

New Program Request Form

CA1

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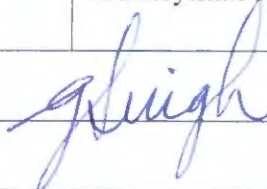
JUL - 7 2020

KS BOARD OF REGENTS

General Information

Institution submitting proposal	Johnson County Community College (JCCC)
Name, title, phone, and email of person submitting the application <i>(contact person for the approval process)</i>	Gurbhushan Singh Assoc Vice President Instruction, Academic Affairs gurbhushan@jccc.edu; 913-469-8500 x2573
Identify the person responsible for oversight of the proposed program	Richard Fort Dean of Industrial Technology rfort@jccc.edu; 913-469-8500 x2343
Title of proposed program	Plumbing Technology Certificate
Proposed suggested Classification of Instructional Program (CIP) Code	46.0503 Plumbing Technology/Plumber
CIP code description	A program that prepares individuals to practice as licensed plumbers by applying technical knowledge and skills to lay out, assemble, install, and maintain piping fixtures and systems for steam, natural gas, oil, hot water, heating, cooling, drainage, lubricating, sprinkling, and industrial processing systems in home and business environments. Includes instruction in source determination, water distribution, waste removal, pressure adjustment, basic physics, technical mathematics, blueprint reading, pipe installation, pumps, welding and soldering, plumbing inspection, and applicable codes and standards.
Standard Occupation Code (SOC) associated to the proposed program	47-2152 Plumbers, Pipefitters, and Steamfitters
SOC description	Assemble, install, alter, and repair pipelines or pipe systems that carry water, steam, air, or other liquids or gases. May install heating and cooling equipment and mechanical control systems. Includes sprinkler fitters.
Number of credits for the degree <u>and</u> all certificates requested	Technical Certificate A; 30 credit hours
Proposed Date of Initiation	August 2020/AY 2020-2021
Specialty program accrediting agency	Currently not seeking accreditation
Industry certification	Upon completion of the Plumbing Technology Certificate from JCCC, graduates will be prepared and eligible for the Journeyman's Plumbers licensing test.

Signature of College Official



Date

6.30.2020

Signature of KBOR Official

Date

Narrative

Completely address each one of the following items for new program requests. Provide any pertinent supporting documents in the form of appendices, (i.e., minutes of meetings, industry support letters, CA1-1a form).

***Institutions requesting subordinate credentials need only submit the items in blue. For example, an institution with an approved AAS degree has determined a need for a Certificate C in the same CIP code using the same courses used in the AAS degree program.*

Program Description

- Provide a complete catalog description (including program objectives) for the proposed program.

The Plumbing Technology certificate program will provide students with an opportunity to develop marketable skills in the plumbing career field that is very rewarding. The plumbing certificate is a program designed to offer students an opportunity to acquire the fundamental skills and knowledge used in the plumbing trade.

The plumbing technology certificate prepares graduates to enter the plumbing industry. The core principles and concepts of the plumbing systems are cornerstones of each course. Classroom instruction and learning theories lead to individual and team building projects. The Occupational Outlook Handbook reports that "job opportunities are expected to be excellent, as demand for skilled pipe layers, pipe fitters, and steamfitters is expected to outpace the supply of worker trained in this craft." Completion of the plumbing certificate program provides students with the educational background and the experiences needed to enter the plumbing career field.

Students should be able to perform the following at the completion of the program:

- Assemble pipe sections, tubing, or fittings, using couplings, clamps, screws, bolts, cement, plastic solvent, caulking, or soldering, brazing, or welding equipment.
 - Install pipe assemblies, fittings, valves, appliances such as dishwashers or water heaters, or fixtures such as sinks or toilets, using hand or power tools.
 - Keep records of work assignments.
 - Fill pipes or plumbing fixtures with water or air and observe pressure gauges to detect and locate leaks.
 - Direct helpers engaged in pipe cutting, preassembly, or installation of plumbing systems or components.
- List and describe the admission and graduation requirements for the proposed program.

The admission and graduation requirement are as follows:

The Plumbing Technology Certificate is an open program to students who are wanting to become plumbers. The program is being envisioned as a part-time night cohort format. Students will enter/start the program in the fall, progress through four semesters by successfully completing 30 credit hours, and earning a Plumbing Technology Certificate. A complete list of classes is included in this application under "Program Information" heading. A new student must successfully pass all coursework to graduate from JCCC. A student, transferring prior Plumbing credits from other institutions, must complete at least 50% of the required coursework and earn a 2.0 grade point average at JCCC in order to graduate.

Demand for the Program

- Using the Kansas Department of Labor's Long Term Occupational Outlook, (<https://klic.dol.ks.gov>) identify employment trends and projections: occupational growth, occupational replacement rates, estimated annual median wages, and typical education level needed for entry.

The Kansas Department of Labor, Long-term Occupation Projections 2016-2026, indicates a statewide change of employment for Plumbers of 10.3% with an annual median wage of \$47,204 (or about \$22.69 per hour) with the typical education listed as high school diploma or equivalent. Annual openings equate to 520 jobs per year. Plumbing Technology Certificate from JCCC will further improve employment outlook for our graduates.

When looking at the regional data for Kansas City, the Kansas Department of Labor, Long-term Occupation Projections 2016-2026, indicates a regional change of employment for Plumbers of 13.2% with an annual median wage of \$61,390 (or about \$29.51 per hour) with the typical education listed as high school diploma or equivalent. Annual openings equate to 178 jobs per year.

Additional employment data retrieved by the Office of Institutional Research at JCCC has also been added to *appendix A*.

- Show demand from the local community. Provide letters of support from at least three potential employers, which state the specific type of support they will provide to the proposed program.

See appendix B.

- Describe/explain any business/industry partnerships specific to the proposed program. *If a formal partnership agreement exists, agreement explaining the relationship between partners and to document support to be provided for the proposed program must be submitted to the Board office independently of the CAI materials for review purposes. The agreement will not be published or posted during the comment period.*

The business partnership between the Plumbing Technology Program and the local plumbing employers and contractors already exist due to their involvement/partnership with the HVAC advisory board at JCCC. They were present in previous meetings and encouraged the college to move forward with the Plumbing Technology Certificate and the curriculum as outlined in this application. As we met with the local employers for guidance, they not only encouraged us but offered support and partnership opportunities for future growth. They also assured their willingness to provide material goods once the program got off the ground and opened enrollment.

The Plumbing Technology certificate program provides students with an opportunity to develop marketable skills in the areas of installation, repair and maintenance of common plumbing systems and to enter a career field that is very rewarding. The plumbing certificate is a program designed to offer students an opportunity to acquire the basic plumbing skills and is designed to provide students with the fundamental knowledge and skills in the plumbing trade. From the research of ONet Online, it provided insight to the optimal educational level needed by the plumbing industry. The research expresses that 61% of those surveyed noted that the educational level needed was only a certificate. Further research also showed that the attainment of an associate degree is not needed.

The Plumbing Technology Certificate from JCCC prepares graduates to enter the plumbing industry. The core principles and concepts of the plumbing systems are cornerstones of each course. Classroom instruction and learning theories lead to individual and team building projects. The Occupational Outlook Handbook reports that "job opportunities are expected to be excellent, as demand for skilled pipe layers, pipe fitters, and steamfitters is expected to outpace the supply of worker trained in this craft." Completion of the plumbing certificate program provides students with the educational background and the experiences needed to take the Journeyman's plumbers licensing exam.

Due to the recent need for skilled plumbers in the local area, JCCC has partnered with industry leaders to develop a one-year Plumbing Technology Certificate program. Upon completion students will be able to enter the plumbing industry with the knowledge needed to be successful in the plumbing trade. The Mid-West is one of the fastest growing areas in the country. With an increase in population and economic expansion, comes the need for skilled plumbers. Addition to the Kansas Department of Labor's Long-Term Occupational Outlook, as cited previously, Bureau of Labor Statistics (BLS) also reports an entry-level hourly wage of \$16.32 per hour in the State of Kansas and workers with experience averaging \$30.18 per hour. These facts indicate that there is a bright future for individuals who are entering plumbing career. The BLS projects there will be 1,370 annual job openings in the local Kansas City metropolitan area and according to the U.S. Department of Labor, the plumbing field is expected to grow 15 percent from 2014 to 2124. This data shows a steady increase in the plumbing industry and continuing need for skilled plumbers.

The HVAC and Plumbing industry that are represented in the JCCC's HVAC Advisory Board membership, which is based upon local employers, are thoroughly overjoyed with the idea and implementation of the Plumbing Technology Certificate. The HVAC department increased their advisory membership numbers by having local plumbing contractors join in with the HVAC members as well.

Duplication of Existing Programs

- Identify similar programs in the state based on CIP code, title, and/or content. For each similar program provide the most recent K-TIP data: name of institution, program title, number of declared majors, number of program graduates, number of graduates exiting the system and employed, and annual median wage for graduates existing the system and employed.

Barton Community College began a Plumbing program in partnership with the Kansas Department of Corrections in AY16; however, no K-TIP data was available.

North Central Kansas Technical College and Highland Community College include plumbing into their HVAC programs; however, K-TIP data may be confusing to use as a comparative as these programs are training for HVAC instead of concentrated focus on Plumbing.

- Was collaboration with similar programs pursued:
 - Please explain the collaboration attempt or rationale for why collaboration was not a viable option.

The Local Union's in Kansas provide their own training to their apprentices, but not to any outside students or people wanting to begin working in the trades. To be a part of the plumbing

union, you must first be hired by a union company and then you are able to begin your apprentice program and training.

Within the State of Kansas there are three colleges that offer some plumbing classes.

Highland Community College offers two courses of plumbing within their HVAC program which consist of 40 hours.

Barton Community College offers a Career Technical Program in Plumbing which consists of 16 hours and only offered inside correctional facilities. Their exit point is the National Center for Construction Education and Research (NCCER) Level 1 Certification.

North Central Kansas Technical College offers two plumbing classes within their HVAC program which consist of 44 hours.

Program Information

- List by prefix, number, title, and description all courses (including prerequisites) to be required or elective in the proposed program.
No general education prerequisites are required to enter the program. Prerequisites within the program are listed below and detailed list included in *appendix C*.

- If the proposed program includes multiple curricula (e.g., pathways, tracks, concentrations, emphases, options, specializations, etc.), identify courses unique to each alternative.

Not applicable; single pathway.

- Provide a Program of Study/Degree Plan for the proposed program including a semester-by-semester outline that delineates required and elective courses and notes each program exit point.

First Semester		
PLUM 110	Introduction to Plumbing Systems	3
PLUM 130	Print Reading and Estimating	3
PLUM 125	Residential Plumbing	3
PLUM 140	Backflow Preventers	2
INDT 125	Industrial Safety/OSHA 30	3
SPD/COMS 155	Workplace Skills	1
Total Semester Credit Hours		15
Second Semester		
PLUM 210	DWV and Water Distribution	3 Prerequisites: PLUM 125
PLUM 250	Commercial Plumbing	3 Prerequisites: PLUM 110
PLUM 240	Installation, Maintenance, and Repair	3 Prerequisites: PLUM 130
PLUM 275	Plumbing Code Review	3 Prerequisites or corequisites: PLUM 125
PLUM 280	Plumbing Internship	3 Prerequisites: Department approval.
Total Semester Credit Hours		15
TOTAL PROGRAM CREDIT HOURS		30

Please see appendix C for individual course outlines.

- List any pertinent program accreditation available:
 - Provide a rationale for seeking or not seek said accreditation
 - If seeking accreditation, also describe the plan to achieve it

There is only one official plumbing program certification which is from National Center for Construction Education and Research (NCCER). There are two primary types of NCCER accreditation – one to offer NCCER training and another to offer assessments. Fully credentialed faculty at JCCC, along with industry partners, have developed both curriculum and assessments for this certificate that fully prepare our graduates to take the journeyman's exam and to enter the work force in our region; hence, forfeiting the need for NCCER accreditation.

It was also evident in the February 2018 HVAC Advisory Board meeting that many of the board members would like to have the plumbing program with an exit point with the plumbing students taking the plumber's journeyman's exam. Johnson County does not sponsor the journeyman's examinations, but the State of Kansas offers a journeyman's examination through the International Code Council (ICC). Students will be able to complete the exam at the ICC office located in Johnson County.

Furthermore, conversations have risen through the HVAC and Plumbing Technology Certificate Advisory Board meetings where members would like to see an exit point in the PLUM 275 Plumbing Code Review course which the students would be required to undertake the Journeyman's Plumbers licensing test for the State of Kansas. Even though, the certification is not required to enter the work force, and the cost may prevent some students from taking the test, graduates will be encouraged to pursue certification as a path to obtaining master plumber's license and promotions into management positions.

Faculty

- Describe faculty qualifications and/or certifications required to teach in the proposed program.

All faculty members should hold a Master Plumber's license and have 3 to 5 years of experience. Additionally, KBOR requires that each instructor have a minimum of an associate degree or a bachelor's degree to teach at JCCC.

Howard Hendren, a full-time HVAC instructor holds a Master Plumbers license and has several years of experience in the HVAC and Plumbing trades.

Jason Lamping, a full-time HVAC instructor is reviewing the code books and is preparing to take the Plumber's exam. He too has some experience in the plumbing trade.

Cost and Funding for Proposed Program

The Plumbing Technology program has benefitted from the construction of the new Hugh L. Libby Career and Technical Education Center. A new plumbing laboratory and classrooms were constructed as a part of the facilities master plan as mentioned later in this document. A large amount of equipment and instructional materials already existed as a part of the HVAC program offered at JCCC. While these factors contributed to the preliminary implementation of the

program, however, we will be dependent upon and are requesting Perkins funds for future equipment purchases.

Faculty salaries are charged to the general fund and further details are also outlined in appendix D.

Plumbing Technology Certificate program specific cost and funding details are provided on the CA-1a form. Please *see appendix D*.

- Describe any grants or outside funding sources that will be used for the initial startup of the new program and to sustain the proposed program.

In 2016, the JCCC Board of Trustees approved a Facilities Master Plan to renovate and build new facilities on the JCCC main campus to benefit current and future students. In accordance with this plan, the exceptional Fine Arts & Design Studios (FADS) and the state-of-the-art Hugh L. Libby Career and Technical Education Center (CTEC) were built. The Plumbing Technology Certificate program is housed in the newly built CTEC building along with other career programs, such as Automotive Technology, Automation Engineer Technology, Electrical Technology, and Heating, Ventilation and Air Conditioning Technology. Many active learning classrooms and fourteen labs occupy the 69,000 square feet space inside the CTEC. The total cost of the CTEC is \$25,510,816.00. The cost was funded by several gifts that totaled \$11,250,000.00 and the rest was covered by the proceeds of the bonds that the college issues back in 2017.

The Plumbing Technology Certificate program benefited from the construction of the CTEC as it occupies newly built and fully equipped lab and several classrooms.

Program Review and Assessment

- Describe the institution's program review cycle.

JCCC program review cycle is conducted every year, with each third year, the programs conduct an extensive review. During the two years between, the programs only conduct a modified version of the program review.

Program Approval at the Institution Level

- Provide copies of the minutes at which the new program was approved from the following groups:
 - Program Advisory Committee
(including a list of the business and industry members)
 - Curriculum Committee
 - Governing Board
(including a list of all Board members and indicate those in attendance at the approval meeting)

See appendix E.

Submit the completed application and supporting documents to the following:

Director of Workforce Development
Kansas Board of Regents
1000 SW Jackson St., Suite 520
Topeka, Kansas 66612-1368

Appendix A

Occupation Profile for Plumbers in Kansas

Job Zone Table

The section below shows the job zone information for Plumbers. Job Zone Three: Medium Preparation Needed.

Education	Experience	Training
Most occupations in this zone require training in vocational schools, related on-the-job experience, or an associate's degree.	Previous work-related skill, knowledge, or experience is required for these occupations. For example, an electrician must have completed three or four years of apprenticeship or several years of vocational training, and often must have passed a licensing exam, in order to perform the job.	Employees in these occupations usually need one or two years of training involving both on-the-job experience and informal training with experienced workers. A recognized apprenticeship program may be associated with these occupations.

