



DEPARTMENT OF
HIGHER EDUCATION &
WORKFORCE DEVELOPMENT

New Program Report

Date Submitted:
03/31/2021

Institution
Missouri Western State University

Site Information

Implementation Date:
8/1/2021 12:00:00 AM

Added Site(s):

Selected Site(s):

Missouri Western State University, 4525 Downs Drive, St. Joseph, MO, 64507

CIP Information

CIP Code:
111003

CIP Description:
A program that prepares individuals to assess the security needs of computer and network systems, recommend safeguard solutions, and manage the implementation and maintenance of security devices, systems, and procedures. Includes instruction in computer architecture, programming, and systems analysis; networking; telecommunications; cryptography; security system design; applicable law and regulations; risk assessment and policy analysis; contingency planning; user access issues; investigation techniques; and troubleshooting.

CIP Program Title:
Computer and Information Systems Security/Information Assurance

Institution Program Title:
Cybersecurity

Degree Level/Type

Degree Level:
Bachelor's Degree

Degree Type:
Bachelor of Science

Options Added:

Collaborative Program:
N

Mode of Delivery

Current Mode of Delivery
Classroom

Student Preparation



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New Program Report

Special Admissions Procedure or Student Qualifications required:

Applicants must be enrolled in CSC 184 "Introduction to Computer Programming" or have completed CSC 184 "Introduction to Computer Programming" with a grade of C or higher, or have an ACT composite score of 25 or higher, or an ACT Science Reasoning score of 28 or higher. In addition, the student must have an overall GPA of at least 2.0.

Specific Population Characteristics to be served:

n/a

Faculty Characteristics

Special Requirements for Assignment of Teaching for this Degree/Certificate:

Most faculty will have an advanced degree in Cybersecurity, Information Technology, Computer Science, Mathematics, or other related fields. Most faculty will also be expected to carry a high-level professional IT or cybersecurity certification. All faculty will have a master's degree or higher in a cybersecurity-related field.

Estimate Percentage of Credit Hours that will be assigned to full time faculty:

90%

Expectations for professional activities, special student contact, teaching/learning innovation:

Faculty are expected to supervise students in required hands-on work in the cybersecurity lab. Students will be required to seek professional certification, internships, and/or independent projects with faculty guidance and mentoring.

Student Enrollment Projections Year One-Five

Year 1	Full Time: 16	Part Time: 4	
Year 2	Full Time: 24	Part Time: 7	
Year 3	Full Time: 32	Part Time: 10	Number of Graduates: 8
Year 4	Full Time: 38	Part Time: 13	
Year 5	Full Time: 45	Part Time: 15	Number of Graduates: 12

Percentage Statement:

n/a

Program Accreditation

Institutional Plans for Accreditation:

ABET accreditation is a priority first for the computer science program at MWSU. Following that, seeking ABET accreditation for Cybersecurity will be a priority.

Program Structure

Total Credits:

120

Residency Requirements:

n/a

General Education Total Credits:

42



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Major Requirements Total Credits:

52

Course(s) Added

COURSE NUMBER	CREDITS	COURSE TITLE
SEC 455	3	Cyberlaw and Investigations

Free Elective Credits:

26

Internship or other Capstone Experience:

None

Assurances

I certify that the program is clearly within the institution's CBHE-approved mission. The proposed new program must be consistent with the institutional mission, as well as the principal planning priorities of the public institution, as set forth in the public institution's approved plan or plan update.

I certify that the program will be offered within the proposing institution's main campus, CBHE-approved service region or CBHE-approved off-site location.

I certify that the program will not unnecessarily duplicate an existing program within the geographically applicable area.

I certify that the program will build upon existing programs and faculty expertise.

I certify that the program can be launched with minimal expense and falls within the institution's current operating budget.

I certify that the institution has conducted research on the feasibility of the proposal and it is likely the program will be successful. Institutions' decision to implement a program shall be based upon demand and/or need for the program in terms of meeting present and future needs of the locale, state, and nation based upon societal needs, and/or student needs.

