

Heating, Ventilation, and Air Conditioning (HVAC), AAS

Modern Heating, Ventilation and Air Conditioning (HVAC) operations depend on well-trained installation and service technicians. Government researchers say graduates of training programs emphasizing hands-on experience will have a definite advantage when seeking employment in heating, ventilation and air conditioning. JCCC provides students with the opportunity to work on actual equipment while pursuing a degree or a certificate program.

The 63-credit-hour associate of applied science degree program focuses on developing an awareness of basic mathematical and scientific principles of HVAC. The curriculum was developed with the manner by which these principles affect the control of temperature and the quality of air, design, testing, installation and development of heating and cooling systems.

If you select the AAS degree, you will learn the theory of operation as well as the installation, duct design, service, and repair of gas and electric furnaces, heat pumps and central air conditioners. The HVAC program at JCCC is nationally accredited by the Partnership for Air-Conditioning, Heating, Refrigeration Accreditation (PAHRA), and you'll benefit when you tell prospective employers you completed a PAHRA-accredited program.

The requirements of the Heating, Ventilation and Air Conditioning (HVAC) AAS program will consist of four semesters. The first two semesters of the HVAC program will focus on the students completing their HVAC certificate which consists of 33 hours. Afterwards, the HVAC students will complete their third and fourth semesters will consist of an additional 15 hours of HVAC classes and 15 hours of general education classes.

(Major Code 3020; CIP Code 47.0201)

Heating, Ventilation and Air Conditioning (HVAC) Program web page (<http://www.jccc.edu/academics/credit/hvac/>)

Program Learning Outcomes

Johnson County Community College (JCCC) is committed to offering high-quality affordable programs that focus on developing knowledge and skills conducive to life-long learning. Both the General Education Student Learning Outcomes (<https://www.jccc.edu/about/leadership-governance/administration/institutional-effectiveness-branch/outcomes-assessment/learning-outcomes.html>) and Institutional Learning Outcomes (<https://www.jccc.edu/about/leadership-governance/administration/institutional-effectiveness-branch/outcomes-assessment/institutional-learning-outcomes.html>) convey JCCC's approach to programmatic outcomes. Additionally, students who successfully complete the Heating, Ventilation, and Air Conditioning (HVAC), AAS from JCCC will be able to:

- Identify heat transfer, pressure, and temperature relationships within the refrigeration cycle.
- Apply proper mechanical safety standards.
- Properly commission furnace and air conditioning systems.
- Apply ACCA Manuals J, H, and N to HVAC systems.
- Apply proper safety mechanical standards.
- Secure an approved training position.

Associate of Applied Science

Fall Semester

Code	Title	Hours
CMGT 100	Industrial Safety/OSHA-30	3
HVAC 105	HVAC Fundamentals*	4
HVAC 110	Electrical Fundamentals*	4
HVAC 136	Heating System Fundamentals*	3
HVAC 167	Sheet Metal Layout and Fabrication*	3
Total Hours		17

Spring Semester

Code	Title	Hours
COMS 155	Workplace Skills	1
HVAC 164	EPA 608*	1

HVAC 188	Load Calculation and Duct Design*	3
HVAC 202	Cooling Systems*	4
HVAC 251	HVAC Installation and Start-up Procedures*	4
HVAC 278	Advanced Electrical Systems*	3
Total Hours		16

Summer Semester

Code	Title	Hours
HVAC 231	HVAC Rooftop Units*	3
Total Hours		3

Fall Semester

Code	Title	Hours
ENGL 121 or ENGL 119	Composition I* College Composition I with Review*	3
HVAC 166	A2L Refrigerant Management	1
HVAC 275	HVAC Code Review*	3
PLUM 110	Introduction to Plumbing Systems	3
Social and Behavioral and Sciences Elective ^		3
Total Hours		13

Spring Semester

Code	Title	Hours
HVAC 220	HVAC Trade Certification Review*	2
HVAC 280	HVAC Internship*	3
MATH 120	Business Mathematics* (or higher)	3
Communications Elective ^		3
Arts and Humanities Elective ^		3
Total Hours		14

Total Program Hours: 63

* This course has registration requirements.

^ See all AAS general education electives (<https://catalog.jccc.edu/degreerequirements/associate-applied-science/>)

JCCC General Education Requirements

English and Communications, Associate of Applied Science (3 hrs.)

Code	Title	Hours
ENGL 121 or ENGL 119	Composition I* College Composition I with Review*	3
If your specific degree program requires a communications elective, select one from the following:		
COMS 121 or COMS 120 or COMS 125 or ENGL 122 or ENGL 123 or ENGL 140	Public Speaking Interpersonal Communication Personal Communication Composition II* Technical Writing I* Writing for Interactive Media*	3

Arts and Humanities, Associate of Applied Science (3 hrs.)