Source: This information is based on O*NET™ data. O*NET is a trademark registered to the U.S. Department of Labor, Employment and Training Administration.
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Occupational Projections (Short-term) for Plumbers, Pipefitters, and Steamfitters in Kansas in 2016-2018

Occupational Projections Area Distribution Table

The table below shows the Projections Region(s) in Kansas with the highest 2016 estimated employment for Plumbers, Pipefitters, and Steamfitters in the 2016-2018 projection period.

Rank	Area	2016 Estimated Employment
1	Kansas City Area	1,652
2	North Central Area	726
3	South Central Area	649
4	Northeast Area	479
5	Southwest Area	167
6	Southeast Area	158
7	Northwest Area	157

Source: Occupational Employment Projections
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Occupation Profile for Plumbers in Kansas

Monthly Job Count Table

The table below shows the number of job openings advertised online for Plumbers in Kansas April, 2020 (Jobs De-duplication Level 2).

Occupation	Job Openings
Plumbers	51

Source: Online advertised jobs data
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Occupation Profile for Helpers--Pipelayers, Plumbers, Pipefitters, and Steamfitters in Kansas

Monthly Job Count Table

The table below shows the number of job openings advertised online for Helpers--Pipelayers, Plumbers, Pipefitters, and Steamfitters in Kansas April, 2020 (Jobs De-duplication Level 2).

Occupation	Job Openings
Helpers--Pipelayers, Plumbers, Pipefitters, and Steamfitters	7

Source: Online advertised jobs data
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Occupational Projections (Short-term) for Plumbers, Pipefitters, and Steamfitters in Kansas in 2016-2018

Occupational Projections Table

The table below shows the short term employment projections for Plumbers, Pipefitters, and Steamfitters in Kansas for the 2016-2018 projection period.

2016 Estimated Employment	2018 Projected Employment	Total 2016-2018 Employment Change	Annual Percent Change
4,195	4,245	50	0.59%

Source: Occupational Employment Projections
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Occupation Overview

Emsi Q1 2018 Data Set

April 2018

Johnson County Community College

12345 College Boulevard
Overland Park, Kansas 66210
913.469.8500

Parameters

Occupations

Code	Description
47-2152	Plumbers, Pipefitters, and Steamfitters

Regions

Code	Description
28140	Kansas City, MO-KS

Timeframe

2017 - 2022

Datarun

2018.1 - QCEW Employees, Non-QCEW Employees, and Self-Employed

Plumbers, Pipefitters, and Steamfitters in MO-KS

Plumbers, Pipefitters, and Steamfitters (SOC 47-2152):

Assemble, install, alter, and repair pipelines or pipe systems that carry water, steam, air, or other liquids or gases. May install heating and cooling equipment and mechanical control systems. Includes sprinklerfitters.

Sample of Reported Job Titles:

Sprinkler Fitter

Fitter

Pipe Fitter

Steamfitter

Sprinkler Fitter Apprentice

Master Plumber

Service Plumber

Residential Plumber

Plumbing and Heating Mechanic

Plumber Gasfitter

Related O*NET Occupations:

Pipe Fitters and Steamfitters (47-2152.01)

Plumbers (47-2152.02)

Occupation Summary for Plumbers, Pipefitters, and Steamfitters

3,102
Jobs (2017)
10% below National average

2,818
% Change (2017-2022)
Nation: 10%

\$25.73/hr
Median Hourly Earnings
Nation: \$23.14/hr

Growth for Plumbers, Pipefitters, and Steamfitters (47-2152)

3,102

2017 Jobs

3,343

2022 Jobs

241

Change (2017-2022)

7.8%

% Change (2017-2022)



Percentile Earnings for Plumbers, Pipefitters, and Steamfitters (47-2152)

\$17.81/hr

25th Percentile Earnings

\$25.73/hr

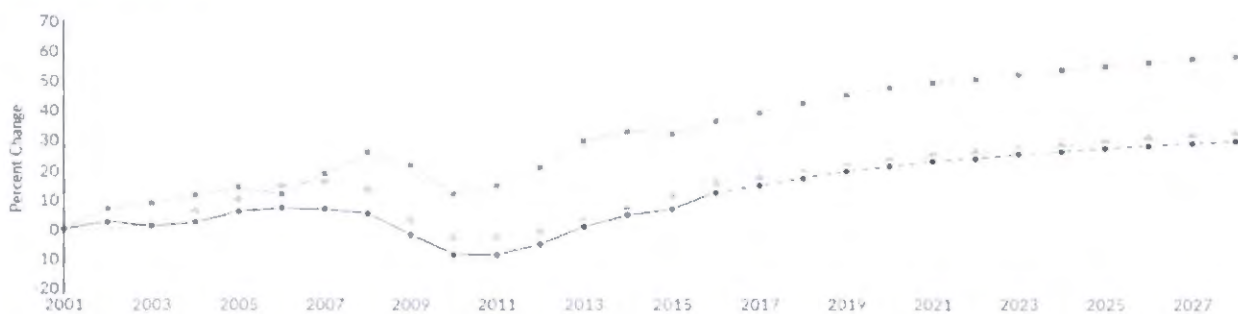
Median Earnings

\$36.63/hr

75th Percentile Earnings



Regional Trends



Region	2017 Jobs	2022 Jobs	Change	% Change
● Region	3,102	3,343	241	7.8%
■ Johnson County, KS	1,033	1,115	82	7.9%
△ State	12,165	12,657	492	4.0%
◆ Nation	484,525	519,915	35,390	7.3%

Regional Breakdown



County	2022 Jobs
Jackson County, MO	1,146
Johnson County, KS	1,115
Wyandotte County, KS	346
Clay County, MO	327
Cass County, MO	110

Job Postings Summary

355
 Unique Postings (Jan 2017 - Feb 2018)
 2,543 Total Postings

7 : 1
 Posting Intensity (Jan 2017 - Feb 2018)
 Regional Average: 7 : 1

There were 2,543 total job postings for your selection from January 2017 to February 2018, of which 355 were unique. These numbers give us a Posting Intensity of 7-to-1, meaning that for every 7 postings there is 1 unique job posting.

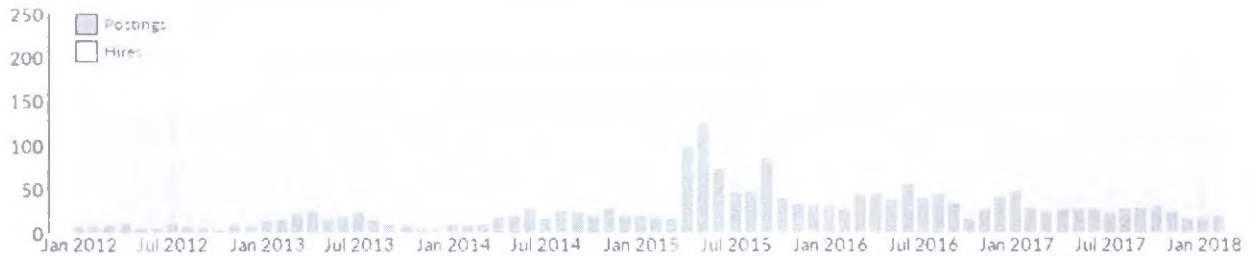
This is close to the Posting Intensity for all other occupations and companies in the region (7-to-1), indicating that they are putting average effort toward hiring for this position.

Job Postings vs. Hires

25
 Avg. Monthly Postings (Jan 2017 - Feb 2018)

183
 Avg. Monthly Hires (Jan 2017 - Feb 2018)

In an average month, there were 25 unique job postings for *Plumbers, Pipefitters, and Steamfitters*, and 183 actually hired. This means there were approximately 7 hires for *Plumbers, Pipefitters, and Steamfitters* for every 1 unique job posting.



Occupation	Avg Monthly Postings (Jan 2017 - Feb 2018)	Avg Monthly Hires (Jan 2017 - Feb 2018)
Plumbers, Pipefitters, and Steamfitters	25	183

Occupation Gender Breakdown



- Gender
- Males
 - Females

2017 Jobs	2017 Percent
3,070	98.9%
33	1.1%

Occupation Age Breakdown



- Age
- 14-18
 - 19-24
 - 25-34
 - 35-44
 - 45-54
 - 55-64
 - 65+

2017 Jobs	2017 Percent
9	0.3%
240	7.7%
747	24.1%
844	27.2%
757	24.4%
428	13.8%
78	2.5%

Occupation Race/Ethnicity Breakdown



Race/Ethnicity	2017 Jobs	2017 Percent
White	2,711	87.4%
Hispanic or Latino	201	6.5%
Black or African American	123	4.0%
Two or More Races	34	1.1%
American Indian or Alaska Native	19	0.6%
Asian	12	0.4%
Native Hawaiian or Other Pacific Islander	2	0.1%

National Educational Attainment



Education Level	2017 Percent
Less than high school diploma	16.5%
High school diploma or equivalent	46.5%
Some college, no degree	24.6%
Associate's degree	7.3%
Bachelor's degree	4.4%
Master's degree	0.5%
Doctoral or professional degree	0.2%

Occupational Programs

3

Programs (2016)

1

Completions (2016)

382

Openings (2016)

CIP Code	Program	Completions (2016)
46.0502	Pipefitting/Pipefitter and Sprinkler Fitter	1
46.0000	Construction Trades, General	0
46.0503	Plumbing Technology/Plumber	0

Industries Employing Plumbers, Pipefitters, and Steamfitters

Industry	Occupation Jobs in Industry (2017)	% of Occupation in Industry (2017)	% of Total Jobs in Industry (2017)
Plumbing, Heating, and Air-Conditioning Contractors	2,165	69.8%	24.6%
Commercial and Institutional Building Construction	79	2.6%	1.5%
Natural Gas Distribution	66	2.1%	3.2%
Light Truck and Utility Vehicle Manufacturing	51	1.6%	0.6%
Electrical Contractors and Other Wiring Installation Contractors	47	1.5%	0.7%

Appendix A - Data Sources and Calculations

Location Quotient

Location quotient (LQ) is a way of quantifying how concentrated a particular industry, cluster, occupation, or demographic group is in a region as compared to the nation. It can reveal what makes a particular region unique in comparison to the national average.

Occupation Data

Emsi occupation employment data are based on final Emsi industry data and final Emsi staffing patterns. Wage estimates are based on Occupational Employment Statistics (QCEW and Non-QCEW Employees classes of worker) and the American Community Survey (Self-Employed and Extended Proprietors). Occupational wage estimates also affected by county-level Emsi earnings by industry.

CareerBuilder/Emsi Job Postings

Job postings are collected from various sources and processed/enriched by Careerbuilder to provide information such as standardized company name, occupation, skills, and geography. Emsi performs additional filtering and processing to improve compatibility with Emsi data.

Institution Data

The institution data in this report is taken directly from the national IPEDS database published by the U.S. Department of Education's National Center for Education Statistics.

State Data Sources

This report uses state data from the following agencies: Kansas Department of Labor, Labor Market Information Services, Kansas Wage Survey; Missouri Department of Economic Development

JCCC

Johnson County Community College
Office of Institutional Research - COM 305
12345 College Blvd.
Overland Park, Kansas 66210-1299
(913) 469-8500

DATE: May 23, 2018
TO: Howard Hendren
FROM: LaWanda Hughes, Institutional Research
SUBJECT: PLUMBING TECHNOLOGY STUDENT AND EMPLOYER ASSESSMENT

Following are the findings from two surveys distributed during the spring 2018 semester to assess the needs of a proposed Plumbing Technology program at JCCC. The first survey was distributed to potential employers, the second to a sample of current JCCC students.

The first survey was emailed to 20 potential employers of the proposed program graduates. Four surveys came back as undeliverable. Six employers completed the survey resulting in an adjusted response rate of 38%. The second survey was administered to 220 current JCCC students in selected courses. A total of 78 students completed the survey in class.

- All six of the responding potential employers indicated they believe a Plumbing Technology program is needed and all were likely to hire graduates of the program.
- Sixty-eight percent of students surveyed indicated interest in enrolling in the program.

Tables detailing the results of the surveys are attached as well as verbatim comments provided by respondents. Caution should be exercised when viewing verbatim comments, as each represents the opinion of one respondent and does not necessarily reflect the perceptions and opinions as a whole. Also included is a table with contact information for those employers willing to serve on a JCCC Plumbing Technology program advisory board.

Please call me at ext. 4837 if you have any questions about these results.

Enclosures

Plumbing Technology Interest Surveys- Spring 2018

Student Survey Tabled Findings

Students' Level of Interest in Enrolling

		Not at All Interested	Not Very Interested	Neutral	Somewhat Interested	Very Interested	Total
Plumbing Technology Certificate	Count	4	4	16	20	32	76
	% by Row	5.3%	5.3%	21.1%	26.3%	42.1%	100.0%
Only enroll in a few classes	Count	1	2	15	24	28	70
	% by Row	1.4%	2.9%	21.4%	34.3%	40%	100.0%

Percentages may not total 100 due to rounding

Student Interest Although Program Only Offered at Night

		Not at All Interested	Not Very Interested	Neutral	Somewhat Interested	Very Interested	Total
Plumbing Technology Certificate	Count	1	3	22	15	27	68
	% by Row	1.5%	4.4%	32.4%	22.1%	39.7%	100.0%

Potential Students' Enrollment Preferences

	Number of Responses	Percent
Anticipated Enrollment Status		
Part-time (less than 12 credit hours/semester)	42	57.5 %
Take classes as desired, not seeking a degree	31	42.5
Most Convenient Semester to Begin Coursework		
Fall 2018	27	39.1 %
Spring 2019	22	31.9
Fall 2019	14	20.3
Other	6	8.7
Responses to Other above		
Summer		
Summer 2019		
Spring 2020		
2022		

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Employer Survey Tabled Findings

Potential Positions and Salaries that Plumbing Technology Program Graduates Qualify

Job Title	Currently Employed	Anticipated Openings in 1 Year	Anticipated Openings in 5 Years	Anticipated Starting Annual Salary	Anticipated Annual Salary after 5 Years
Apprentice	7	7	35	\$31,200 - \$41,000	\$37,440 - \$50,000
Journeyman Plumber	10	5	20	\$29,000	\$52,000
Plumbing Estimator	1	1	3	\$45,000	\$75,000
Service & Repair Plumber	46	18	55	\$40,000 - \$60,000	\$60,000 - \$85,000
Total	64	31	113		

In your opinion, is a Plumbing Technology program needed?

(Respondents could only choose a single response)

Response	Chart	Frequency	Count
Yes		100.0%	6
No		0.0%	0
		Total Responses	6

Is the market for Plumbing Technicians sufficient to provide employment for program graduates?

(Respondents could only choose a single response)

Response	Chart	Frequency	Count
Yes		100.0%	6
No		0.0%	0
		Total Responses	6

How likely would you be to hire someone with a Plumbing Technology degree from JCCC?
 (Respondents could only choose a single response)

Response	Chart	Frequency	Count
Very Likely		83.3%	5
Somewhat Likely		16.7%	1
Unsure		0.0%	0
Somewhat Unlikely		0.0%	0
Very Unlikely		0.0%	0
		Total Responses	6

Contacts willing to serve on a JCCC Plumbing Technology Program Advisory Board

Name	Title	Organization	Phone	Email	Address
Jim Lutz	Vice President	Lutz Plumbing	913.915.7785	lutzplumbing@aol.com	23712 W. 83 rd Terr. Shawnee KS 66227
Brian Nelson	Training Specialist	AB May	913.383.2222	bnelson@abmay.com	7100 E. 50 th St. KCMO 64129
Garrison Pflumm	Owner	Garrison Plumbing	913.244.9587	gary@garrisonplumbing.com	1375 Winchester Olathe KS 66061
Bob Quirk	Service Manager	Morgan Miller Plumbing	816.765.4843	bob@morganmillerplumbing.com	PO Box 499 Grandview MO 64030
Doug Crouch	Branch Manager	Plumbing Supply	913.782.7455	dcrouch@plumbsupply.com	14936 W. 101 st Terr Lenexa KS 66215

Additional Employer Comments:

There truly is a need for people that want to work with their hands. I think it would be great to offer this training to put more skilled people in the work force. Training such as Back water flow testing, working with pex piping and flex gas lines.