Contact Information

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MWSU - BS Cybersecurity

Rationale: MWSU has offered an Applied Computing Technology (ACT) degree aimed towards students seeking a career in computing but not necessarily as a software developer. As both student and industry demand for greater incorporation of security content within this program grew, MWSU developed a security concentration within ACT to address this need. Now, MWSU seeks to capitalize on the instructional and lab resources marshaled for this concentration and the existing undergraduate computer science and graduate cybersecurity programs to develop an undergraduate program in Cybersecurity.

The MWSU Cybersecurity curriculum was developed in consultation with Frank Luziscza (CEO of Lodestone Security and MWSU alumni), Kent Pickett (Engineer at MITRE Corporation and MWSU faculty member), and an industry advisory board with representatives from Cerner, MITRE, Herzog, Boehringer Ingelheim, TS Conrad, KU Health, and other local IT operations. In consultation with Frank Luziscza, the new program was designed specifically to prepare students for an immediate career as a Security Analyst upon graduation.

Location: MWSU is uniquely situated to develop this program, leveraging resources from existing computer science and graduate cybersecurity programs, as well as lessons learned from the development of the IT Security concentration in the ACT program. MWSU's ties to local industry in St. Joseph and Kansas City informed the development of this specialization, the growth of the graduate cybersecurity program, and will continue to serve as a strong asset through the development and advancement of the undergraduate program in Cybersecurity. MWSU's ties to government and military organizations justify the unique focus in the proposed program on the NIST framework and security analyst role, as MWSU aims to develop graduates well suited to joining or partnering with these organizations. As an alumni of Missouri Western, Frank Luziscza exemplifies the success Missouri Western students will reach through this program.

Market Needs: According to data provided by JobsEQ, in the Kansas and Missouri regions that MWSU serves, there is an expected need for over 24,000 newly trained workers over the next 7 years in the occupations most related to the Cybersecurity degree. Beyond Buchanan county, MWSU also serves the counties in the region with cybersecurity-related positions, including Jackson, Platte, Clay, Johnson, Wyandotte, Leavenworth, Shawnee, and Douglas counties. These counties alone account for over 12,000 existing positions in the region.

Nationwide, there is significant additional, specific demand for cybersecurity analysts (the focus of MWSU's cybersecurity program), and the affordable cost of living coupled with access to resources and stakeholders in IT in and around St. Joseph make it an attractive location for this type of remote work.

Program features: MWSU's proposed program is distinguished from other cybersecurity programs in three principal ways:

1) It is focused upon the security operations role and is built to produce graduates seeking employment as security analysts or SOC (Security Operations Center) Analysts. MWSU is uniquely suited to this type of program given the alumni and industry support we have had developing the program. Students will be provided with opportunities for practical experience and professional certification sufficient to begin employment in this position immediately following graduation.

2) Missouri Western has a state-designated mission of applied learning. This program will be focused on applied learning, requiring internships, faculty sponsored applied-learning projects, and professional certification. Upper-division coursework will involve applied lab experience using networking and computing equipment in MWSU's applied computing lab.

3) MWSU's Cybersecurity program will be based upon the NIST Cybersecurity framework, making MWSU graduates ideal candidates for positions in government and military work while also providing a strong foundation for transition to other security frameworks employed at other organizations.

Missouri Western State University

Cybersecurity Budget Narrative

Faculty: In Year 1, existing faculty without added expense will teach introductory coursework. In years 2-5, an annual salary estimated for 1 faculty at \$100,000 with .25 FTE required in year 2-3 and .5 FTE required in year 4 and moving forward.

Benefits: Benefits are calculated at 30%.

Tuition and Fees: Enrollments will gradually increase from 16 students in the first year to 45 students by year 5. Each year, they will enroll in 30 credit hours (15-16 cr/semester) at \$231 per credit hour. Program fees will be \$45/credit hour. This equals \$8280 per student per year.

Equipment: Replacement costs for computer \$3000. Existing equipment will be used, but as they fail, they will be replaced (annual budget). Hardware costs are estimated at \$2500/year. Total equipment and hardware will be budgeted at \$5500.