Code	Title	Hours
Art History		
ARTH 180	Art History: Ancient to Medieval	3
ARTH 182	Art History: Renaissance to Modern	3
ARTH 184	Art History: Twentieth Century	3
ARTH 188	History of Photography	3
ARTH 200	Women, Art, and Society	3
Communications		
COMS 180	Intercultural Communication	3
English		
English (Literature)		
ENGL 130	Introduction to Literature*	3
ENGL 214	Environmental Literature*	3
ENGL 215	U.S. Latino and Latina Literature*	3
ENGL 216	African-American Literature*	3
ENGL 217	Literature by Women*	3
ENGL 227	Introduction to Poetry*	3
ENGL 230	Introduction to Fiction*	3
ENGL 232	Children's Literature*	3
ENGL 235	Drama as Literature*	3
ENGL 236	British Literature to 1800*	3
ENGL 237	British Literature after 1800*	3
ENGL 246	American Literature I*	3
ENGL 247	American Literature II*	3
ENGL 254	Masterpieces of the Cinema*	3
English (Writing)		
ENGL 222	Advanced Composition: The Art of the Essay*	3
ENGL 223	Introduction to Creative Writing*	3
ENGL 257	Generative AI and The Future of Writing*	3
Film and Media Studies		
FMS 100	Intro to Film	3
FMS 200	Intro to Filmmaking and Media Aesthetics	3
Foreign Languages		
FL 120	Elementary German I	5
FL 121	Elementary German II*	5
FL 130	Elementary Spanish I	5
FL 131	Elementary Spanish II*	5
FL 140	Elementary French I	5
FL 141	Elementary French II*	5
FL 165	Elementary Chinese I	5
FL 166	Elementary Chinese II*	5
FL 170	Elementary Japanese I	5
FL 171	Elementary Japanese II*	5
FL 182	Intermediate Japanese I*	5
FL 183	Intermediate Japanese II*	5
FL 220	Intermediate German I*	3
FL 221	Intermediate German II*	3
FL 230	Intermediate Spanish I*	3



FL 231	Intermediate Spanish II*	3
FL 240	Intermediate French I*	3
FL 241	Intermediate French II*	3
FL 265	Intermediate Chinese I*	3
FL 266	Intermediate Chinese II*	3
History		
HIST 120	Local and Kansas History	3
HIST 125	Western Civilization: Ancient World to the Renaissance	3
HIST 126	Western Civilization: Scientific Revolution to the Modern Age	3
HIST 128	Medieval History	3
HIST 129	Early Modern Europe 1500-1789	3
HIST 130	European History Since 1789	3
HIST 132	History of Africa	3
HIST 135	Eastern Civilization	3
HIST 137	African American History	3
HIST 140	U.S. History to 1877	3
HIST 141	U.S. History Since 1877	3
HIST 143	Ancient Greece, the Near East and Egypt	3
HIST 145	History of Ancient Rome	3
HIST 149	History of India	3
HIST 150	Islam: Religion and Civilization	3
HIST 151	World History: Traditional	3
HIST 152	World History: Modern World	3
HIST 160	Modern Russian History	3
HIST 162	Modern Latin America	3
HIST 165	History of China	3
HIST 167	Introduction to History: Japan	3
HIST 180	North American Indian History	3
HIST 195	History of the Middle East	3
HIST 200	Empires of the Silk Road	3
HIST 210	Environmental History of North America	3
HIST 250	American West	3
HIST 260	Women in U.S. History	3
Humanities		
HUM 122	Introduction to Humanities	3
HUM 145	World Humanities: Ancient to Medieval	3
HUM 146	World Humanities: Renaissance to Modern	3
HUM 150	Islam: Religion and Civilization	3
HUM 155	Classical Mythology	3
HUM 156	Contemporary Approaches to World Mythology	3
HUM 165	Introduction to Chinese Culture	3
HUM 167	Introduction to Japanese Culture	3
Journalism		
JOUR 120	Mass Media and Society	3
Music		
MUS 121	Introduction to Music Listening	3
MUS 125	Introduction to Jazz Listening	3
MUS 126	Introduction to World Music	3
MUS 128	History of Rock and Roll Music	3

Religion

REL 120	Exploring World Religions	3
REL 125	Asian Religions	3
REL 126	Religions of the West	3
REL 150	Islam: Religion and Civilization	3

Philosophy

PHIL 121	Introduction to Philosophy	3
PHIL 124	Logic and Critical Thinking	3
PHIL 128	Environmental Ethics	3
PHIL 130	Food Ethics	3
PHIL 143	Ethics	3
PHIL 154	History of Ancient Philosophy	3
PHIL 176	Philosophy of Religion	3

Photography

PHOT 200	Foundations in Photography	3
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Theater

THEA 120	Introduction to Theater	3
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Social and Behavioral Sciences, Associate of Applied Science (3 hrs.)