Appendix B



June 11, 2020

Johnson County Community College
Attn: Dr. Howard Hendren
HVAC & Plumbing Department
12345 College Blvd.
Overland Park, KS 66210

Dear Howard,

It is exciting for me to see a long-time vision of a plumbing program coming to fruition at JCCC! I appreciate your leadership and persistence in finally making this happen.

Our company and I personally are happy to help in any way. This includes serving on the Advisory Committee, donating tools and equipment, hosting interns, providing specific product training, specific situation training and serving as a guest speaker.

In short Howard, whatever you need, do not hesitate to ask.

Best always,

A handwritten signature in black ink, appearing to read "Steve Burbridge". The signature is written in a cursive style with a long, sweeping tail.

Steve Burbridge
Master Mechanical
Master Plumber
NATE Certified

Serving Metro Kansas City Since 1951

15203 W. 99th Street | Lenexa, KS 66219 | Call A-N-T-H-O-N-Y (268-4669) | Fax (913) 384-4120 | AnthonyPHCE.com



Johnson County Community College
12345 College Boulevard
Overland Park, KS 66210
Attn: Plumbing Program Department

To Whom It May Concern,

Lutz Plumbing of Shawnee, KS has proudly serviced the Kansas City Metro area's plumbing needs for 100 years and we are thrilled for the roll out of the Plumbing Program at Johnson County Community College. We are here to support in any way possible, through serving on the advisory board, donating tools and material/equipment or funds, serving as guest speakers or providing skill demonstrations, developing curriculum and serving as an internship site.

We have multiple Master Certified Plumbers willing to help develop the skills of the students and speak with them, and myself as the owner could provide information and insight on the ownership side of the business. We have our own apprenticeship program now and would be grateful for a pool of qualified candidates to intern with us and possibly grow their career here. I would be happy to serve on the board as would my service manager, Kevin Griffin. And anytime we are able to donate, we will let you know, or please let us know specifics.

Thank you so much for your continued effort. This program is going to make such a positive impact on our community and the future of the plumbing industry.

Please reach out should you need more information. Our phone number is (913) 888-9500 or you can email me at asewell@lutzplumbing.com

Sincerely,
Amber Sewell
President
Lutz Plumbing, Inc.
913-888-9500

From: Jeff Morgan <jeffmorgan508@gmail.com>

Sent: Tuesday, June 16, 2020 11:50 AM

To: Howard Hendren <hhendren@jccc.edu>

Subject: Plumbing Program



Morgan Miller Plumbing is looking forward to our continued collaboration and stands ready to play an active role in the JCCC plumbing program to ensure its success.

We would be honored to serve on the advisory committee, serve as guest speakers and conduct skill demonstrations. We welcome the opportunity to help with the curriculum development and have several ideas for that. We have been actively serving as guest speakers throughout the metro for many years.

We already have a couple candidates for the program and are in the planning stages of establishing a scholarship program of our own. Our goal is to hire an apprentice each year for the next five years and send them through the program.

We have some other ideas to help publicize the program including social media, advertising, etc. For example, we recently recruited a high school senior from Olathe South during the JCCC career day held in February. Not only is our new apprentice looking forward to the JCCC plumbing program, he could join us when we visit the local trade schools to advertise and show his first-hand experience with the program.

The plumbing industry has been good to us and we intend to do what we can to help others with an interest become involved in delivering clean water and safe sanitation to our community and our world. Thank you for the opportunity in allowing us to help develop this much-needed program.

Sincerely,

Jeff Morgan

Founder/Owner Morgan Miller Plumbing

Advisory board member of Plumbers Without Borders

13911 Norby Rd, Grandview, MO 64030

(816) 765-4843; www.morganmillerplumbing.com

Appendix C

Plumbing (PLUM) Course Outlines

JOHNSON COUNTY COMMUNITY COLLEGE

Technology Division
Department of Plumbing
Introduction to Plumbing Systems
PLUM 110

Credit Hours: 3 credit hours

Prerequisites/corequisites: none

Course Description:

This is an introduction course to the plumbing trade with an emphasis on residential plumbing and installation methods. Students will be instructed on the basic fundamentals of the plumbing trade. This course is designed to provide training in the identification and use of plumbing tools and materials, plumbing print reading, math skills used in the plumbing trade, reading residential plumbing drawings and sketches, perform basic pipe sizing, copper and plastic piping practices, soldering and brazing, cutting and threading carbon steel pipe, joining cast-iron pipe and fittings, making flared and compression joints with copper tubing, PVC and CPVC fittings, fitting and cleanout requirement for DWV piping, and installing natural gas piping systems. 2 hrs. lecture/wk, 3 hrs lab/wk.

Course Objectives:

Upon successful completion of this course, the student should be able to:

1. Describe the history of plumbing.
2. Demonstrate the basic principles of plumbing.
3. Identify the tools of the plumbing industry.
4. Explain first aid procedures and safety regulations.
5. Interpret basic math skills used in the plumbing industry.
6. Demonstrate the joining methods of the materials used in the plumbing industry.
7. Sketch plumbing isometric plans.
8. Apply the IPC to the plumbing trade.

Content Outline and Competencies:

- I. History of Plumbing
 - A. Describe the history of the plumbing from the Roman Empire to presenttime.
 - B. Describe what effects of disease has in relationship with water.
 - C. Describe the water cycle and how it impacts people.
- II. Basic Principles of Plumbing
 - A. Describe the type of fittings used in the plumbing industry.
 - B. Demonstrate Drainage, Waste, and Vent (DWV) applications.
 - C. Demonstrate supply water sizing.
 - D. Describe water valves and fixtures.
 - E. Describe plumbing equipment and appliances.
- III. Plumbing Tools
 - A. Explain and identify the different types of tools used.
 1. Demonstrate the usage of power tools.
 2. Demonstrate the usage of hand tools.
 - B. Identify and use rough-in tools.
 1. Locate and identify the location of using tools.
 2. Complete the rough-in process.
 - C. Identify and use finish tools.

Plumbing (PLUM) Course Outlines

1. Identify the usage of finishing tools.
 2. Complete the installation process.
 - D. Compile a pricing list for labor and material.
 1. Determine the price of materials manually.
 2. Determine the price of materials with computer-related software.
 3. Complete a working model of a labor-unit.
- IV. First Aid Procedures and Safety Regulations
- A. First Aid.
 - B. Jobsite safety.
 1. Trenches and excavations.
 2. Rigging.
 3. Fire prevention.
 4. Personal Protective Equipment (PPE).
 5. Material handling.
 6. Ladder safety.
 7. Cylinders.
 - C. Hand and power tools.
 1. Electrical safety.
 2. Power tools.
 3. Hand tools.
- V. Math Skills
- A. Solve basic math problems.
 - B. Application of basic math to measure tools.
 - C. Determine the devolved length of pipes.
 - D. Calculate the cost of material and labor.
 - E. Calculate basic geometry formulas.
- VI. Joining Materials
- A. Copper tubing.
 1. Types of copper tubing.
 2. Advantages and disadvantages of using copper.
 - B. Cast iron pipe.
 - C. Steel pipe.
 - D. Plastic pipe.
 1. PVC (Polyvinyl Chloride).
 2. CPVC (Chlorinated Polyvinyl Chloride).
 3. ABS (Acrylonitrile Butadiene Styrene).
 4. PEX (Cross-Linked Polyethylene).
 5. Advantages and Disadvantages of Plastic Piping.
 - E. Piping standards.
 - F. Water fixtures.
 1. Water Closets.
 2. Urinals.
 3. Sinks.
 4. Lavatories.
 5. Showers and bathtubs.
- VII. Sketch Basic Plumbing Plans.
- A. Planning and project design.
 - B. Analyze construction drawings.
 - C. Draw isometric plans.
 - D. Sketch residential and commercial plumbing plans.

Plumbing (PLUM) Course Outlines

- E. Identify projections used with drawings.
- F. Determine the national and local codes to be followed.
- G. Use of scale rulers.

VIII. IPC and the Plumbing Trade

- A. Plumbing code definitions.
- B. Analyze the general requirements of the plumbing code.
- C. Develop a comprehensive understanding of the plumbing code

Method of Evaluation and Competencies:

Chapter Tests	30-40%
Homework	20-25%
Class Participation	10-15%
Lab Assignments	25-35%
Final Exam	10-15%
TOTAL	100%

Grade Criteria:

- 90 – 100% = A
- 80 – 89% = B
- 70 – 79% = C
- 60 – 69% = D
- 0 – 59% = F

Plumbing (PLUM) Course Outlines

JOHNSON COUNTY COMMUNITY COLLEGE

Technology Division
Department of Plumbing
Residential Plumbing
PLUM 125

Credit Hours: 3 credit hours

Prerequisites/corequisites: none

Course Description:

This course introduces students to residential plumbing fixtures, faucets, drain assemblies and appliances. Students will study and practice safe installation applications of basic residential plumbing devices. The items discussed in this course will focus mainly on wood-framed structures such as single and multi-family dwellings along with the different types of materials and tools that are commonly used with these structures. This course is designed to provide an understanding of the plumbing system of a structure including water supply distribution pipes, fixtures and fixture traps, soil, waste and vent pipes, building drains and building sewers, storm water drainage and their devices, appurtenances and connections within the building and outside the building within the property lines. 2 hrs. lecture/wk, 3 hrs lab/wk.

Course Objectives:

Upon successful completion of this course, the student should be able to:

1. Install common fixtures in residential settings.
2. Install common traps associated with fixtures.
3. Assemble a water service and distribution lines.
4. Repair various types of water heaters.
5. Replace various types of water heaters.
6. Differentiate between building drains and building sewers.
7. Connect drain, waste, and vents (DWV) to building drains.
8. Use the IPC as it relates to residential applications.

Content Outline and Competencies:

I. Install Fixtures

- A. Identify and install different types of fixtures.
- B. Identify the location of residential bathroom fixtures.
- C. Calculate the amount of fixture units for a residence.

II. Plumbing Traps Fixtures

- A. Describe the different types of fixture traps.
- B. Assemble residential fixture traps.
- C. Identify the length of each trap arm.
- D. Assemble fixture traps to the DWV.

III. Water and Distribution Lines

- A. Describe and calculate the water service connection and size.
- B. Examine different types of water distribution lines.
- C. Demonstrate water sizing branch lines.
- D. Demonstrate joining methods and connections to the branch lines.
- E. Demonstrate testing and inspection of water service lines.

Plumbing (PLUM) Course Outlines

IV. Repair Water Heaters

- A. Demonstrate how to repair a gas water heater.
- B. Demonstrate how to repair an electric water heater.
- C. Demonstrate how to repair an on-demand water heater.

V. Replace Water Heaters.

- A. Calculate size of water heaters for a residence to be replaced.
- B. Demonstrate how to install a gas water heater.
- C. Demonstrate how to install an electric water heater.
- D. Demonstrate how to install an on-demand water heater.

VI. Building Drains and Sewers.

- A. Identify the location of a building drain.
 - 1. Identify types of building drains.
 - 2. Explain the materials used in building drains.
- B. Identify the location of a building sewer.
 - 1. Identify types of building sewers.
 - 2. Explain the materials used in building sewers.
- C. Calculate the length of Building sewers.

VII. Drain, Waste, and Vents (DWV).

- A. Use the IPC to determine the size of the DWV's.
- B. Explain the terms associated with the DWV.
- C. Determine the national and local codes to be followed.
- D. Sketch residential DWV diagrams.

VIII. IPC as it Relates to Plumbing Code.

- A. Plumbing code definitions.
- B. Analyze the building drains and sewers according to the plumbing code.
- C. Develop a comprehensive understanding of the plumbing code.

Method of Evaluation and Competencies:

Chapter Tests	30-40%
Homework	20-30%
Class Participation	10-20%
Lab Assignments	20-30%
Final Exam	10-15%
TOTAL	100%

Grade Criteria:

- 90 – 100% = A
- 80 – 89% = B
- 70 – 79% = C
- 60 – 69% = D
- 0 – 59% = F

Plumbing (PLUM) Course Outlines

JOHNSON COUNTY COMMUNITY COLLEGE

Technology Division
Department of Plumbing
Print Reading and Estimating
PLUM 130

Credit Hours: 3 credit hours

Prerequisites/corequisites: none

Course Description:

This course explores reading, interpreting, and understanding of construction drawings and developing piping sketches including plan, elevation and isometric views, size drain waste and vent piping. This course was designed for plumbing students who need to develop the ability to interpret trade prints and plan the installation of the required plumbing. The students will be taught the basics of sketching and plumbing designs on construction prints. 2 hrs. lecture/wk, 3 hrs lab/wk.

Course Objectives:

Upon successful completion of this course, the student should be able to:

- Interpret isometric drawings and apply to plumbing drawings.
- Create isometric pipe drawings and pipe sizes used in the plumbing trade.
- Discuss symbols used in plumbing drawings.
- Develop material takeoffs lists and approved submittal data information.
- Discuss materials, construction, and pipe connections from rough-in sheet.
- Discuss the installation of fixtures.
- Utilize plumbing software and technology.

Content Outline and Competencies:

I. Interpret Isometric Drawings

- A. Identify fixtures on an isometric drawing.
- B. Identify the location fixtures on an isometric drawing.
- C. Calculate the drain fixtures units (DFU's) for each drain line.
- D. Size the appropriate drain line after calculating the DFU's.

II. Create Isometric Pipe Drawings

- A. Develop an isometric drawing for a typical residential home.
- B. Develop an isometric drawing for a typical commercial building.
- C. Identify the length of each DWV on the isometric drawing.

III. Plumbing Symbols

- A. Describe the differences between residential and commercial symbols.
- B. Explain the differences of the plumbing needs of the public with the Americans with Disabilities Act (ADA).
- C. Demonstrate using plumbing drawings in a residential and commercial application.
- D. Identify symbols on a print.

IV. Material Take-offs Lists

- A. Demonstrate how to list the components in a take-off list.
- B. Demonstrate how to calculate the cost of the equipment from the take-off list.
- C. Identify the different types of fixtures for a residential and commercial application.

Plumbing (PLUM) Course Outlines

V. Rough-in Sheet.

- A. Calculate installation tolerances.
- B. Use an architect ruler to determine the length of pipes, drains, and vents.
- C. Demonstrate how to read a rough-in sheet.
- D. Demonstrate how to identify and list the components used for new construction.

VI. Installation of Fixtures

- A. Identify the exact location of the fixtures on a print.
- B. Identify the distance between the fixtures in a residence and commercial application.
- C. Calculate the size of the DWV pipe for a residence and commercial application.

VII. Plumbing Software

- A. Demonstrate and utilize plumbing software in estimating printreading.
- B. Use software to construct a take-off sheet.
- C. Calculate the size of water lines and drains according to the software.

Method of Evaluation and Competencies:

Chapter Tests	30-40%
Homework	20-25%
Class Participation	10-15%
Lab Assignments	20-30%
Final Exam	10-15%
TOTAL	100%

Grade Criteria:

- 90 – 100% = A
- 80 – 89% = B
- 70 – 79% = C
- 60 – 69% = D
- 0 – 59% = F

Plumbing (PLUM) Course Outlines

JOHNSON COUNTY COMMUNITY COLLEGE

Technology Division
Department of Plumbing
Backflow Preventers
PLUM 140

Credit Hours: 2 credit hours

Prerequisites/corequisites: none

Course Description:

This course is designed to provide essential information by blending theoretical and practical aspects of cross-connection controls concerning the theory of backflow prevention and the different types of backflow devices that are used to protect the public water supply. This class will provide the students with an understanding of the principles of backflow prevention, back pressure and backsiphonage along with applying the hydraulic principles and laws. Students will be able to recognize the proper backflow prevention assembly application, installation and operation. Students will be able to demonstrate how to properly install and test backflow protection devices. 1hr. lecture/wk, 2 hrs lab/wk.