Institutional Overhead: Professional development costs for study materials and certification exams range \$300-900/exam. One or two may be taken each year.

Other: Cloud computing service-\$1000 annually.

MISSOURI WESTERN STATE UNIVERSITY

Major Declaration Form

Student Name _____

Address _____
Street

Address _____
City State ZIP

Telephone _____ G# _____

All students should seek the advice of an MWSU advisor. The student is responsible for knowing the regulations and policies in the current University Catalog and Student Handbook and for meeting the requirements for a degree or certificate.

Advisor _____ Department _____

SIGNATURES REQUIRED:

Student _____ Date _____

Advisor _____ Date _____

Chairperson _____ Date _____

Registrar _____ Date _____



Transfer students using the CORE 42 general education curriculum should access requirements and courses that count through Griffon GPS or at <https://main.missouriwestern.edu/registrar/core42>.

PREPARATORY COURSES

MAT083 _____ ENG100 _____ RDG095 _____

GENERAL STUDIES (42-47 credits)

CATEGORY ONE: BASIC SKILLS (12-14 credits)	Grade
1. MAT110 or MAT110E or MAT111 or MAT111E or MAT112 or MAT116 or MAT147 or MAT165 or MAT167	3/4/5 _____
2. ENG104 and 108 or ENG112	6 _____
3. COM104	3 _____

CATEGORY TWO: NATURAL SCIENCES (8-10 credits)	Grade
Minimum of 8 credits with lab from two of the following groups.	
1. BIO101 or 105	4 _____
2. CHE101(4) or 104(5) or 111(5)	4/5 _____
3. ESC111	4 _____
4. PHY101(4) or 107(4) or 110(4) or 210(5)	4/5 _____
5. PHY104	4 _____
6. GEO160	4 _____

CATEGORY THREE: SOCIAL SCIENCES (9 credits)	Grade
Minimum of 9 credits with at least one course from each of the two following groups.	
1. ECO101 or 260 or 261 or GEO100 or PSY101 or SOC110 or 120	3 _____
2. HIS140 or 150 or PSC101	3 _____
3. Additional course from group 1 or 2	3 _____

CATEGORY FOUR: HUMANITIES (9 credits)	Grade
One course each from three of the following four groups.	
1. HIS200 or 210 or 230 or HUM203 or 204 or 205	3 _____
2. ENG210 or 220 or PHL210 or 230 or 231 or 232 or REL250 or 251 or 252	3 _____
3. ART100 or MUS101 or THR113	3 _____
4. Any 3-credit hour 100-level or higher foreign language course	3 _____

CATEGORY FIVE: PHYSICAL HEALTH (4 credits)	Grade
1. PED101	3 _____
2. One approved physical activity course	1-2 _____

LAS AREAS OF FOCUS

	Course ID	Grade
1. LAS Writing Intensive	_____	_____
2. LAS Computer Literacy	_____	_____

This form is not official until signed by the Registrar.

Degree/Program:	B.S. – Cybersecurity
Major:	Cybersecurity
Catalog Year: 2019-2020	Expires: 2025-2026

DEGREE REQUIREMENTS

- Earn a minimum of 120 credit hours, including 60 from a senior college (100 level and higher, maximum of 6 CED credit hours applicable).
- Earn a minimum of 30 credit hours in upper division courses. Lower division transfer courses accepted as meeting upper division departmental course requirements cannot be used to fulfill this requirement.
- Earn 30 of the last 45 credit hours at MWSU in institutional course work (exclusive of credit by examination).
- Participate in required departmental and campus wide assessments.
- Earn an overall GPA of at least 2.0 and a major GPA of at least 2.0.
- Fulfill the Missouri Constitution requirement.
- Successfully pass the Missouri Higher Education Civics Achievement exam.

