modification, adding two new courses, deletion of selected course, and drawing the degrees and certifications down to one apiece.

Several classes were reduced from four credit hours to three credit hours. In reducing the number of credit hours from four to three, this process also makes the students to enroll in every course in the HVAC program that is offered if they choose to pursue an Associate in Applied Science (AAS) degree. The two new courses that have been added to the program are; HVAC 165 and HVAC 275.

The incoming students to the HVAC program are advised by the department chair that they should focus on attaining a certification before going on to get their AAS. This will ensure that the students are seen as completers in the certification phase and each class that is required will transfer to the AAS. From the perspective of KBOR, this grants the HVAC department with a higher percentage of graduates within the allowable timeframe.

The loss of credit hours was expected and should not be seen as an indication of the program declining. However, the loss of two full-time faculty members is a determent to the HVAC program. Approximately 57 years of experience was lost when Willy and Glenn retired. Over the three assessment period, the fulltime faculty has maintained a teaching load average of over 45 percent of

all classes.

HVAC PROGRAM COST PER CREDIT HOUR
The costs figure that the department was been given for the overhead for the division was $44,035 for 2013/2014. The total number of student credit hours for 2013/2014 was 1,622.This cost was broken down to a total cost per credit hour of $27.15. Thus, the division overhead is $27.15 per student credit hour. The HVAC department has no control over the division overhead cost.

For the academic year of 2012/2013 the total cost for the HVAC department was $50,180.07. The total student credit hours were listed as 1,910. By dividing the $50,180.07 by 1,910, the results are that for the academic year of 2012/2013 the total cost per student hour was $26.27.

4 Student Success

Being a career and technical education (CTE) program, many students often finish just the certification and before enter the workforce. Generally, CTE programs are a pathway for students seeking employment opportunities that lead to a full time job with limited amount of educational classes. However, some students make the choice to stay and complete their associates degree at JCCC, then enter the workforce. The CTE programs are different than other traditional liberal arts programs where a student can facilitate further advancements with a bachelors degree.

Completion of the required courses for either the certificate or degree, acquiring internships with local employers, having the students meet with local employers and having an opportunity to foster relationship with them, the students are required to achieve a passing score in one of the four areas that the Kansas Board of Regents (KBOR) has defined as industry recognized third party tests. The students are beginning to take one the HVAC Excellence tests if they are pursuing the certificate and they are required to take a minimum of two tests if they stay to undertake the AAS. KBOR has provided a list on their webpage of the acceptable third party testing requirements and facilitators.
Having the students interviewing and getting jobs in the field is identified as a success. In addition, based upon the outcomes of the student that company has hired, those companies often come back to the HVAC program looking for other students to hire. This result is from the education that the students are receiving. This training is being recognized by the HVAC industry and by employers is current, effective, and relevant based upon the needs and outcomes of the students.

4.1 Define Student Success

Student success would best be measured by the number of employers seeking our graduates. The number of companies that are seeking certified students and degree graduates speaks volumes for the HVAC department. If the previous students and classes were not successful, the HVAC program would not have the success we are currently achieving. Student success in the terms of the HVAC program can be recognized as the fulfillment of students who have entered the workforce and to those who are being successful working in the HVAC field.
The tracking mechanism for the classes by JCCCs Institutional Research (IR) shows that a majority of the students enrolled in the HVAC program are finding success in the courses they are taking and by the ability to take that education and transform it into being successfully employed. In addition, the attrition rate for students enrolling in HVAC classes rates at about three percent. This percentage acknowledges the fact that the students are committing themselves to the HVAC profession.
Also, the HVAC program brings in several speakers each semester who are business owners or managers. These presentations give the students a factual understanding of what is expected of them when they leave JCCC and enter the workforce and address the important issues that the students ask during their time on campus.
According the document file for the HVAC department, JCCC tracks the percentage of student that have enrolled in each class and their completion rate for the HVAC course remain high and the completion rate for 2013/2014 is almost 98 percent, for 2012/2013 the percentage was almost 97 percent, and for the first year of the data, 2011/2012 the proportion was almost 96 percent. The students that are enrolling in the HVAC program are filling the classes and gaining valuable skills that are required for the local community, local employers, and the overall objective for JCCC is by producing tax payers and democratic citizens.