Course Objectives:

Upon successful completion of this course, the student should be able to:

1. Examine historical data, hydraulics and the fundamentals regarding cross-connections.
2. Apply, define and identify the appropriate plumbing codes.
3. Describe back pressure and back siphonage and how to prevent it on various traps.
4. Observe the condition of the test gage equipment during all steps of the field test procedure.
5. Troubleshoot and repair the problem with a backflow prevention assembly.
6. Document and report the inspection and certification of a backflow prevention assembly.
7. Maintain and generate all certifications of backflow prevention assemblies.

Content Outline and Competencies:

I. Hydraulics and Cross-Connection

- A. Examine the historical data regarding cross-connection.
- B. Identify the pollution and hazards in the public water systems.
- C. Describe how hydraulics affects water pressure.

II. Plumbing Codes and Manuals

- A. Examine the IPC regarding backflow prevention devices.
- B. Examine the Cross-Connection Control Manual.

III. Backpressure and Backsiphonage

- A. Review the terms backpressure and backsiphonage.
- B. Examine the term backflow.
- C. Examine the concepts of the degree of hazard or pollution.

IV. Testing Equipment

- A. Demonstrate how to appropriately install backflow gages.
- B. Demonstrate how to zero the water gage.
- C. Demonstrate how to read pressure on various backflow preventer devices.
- D. Demonstrate how to remove the gages after testing backflow device.

V. Troubleshoot Backflow Assemblies

Plumbing (PLUM) Course Outlines

- A. Determine if a backflow prevention assembly is fouled.
 - B. Demonstrate how to correct the backflow device.
 - C. Describe how to repair the backflow prevention assembly.
- VI. Inspections of Backflow Prevention Assemblies
- A. Demonstrate how to document the inspection form of the backflow assembly.
 - B. Explain the process of how to complete the inspection form.
 - C. Complete the inspection form report and forward it to the state.
- VII. Backflow Prevention Assemblies
- A. Generate maintain records of backflow assemblies.
 - B. Demonstrate of how to maintain records of backflow assemblies.
 - 1. Identify the location of the backflow preventer.
 - 2. Identify the degree of hazard or pollution for each backflow preventer.
 - C. Generate the inspection reports to the owners and to the state.

Method of Evaluation and Competencies:

Chapter Tests	30-40%
Homework	20-25%
Class Participation	10-15%
Lab Assignments	25-35%
Final Exam	10-15%
TOTAL	100%

Grade Criteria:

- 90 – 100% = A
- 80 – 89% = B
- 70 – 79% = C
- 60 – 69% = D
- 0 – 59% = F

Plumbing (PLUM) Course Outlines

JOHNSON COUNTY COMMUNITY COLLEGE

Technology Division
Department of Plumbing
Drain, Waste, and Venting (DWV) and Water Distribution
PLUM 210

Credit Hours: 3 credit hours

Prerequisites/corequisites: PLUM 125

Course Description:

This course introduces students to the layout and design of the drain, waste, and vent (DWV) along with providing students how to size water distribution lines in residential homes. The students will gain practical application of using leveling instruments, shooting elevations, and grading pipes. Students will become familiar with the different types of piping utilized in water and distribution piping. This class will examine sewer treatment procedures and disposal systems; including sewers, septic tanks, calculating tank sizes, maintenance causes, and removal of sewer obstructions. 2 hrs. lecture/wk, 3 hrs lab/wk.

Course Objectives:

Upon successful completion of this course, the student should be able to:

1. Design the layout and a drain, waste, and vent (DWV) systems in residential and commercial buildings.
2. Complete basic plumbing DWV pipe calculations.
3. Interpret and identify construction drawings used in the plumbing trade.
4. Describe code requirements and construction practices in the plumbing industry.
5. Identify common types of materials and schedules used in the plumbing trades.
6. Install water piping in a residential application.
7. Install water distribution system in a residential application.
8. Identify water distribution systems in a commercial setting.
9. Use the IPC as it relates to the residential application.

Content Outline and Competencies:

I. Drain, Waste, and Vent (DWV) Systems

- A. Identify the difference between public and private systems.
- B. Identify the location of a residential public sewer line.
- C. Calculate the drain lines and vents for a residence.
- D. Calculate the drain lines and vents for a commercial business.

II. DWV Pipe Calculations

- A. Calculate the size of the DWV for a residence and commercial application.
- B. Calculate the material needed for a DWV system.
- C. Build a material take-off list.
- D. Demonstrate joining methods and connections for the DWV system.
- E. Demonstrate testing and inspection of the DWV system.

III. Construction Drawings

- A. Demonstrate the usage of construction drawing in the plumbing trade.
- B. Interpret the construction drawings.
- C. Identify the location of the DWV systems from the construction drawings.
- D. Demonstrate how to install DWV piping from the construction drawings.

Plumbing (PLUM) Course Outlines

IV. Apply the Plumbing Code

- A. Utilize the IPC in reference to the DWV system.
- B. Explain the construction practices of trenching.
- C. Identify common residential construction practices when installing a DWV system.
- D. Utilize the Occupational Safety and Health Administration (OSHA) guidelines for construction practices.

V. Materials and Construct Time Schedules

- A. Identify common types of DWV systems.
 1. Explain the different materials used below ground.
 2. Explain the different materials used above ground.
- B. Identify common connection procedures with different types of materials used for DWV.
 1. Identify types of building sewers.
 2. Explain the materials used in building sewers.
- C. Identify construction schedules.
- D. Construct a plumbing schedule and timeframe of completion.

VI. Construct Water Piping

- A. Calculate size of the water service for a residence.
- B. Demonstrate how to install a water meter.
- C. Demonstrate how to install a water service.

VII. Residential Water Distribution System

- A. Identify the location of the water service on a print.
 1. Identify other locations for the water service.
 2. Explain the materials used for a water service.
- B. Identify the location of a water service in a residence.
 1. Identify types of piping to be used for a water service.
 2. Explain the materials used for a water service.
- C. Demonstrate how to install distribution lines in a residence.

VIII. Commercial Water Distribution System

- A. Identify the location of the water service on a print.
 1. Identify other locations for the water service.
 2. Explain the materials used for a water service.
- B. Identify the location of a water service in a commercial setting.
 1. Identify types of piping to be used for a water service.
 2. Explain the materials used for a water service.
- C. Demonstrate how to install distribution lines in a commercial setting.

IX. IPC and the Code

- A. Plumbing code definitions.
- B. Analyze the building drains and sewers according to the plumbing code.
- C. Develop a comprehensive understanding of the plumbing code.

Plumbing (PLUM) Course Outlines

JOHNSON COUNTY COMMUNITY COLLEGE

Technology Division
Department of Plumbing
Installation, Maintenance, and Repair
PLUM 240

Credit Hours: 3 credit hours

Prerequisites/corequisites: PLUM 130

Course Description:

This course is designed to convey solid plumbing practices applicable to all areas of plumbing trade including: materials, installations, maintenance, and repair. Traditional approaches will be examined to ensure that the students receive a broad exposure to all materials and practices of the work place. Emphasis will be placed on advanced concepts of the plumbing industry. This class focuses on the maintenance and repairing of plumbing fixtures and includes the scientific principles of explaining why water supply and sewage systems work and mathematical principles of plumbing. This course will allow students to learn practical application in the lab setting of the theoretical material covered in class in how to diagnose and repair common problems associated with plumbing components and systems. 2hr. lecture/wk, 3hrs lab/wk.

Course Objectives:

Upon successful completion of this course, the student should be able to:

1. Install common fixtures in residential settings.
2. Install common traps associated with fixtures.
3. Assemble a water service and distribution lines.
4. Repair various types of water heaters.
5. Replace various types of water heaters.
6. Differentiate between building drains and building sewers.
7. Connect drain, waste, and vents (DWV) to building drains.
8. Use the IPC as it relates to residential applications.

Content Outline and Competencies:

I. Plumbing Fixtures

- A. Identify and install different types of fixtures.
- B. Identify the location of residential bathroom fixtures.
- C. Calculate the amount of fixture units for a residence.

II. Fixtures Traps

- A. Describe the different types of fixture traps.
- B. Assembly residential fixture traps.
- C. Identify the length of each trap arm.
- D. Assemble fixture traps to the DWV.

III. Water Distribution Lines

- A. Describe and calculate the water service connection and size.
- B. Examine different types of water distribution lines.

Plumbing (PLUM) Course Outlines

- C. Demonstrate water sizing branch lines.
- D. Demonstrate joining methods and connections to the branch lines.
- E. Demonstrate testing and inspection of water service lines.
- IV. Evaluate Water Heaters
 - A. Demonstrate how to repair a gas water heater.
 - B. Demonstrate how to repair an electric water heater.
 - C. Demonstrate how to repair an on demand water heater.
- V. Install Water Heaters.
 - A. Calculate size of water heaters for a residence to be replaced.
 - B. Demonstrate how to install a gas water heater.
 - C. Demonstrate how to install an electric water heater.
 - D. Demonstrate how to install an on demand water heater.
- VI. Differentiate Between Building Drains and Sewers
 - A. Identify the location of a building drain.
 - 1. Identify types of building drains.
 - 2. Explain the materials used in building drains.
 - B. Identify the location of a building sewer.
 - 1. Identify types of building sewers.
 - 2. Explain the materials used in building sewers.
 - C. Calculate the length of Building sewers.
- VII. Assemble DWV
 - A. Use the IPC to determine the size of the DWV's.
 - B. Explain the terms associated with the DWV/.
 - C. Determine the national and local codes to be followed.
 - D. Sketch residential DWV diagrams.
- VIII. Use the IPC
 - A. Plumbing code definitions.
 - B. Analyze the building drains and sewers according to the plumbing code.
 - C. Develop a comprehensive understanding of the plumbing code.

Method of Evaluation and Competencies:

Chapter Tests	30-40%
Homework	20-25%
Class Participation	10-15%
Lab Assignments	25-35%
Final Exam	10-15%
TOTAL	100%

Grade Criteria:

- 90 – 100% = A
- 80 – 89% = B
- 70 – 79% = C
- 60 – 69% = D
- 0 – 59% = F

Plumbing (PLUM) Course Outlines

Plumbing (PLUM) Course Outlines

JOHNSON COUNTY COMMUNITY COLLEGE

Industrial Technology Division

Department of Plumbing

Commercial Plumbing

PLUM 250

Credit Hour: 3

Contact Hours: 5

Lecture Hours: 2

Lab Hours: 3

Prerequisites: PLUM 110

Course Description:

This course introduces students to commercial plumbing features. Students will study and practice safe application and installation of basic commercial plumbing devices. This course is designed to provide an understanding of the plumbing system of a commercial structure including water supply distribution pipes; fixtures and fixture traps; soil, waste and vent pipes; building drains and building sewers; storm water drainage; appurtenances and connections within the building and outside the building within the property lines. 2hr. lecture/wk, 3hrs lab/wk.

Course Objectives:

Upon successful completion of this course, the student should be able to:

1. Install common fixtures in a commercial setting.
2. Install common traps associated with fixtures.
3. Assemble a water service and distribution lines.
4. Repair various types of commercial water heaters.
5. Replace various types of commercial water heaters.
6. Differentiate between building drains and building sewers.
7. Connect drain, waste, and vents (DWV) to building drains.
8. Use the IPC as it relates to commercial applications.
9. Assemble commercial rough-in fixtures
10. Complete commercial trim-out of fixtures

Content Outline and Competencies:

I. Commercial Fixtures

- A. Identify and install different types of fixtures.
- B. Identify the location of commercial bathroom fixtures.
- C. Calculate the amount of fixture units for a residence.

II. Fixtures Traps

- A. Describe the different types of fixture traps.
- B. Assemble residential fixture traps.
- C. Identify the length of each trap arm.
- D. Assemble fixture traps to the DWV.

III. Commercial Water Service

- A. Describe and calculate the water service connection and size.

Plumbing (PLUM) Course Outlines

- B. Examine different types of water distribution lines.
 - C. Demonstrate water sizing branch lines.
 - D. Demonstrate joining methods and connections to the branch lines.
 - E. Demonstrate testing and inspection of water service lines.
- IV. Repair Commercial Water Heaters
- A. Demonstrate how to repair a gas water heater.
 - B. Demonstrate how to repair an electric water heater.
 - C. Demonstrate how to repair an on-demand water heater.
- V. Replace Commercial Water Heaters
- A. Calculate size of water heaters for a residence to be replaced.
 - B. Demonstrate how to install a gas water heater.
 - C. Demonstrate how to install an electric water heater.
 - D. Demonstrate how to install an on-demand water heater.
- VI. Building Drains and Building Sewers
- A. Identify the location of a building drain.
 - 1. Identify types of building drains.
 - 2. Explain the materials used in building drains.
 - B. Identify the location of a building sewer.
 - 1. Identify types of building sewers.
 - 2. Explain the materials used in building sewers.
 - C. Calculate the length of Building sewers.
- VII. Connect DWV to Building Drains
- A. Use the IPC to determine the size of the DWV's.
 - B. Explain the terms associated with the DWV.
 - C. Determine the national and local codes to be followed.
 - D. Sketch commercial DWV diagrams.
- VIII. Use the IPC
- A. Plumbing code definitions.
 - B. Analyze the building drains and sewers according to the plumbing code.
 - C. Develop a comprehensive understanding of the plumbing code.
- IX. Commercial Rough-in
- A. Assemble a commercial bathroom group.
 - B. Assemble DWV for a bathroom group.
 - C. Assemble water distribution lines for a bathroom group.
 - D. Assemble an Americans with Disabilities Act (ADA) bathroom group.
- X. Commercial Trim
- A. Install trim for a commercial bathroom group.
 - B. Install trim for the water distribution lines in a bathroom group.
 - C. Install trim for an Americans with Disabilities Act (ADA) bathroom group.

Method of Evaluation and Competencies:

Chapter Tests	30-40%
Homework	20-25%
Class Participation	10-15%
Lab Assignments	25-35%
Final Exam	10-15%

Plumbing (PLUM) Course Outlines

TOTAL 100%

Grade Criteria:

90 – 100% = A

80 – 89% = B

70 – 79% = C

60 – 69% = D

0 – 59% = F

Plumbing (PLUM) Course Outlines

JOHNSON COUNTY COMMUNITY COLLEGE

Technology Division
Department of Plumbing
Plumbing Code Review
PLUM 275

Credit Hours: 3 credit hours

Prerequisites/corequisites: PLUM 125

Course Description:

This course is designed to assist students in the understanding and the interpretation of the current International Plumbing Code (IPC) and International Fuel Gas Code (IFGC) and the minimum requirements for plumbing materials and design. These codes are founded upon the basic principles of safety through properly designed systems, acceptable installation standards and appropriately maintained plumbing systems. 3 hrs. lecture/wk.

Course Objectives:

Upon successful completion of this course, the student should be able to:

1. Explain how the IPC code book addresses the regulatory codes for plumbing applications.
2. Explain the contextual arrangement and usage of the IPC code book.
3. Describe and examine the relationship between the IPC and the IFGC.
4. Describe the application process for becoming a licensed journeyman or master plumber.
5. Investigate design layout, fundamentals and installation process of gas burning appliances and fuel piping systems.
6. Examine the Occupational Safety and Health Administration (OSHA) regulations as it applies to a plumbing career.

Content Outline and Competencies:

I. International Plumbing Code

- A. Demonstrate application of the code book.
- B. Identify the subgroups in the code book.

II. IPC Arrangement

- A. Explain the role of the administration having jurisdiction of the code.
- B. Understand the terms associated with the IPC.

III. Other Code Books

- A. Understand the regulations concerning the various code books.
- B. Differentiate current code requirements from past code regulations.
- C. Identify how to find important information concerning the code.
- D. Summarize the code use in various cities, counties and state.

IV. License Requirements

- A. Determine testing requirements for a candidate in various jurisdictions.
- B. Identify the responsibility of the test taker.

V. Gas Appliances and Fuel Piping Systems.

- A. Determine testing requirements for a candidate in various jurisdictions.
- B. Identify the responsibility of the test taker.

VI. OSHA Regulations

- A. Examine the OSHA regulations as it relates to the plumbing trade.
- B. Identify the responsibility of a business owner.