MAJOR REQUIREMENTS		(61 Credits)	
CORE		Credits	Grade
ACT 101	Introduction to Information Technology	3	
ACT 301	Applied Database Systems	3	
CSC 184	Introduction to Computer Programming	3	
CSC 264	Computer Architecture and Assembly Language	3	
CSC 274	Introduction to Unix/Linux	3	
CSC 294	Networking & Telecommunications	3	
CSC 374	UNIX/Linux System Administration	3	
CSC 386	Operating Systems Concepts	3	
ETC 200	Introduction to Technical Writing	3	
MAT 116	College Algebra	3	
PHL 230	Ethics	3	
SEC 300	Introduction to Cybersecurity	3	
SEC 335	Network and Endpoint Security I	3	
SEC 415*	Data Security	3	
SEC 425*	Ethical Hacking	3	
SEC 435*	Network and Endpoint Security II	3	
SEC 445*	Security Program Governance	3	
SEC 455*	Cyberlaw and Investigations	3	
SEC 490	Cybersecurity Career Preparation	1	
PLUS – 6 credits from the following courses			
CSC 450	Independent Research/Project	1-6	
CSC 451	Internship in Computing	1-6	
CSC 452	Professional Certification in Computing	3-6	
TOTAL		61	

A grade of C or higher is required in all major courses.

SEC majors must own a laptop with approved minimum specifications. Specifications are available on the CSMP home page.

*500-level versions of these courses are also available to meet these requirements. Students desiring to take 500 level courses must meet the criteria required for undergraduates to enroll in graduate level courses.

TR beside grade denotes that transfer work fulfills course requirements.

- PUBLIC
 INDEPENDENT



- SAVE
- SUBMIT
- ATTACH
- SHOW ATTACHMENTS

NEW PROGRAM PROPOSAL FOR ROUTINE REVIEW

Sponsoring Institution: Missouri Western State University

Program Title: Cybersecurity

Degree/Certificate: BS-Bachelor of Science If other, please list: _____

Options: _____

Delivery Site(s): MWSU main campus in St. Joseph, MO

CIP Classification: 11.1003
**CIP Code can be cross-referenced with programs offered in your region on MDHE's program inventory. Click here for link to NCES CIP site.*

Implementation Date 08/21 please use MM/YY date format.

Is this a new off-site location? No Yes

If yes, is the new off-site location within your institution's current CBHE-approved service region? Yes

**If no, public institutions should consult the comprehensive review process.*

Is this a collaborative program? Yes No *If yes, please complete the collaborative programs form on page 6.*

CERTIFICATIONS:

- The program is within the institution's CBHE approved mission. *(public institutions only)*
- The program will be offered within the institution's CBHE approved service region. *(public institutions only)*
- The program builds upon existing programs and faculty expertise.
- The program does not unnecessarily duplicate an existing program in the geographically applicable area.
- The program can be launched with minimal expense and falls within the institution's current operating budget. *(public institutions only)*

AUTHORIZATION:

Name/Title of Institutional Officer	Signature	Date
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PROGRAM CHARACTERISTICS AND PERFORMANCE GOALS

Although the following guidelines may not be applicable to the proposed program, please carefully consider the elements in each area and respond as completely as possible in the format below. Qualifications of performance goals should be included wherever possible.

If you need more than one line of text to answer questions 1–5, please attach a Word .doc.

1. Student Preparation

- Any special admissions procedures or student qualifications required for this program which exceed regular university admissions, standards, e.g., ACT score, completion of core curriculum, portfolio, personal interview, etc. Please note if no special preparation will be required.

Applicants must be enrolled in CSC184 "Introduction to Computer Programming" or have completed CSC184 "Introduction to Computer Programming" with a grade of C or higher or have an ACT composite score of 25 or higher.

- Characteristics of a specific population to be served, if applicable.

N/A

2. Faculty Characteristics

- Any special requirements (degree status, training, etc.) for assignment of teaching for this degree/certificate.

Most faculty will have an advanced degree in Cybersecurity, Information Technology, Computer Science, Mathematics, or other related field. Most faculty will also be expected to carry a high-level professional IT or cybersecurity.

- Estimated percentage of credit hours that will be assigned to full time faculty. Please use the term "full time faculty" (and not FTE) in your descriptions here.