4.2 Achieve/Promote Student Success

Student success would best be measured by the number of employers seeking our graduates. The number of companies that are seeking certified students and degree graduates speaks volumes for the department. The HVAC program brings in several speakers each semester who are business owners or managers. They give the students a factual understanding of what is expected of them when they leave JCCC and enter the workforce. They address many important issues that the students ask during their time on campus. In addition, the requirements set up by KBOR and the Technical Education Authority (TEA) it has noted that the HVAC students are required to take and pass third party industry recognized third party testing. This gives the students industry recognized credentials that attest to the students abilities before the employers hire them.

4.3 Successful Transfer

Being a career and Technical Education (CTE) program, a vast majority of the HVAC students gain enough experience from the HVAC program and their classes to enter into the workforce. The night students who are in the HVAC program, choose this program to increase their earning potential, upgrade their technical skills, or are trying to finish their AAS degree while they are working full-time in the HVAC field.
Of the students that had transferred to a four year institution, in 2011/12 there were four students that transferred. In 2012/13, the data only shows one student had transferred and in 2013/14 the data is incomplete. Being in the HVAC department, it is known that a vast majority of the graduates that JCCC is producing are getting hired to work in the HVAC field. The department acknowledges that the transfer rate is low however, the instructors within the program understand what we have been tasked with and accept the challenge to continue to build a productive program with these graduates in demand from the local employers and the community as a whole.
Additionally, K-State has recently begun a program called 2X2, whereas, all of the credits will transfer to a four year degree. Again, for the most part, the HVAC graduates do not take advantage of the opportunities to further their education once they enter the workforce or follow through by reporting it to JCCCs IR department.

5 Assessment of Student Learning Outcomes

5 [XLS 43 KB 11/18/14]
5b [XLS 44 KB 11/18/14]
Assessment&CurriculumChart [XLS 41 KB 9/8/14]
Copy of ProgramQuestionFileView [XLS 38 KB 10/16/14]

5.1 Reflection on table provided on assessment.

In regards to the Assessment and Curriculum chart provided, student learning outcomes are taking place in every HVAC classes. In fact, according to the SLO description, in every class, there are more than one SLO taken place for the benefit of the students, faculty, and HVAC department. The eight different SLOs are committed to benefit the students learning and success in each class they undertake. In the HVAC department, each class is incorporating these outcomes into their learning objectives and the dynamics of the classes themselves. An example is SLO #8 use technology efficiently and responsibly, several HVAC classes use the computer lab as a training tool and incorporate the specific technology advancements of the HVAC field to the students. This objective gives the students a hands-on training evolution that is currently being used out in the HVAC field.

Last year, 2013 the HVAC program was realigned by KBOR. The vast majority of these classes are new and improved. The entire curriculum was overhauled with new and comprehensive competencies and objectives put in place. The program went before the Educational Affairs to have these new classes approved. In addition, the HVAC advisory committee and the entire HVAC faculty approved the changes to the curriculum. These changes are reflective upon the current trends of the HVAC business and industry.

5.2 Significant Assessment Findings

According to the guidelines of KBOR, the Technical Education Authority (TEA), and the HVAC

business and industry that represents the HVAC industry in Kansas. Each HVAC program will begin having their students take third party industry recognized tests. There are four options that the colleges can choose from; North American Technical Examinations (NATE), National Center for Construction Education and Research (NCCER), HVAC Excellence, Industry Competency Exams (ICE). JCCC is assessing students using the HVAC Excellence tests. By having the students take the HVAC Excellence tests, the faculty members are able to gain access to the results of the tests. These assessment scores will be provided to KBOR for a part of the Key Performance Indicators (KPIs). The objective is for each HVAC class to be able to offer an HVAC Excellence test. These exams offer prospective employers a comprehensive outlook of where a student is based upon the third party industry recognized competency exams. Should a student possess these third party exams, the employers could be able to gain an elevated perspective of the knowledge base of the graduate. Thus, this testing will become a requirement for graduates entering the HVAC field or employees already working in the field.