Plumbing (PLUM) Course Outlines

C. Identify the responsibilities of an employee.

Method of Evaluation and Competencies:

Chapter Tests	30-40%
Homework	20-25%
Class Participation	10-15%
Lab Assignments	25-35%
Final Exam	10-15%
TOTAL	100%

Grade Criteria:

90	100% = A
80	89% = B
70	79% = C
60	69% = D
0	59% = F

Plumbing (PLUM) Course Outlines

JOHNSON COUNTY COMMUNITY COLLEGE

Technology Division
Department of Plumbing
Plumbing Internship
PLUM 280

Credit Hours: 3 credit hours

Prerequisites/corequisites: Department Approval

Course Description:

Upon successful completion of this course, the student should be able to apply classroom knowledge to an actual work environment. The internship will provide the students with an on-the-job experience under the supervision of industry professionals. The work will be developed in cooperation with area employers, college staff and each student to provide a variety of actual job experiences directly related to the student's career goals in the plumbing field. Minimum 15 hrs. per week on-the-job training.

Course Objectives:

Upon successful completion of this course, the student should be able to:

1. Describe the internship work environment.
2. Apply for and secure a position in an approved training position.
3. Keep accurate records of hours worked, job activities, and salary earned.
4. Demonstrate a mature and professional attitude toward employment and work.
5. Demonstrate the ability to work with supervisor, customers and fellow employees.

Content Outline and Competencies:

- I. Work Environment
 - A. Obtain a position with a plumbing employer.
 - B. List all objectives and situations that arise from the internship position.
 - C. Describe daily activities during the internship.
- II. Training Position
 - A. Write a letter of inquiry.
 - B. Write a resume.
 - C. Complete a job application.
 - D. Describe a job interview.
- III. Maintain Accurate Records of Job Activities
 - A. Record all significant activities.
 - B. Create a detailed list of employer expectations regarding the position.
- IV. Professionalism in the Workplace
 - A. Define labor relations.
 - B. Explain human relations.
 - C. Examine job performance.
- V. Demonstrate the Ability to Work with Others.
 - A. Describe how to work with supervisors.
 - B. Describe how to work with other employees.
 - C. Describe how to work with customers.

Method of Evaluation and Competencies:

Work assignments	60-80%
Employer Evaluations	20-30%
Student Self-evaluation	10-20%

Plumbing (PLUM) Course Outlines

TOTAL 100%

Grade Criteria:

90 - 100% = A

80 - 89% = B

70 - 79% = C

60 - 69% = D

0 - 59% = F

Plumbing (PLUM) Course Outlines

JOHNSON COUNTY COMMUNITY

COLLEGE

Workplace Skills

COMS 155

Credit Hours: 1 - 2

Contact Hours: 1 - 2

Lecture Hours: 1 - 2

Description:

This course focuses on communication concepts and skills utilized in the workplace. The course demonstrates the relationships between listening; oral communication; human relations skills; problem-solving and teamwork dynamics; time and resource management; and work ethics and job interviewing; with success in a student's desired field.

Objectives

1. Proficiently use listening skills to interpret, analyze and follow through on instructions.
2. Demonstrate oral communication through presentations, speeches, interviews and group interactions.
3. Display the necessary human relation skills to be a valued employee.
4. Utilize problem-solving/decision-making in a work environment.
5. Participate in team tasks in building group consensus.
6. Identify and explain resource management.
7. Develop time management strategies for scheduling, meeting deadlines and prioritizing tasks.
8. Interpret work ethics for responsibility, behavior, workplace rules that lead to job satisfaction.
9. List the job interview skills necessary in a career decision-making process.
- 10.

Content Outline and Competencies:

- I. Listening Habits and Skills
 - A. Identify the types and process of listening.
 - B. Describe the barriers to effective listening.
 - C. Identify methods to improve listening skills in the workplace.
 - D. Demonstrate critical-thinking methods of synthesizing, prioritizing, and reproducing messages to an audience.
- II. Oral Communication Skills
 - A. Compose and deliver a presentation on a career-oriented topic that is suitable to the topic, purpose, and audience.
 - B. Identify and demonstrate the elements of a speech presentation including introductions, main points, connectives, and conclusions.
 - C. Demonstrate the use of visual aids, including basic technology and terminology, used during an oral presentation.
 - D. Identify how nonverbal behaviors can support or hinder a message in oral presentations, speeches and group interactions.
 - E. Demonstrate positive verbal and nonverbal behaviors crucial toward workplace presentation success.
- III. Elements of Workplace Communication
 - A. Define the communication process as it relates to an organization.
 - B. Evaluate the personal self-concept and how it influences communication within the workplace.
 - C. Identify the steps of the perception process.
 - D. List methods to enhance one's ability to perceive in the workplace.
 - E. Identify methods to manage one's self-identity and strengthen credibility in the workplace.
 - F. Demonstrate skills for communicating with a culturally diverse population.
- IV. Conflict Management and Decision-Making
 - A. Define interpersonal conflict.
 - B. Explain conflict resolution styles.
 - C. Identify strategies to improve conflict resolution skills in the workplace.
 - D. Explain variables for sound decision-making in a workplace.

Plumbing (PLUM) Course Outlines

V. Group and Team Communication

- A. Define group membership roles and leadership styles.
- B. Demonstrate strategies for navigating group dynamics.
- C. List limitations and strengths of group dynamics in relation to implicit and explicit communication power.
- D. Demonstrate skills of positive team membership and consensus building.

VI. Resource Management

- A. Define resource management.
- B. Explain the similarities and differences between physical and human resources.
- C. Determine informative and persuasive communication techniques needed to successfully complete a task within an occupation.

VII. Time Management

- A. Identify the difference between social and workplace relationships.
- B. Explain methods for setting and meeting deadlines as well as communicating deadlines to others.
- C. Identify time management strategies to provide balance between work, family, civic, social, and other responsibilities.

VIII. Organizational Behavior and Communication

- A. Define organizational workplace cultures.
- B. Determine ethics in coordination with workplace implicit and explicit rules.
- C. Explain the reasoning for ethical standards including legal, reputation-related, general industry standards, and individual business preferences.
- D. Identify workplace ethical standards regarding safety, substance abuse, honesty, sexual harassment, social media, technology use, horseplay, and general behavior.
- E. Explain consequences for workplace ethical or cultural violations.

IX. Career Development Communication

- A. Develop short, medium, and long-term career goals.
- B. Prepare for a job interview.
- C. Identify and critique high and low-quality examples of resumes, cover letters, and other career-seeking communication tools.
- D. Describe communication activities which can enhance one's ability to earn a job and advance within a profession.

Method of Evaluation and Competencies:

20-30% Tests

Testing may include quizzes, chapter tests, mid-term and final examination.

20-30% Oral Presentations

A minimum of two (2) brief oral presentations will be given during the semester.

- One presentation must be performed relating to an aspect of the student's desired profession. This presentation can be informative or persuasive. Appropriate presentation genres include (but are not limited to) product or procedure talks; how to use and care for a specific tool; leading a business, production, or shift meeting; leading a safety briefing or discussing workplace expectations meeting; and generalized training. A visual aid is required for this oral presentation.
- For a second presentation, students must prepare and present a brief sales pitch; deliver an appropriate thank you, apology, or explanation to a stakeholder; or handle a potentially difficult conflict with a supervisor or employee.

20-30% Written Assignments

These can include reaction papers, worksheets, research assignments, resume drafts, critiques, or daily exercises.

20-30% Participation

Participation/Discussion may include worksheets or daily exercises/activities done in dyads, triads, and small groups; class discussion; oral presentations or impromptu speeches; and speech critiques. These activities may be evaluated through peer evaluation, self-evaluation, and instructor evaluation.

Grade Criteria:

Plumbing (PLUM) Course Outlines

90 - 100% = A

80 - 89% = B

70 - 79% = C

60 - 69% = D

0 - 59% = F

Plumbing (PLUM) Course Outlines

JOHNSON COUNTY COMMUNITY COLLEGE

Industrial Safety/OSHA 30
INDT 125

Credit Hours: 3

Contact Hours: 3

Lecture Hours: 3

Description:

Upon successful completion of this course, participants will be able to clearly identify, define and explain general industry hazards and acceptable corrective measures in accordance with the 29th Code of Federal Regulations, Part 1910 (29 CFR 1910), Occupational Safety & Health Administration (OSHA) General Industry Regulations. The OSHA course-completion card can be earned simultaneously with completion of this college course, at the discretion of the student and fulfillment of OSHA's requirements.

Objectives

Upon the successful completion of the course, the student should be able to:

1. Explain the importance of the Occupational Safety and Health Administration (OSHA) in providing a safe and healthful workplace to workers covered by OSHA.
2. Describe the OSHA and American National Standards Institute (ANSI) guidelines for safety and health programs.
3. Describe the history and application of the Occupational Safety and Health (OSH) Act, OSHA standards and the General Duty Clause.
4. Explain the OSHA record-keeping requirements.
5. Describe the requirements of the hazard communication standard (HazCom) and the Globally Harmonized System (GHS).
6. Describe the requirements for personal protective equipment (PPE).
7. Read, interpret and apply each subpart of the OSHA regulations from 29 CFR 1910.

Content Outline and Competencies:

I. Introduction to OSHA

- A. Explain why OSHA is important to workers.
- B. Explain OSHA rights under OSHA.
- C. Discuss employer responsibilities under OSHA.
- D. Discuss the use of OSHA standards.
- E. Explain how OSHA inspections are conducted.
- F. Utilize helpful worker safety and health resources.

II. Safety and Health Programs

- A. Discuss the costs of accidents and the benefits of safety and health programs.
- B. Describe the OSHA requirements and guidelines for safety and health programs in general industry.
- C. Discuss the relevance and application of ANSI/AIHA Z10-2005, American National Standard for Occupational Health and Safety Management Systems.
- D. Discuss OSHA cooperative programs.

III. OSHA Overview, the Act and Standards

- A. Explain the reason for the OSH Act and its relationship to OSHA and the OSHA standards.
- B. Describe the meaning of the General Duty Clause.
- C. Explain the process of development of OSHA standards.
- D. Explain the organization of the OSHA standards that apply to general industry.

IV. Record Keeping (1904)

- A. Identify the most frequent record-keeping citations and the parts of 29 CFR 1904.
- B. Demonstrate the use of the CFR to resolve record-keeping issues.

V. Introduction to Industrial Hygiene (Subpart Z)

- A. Identify the common hazards and citations involving toxic and hazardous substances.
- B. Discuss the basic principles of industrial hygiene.
- C. Explain the use of tables Z-1, Z-2 and Z-3.

Plumbing (PLUM) Course Outlines

- D. Discuss specific hazards and requirements related to asbestos and lead or any other two substances that have substance-specific standards within Subpart Z.
- VI. Hazard Communication (HazCom) (1910.1200)
 - A. Describe the purpose of the Hazard Communication (HazCom) standard and the Globally Harmonized Standards (GHS).
 - B. Identify the requirements for hazard communication training.
 - C. Summarize the requirements of a written program and explain how workers can find information.
 - D. Discuss requirements for labeling of chemical containers.
 - E. Explain types of information found on Safety Data Sheets (SDS).
- VII. Personal Protective Equipment (PPE) (Subpart I)
 - A. Identify common uses and needs for PPE and citations related to PPE.
 - B. Explain general requirements relating to PPE.
 - C. Identify basic requirements for eye and face protection.
 - D. Summarize requirements for respiratory protection.
 - E. Identify basic requirements for head protection.
 - F. Identify basic requirements for foot protection.
 - G. Identify basic requirements for hand protection.
- VIII. Exit Routes, Emergency Action Plans (EAPs) and Fire-Prevention Plans (Subpart E)
 - A. Identify the common hazards and citations involving exit routes, emergency action plans and fire-prevention plans.
 - B. Describe the requirements and safe work practices associated with exits and exit routes.
 - C. Explain the purpose and elements of an emergency action plan (EAP).
 - D. Explain the purpose and elements of a fire-prevention plan.
- IX. Fire Protection (Subpart L)
 - A. Identify the common hazards and citations involving fire protection.
 - B. Define the classes of fires.
 - C. Identify requirements for fire brigades.
 - D. Explain requirements for portable fire extinguishers.
- X. Hazardous Materials (Subpart H)
 - A. Identify the common hazards and citations involving hazardous materials.
 - B. Discuss the hazards, requirements and safe work practices for compressed gases and cylinders.
 - C. Discuss the hazards, requirements and safe work practices for flammable and combustible liquids.
 - D. Discuss the purpose and requirements for process safety management (PSM) of highly hazardous chemicals.
- XI. Electrical Safety (Subpart S)
 - A. Identify the common hazards and citations involving electricity.
 - B. Discuss the organization and history of the electrical standard and the related consensus standards.
 - C. Discuss general requirements related to electrical safety.
 - D. Discuss principles and requirements for wiring design and protection.
 - E. Discuss principles and requirements for wiring methods, components and equipment for general use, including flexible cords.
 - F. Discuss basic principles of hazardous (classified) locations.
 - G. Discuss safety-related work practices.
- XII. Lockout/Tagout (LOTO) (1910.147)
 - A. Discuss the principles of hazardous energy and reasons for lockout and tagout procedures.
 - B. Describe the requirements for lockout/tagout programs and procedures.
- XIII. Walking and Working Surfaces (Subpart D)
 - A. Identify the common hazards and citations involving walking and working surfaces.
 - B. Discuss important housekeeping requirements and principles.
 - C. Discuss hazards and requirements related to floor and wall openings, open-sided floors, stairways and railings.
 - D. Discuss hazards and requirements related to wood and metal ladders and safe work practices

Plumbing (PLUM) Course Outlines

for their use.

XIV. Materials Handling and Storage (Subpart N)

- A. Discuss the common hazards and citations involving materials handling and storage.
- B. Discuss hazards and requirements relating to storage and movement of materials.
- C. Discuss the training requirements and basic hazards for employees servicing multipiece and single piece rim wheels.
- D. Discuss the hazards and requirements for operating powered industrial trucks.
- E. Discuss the hazards, requirements and safe work practices for operation of overhead and gantry cranes.
- F. Discuss the hazards and requirements related to slings.

XV. Permit-Required Confined Spaces (1910.146)

- A. Identify the common hazards and citations involving confined space entry.
- B. Discuss the requirements and interpretations for permit-required confined space entry.

XVI. Machinery and Machine Guarding (Subpart O)

- A. Identify the common hazards and citations involving machinery and machine safeguarding.
- B. Discuss general principles and requirements of machine guarding.
- C. Describe the purpose and provisions of OSHA's national emphasis program on amputations.
- D. Discuss the hazards and requirements for woodworking machinery.
- E. Discuss the hazards and requirements for abrasive wheel machinery.
- F. Discuss the hazards and requirements for mechanical power presses.
- G. Discuss the hazards and guarding requirements for moving parts of machinery.

XVII. Hand and Power Tools (Subpart P)

- A. Identify the common hazards and citations involving hand and power tools.
- B. Discuss general principles of safe working practices with hand and power tools, including compressed air.
- C. Explain hazards and requirements associated with portable powered tools.
- D. Discuss hazards and requirements associated with other portable tools and equipment.

XVIII. Welding, Cutting and Brazing (Subpart Q)

- A. Identify the common hazards and citations involving welding, cutting and brazing.
- B. Discuss the hazards and requirements associated with welding and other types of hot work.
- C. Discuss practices and requirements for the protection of workers and helpers performing welding or other hot work.
- D. Summarize special requirements for oxygen-fuel gas welding and cutting and cylinder use during welding.
- E. Summarize special requirements for arc welding and cutting.