90%

- Expectations for professional activities, special student contact, teaching/learning innovation.

Students will be required to perform hands-on work in the cybersecurity lab. Students will be required to seek professional certification, internships, and/or independent projects.

3. Enrollment Projections

- Student FTE majoring in program by the end of five years.

50 - We expect our program will be fueled by strong job prospects in the region. According to data provided by JobsEQ, in the Kansas and Missouri regions that MVSU serves, there is an expected need for over 24,000 newly trained

- Percent of full time and part time enrollment by the end of five years.

80% Full Time and 20% part time

STUDENT ENROLLMENT PROJECTIONS

YEAR	1	2	3	4	5
FULL TIME	16	24	32	38	45
PART TIME	4	7	10	13	15
TOTAL	20	31	42	51	60

4. Student and Program Outcomes

- Number of graduates per annum at three and five years after implementation.

After 3 years, we would anticipate at least 8 per year. After 5 years, we would anticipate 12 per year.

- Special skills specific to the program.

Problem Solving skills; computer operation, programming, and management skills; interpersonal and communication skills; critical thinking skills.

- Proportion of students who will achieve licensing, certification, or registration.

certification not required

- Performance on national and/or local assessments, e.g. percent of students scoring above the 50th percentile on normed tests; percent of students achieving minimal cut-scores on criterion-referenced tests. Include expected results on assessments of general education and on exit assessments in a particular discipline as well as the name of any nationally recognized assessments used.

We plan to use the Assistant Cyber Security Professional (ACSP) test offered by Institute for Certification of Computing Professionals (ICCP) and expect 50% of students to be passing at or

- Placement rates in related fields, in other fields, unemployed.

We expect 5-10% to pursue graduate education and 75-90% to find employment in IT or cybersecurity immediately.

- Transfer rates, continuous study.

We anticipate 23.5% students to transfer into the program, consistent with University transfer averages.

5. Program Accreditation

- Institutional plans for accreditation, if applicable, including accrediting agency and timeline. If there are no plans to seek specialized accreditation, please provide a rationale

ABET accreditation is a priority first for the computer science program at MWSU. Following that, seeking

6. Program Structure

A. Total credits required for graduation: 120

B. Residency requirements, if any: 0

C. General education: Total credits: 42

Courses (specific courses OR distribution area and credits)

Course Number	Credits	Course Title
Core 42		
ETC 200		Intro to Technical Writing
MAT 116		College Algebra
PHL 230		Ethics
ACT 102	3	Introduction to Web Page Dev

D. Major requirements: Total credits: 52 (3 required courses are part of general education requirements, ETC200, MAT111, and PHL230)

Course Number	Credits	Course Title
ACT 301	3	Applied Database Systems
CSC 184	3	Introduction to Computer Programming
CSC 264	3	Computer Architecture and Assembly Language Programming
CSC 274	3	Introduction to Unix/Linux
CSC 294	3	Networking and Telecommunications
CSC 374	3	UNIX/Linux System Administration
CSC 386	3	Operating Systems Concepts
CSC450/CSC451/CSC	6	Independent Research/Project / Internship in Computing / Professional
SEC 300	3	Introduction to Cybersecurity
SEC 335	3	Network and Endpoint Security I
SEC 415	3	Data Security
SEC 425	3	Ethical Hacking
SEC 435	3	Network and Endpoint Security II
SEC 445	3	Security Program Governance
SEC 455	3	Cyberlaw and Investigations
SEC 490	1	Cybersecurity Career Prep

E. Free elective credits: 26
(sum of C, D, and E should equal A)

F. Requirements for thesis, internship or other capstone experience: N/A

G. Any unique features such as interdepartmental cooperation: Cooperation w/ Criminal Justice & Legal Studies

7. Need/Demand

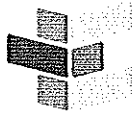
Student demand

Market demand

Societal need

I hereby certify that the institution has conducted research on the feasibility of the proposal and it is likely the program will be successful.