5.3 Ongoing Assessment Plans

The ongoing assessment plans will be associated with the industry recognized third party tests that KBOR has identified as acceptable. JCCC will be using the HVAC Excellence exams for ease of gaining the scores of the students, ease of reporting the required information to KBOR, and acceptability of the credentials among the business and industry professionals. Assessments will continue among all of the HVAC courses and each class will focus in on the continuation and implementation of the SLOs goals.

6 Curriculum Reflection

The curriculum of the HVAC department is current and reflective of the wants and needs of the business and industry community. This assertion is based upon the HVAC program has recently completed a program realignment process from KBOR, TEA, and the business and industry community. This re-alignment process was brought forth to bring all of the HVAC programs in Kansas back together for a comprehensive unity. The new curriculum at JCCC was initiated by the full-time faculty members, the adjunct faculty members were advised of the changes and were accepting of the changes. Also, the HVAC advisory board was notified about the changes and was accommodating. One aspect that the advisory board wanted to have in the curriculum was for students that were going to get a certificate, they wanted those students to have an internship before entering the workforce. The HVAC program elected to follow the suggestions of the HVAC advisory board and implement that idea into the curriculum.

The curriculum is coherent because of the recent alignment of the HVAC curriculum by KBOR. The alignment of the introductory classes will allow the students across the state to transfer from program to another if they choose to, yet giving them the same opportunity to transfer courses and having the same objectives as the other HVAC schools in Kansas.

The program is designed to assist the students in meeting the challenges of the industry by focusing on the most current methodologies that is relevant in the HVAC field. Allowing the students to take authentic assessments that are applicable to the field is critical for it initiates an understanding to employers that the students have both theoretical understanding of the complexity of the HVAC equipment, but also a hands-on and real life experience that has led to them gaining the outside third party credential.

The atmosphere of the classroom and lab areas is dynamic and the learning that is taking place is creating a presence that is moving to each student as they learn the theoretical and application of the HVAC trade. The dynamics of learning is always pushing the student forward into gaining a complete understanding of the HVAC theory, equipment, and how these future employees will be interacting with these pieces of equipment, be it in a residential or commercial application. In addition, the HVAC removed the two separate degrees of the past and joined both curriculums into a single degree. The new curriculum is reflective of both the residential and commercial degree. Yet, with a single cohesive degree, the students are being empowered by having the ability of taking and understanding all of the courses in the HVAC catalog.

The HVAC program was overhauled last year and this school year, 2014-15 will the first semester of

the new classes and format. The last overhaul of the HVAC curriculum was completed several years ago. These changes are impressive, but with any amount of change there will be some growing pains. The changes that are most noticeable are the courses that KBOR aligned which are designed for the students success and affiliated with graduation rates, Key Performance Indicators (PKIs), and overall achievement.

The curriculum was developed and is a product of the local and state needs of business and industry. With having a strong advisory committee, which many members are HVAC business owners or in the management chain of their companies, the insight of what the business and industry want in future employees was the driving force for the HVAC department. The HVAC business leadership of companies knows where their strong suites are and where they want to get to as a business. This insight acts as a guiding light for the HVAC program at JCCC.

The HVAC program does have a specialized accreditation through Partnership for Heating, Ventilation, Air-Conditioning Refrigeration (PAHRA). This certification is valid until May 2015. At this, the HVAC department is in the beginning steps of starting to renew the programs certification. In the past, the HVAC department was an active member of the JCCCs Christmas in October. The instructors and several students were involved in assisting local home owners with their HVAC equipment.

6.1 Honors Contract(s)

Honors Contracts 6.1 [DOC 25 KB 10/16/14]

6.2 New Course Offerings

The HVAC program recently underwent a realignment process through KBOR, TEA, and business and industry. JCCCs HVAC program last year developed a new curriculum and went through Educational Affairs (EA) and was passed and accepted by KBOR. In addition to changing almost every course with new objective and competencies, the HVAC program developed two new courses; HVAC 165 R-410-A Refrigerant Management course and HVAC 275 Code Review. The R-410A course is devised to allow the JCCC student to gain another type of certification that is recognized by the HVAC industry. The code review class is designed to assist the students in gaining an accurate perception of what codes are being used in the field and what is required of the students if they elect to pursue licensing in the HVAC field.