Method of Evaluation and Competencies:

15-35% Classroom Attendance and Participation

20-40% Homework

10-30% Midterm Test

15-35% Final Test

TOTAL = 100%

Grade Criteria:

90 – 100% = A

80 – 89% = B

70 – 79% = C

60 – 69% = D

0 – 59% = F

Appendix D

KBOR Fiscal Summary for Proposed Academic Programs

CA-1a Form (2018)

Institution: Johnson County Community College

Proposed Program: Plumbing Technology Certificate

IMPLEMENTATION COSTS

Part I. Anticipated Enrollment		Implementation Year	
Please state how many students/credit hours are expected during the initial year of the program?			
		Full-Time/ credit hours	Part-Time/credit hours
A. Headcount:		8/ 208-240 P - T	8/ 88-96 P - T
Part II. Initial Budget		Implementation Year	
A. Faculty		Existing:	New: Funding Source:
Full-time	1	\$ 110,000	\$ JCCC General Fund
Part-time/Adjunct	2	\$	\$ 9,000 JCCC General Fund
		Amount	Funding Source
B. Equipment required for program		\$ 0	
C. Tools and/or supplies required for the program		\$ 40,000	Facilities Master Plan Funds
D. Instructional Supplies and Materials		\$ 0	
E. Facility requirements, including facility modifications and/or classroom renovations		\$ 0	New construction
F. Technology and/or Software Estimating software		\$ 5,000	Facilities Master Plan Funds
G. Other <i>(Please identify; add lines as required)</i>			
Total For Implementation Year		164,000	General Fund & Master Plan

PROGRAM SUSTAINABILITY COSTS (Second and Third Years)

Part I. Program Enrollment		Second and Third Years	
Please state how many students/credit hours are expected during the first two years of the program?			
		Full-Time/credit hours	Part-Time/credit hours
A. Headcount:		12/ 312 / 360 P T	12/ 180 / 216 P T
Part II. Ongoing Program Costs		First Two Years	
A. Faculty		Existing:	New: Funding Source:
Full-time	1	\$ 220,000	\$ JCCC General Fund
Part-time	2	\$	\$ 18,000 JCCC General Fund
		Amount	Funding Source
B. Equipment required for program		\$ 0	
C. Tools and/or supplies required for the program		\$ 40,000	General Fund & Perkins
D. Instructional Supplies and Materials		\$ 0	
E. Facility requirements, including facility modifications and/or classroom renovations		\$ 0	
F. Technology and/or Software		\$ 0	
G. Other <i>(Please identify; add lines as required)</i>			

KBOR Fiscal Summary for Proposed Academic Programs

CA-1a Form (2018)

Total for Program Sustainability	278,000	General Fund/Facilities Master Plan Funding/Perkins
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Please indicate any additional support and/or funding for the proposed program:

As mentioned in CA1 form, the JCCC Board of Trustees approved a Facilities Master Plan in 2016 to renovate and build new facilities on the JCCC main campus to benefit current and future students. In accordance with this plan, the exceptional Fine Arts & Design Studios (FADS) and the state-of-the-art Hugh L. Libby Career and Technical Education Center (CTEC) were built. The Plumbing Technology Certificate program is housed in the newly built CTEC building along with other career programs, such as Automotive Technology, Automation Engineer Technology, Electrical Technology, and Heating, Ventilation and Air Conditioning Technology. Many active learning classrooms and fourteen labs occupy the 69,000 square feet space inside the CTEC. The total cost of the CTEC is \$25,510,816.00. The cost was funded by several gifts that totaled \$11,250,000.00 and the rest was covered by the proceeds of the bonds that the college issues back in 2017.

The Plumbing Technology Certificate program benefited from the construction of the CTEC as it occupies newly built and fully equipped lab and several classrooms.

Submit the completed application and supporting documents to the following:

Director of Workforce Development
Kansas Board of Regents
1000 SW Jackson St., Suite 520
Topeka, Kansas 66612-1368

Appendix E

Advisory Committee Meeting Minutes
Johnson County Community College
12345 College BLVD.
Overland Park, Kansas 66210
913-469-8500
HVAC Advisory Board Committee Meeting
9-28-2018

8:02 am Advisory Board was called to order by Howard Hendren. Richard Fort, Dean of Industrial Technology, welcomed everyone who was attending the meeting and thanked them for their continual support of the HVAC program and with the mission of the college.

8:05 am Each person attending the meeting introduced them self and identified their company.

Johnson County Community College faculty and staff

Richard Fort

Jason Lamping

Howard Hendren

Dr. Gurb Singh

Doug Crouch

HVAC Advisory Board Members Present

Bob Kunze

Cates Service Co. 14361 W. 96th St. Lenexa KS 66215

Steve Burbridge

Anthony's Plumbing and HVAC 15203W. 99th Lenexa, KS

Gordon Anderson

H&H Color Labs 8906 E. 67 St. Raytown, MO

Duane Wood

Santa Fe A/C 1100 E. Santa Fe Gardner, KS

HVAC Advisory Board Members New

Karen Crnovich

DMC Services P.O. Box 14945 Lenexa, Kansas

Brad Porch

KC Winair Co 9980 lakeview Ave. Lenexa, Kansas

Jason Bedore

Plumb Supply 14906 W. 101 St. Lenexa, Kansas

Kevin Stryczek

Polar Aire HVAC 400 S. Kansas Olathe, Kansas

HVAC Advisory Board Members Not Present

Mike Gibbons

Mike's HVAC Olathe, KS

Jeff Vince

Vince Mechanical 22052 W. 66th St. Lenexa, KS

Zack Smith

KB Complete 5621 Foxridge, Mission, KS

Bill Geckles

Key Refrig. 14701 W. 101st. Terrace Lenexa, KS

Tom Roberts

CFM Distribution 1104 Union K. C. MO

Laine Wright

Engineered Air 32050 W. 83rd St DeSoto, KS 66215

James Gallet

Envor-tech 11003 W. 59th Terrace Shawnee KS

Kacy Hinton

MVP Electrical 15506 College BLVD, Lenexa, KS

Scot Posladel

AB May 7100 E. 50th St. K.C., MO

Bob Quirk

Morgan Miller 13911 Norby Grandview, MO

Mouhammad Alkhafaf

Bob Hamilton 7899 E. Frontage Overland Park, KS

Gary Pflumm
Ray Bradshaw

Paul Nasrallar
Gary Casey
Brian Nelson
Mike Brosseit
Rob Brown
Jason Venneman

Garrison Plumbing 1375 N. Winchester St. Olathe, KS
Anthony's Plumbing HVAC Anthony's Plumbing and
HVAC 15203W. 99th Lenexa, KS
Bob Hamilton 7899 E. Frontage Overland Park, KS
B&C Mechanical 2008 Spruce Olathe, KS
AB May 7100 E. 50th St. K.C., MO
Top Notch HVAC 23754 W. 82nd Terrace Lenexa, KS
B&C Mechanical 2008 Spruce Olathe, KS
Hampden Engineering East Longmeadow, MA

Approval of the previous HVAC advisory board minutes: Bob Kunze moved to approve the minutes and Steve Burbridge second, minutes approved.

Richard Fort presented a short PowerPoint presentation on the new CTE building with the various updates and progress of the building under construction.

Old Business: Howard Hendren presented an update of the Plumbing certificate and courses. He notified the committee that the courses were completed including the outlines and competencies, but he was still working on the CIA for the Kansas Board of Regents. He thought that the entire program may be completed in a few weeks.

New Business: Jason Lamping notified the committee that with the fall 2019 schedule there will significant changes to the scheduling of classes and the hours when the students will be on campus. The new changes will include going to an eight-week semester and a cohort program where the students will only be allowed to enter the HVAC program during the Fall semester and then they should be able to complete the program in the spring. The AAS classes will still only offered at night.

Jason Lamping also notified the committee of the new equipment that has been authorized for the HVAC department to purchase and sought insight from the members on what they thought might still be needed to acquire in the future.

Howard Hendren informed the committee members that the Industrial Technology Career Fair will be held on March 6, 2019. Each member of the advisory board will be given the opportunity to participate based upon the first comes first served policy and the number of spots available to each career program.

Susan Tollson published a news article concerning the HVAC department and recent graduates of the HVAC program. This type of news story is valuable to the HVAC program because it sheds a different light on the program and showcases the success that the HVAC graduates are having as they enter the workforce.

Lastly, the HVAC committee will be holding new election for the president and secretary in the spring. The current president and secretary have held their positions for three years.

Next Meeting: February 22, 2019 at 7:30 a.m.

Adjournment: 9:01 a.m.

Advisory Committee Meeting Minutes
Johnson County Community College
12345 College BLVD.
Overland Park, Kansas 66210
913-469-8500
HVAC Advisory Board Committee Meeting
2-23-2018

8:02 am Advisory Board was called to order by Jason Lamping. Richard Fort, Dean of Industrial Technology, welcomed everyone who was attending the meeting and thanked them for their continual support of the HVAC program and with the mission of the college.

8:05 am Each person attending the meeting introduced themselves and identified their company.

Johnson County Community College faculty and staff

Richard Fort
Jason Lamping
Harold Zuck
Howard Hendren

HVAC Advisory Board Members Present

Laine Wright	Engineered Air 32050 W. 83 rd St DeSoto, KS 66215
James Gallet	Envor-tech 11003 W. 59 th Terrace Shawnee KS
Bob Kunze	Cates Service Co. 14361 W. 96 th St. Lenexa KS 66215
Mike Brosseit	Top Notch HVAC 23754 W. 82 nd Terrace Lenexa, KS
Rob Brown	B&C Mechanical 2008 Spruce Olathe, KS
Jason Venneman	Hampden Engineering East Longmeadow, MA
Gordon Anderson	H&H Color Labs 8906 E. 67 St. Raytown, MO

HVAC Advisory Board Members New

Kacy Hinton	MVP Electrical 15506 College BLVD, Lenexa, KS
Scot Posladel	AB May 7100 E. 50 th St. K.C., MO
Bob Quirk	Morgan Miller 13911 Norby Grandview, MO
Mouhammad Alkhafaf	Bob Hamilton 7899 E. Frontage Overland Park, KS
Gary Pflumm	Garrison Plumbing 1375 N. Winchester St. Olathe, KS

Ray Bradshaw Anthony's Plumbing HVAC Anthony's Plumbing and
HVAC 15203W. 99th Lenexa, KS

Paul Nasrallar Bob Hamilton 7899 E. Frontage Overland Park, KS
Gary Casey B&C Mechanical 2008 Spruce Olathe, KS
Brian Nelson AB May 7100 E. 50th St. K.C., MO

HVAC Advisory Board Members Not Present

Steve Burbridge	Anthony's Plumbing and HVAC 15203W. 99 th Lenexa, KS
Mike Gibbons	Mike's HVAC Olathe, KS
Pat Jackson	Wattmaster Controls 8500NW Riverport Parkville, MO
Jesse Pugh	Trane Services 8014 Flint Lenexa, KS
Justing Essig	WSM 9755 Lackman Lenexa, KS
Duane Wood	Santa Fe A/C 1100 E. Santa Fe Gardner, KS
Jeff Vince	Vince Mechanical 22052 W. 66 th St. Lenexa, KS
Darla Pennington	Penn Tech 1755 SE "AA" Blue Springs, MO
John Burbridge	United Refrigeration 10618 Lackman Lenexa, KS
Bob Habermel	Clarcor Products
Zack Smith	KB Complete 5621 Foxridge, Mission, KS
Aaron Harkness	Associated Air Products 14900 W. 107 St. Lenexa, KS
Bill Geckles	Key Refrig. 14701 W. 101 st . Terrace Lenexa, KS
Tom Roberts	CFM Distribution 1104 Union K. C. MO

Approval of last year's HVAC advisory board minutes: Bob Kunze moved to approve the minutes and Laine Wright second. minutes approved.

Richard Fort presented a short powerpoint presentation on the new CTE building with the various updates and progress of the building under construction.

Old Business: Jason Lamping gave the advisory board members a brief update of the new HVAC curriculum that will be introduced in the fall semester: including an outline of the four new classes to the HVAC program.

Howard Hendren spoke about the new HVAC equipment that the department received including four HVAC systems and a new 8 foot break that should be arriving any day. The ship date for the 8 foot break was February 13th.

On February 28th JCCC will be holding the second annual Technology Career Fair. James Gallet spoke about last year's career fair and how successful it was. Richard Fort noted that this year, the students will have different types of name tags so the employers can easily identify which department they are from.

New Business:

Jason Lamping spoke about the progress that the JCCC marketing team has completed under the direction of Susan Tollson in the new brochures and web page for the HVAC department.

Howard Hendren asked the advisory board for their input of a new plumbing curriculum. This new plumbing curriculum would consist of a 30-hour certificate program and would focus on the needs of the local plumbing employers. Additionally, from the new advisory board members, there were questions of if the plumbing classes would focus on new construction or service and

repair. Overall, in most classes, the content should reflect a comprehensive review of both; new construction and repair and service.

Furthermore, as the discussion proceeded, it was identified that the OSHA class should focus on the construction safety aspect and not the industrial safety. This type of information was interesting because the new board members noted that as plumbers working in the field, they need to be aware of the new construction aspect of the safety requirements. Many of the board members acknowledged that they would like to have the plumbing program with an exit point with the plumbing students taking the plumber's journeyman's exam. Johnson County does not sponsor the journeyman's examinations, but the State of Kansas offers a journeyman's examination through the International Code Council (ICC). The ICC office is located in Johnson County so the plumbing students would be close to the testing organization office.

Richard Fort asked each of the members to list and identify competencies that would be critical for the plumbing students to be able to complete in each class as they progress through the plumbing program. Howard Hendren further asked the members if they could respond to the request for information by May 2018. Howard would be able to complete the class outlines during the summer. Howard also asked if the committee could reconvene during the summer, after he produced the outlines to ensure that the course objectives and competencies are comprehensive and aligned with the employers' needs and thoughts. Howard identified that middle to late July would probably be the date to meet next.

Jason asked the committee members if any one of them would be able to teach any of the plumbing classes or if they had any employees that would be interested in teaching. The faculty members identified the times, dates and hours of the classes and etc. for their considerations. None of the board members that were present were able to meet the Higher Learning Commissions qualifications to teach the new plumbing classes because of the higher education requirements. Most of the board members that were present had more than enough field experience and third-party credentials.

The fall 2018 advisory board meeting will be held on September 28, 2018.

Adjournment: 9:20 am

*In the HVAC Advisory Board Minutes, the sections that are underlines directly pertain the developing the Plumbing Program.

HVAC Advisory Committee Meeting Minutes

Johnson County Community College
12345 College BLVD.
Overland Park, Kansas 66210
913-469-8500
HVAC Advisory Committee Meeting
2-22-2019

8:05 am Advisory Board Meeting was called to order by Duane Wood. Richard Fort, Dean of Technology, welcomed the HVAC Advisory board members and thanked them for their support in being involved with the mission of JCCC.

8:07 pm. The following HVAC advisory board members were members present:

Johnson County Community College faculty and staff

Richard Fort	JCCC
Jason Lamping	JCCC
Howard Hendren	JCCC
Harold Zuck	JCCC

HVAC advisory Board Members present:

Laine Wright Plant Mgr.	Engineered Air 32050 W. 83 rd St. Desoto, KS 66018
Bob Kunze Service Mgr.	Cates Service Co. 14361 W. 96 St. Lenexa, KS 66215
Mike Gibbins Owner	Mike's Heating and Cooling Olathe, KS 66051
Duane Wood Owner	Santa Fe A/C 1100E. Santa Fe Gardner, KS 66030
Aaron Phillips Supervisor	Edwards McDowell Inc 400E. 10 th Ave, NKC. MO 64116

Jim Lewis	Owner	Summit HVAC 1415 Murry Dr. NKC. MO 64116
Karen Crnkovich	Owner	DMC service PO Box 158 Olathe, KS 66051
Jake Ewbank	Supervisor	Diakin Applied 10623 Rene Street Lenexa, KS 66215

HVAC advisory board members absent:

James Gallet	Owner	Enviro Tech 11003 W. 59 th Terrace Shawnee, KS 66203
Jeff Vince	Owner	Vince Mechanical 22052 W. 66thSt. Shawnee, KS
Mike Brosseit	Owner	Top Notch HVAC 23754 W. 82ndTerrace Lenexa, KS
Rob Brown	Owner	B&C Mechanical 2008 Spruce Olathe, KS 66219
Steve Burbridge	Owner	Anthony's HVAC 15203 W. 99thst. Lenexa, KS 66215
Tom Roberts	CEO	CFM Distributors 1104 Union KC, MO 64101
Bill Geckles	Sales Mgr.	Key Refrigeration 14701 W. 101 st. Terr Lenexa, KS 66215
Dick Ray/ Ryan Radar	Owner	Dick Ray Plumber 11306 W. 89th st. Shawnee Mission, KS 66214
Amber Lutz Sewell	Owner	Lutz Plumbing 21961 W. 83rd St. Shawnee, Ks 66227
Chip Gabbert	Owner	MVP electrical 15506 College Blvd. Lenexa, Ks 66219
Brad Porch	President	KCWin Air 9980 Lake View Ave. Lenexa, KS 66215
Bob Quirk	Mgr.	Morgan Miller Plumbing 113911 Norby Rd. Grandview, Mo. 64030
Doug Crouch	Mgr.	Plumb Supply 14906 W. 101 Terrace Lenexa, KS 66215
Dean Hutchinson	Owner	Rainbow Plumbing 9207 W. 58th St. Merriam, KS 66203
Duane Deffenbaugh	Owner	Guardian Heating & Cooling P.O. Box 527, Spring Hill, KS 66083

Approval of the previous HVAC advisory board meeting minutes from 9-28-2018: Bob Kunze moved to approve the minutes, Laine Wright seconded, minutes were approved as noted. Richard Fort provided a short presentation about the new CTE building and spoke about how the building was be completed. Richard noted that the building will be ready for the summer 2019 semester and the Roof Top Units class will be the first HVAC class to be offered in the new building. Richard Fort also noted that as of June 3 or 4, his departments will be moved out of the ATB building and into the new CTE building. The dedication of the CTE building will be next year and the initial ribbon cutting will take place in September.