On July 1, 2011, the Coordinating Board for Higher Education began provisionally approving all new programs with a subsequent review and consideration for full approval after five years.

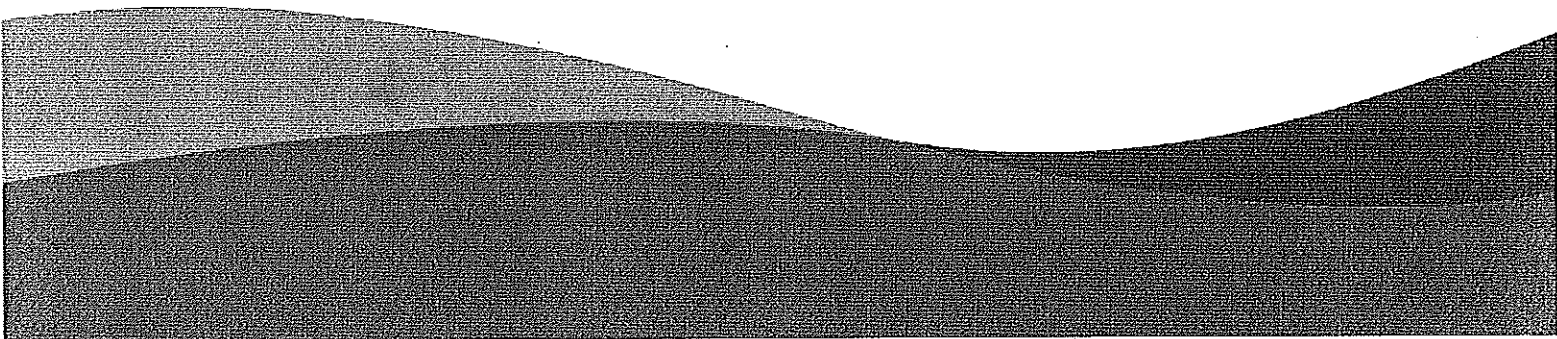


JOBS **ea**

Education Report

Computer and Information Systems Security/Information Assurance

Kansas



Definition of Computer and Information Systems Security/Information Assurance, CIP 11.1003.....	3
Awards.....	4
Occupation Crosswalk.....	5
Occupation Details.....	7
Employment by Industry.....	8
Geographic Distribution.....	9
Demographic Profile.....	10
RTI (Job Postings).....	11
Kansas Regional Map.....	16
FAQ.....	17

Definition of Computer and Information Systems Security/Information Assurance, CIP 11.1003

A program that prepares individuals to assess the security needs of computer and network systems, recommend safeguard solutions, and manage the implementation and maintenance of security devices, systems, and procedures. Includes instruction in computer architecture, programming, and systems analysis; networking; telecommunications; cryptography; security system design; applicable law and regulations; risk assessment and policy analysis; contingency planning; user access issues; investigation techniques; and troubleshooting.

Awards

The table below is a list of postsecondary awards in CIP 11.1003 that were granted by institutions located in Kansas in the 2019 academic year.

Schools	Certs & 2yr Awards ¹	4yr Awards ²	Post-Grad Awards ³	Avg Net Price ⁴
Grantham University	14	29		\$8,961
Butler Community College	17			\$8,223
Friends University		2	6	\$18,780
National American University- Wichita		1		
Rasmussen College-Kansas		1		\$18,639
Cowley County Community College				\$9,122
MidAmerica Nazarene University				\$19,905
National American University- Garden City				
National American University- Overland Park				
Total	31	33	6	

1. Undergraduate certificates and associate's degrees

2. Bachelor's degrees and post-baccalaureates

3. Master's, post-master's, and doctorates

4. Data as of the 2017-2018 academic year

Awards data are per the National Center for Education Statistics (NCES) and JobsEQ for the 2019 academic year. Any programs shown here reflect only data reported to the NCES; reporting is required of all schools participating in any federal finance assistance program authorized by Title IV of the Higher Education Act of 1965, as amended—other training providers in the region that do not report data to the NCES are not reflected in the above.