7 Faculty Success

7.1 Departmental Accomplishments

Last year, the HVAC department has completed the KBOR alignment process and proceeded to re-write the entire HVAC curriculum for JCCC. In addition, the department was able to successfully obtain approval from Educational Affairs for the improvements to the curriculum. Lastly, the HVAC department was able to bring on two new classes to the certificate and the degree. These two new classes have never been taught in the HVAC program before. The HVAC department is committed to assisting our students in every way imaginable. In the HVAC program, the faculty sees the students success as a success for themselves.

7.2 Faculty Accomplishments

Howard Hendren completed his Education Specialist Degree from Liberty University. He is also taken several continuing education classes in the HVAC industry. These include the Master Mechanical review class and the Backflow certification both presented by JCCC through its continuing education program. Currently, Howard is taking the Air Conditioning Clinic presented by Trane at JCCC.
For a vast majority of the HVAC faculty members are employed within the HVAC trades and working in the industry as full-time employees or as business owners. Thus, it is essential for them to keep up to date with their continuing education requirements and to ensure their mechanical licenses are current. However, as business owners and as employees their time is limited for their own endeavors. A vast majority of the faculty members who teach HVAC at JCCC have their Master Mechanical licenses. The Master Mechanical license is an essential tool for a business owner to have and can be necessary for

employees to achieve.

The other two full-time faculty members Willy Hickerson and Glenn Smith who were a part of the HVAC department retired last year. Last semester, the HVAC department promoted Gordon Anderson to a full-time temporary faculty member, but his tenure will expire at the end of the spring 2015 term.

7.3 Innovative Research, Teaching or Community Service

In the HVAC field, keeping current with the changing mechanical, fuel gas codes, electrical, and plumbing codes is essential. With a majority of the faculty being used on an adjunct basis, the HVAC department encourages and supports each persons insight. Each adjunct of the program shares their experiences and the information that they have gained in the educational classes. Sharing of the material is a benefit for each faculty member and the students as a whole.

Community Outreach was done by the HVAC department in helping local residents with the Christmas in October program. This program is interesting for it creates challenges and a benefit for not only the faculty, but it provides a hands-on learning environment for the students. This hands-on approach to learning is a real-world experience that is hard to replicate in the HVAC lab. The students benefit greatly from it and the assistance it provides to the members of community creates a positive interaction for JCCC, the HVAC department, and the community of Johnson County.

Being in the HVAC program, the instructors take the students on field trips to the York Manufacturing plant in Wichita, to local manufacturing plants and businesses, out in the field to visually see how houses are built and exactly how all of the duct work and mechanical systems plays a part in the construction of the houses, and visiting the JCCC campus to view the chillers and how they work. Each of these interactions is critical for the development of the students as they embark on their new careers and for the faculty of JCCC to interact with other business identities so we can build relationship with future employers.

8 Goal Setting and Action Plan

8.1 Long-term Goals

Long Term Goals 8.1
The long term goals for the HVAC department are to continue to have success with student achievement and the SLOs. Based upon the Key Performance Indicators (KPIs) the HVAC department is focusing in the student attainment. The HVAC program also seeks to maintain a successful completion rate of classes (student satisfaction). Also, for a continuation to build a successful program that is reflective of the needs of business and industry locally and within the state of Kansas (graduates and jobs in the local community). Gain a greater foothold with the HVAC business and industry, so the students of our program can be involved with internships and future employment (employment). The general educational outcomes of the students within the HVAC program are essentially devoted to their success in either the certificate program or the Applied Associates Degree of Science (AAS).
One aspect that the HVAC department and several other departments are facing is a short area of space with enable our Career and Technical Education (CTE) students to find or locate more area within the campus or within the ATB building so the HVAC program can expand instead of contracting as its been having to do for the last several semesters. As CTE programs continue to build and grow, there are space issues and concerns for safety by having so many students in a limited area.

8.1.1 Actions/Resources Required

The HVAC chair will meet with HVAC faculty member to determine and ensure that the students in the HVAC courses are getting feedback from their instructors, test results, notification of grades, and overall timely responses. The HVAC chair will provide any assistance to the faculty members or to the students that are having any issues.

8.1.2 Updates on Long-Term Goals

The long term goals of this program review have just been established and as of now there are no updates.