Old Business: Howard Hendren was asked about the Plumbing program. He noted that with the new building and the movement towards a new cohort program for the HVAC department, he has placed it on a hold status.

NEW Business: Jason Lamping spoke on the HVAC departments move towards a three-cohort program where the day students would enter the HVAC program as a group and would complete their certificate and be ready to seek employment in one year. The night students who enter the HVAC program would still need additional time to complete the program outside of the one-year time frame because those students would not be taking a full credit load of classes.

Howard Hendren spoke about the items being purchased for the next academic year for the HVAC department.

The HVAC advisory board members also asked about any possible full-time faculty members being added for the new building. Richard Fort noted that the administration only authorized six new faculty members for other parts of the college for the next school year.

Karen Crnkovich also noted that the HVAC department should contact the Johnson County contractor licensing program prior to the mandatory contractor licensing classes to find out if any local HVAC contractor would be interested in teaching some courses for either the day or evening program.

Mike Gibbons asked if the department was going to start to offer more training for HVAC contractors. Richard Fort noted that with the new building, John Littleton in the non-credit area of the college was working on some new classes for the local HVAC contractors and would be able to enroll in them once the new building is completed.

Aaron Phillips noted that United Heating and Cooling and some other local HVAC companies are using Google glasses as a method of demonstrating technicians' competencies and warranty issues that they encounter as they are in customers houses and the HVAC department should look at using some of this technology in their classes.

Richard Fort noted that the 3rd annual career fair is being held on March 6th. There were still some interests in being involved with the career fair. It was noted that the notification should be resent out to all the HVAC advisory board members if any spots remain open for employer's involvement.

The elections were held for the president and secretary of the HVAC advisory board. Bob Kunze was elected as the new president and Karen Crnkovich was elected as the new secretary.

Congratulations to all.

The next HVAC Advisory board meeting is being changed to a night meeting so please take note. The meeting will be held on September 24th, 2019 on a Tuesday night at 6:30 p.m.

This is the first time that the meeting will be held at night in recent memory. This change is due to trying to get more advisory board members involved and participating with the HVAC department.

Bob Kunze made the motion to adjourn the meeting and a second by Laine Wright. Motion passed.

8:09 am Meeting Adjourned



EDUCATIONAL AFFAIRS COMMITTEE MEETING

Approved Minutes

December 4th, 2019

3:00pm

CC 107 – Virginia Krebs Community Room

Voting Members Present: Theresa McChesney (chair), Judi Guzzy, Brett Cooper, Mark Cowardin, Toby Klinger, Aaron Prater (vice chair), Mary Berg, Kerri Stephenson, Darryl Luton, Mazen Akkam, Richard Fleming, Matthew Schmeer, Beth Gulley, Lori Shank, Edward Ronnebaum, JC James, Dan Eberle, , Andy Meenen, Rob Grondahl, Sandy Finnicum and Jamie Cunningham

Members Absent: Jeff Anderson

Resource Members: Gurbhushan Singh, Valerie Dorsey, Debbie Young, Kris Perales and Anne Rubeck

(1) Call to Order

The meeting was called to order at 3:02pm by Theresa McChesney.

(2) Agenda Agreement (consent item)

The agenda were agreed on by consent.

(3) Meeting Minutes (consent item)

The minutes were agreed on by consent.

Arts & Design, Humanities & Social Sciences

Graphic Design

Terri Nemer

Course Edits, Effective AY 2020-2021 (summer 2020)

- ART 124: Design 2D
- ART 127: Design 3D
- ART 129: Design Color

Terri Nemer was present to represent the culmination of a few years of work standardizing courses and updating the Graphic Design program. She introduced the

updated to the design courses which are offered under the ART course subject prefix but is currently taught by Graphic Design.

Matthew Schmeer motioned to approve the edits to the ART courses and Mark Cowardin seconded the motion. The motion passed.

- GDES 120: Intro to Graphic Design
- GDES 140 & GDES 125: Graphic Processes
- GDES 131: Drawing and Media Methods II
- GDES 132: Typography
- GDES 134: Layout Design
- GDES 230: Drawing and Media Methods III
- GDES 231: Advanced Typography
- GDES 235: Production Methods
- GDES 236: Electronic Production
- GDES 244: Communication Systems
- GDES 245: Advanced Design Practice
- GDES 272: Professional Preparation
- GDES 275: Graphic Design Internship

Matthew motioned to approve the course edits in GDES and Mark Cowardin seconded the motion. The motion passed.

Program Edit, Effective AY 2020-2021 (summer 2020)

- 2290-AAS: Graphic Design
Terri discussed the updates to the program due to the updates to the existing courses. There was a discussion pertaining to the possibility of changing the extra humanities general education requirement to a COMS course in a future catalog.
Aaron Prater motioned to approve the program edit in Graphic Design and Matthew seconded the motion. The motion passed.

Computing Science & Information Technology

Data Science

Andrew Lutz

Course Edits, Effective AY 2020-2021 (summer 2020)

- IT 221: Windows Server
- IT 225: Windows Active Directory Services
- IT 245: Network Infrastructure

Andrew Lutz presented the course edits which reflect an alignment with an updated Microsoft certification.

Mazen Akkam motioned to approve the course edits to IT 221, 225 and 245. Aaron seconded the motion and the motion passed.

- IT 256: Windows Security

Bob Carney presented the course edit to IT 256 which was also updated to better align with the Microsoft Certification test 70-744.

Mazen motioned to approve the update to IT 256 and Aaron seconded the motion. The motion passed.

Communications

Foreign Languages

Christina Wolff

New Courses, Effective AY 2020-2021 (summer 2020)

- FL 172: Conversational Japanese I
- FL 184: Conversational Japanese II

Christina Wolff was present to represent the new courses developed in conversational Japanese. There were question about the percentage ranges within the Method of Evaluation of Competencies and, in the end, the percentage ranges were updated during the meeting along with a typo.

Matthew motioned to approve the new FL courses and Aaron seconded the motion. The motion passed.

Communication Studies

Deana Miller

Course Edits, Effective AY 2020-2021 (summer 2020)

- SPD 120 to COMS 120: Interpersonal Communication
 - DHYG 240 : Dental Public Health
 - DHYG 245 : Nitrous Oxide Analgesia
 - DHYG 250 : Clinical Dental Hygiene IV
 - 2510-AAS: Hotel & Lodging Management
 - 264A-AA: Emphasis in Paralegal
 - 2620-AAS: Marketing Management
 - 4920-CERT: Sales and Customer Relations Certificate
 - 2930-AAS: Computer Information Systems
 - 2990-AA: Emphasis in Criminal Justice
 - 2310-AAS: Construction Management Technology
 - 223A-AAS: Dental Hygiene
 - 2100-AS: Associate of Science with Emphasis in Early Childhood Education
 - 2650-AAS: Game Development
 - 2440-AAS: Chef Apprenticeship
 - 2550-AAS: Food and Beverage Management
 - General Education: Communications Associate of Applied Science
 - General Education: Communications Requirements for Associate of Arts

- General Education: Communications Associate of Science
- General Education: Communication Skills Requirements for Associate of General Studies
- SPD 121 to COMS 121: Public Speaking
 - DHYG 240 : Dental Public Health
 - DHYG 245 : Nitrous Oxide Analgesia
 - DHYG 250 : Clinical Dental Hygiene IV
 - 2510-AAS: Hotel & Lodging Management
 - 2330-AAS: Information Technology - Networking
 - 264A-AA: Emphasis in Paralegal
 - 2620-AAS: Marketing Management
 - 4920-CERT: Sales and Customer Relations Certificate
 - 2180-AS: Emphasis in Health Information Systems
 - 2930-AAS: Computer Information Systems
 - 2990-AA: Emphasis in Criminal Justice
 - 3120-AAS: Fashion Merchandising and Marketing
 - 2940-AS: Emphasis in Information Systems Technology
 - 223A-AAS: Dental Hygiene
 - 2100-AS: Associate of Science with Emphasis in Early Childhood Education
 - 2650-AAS: Game Development
 - 2440-AAS: Chef Apprenticeship
 - 2550-AAS: Food and Beverage Management
 - General Education: Communications Associate of Applied Science
 - General Education: Communications Requirements for Associate of Arts
 - General Education: Communications Associate of Science
 - General Education: Communication Skills Requirements for Associate of General Studies
- SPS 125 to COMS 125: Personal Communication
 - DHYG 240 : Dental Public Health
 - DHYG 245 : Nitrous Oxide Analgesia
 - DHYG 250 : Clinical Dental Hygiene IV
 - 2510-AAS: Hotel & Lodging Management
 - 2330-AAS: Information Technology - Networking
 - 264A-AA: Emphasis in Paralegal
 - 2620-AAS: Marketing Management
 - 4920-CERT: Sales and Customer Relations Certificate
 - 2930-AAS: Computer Information Systems
 - 2990-AA: Emphasis in Criminal Justice
 - 223A-AAS: Dental Hygiene
 - 2650-AAS: Game Development

- 2440-AAS: Chef Apprenticeship
- 2550-AAS: Food and Beverage Management
- General Education: Communications Associate of Applied Science
- General Education: Communications Requirements for Associate of Art
- General Education: Communications Associate of Science
- General Education: Communication Skills Requirements for Associate of General Studies
- SPD 130 to COMS 130: Elementary Debate
- SPD 132 to COMS 132: Intermediate Debate I
- SPD 155 to COMS 155: Workplace Skills
 - 4790-CERT: Metal Fabrication/Welding Certificate
 - 2460-AAS: Metal Fabrication/Welding Technology
 - 5110-CERT: Electrical Technology Certificate
 - 2050-AAS: Automation Engineer Technology
 - 3020-AAS: Heating, Ventilation, and Air Conditioning (HVAC) Technology AAS
 - 4750-CERT: Construction Management Certificate
 - 2310-AAS: Construction Management Technology
 - 2220-AAS: Computer-Aided Drafting and Design Technology
 - 2260-AAS: Electrical Technology
 - 2690-AAS: Electronics Technology
 - 6230-CERT: Heating, Ventilation, and Air Conditioning Technology Certificate
- SPD 180 to COMS 180: Intercultural Communication
 - Cultural Diversity: Associate of Arts
 - Cultural Diversity: Associate of Science
 - General Education: Global Issues/Diversity Associate of General Studies
 - General Education: Communications Associate of Applied Science
 - General Education: Communications Requirements for Associate of Arts
 - General Education: Communications Associate of Science
 - General Education: Communication Skills Associate of General Studies
- SPD 230 to COMS 230: Intermediate Debate II
- SPD 235 to COMS 235: Advanced Debate
- SPD 292 to COMS 292: Special Topics:

Deana Miller discussed the nomenclature change process for Speech to Communication Studies. The culmination of this change is the finalization of the course subject prefix change from SPD to COMS effective next catalog and coordinated rebranding.

Matthew motioned to approve the course changes from SPD to COMS and all the subsequent chain reactions listed. Toby Klinger seconded the motion and the motion passed.

Industrial Technology

Plumbing Technology

Howard Hendren

New Courses, Effective AY 2020-2021 (summer 2020)

- PLUM 110: Introduction to Plumbing Systems
- PLUM 125: Residential Plumbing
- PLUM 130: Print Reading and Estimating
- PLUM 140: Backflow Preventers
- PLUM 210: DWV Water Distribution
- PLUM 240: Installation, Maintenance and Repair
- PLUM 275: Plumbing Code Review
- PLUM 250: Commercial Plumbing
- PLUM 280: Plumbing Internship

Howard Hendren introduced the new program request for Plumbing which was developed in response to the need of businesses within the community. There were questions pertaining to licensure, obtaining qualified faculty, possible Plumbing and HVAC cross-over and financial resources for equipment.

Matthew motioned to approve the new courses in Plumbing. JC James seconded the motion and the motion passed.

New Program, Effective AY 2020-2021 (summer 2020)

- 3200-CERT: Plumbing Technology

Aaron motioned to approve the new Plumbing Technology Certificate. JC James seconded the motion and the motion passed.

Computing Science & Information Technology

Data Science

Mindi Leftwich/Suzanne Smith

Course Edits, Effective AY 2020-2021 (summer 2020)

- DS 210: Introduction to Data Science
- DS 220: Data Visualization
- DS 230: SQL for Data Analysis
- DS 240: Statistical Programming
- DS 250: Data Analysis
- DS 260: Data Mining
- DS 270: Machine Learning
- DS 280: Big Data Architecture

Mindi Leftwich and Suzanne Smith were present to represent the courses changes to DS courses. The updates to the courses include new registration requirements and

updates to the methods of evaluation of competencies. It was noted that there may be a program change to come for a future catalog.

Mazen motioned to approve the DS course edits and Aaron seconded the motion. The motion passed.

(4) Subcommittee and Liaison Reports

- Cultural Diversity/General Education
No report.
- Procedures
No report.
- Collegial Steering Committee
No report.
- OLAC
Judi Guzzy noted OLCA discussed merge class script being written to alleviate privacy issues, new Canvas upgrades, Single Sign On integration, add-ons and an online class observation tool.
- Faculty Association
Brett Cooper updated the committee on FA topics of discussion which included the new OLCA observation tool, the Shared Governance Task Force and open KNEA delegate positions.
- Faculty Senate
No report.
- Management Committee
Richard Fleming stated Management was looking into issues which stem from the formatting of public board packets.
- LQC
Theresa reported she presented the November curriculum at the December meeting.
- MPL Standardization Ad Hoc
No report.
- Governance Task Force
Aaron accounted discussed topics included feedback from listening sessions, writing bylaws, policy and procedure, and a possible vote during PDD.

(5) Announcements/Updates

- Kerri Stephenson updated the committee on her retirement plans. Best wishes offered to Kerri from the committee.

(6) Adjournment

Aaron motioned to adjourn the meeting at 4:27pm and Matthew seconded the motion.