Occupation Crosswalk

The below table lists all occupations linked with the program, Computer and Information Systems Security/Information Assurance, CIP 11.1003.

		Education and Training Requirements			Educational Attainment				
		Typical Education Needed for Entry	Work Experience in a Related Occupation	Typical On-the-Job Training Needed to Attain Competency in the Occupation	No College	Some College, No Degree	Associate's Degree	Bachelor's Degree	Postgraduate Degree
11-3021	Computer and Information Systems Managers	Bachelor's degree	5 years or more	None	2%	9%	6%	51%	31%
15-1212	Information Security Analysts	Bachelor's degree	Less than 5 years	None	3%	10%	10%	47%	30%
15-1231	Computer Network Support Specialists	Associate's degree	None	None	7%	18%	15%	45%	15%
15-1241	Computer Network Architects	Bachelor's degree	5 years or more	None	3%	16%	12%	47%	22%
15-1244	Network and Computer Systems Administrators	Bachelor's degree	None	None	5%	16%	14%	48%	17%
15-1245	Database Administrators and Architects	Bachelor's degree	None	None	3%	9%	6%	51%	30%

Education and training requirements are from the Bureau of Labor Statistics (BLS); educational attainment mix are regional data modeled by Chmura using Census educational attainment data projected to 2020Q2 along with source data from the BLS

Definition of Computer and Information Systems Managers (11-3021)

Plan, direct, or coordinate activities in such fields as electronic data processing, information systems, systems analysis, and computer programming. Excludes "Computer Occupations" (15-1111 through 15-1199).

Definition of Information Security Analysts (15-1212)

Plan, implement, upgrade, or monitor security measures for the protection of computer networks and information. May ensure appropriate security controls are in place that will safeguard digital files and vital electronic infrastructure. May respond to computer security breaches and viruses. Excludes "Computer Network Architects" (15-1143).

Definition of Computer Network Support Specialists (15-1231)

Analyze, test, troubleshoot, and evaluate existing network systems, such as local area network (LAN), wide area network (WAN), and Internet systems or a segment of a network system. Perform network maintenance to ensure networks operate correctly with minimal interruption. Excludes "Network and Computer Systems Administrators" (15-1142) and "Computer Network Architects" (15-1143).

Definition of Computer Network Architects (15-1241)

Design and implement computer and information networks, such as local area networks (LAN), wide area networks (WAN), intranets, extranets, and other data communications networks. Perform network modeling, analysis, and planning. May also design network and computer security measures. May research and recommend network and data communications hardware and software. Excludes "Information Security Analysts" (15-1122), "Network and Computer Systems Administrators" (15-1142), and "Computer Network Support Specialists" (15-1152).

Definition of Network and Computer Systems Administrators (15-1244)

Install, configure, and support an organization's local area network (LAN), wide area network (WAN), and Internet systems or a segment of a network system. Monitor network to ensure network availability to all system users and may perform necessary maintenance to support network availability. May monitor and test Web site performance to ensure Web sites operate correctly and without interruption. May assist in network modeling, analysis, planning, and coordination between network and data communications hardware and software. May supervise computer user support specialists and computer network support specialists. May administer network security measures. Excludes "Information Security Analysts" (15-1122), "Computer User Support Specialists" (15-1151), and "Computer Network Support Specialists" (15-1152).

Definition of Database Administrators and Architects (15-1245)

Administer, test, and implement computer databases, applying knowledge of database management systems. Coordinate changes to computer databases. May plan, coordinate, and implement security measures to safeguard computer databases. Excludes "Information Security Analysts" (15-1122).

Occupation Details

As of 2020Q2, total employment for occupations linked to Computer and Information Systems Security/Information Assurance in Kansas was 12,659. Over the past three years, linked occupations added 216 jobs in the region and are expected to need in aggregate approximately 7,219 newly trained workers over the next seven years.