Code	Title	Hours
Anthropology		
ANTH 125	Cultural Anthropology	3
ANTH 126	Physical Anthropology	3
ANTH 130	World Cultures	3
ANTH 142	World Prehistory	3
ANTH 165	Linguistic Anthropology	3
Criminal Justice		
CJ 121	Introduction to Criminal Justice System	3
CJ 141	Criminal Law	3
CJ 223	International Criminal Justice Systems	3
Economics		
ECON 132	Survey of Economics	3
ECON 230	Principles of Macroeconomics	3
ECON 231	Principles of Microeconomics	3
Geoscience		
GEOS 145	World Regional Geography	3
GEOS 155	Human Geography	3
Legal Studies		
LAW 120	Introduction to Paralegal Studies	3
LAW 121	Introduction to Law	3
Political Science		
POLS 122	Political Science	3
POLS 124	American National Government	3
POLS 126	State and Local Government	3
POLS 132	Introduction to Comparative Government	3
POLS 135	International Relations	3
POLS 175	Environmental Policy and Law	3
POLS 192	Political Theory	3
POLS 200	Model United Nations	3
POLS 220	Introduction to Public Policy	3



POLS 245	Introduction to Public Administration	3
Psychology		
PSYC 121	Applied Psychology	3
PSYC 130	Introduction to Psychology	3
PSYC 215	Child Development*	3
PSYC 218	Human Development*	3
Sociology		
SOC 122	Introduction to Sociology	3
SOC 125	Social Problems	3
SOC 131	Sociology of Families	3
SOC 146	Introduction to Social Work and Social Welfare	3
Gender and Ethnic Studies		
WGS 201	Global Women's Studies	3

Mathematics and Sciences, Associate of Applied Science (3 hrs.)

Code	Title	Hours
Mathematics		
MATH 120	Business Mathematics*	3
MATH 130	Technical Mathematics I*	3
MATH 131	Technical Mathematics II*	3
MATH 151	Contemporary Mathematics*	3
MATH 161	Elementary Statistics*	3
MATH 171	College Algebra*	3
MATH 172	Trigonometry*	3
MATH 173	Precalculus*	5
MATH 175	Discrete Mathematics and its Applications*	3
MATH 201	Statistics*	3
MATH 231	Business and Applied Calculus I*	3
MATH 232	Business and Applied Calculus II*	3
MATH 241	Calculus I*	5
MATH 242	Calculus II*	5
MATH 243	Calculus III*	5
MATH 254	Differential Equations*	4
MATH 285	Statistics for Business*	4
Life Science		
BIOL 121	Introductory Biology for Non-Majors	4
BIOL 125	General Botany	5
BIOL 127	General Zoology	5
BIOL 135	Principles of Cell and Molecular Biology	4
BIOL 140	Human Anatomy	4
BIOL 144	Human Anatomy and Physiology*	5
BIOL 150	Biology of Organisms*	5
BIOL 161	Introduction to Biotechnology	4
BIOL 225	Human Physiology*	4
BIOL 230	Microbiology*	3
BIOL 231	Microbiology Lab*	2
EVRN 124	Oceanus: Essentials of Oceanography	3
EVRN 130	Environmental Science	3
EVRN 132	Environmental Science Laboratory*	2
EVRN 134	Principles of Sustainability	3



EVRN 250	Bioethics in Science and Research*	3
EVRN 275	Nature, Law, and Environmental Protection*	3
Physical Science		
ASTR 120	Fundamentals of Astronomy	3
ASTR 122	Astronomy	4
CHEM 120	Chemistry in Society*	4
CHEM 122	Principles of Chemistry*	5
CHEM 124	General Chemistry I Lecture*	4
CHEM 125	General Chemistry I Lab*	1
CHEM 131	General Chemistry II Lecture*	4
CHEM 132	General Chemistry II Lab*	1
CHEM 140	Principles of Organic & Biological Chemistry*	5
ENGR 121	Engineering Orientation	2
GEOS 130	General Geology	5
GEOS 140	Physical Geography	3
GEOS 141	Physical Geography Lab*	2
GEOS 160	Introduction to Meteorology	5
PHYS 130	College Physics I*	5
PHYS 131	College Physics II*	5
PHYS 220	Engineering Physics I*	5
PHYS 221	Engineering Physics II*	5
PSCI 120	Physical Science	4

Cavalier Credits (3 hrs.)

Code	Title	Hours
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Requires the completion of 3 additional credit hours to be selected from one of the above general education categories.

General Education Hours: 15