JOHNSON COUNTY COMMUNITY COLLEGE
OFFICE OF THE PRESIDENT

January 16, 2020

Curriculum

New Courses, Effective Academic Year 2020-2021

- FL 172: Conversational Japanese I
- FL 184: Conversational Japanese II
- PLUM 110: Introduction to Plumbing Systems
- PLUM 125: Residential Plumbing
- PLUM 130: Print Reading and Estimating
- PLUM 140: Backflow Preventers
- PLUM 210: DWV Water Distribution
- PLUM 240: Installation, Maintenance and Repair
- PLUM 250: Commercial Plumbing
- PLUM 275: Plumbing Code Review
- PLUM 280: Plumbing Internship

Course Modifications, Effective Academic Year 2020-2021

- ART 124: Design 2D
- ART 127: Design 3D
- ART 129: Design Color
- DHYG 240 : Dental Public Health
- DHYG 245 : Nitrous Oxide Analgesia
- DHYG 250 : Clinical Dental Hygiene IV
- DRAF 135: Graphic Analysis
- DS 210: Introduction to Data Science
- DS 220: Data Visualization
- DS 230: SQL for Data Analysis
- DS 240: Statistical Programming
- DS 250: Data Analysis
- DS 260: Data Mining
- DS 270: Machine Learning
- DS 280: Big Data Architecture
- GDES 120: Introduction to Graphic Design
- GDES 140: Graphic Technical Processes
 - Change to: GDES 125: Graphic Processes
- GDES 131: Drawing and Media Methods II

- GDES 132: Typography
- GDES 134: Layout Design
- GDES 230: Drawing and Media Methods III
- GDES 231: Advanced Typography
- GDES 235: Production Methods
- GDES 236: Electronic Production
- GDES 244: Communication Systems
- GDES 245: Advanced Design Practice
- GDES 272: Professional Preparation
- GDES 275: Graphic Design Internship
- IT 221: Windows Server
- IT 225: Windows Active Directory Services
- IT 245: Network Infrastructure
- IT 256: Windows Security
- SPD 120: Interpersonal Communication
 - Change to: COMS 120: Interpersonal Communication
- SPD 121: Public Speaking
 - Change to: COMS 121: Public Speaking
- SPD 125: Personal Communication
 - Change to: COMS 125: Personal Communication
- SPD 130: Elementary Debate
 - Change to: COMS 130: Elementary Debate
- SPD 132: Intermediate Debate I
 - Change to: COMS 132: Intermediate Debate I
- SPD 155: Workplace Skills
 - Change to: COMS 155: Workplace Skills
- SPD 180: Intercultural Communication
 - Change to: COMS 180: Intercultural Communication
- SPD 230: Intermediate Debate II
 - Change to: COMS 230: Intermediate Debate II
- SPD 235: Advanced Debate
 - Change to: COMS 235: Advanced Debate
- SPD 292: Special Topics:
 - COMS 292: Special Topics:

New Program, Effective Academic Year 2020-2021

- 3200-CERT: Plumbing Technology

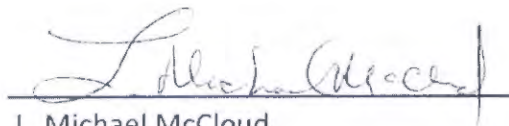
Program Modifications, Effective Academic Year 2020-2021

- 2050-AAS: Automation Engineer Technology
- 2100-AS: Associate of Science with Emphasis in Early Childhood Education
- 2180-AS: Emphasis in Health Information Systems
- 2220-AAS: Computer-Aided Drafting and Design Technology
- 223A-AAS: Dental Hygiene
- 2260-AAS: Electrical Technology
- 2290-AAS: Graphic Design
- 2310-AAS: Construction Management Technology
- 2440-AAS: Chef Apprenticeship
- 2460-AAS: Metal Fabrication/Welding Technology
- 2510-AAS: Hotel & Lodging Management
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- 264A-AA: Emphasis in Paralegal
- 2650-AAS: Game Development
- 2690-AAS: Electronics Technology
- 2930-AAS: Computer Information Systems
- 2940-AS: Emphasis in Information Systems Technology
- 2990-AA: Emphasis in Criminal Justice
- 3020-AAS: Heating, Ventilation, and Air Conditioning (HVAC) Technology AAS
- 3120-AAS: Fashion Merchandising and Marketing
- 4750-CERT: Construction Management Certificate
- 4790-CERT : Metal Fabrication/Welding Certificate
- 4920-CERT: Sales and Customer Relations Certificate
- 5110-CERT: Electrical Technology Certificate
- 6230-CERT: Heating, Ventilation, and Air Conditioning Technology Certificate

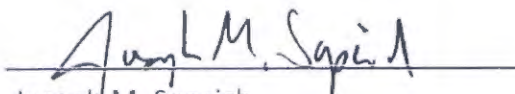
General Education & Cultural Diversity Designation Modifications, Effective Academic Year 2020-2021

- Cultural Diversity: Associate of Arts
- Cultural Diversity: Associate of Science
- General Education: Communications Associate of Applied Science
- General Education: Communications Requirements for Associate of Arts
- General Education: Communications Associate of Science
- General Education: Communication Skills Requirements for Associate of General Studies
- General Education: Global Issues/Diversity Associate of General Studies

It is the recommendation of the college administration that the Board of Trustees approve the changes to the curriculum as indicated.

A handwritten signature in cursive script, reading "L. Michael McCloud", written over a horizontal line.

L. Michael McCloud
Vice President of Academic Affairs
Chief Academic Officer

A handwritten signature in cursive script, reading "Joseph M. Sopcich", written over a horizontal line.

Joseph M. Sopcich
President

Curriculum	Changes to the curriculum, as shown in the Board Packet.
Transfer to JCCC Foundation Tribute Fund	Authorize the transfer of \$300 from the general fund to the JCCC Foundation student scholarship fund in honor of Randy Breeden and Terry Callihan.
Retirements	JOANN RIGGS (KPERS), Administrative Assistant, Continuing Education Operations, Continuing Education and Organizational Development, effective July 15, 2020.
Separation	COLLEEN RYCKERT COOK, Principal Writer/Editor, Strategic Communications Marketing, effective January 24, 2020.
Reassignments	<p>KENDYL MCDOUGALD, Zero Waste Associate Sustainability, Campus Services, Finance and Administrative Services, at \$12.72 per hour to Interim Assistant Coordinator Zero Waste, Campus Services, Finance and Administrative Services, effective January 1, 2020 at \$14.63 per hour.</p> <p>JESSICA JOHNSON, Subcenter Director, PTAC, Continuing Education and Organizational Development, at an annual salary of \$71,318 to Director, Small Business Development Center, Continuing Education and Organizational Development, effective January 21, 2019 at an annual salary of \$84,740.</p>
Employment – Regular	Regular employment in classifications indicated, as shown in the board packet.
Employment – Temporary	Temporary employment in classifications indicated, as shown in the board packet.
Unpaid Extraordinary Leave of Absence	MOLLY BAUMGARDNER, Coordinator Communications, Strategic Communications Marketing, has requested a part-time unpaid Extraordinary Leave of Absence from January 1, 2020 - May 31, 2020.

Change to the FY2019-2020 Staffing Authorization Table for Part-time Regular Staff FROM: Video Systems Technician
TO: Senior Tutor Anatomy & Physiology SRC
FROM: Library Clerk
TO: Librarian

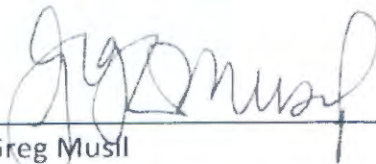
Minutes Ms. Lawson requested that the December 12, 2019 minutes reflect that she voted against the 2020 slate of officers, committee and liaison assignments.

Following discussion, upon motion by Mr. Snider, seconded by Ms. Smith-Everett which motion unanimously carried, the Board of Trustees approved Minutes from the December 12, 2019 Board of Trustees meeting as amended.


Cash Disbursement Report Ms. Lawson requested that the Cash Disbursement report be pulled for further discussion.

Following discussion, upon motion by Mr. Snider, seconded by Mr. Cross, which motion carried with a vote of 6-1, with Ms. Lawson voting against, the Board of Trustees ratified the total cash disbursements, as shown in the Board Packet, for the total amount of \$ 8,515,784.37

ADJOURNMENT Upon motion by Mr. Cross, seconded by Ms. Ingram which motion unanimously carried, the Board of Trustees meeting adjourned at 7:49 p.m.



Greg Musil
Chair



Paul Snider
Vice Chair

MINUTES OF A MEETING OF THE BOARD OF TRUSTEES
OF
JOHNSON COUNTY COMMUNITY COLLEGE

A meeting of the Board of Trustees of Johnson County Community College was called to order by the Chair on January 16, 2020, at 5:00 p.m. in the Hugh W. Speer Board Room, 137 General Education Building, on the JCCC campus, 12345 College Boulevard, Overland Park, Kansas.

Trustees Greg Musil, Chair
 Paul Snider, Vice Chair
 Lee Cross, Treasurer
 Nancy Ingram, Secretary
 Jerry Cook, Trustee
 Angeliina Lawson, Trustee
 Laura Smith-Everett, Trustee

Staff Joe Sopcich, President

Sheri Barrett, Director, Assessment/Evaluation/Institutional Outcomes
Malinda Bryan-Smith, Director, Grants Leadership & Development
Becky Centlivre, Vice President, Human Resources
John Clayton, Executive Director, Institutional Effectiveness
Chris Gray, Executive Director, Marketing Communications
Tom Hall, Associate Vice President, Campus Services. Fac. Plng.
Melanie Harvey, Associate Professor, Chemistry
Farrell Hoy Jenab, Directory, Faculty Development
Jeff Hoyer, Director, Continuing Education Operations
Rachel Lierz, Associate Vice President, Financial Services/CFO
Mickey McCloud, Vice President, Academic Affairs/CAO
Justin McDaid, Director, Audit and Advisory Services
Caitlin Murphy, Administrative Assistant, President's Office
Kelsey Nazar, Senior Legal Counsel
Alisa Pacer, Director, Emergency Management
Tom Pagano, Vice President/CIO, Information Services
Gurbhushan Singh, Associate Vice President, Academic Affairs
Shawn Smith, Director, Collaboration Center
Janelle Vogler, Associate Vice President, Business Services
Elisa Waldman, Dean, Continuing Education
Randy Weber, Vice President, Student Success/CSAO

Jerry Zimmerman, Manager, Benefits

Students

Alexis Sutton

Visitors

Michael Ashcraft
Dick Carter
Lindsey Constance
Addie Everett
James Everett
Owen Everett
Rhese Everett
Allan Hallquist
Christopher Reeves
Barbara Smith
David Smith

QUORUM	Mr. Musil announced the presence of a quorum, with seven board members present.
PLEDGE OF ALLEGIANCE	Mr. Musil led the Board of Trustees and other meeting participants in the reciting of the Pledge of Allegiance.
AWARDS AND RECOGNITIONS	There were no awards and recognitions.
OPEN FORUM	Mr. Musil announced that there were no registered speakers. Subsequent to the Board Reports, Ms. Lawson requested by handwritten note to Mr. Musil that Christopher Reeves, Shawnee resident, be afforded the opportunity to address the board. He expressed personal concerns with media relations.
BOARD REPORTS	

CA1 b & c

Carl D. Perkins Funding Eligibility Request Form

Strengthening Career and Technical Education for the 21st Century Act

CA-1c Form (2020)

Name of Institution	Johnson County Community College
Name, title, phone, and email of person submitting the Perkins Eligibility application <i>(contact person for the approval process)</i>	Gurbhushan Singh Associate Vice President, Academic Affairs gurbhushan@jccc.edu 913-469-2573
Name, title, phone, and email of the Perkins Coordinator	Shelia Mauppin; Career and Tech. Education Transition smauppin@jccc.edu 913-469-3618
Program Name	Plumbing Technology Certificate
Program CIP Code	46.0503
Educational award levels and credit hours for the proposed request	Completion Certificate; 30 Credit Hours
Percentage of tiered credit hours for the educational level of this request	86.7%
Number of concentrators for the educational level	The proposed program will be a new offering at Johnson County Community College; therefore, no concentrator data is available. We do predict 8 student per year for the first three years of the program (8 students X 3 years = 24).
Does the program meet program alignment?	The Plumbing program has not been aligned.
Justification for conditional approval: <i>(this section must reference information found within the Local Needs Assessment)</i>	<p>The Kansas Department of Labor, Long-term Occupation Projections 2016-2026, indicates a statewide change of employment for Plumbers of 10.3% with an annual median wage of \$47,204 (or about \$22.69 per hour) with the typical education listed as high school diploma or equivalent.</p> <p>Data for the Kansas City, the Kansas Department of Labor, Long-term Occupation Projections 2016-2026, indicates a regional change of employment for Plumbers of 13.2% with an annual median wage of \$61,390 (or about \$29.51 per hour).</p>

Signature of College Official _____
Signature of KBOR Official _____

g Singh

Date 6.30.2020
Date _____

Carl D. Perkins Funding Eligibility Request Form

Strengthening Career and Technical Education for the 21st Century Act

CA-1c Form (2020)

This application should be used for new programs (currently in the program approval process) or existing programs the institution would like reviewed for Carl D. Perkins funding eligibility.

Program Eligibility

An “eligible recipient” is an eligible institution or consortium of eligible institutions qualified to receive a Perkins allocation.

An “eligible institution” is an institution of higher education that offers CTE programs and will use Perkins funds in support of CTE coursework that leads to technical skill proficiency or a recognized postsecondary credential, including an industry-recognized credential, a certificate, or an associate degree, which does not include a baccalaureate degree.

Any program receiving Perkins funds must be designated as a technical program by KBOR. Definition of a technical program may be found in state statute K.S.A. 72-1802. Criteria adopted by the Board of Regents may be found in their February 20, 2019 meeting packet.

Program Levels:

Educational Award Level	Credit Hours
SAPP	0-15
Certificate A	16-29
Certificate B	30-44
Certificate C	45-59
Associate of Applied Science	60-69

Stand-Alone Parent Programs (SAPPs) must meet the following criteria:

- Minimum of 8 credit hours
- Minimum of 80% tiered credit hours
- Maintain an average of 6 concentrators over the most recent consecutive 2-year period

Certificates and Associate of Applied Science degrees must meet the following criteria:

- Minimum of 51% tiered credit hours
- Maintain an average of 6 concentrators over the most recent consecutive 2-year period
- Comply with Program Alignment – *if applicable*

KBOR Excel in CTE Fee Summary for Proposed Academic Programs

CA-1b Form (2020)

*Per statute (K.S.A. 72-3810), the Kansas Board of Regents shall establish general guidelines for tuition and fee schedules in career technical education courses and programs. The Excel in CTE tuition and fee schedule of every technical education program shall be subject to annual approval.
Please include all costs charged to **high school students** for the proposed new program.*

Institution Name:	Johnson County Community College
Program Title:	Plumbing Technology/Plumber
Program CIP Code:	46.0503 Plumbing Technology/Plumber

*Please list all fees associated with this **program**:
Only list costs the institution **is** charging students.*

Fee	Short Description	Amount
Tools	Students will be asked to purchase tools to be used while in class; Students keep those tools and use them while employed as well	\$150-\$200
Exam Fee	Journeyman's Plumbers Licensing Exam Fee (Paid to a private testing center)	\$ 115.00

*Please list all courses within the program and any fees associated to those **courses** :*

Course ID	Short Description	Amount
PLUM 110 Introduction to Plumbing Systems (3 credit hours)	Textbook-- Plumbing: Residential Construction	\$ 160.00
PLUM 130 Print Reading and Estimating (3 credit hours)	Textbook-- Print Reading and Drafting for Plumbers	\$ 120.00
PLUM 125 Residential Plumbing (3 credit hours)	Textbook-- Plumbing: Residential Construction	\$ 160.00
PLUM 140 Backflow Preventers (2 credit hours)	Possible OER (Open Educational Resources)	\$ -
INDT 125 Industrial Safety/OSHA 30 (3 credit hours)	EOS General Industry Student PK 2019	\$ 56.00
SPD/COMS 155 Workplace Skills (1 credit hours)	No Required Book; Possible OER (Open Educational Resources)	\$ -
PLUM 210 DWV and Water Distribution (3 credit hours)	Textbook-- Plumbing: Residential Construction Plumber's Handbook (pdf)	\$ 160.00
PLUM 250 Commercial Plumbing (3 credit hours)	Textbook--Plumbing, Venting, and Planning	\$ 114.65
PLUM 240 Installation, Maintenance, and Repair (3 credit hours)	Textbook-- Plumbing: Residential Construction	\$ 160.00
PLUM 275 Plumbing Code Review (3 credit hours)	International Plumbing Code; International Fuel Gas Code	\$ 125.00
PLUM 280 Plumbing Internship (3 credit hours)	JCCC Booklet	\$ 9.00

*Please list items the student will need to purchase on their own for this program:
Institution **is not** charging students these costs, rather students are expected to have these items for the program.*

Item	Short Description	Estimated Amount
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