8.2 Short-Term Goals

In the 2014/15 and 2015/16 academic years, review current textbooks to ensure they comply with the new technology division non-discrimination policy. Another short term goal for the HVAC department is to ensure that each HVAC student is taking and passing the required HVAC Excellence test. This will show that the students are meeting and exceeding the primary goals established by KBOR and JCCCs HVAC department.

Another short-term goal is to have another full-time faculty member brought on board to assist the HVAC program. In addition to continue to receive funds to improve the HVAC lab and expound upon the commercial side of the HVAC department. Also, I would like to improve and continue on acquiring training material and publications for the students of the HVAC department.

8.2.1 Actions/Resources Required

The actions that are necessary for the HVAC department in achieving the designated short term goals is ensure that the HVAC students are properly trained to be able to take and pass the HVAC Excellence tests. By allowing the HVAC students an opportunity to take and pass these industry recognized third party tests, the students will be able to compete with other candidates for the openings at local HVAC companies.

The need for another full-time faculty member is ever present due to being short handed in the HVAC department since the other two full-time faculty members retired.

Having the material and equipment to effectively train the HVAC students on is essential. The cost of equipment, materials, and supplies are increasing each year. Therefore, as a department, the faculty members are searching for donations and recycled equipment to keep our cost of training to a minimum.

8.2.2 Updates on Short-Term Goals

9 Accreditation Standards

The HVAC program recently underwent a program review from KBOR in 2013. Additionally, the HVAC program revamped its entire course load with new course numbers, competencies, objectives, and credit hours. This program review allowed the HVAC department to join together classes, separate some classes, and develop some new classes. Each member of the HVAC faculty was a part of these changes, as well as the HVAC advisory board. These changes reflect the changing nature of the HVAC business and should ensure that the HVAC department is proactive in seeking advice, implementing new ideas, and following the prescribe adjustments of KBOR.

Currently, the HVAC program offers one certificate and one degree. In the past, JCCC offered many certificates that ranged from 10 hours to 38 hours. Last year, KBOR identified that the accrediting body would only recognize certificates that were above 30 hours. JCCCs certificate is 32 hours. The HVAC advisory board identified that the department should have at least one hour for an internship class. The Associates Degree (AAS) in HVAC brought together both areas of study, the commercial and residential classes to form one new Associates Degree. The HVAC Technology Associates Degree is 64 hours.

By using the AQIP standards in category one helping students learn, is the main objective of the HVAC program. In standards three and nine, the stakeholders of the HVAC program are equally invested in the program. The HVAC advisory board is always helpful and offering ways and methods of assisting the program to ensure that not only the students are successful, but the faculty. These relationships are a driving force for when the employers are seeking entry level employees. By having local employers and members of the advisory board come to JCCC and seek our graduates speaks volumes not only for the program, but the students for what they put into their learning.

9.1 Specialized Accreditation

The HVAC program at JCCC is accredited through the Partnership for Heating, Ventilation, Air Conditioning, Refrigeration Accreditation (PAHRA). PAHRA is one of the few HVAC accreditation bodies in America and at this time, JCCC is the only collegiate HVAC program to be accredited in the State of Kansas. The HVAC programs accreditation will expire in May 2015. Currently, the HVAC program is taking steps to re-new its programs accreditation with PAHRA.

10 Resource Request/Adjustment

BudgetChart [XLS 2,000 KB 9/8/14]

10.1 Long-range Adjustment to Resources

At this time there are no long range adjustments to be made for the HVAC department.

10.2 Educational Technology Support

In the HVAC program, the faculty relies heavily on teaching in smart classrooms and that all of the computers and audio visual equipment is kept in good working order. For a vast majority of the instructors, we use the computers and software as teaching aids, to further provide an explanation of the concepts that have been taught in class, and applicable programs such as Air Conditioning Contractors of America (ACCA). The ACCA programs that are used in two HVAC classes, HVAC 142 and HVAC 242 directly uses the free downloads from ACCA in order to teach these two classes. The computer lab in the Arts and Technology Building (ATB) ATB 155 is also a means for the students to take HVAC 165 the EPA 608 Refrigerant Management class, HVAC R-410A class. Both of these classes have their tests downloaded from ESCO Institute.

The computers and software are essential for the students to use in their classes, take tests, and to be able for the instructors to have at the ready for specialty classes. This requirement allows the students to perform their assigned tasks.

End of report