Snapshot of Occupations Linked to Computer and Information Systems Security/Information Assurance in Kansas¹

SOC	Occupation	Empl	Avg Ann Wages ²	Current			3-Year History		Total Demand	7-Year Forecast			
				LQ	Unempl	Unempl Rate	Online Job Ads ³	Ann %		Exits	Transfers	Empl Growth	Avg Ann Growth %
15-1244	Network and Computer Systems Administrators	4,894	\$76,300	1.43	132	2.7%	487	-0.9%	2,639	596	1,858	184	0.5%
11-3021	Computer and Information Systems Managers	3,476	\$124,400	0.81	62	1.7%	126	2.1%	2,145	427	1,532	186	0.7%
15-1241	Computer Network Architects	1,390	\$99,500	0.94	13	0.9%	14	0.4%	755	130	561	64	0.6%
15-1212	Information Security Analysts	995	\$87,300	0.83	30	2.7%	204	4.0%	569	100	409	60	0.8%
15-1231	Computer Network Support Specialists	982	\$51,300	0.55	37	3.1%	5	0.9%	594	125	446	23	0.3%
15-1245	Database Administrators and Architects	922	\$89,800	0.76	15	1.4%	80	-0.7%	516	126	345	45	0.7%
Total - Linked Occupations		12,659	\$91,900	0.95	289	2.1%	916	0.6%	7,219	1,505	5,151	562	0.6%
Total - All Occupations		1,480,030	\$47,700	1.00	71,581	4.8%	87,864	-0.2%	1,168,693	447,056	722,082	-445	0.0%

Source: JobsEQ[®]

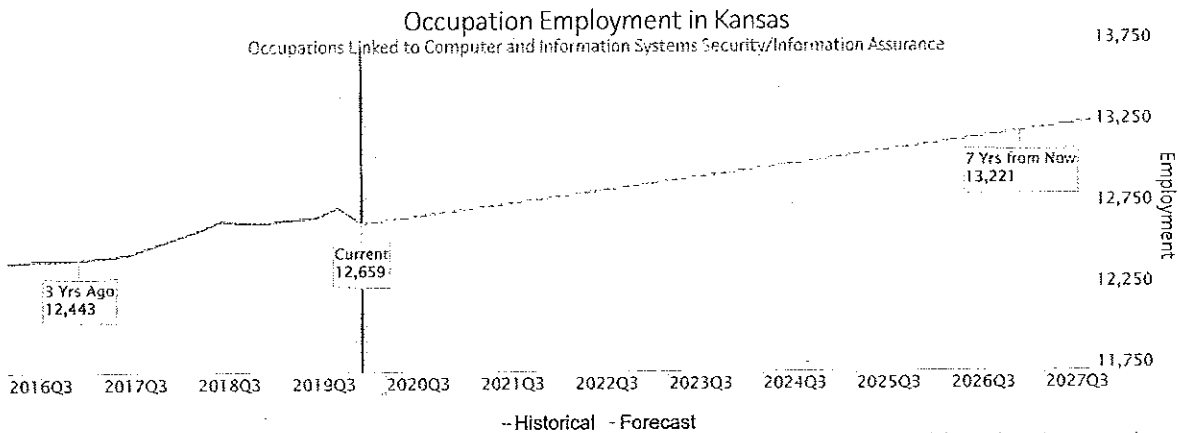
Data as of 2020Q2 unless noted otherwise

Note: Figures may not sum due to rounding.

1. Data based on a four-quarter moving average unless noted otherwise.

2. Wage data are as of 2019 and represent the average for all Covered Employment

3. Data represent found online ads active within the last thirty days in the selected region; data represents a sampling rather than the complete universe of postings. Ads lacking zip code information but designating a place (city, town, etc.) may be assigned to the zip code with greatest employment in that place for queries in this analytic. Due to alternative county-assignment algorithms, ad counts in this analytic may not match that shown in RTI (nor in the popup window ad list).



Source: JobsEQ[®], data as of 2020Q2. The shaded area of the graph represents the 95% forecast.

Occupation employment data are estimated via industry employment data and the industry/occupation mix. Industry employment data are derived from the Quarterly Census of Employment and Wages, provided by the Bureau of Labor Statistics and currently updated through 2019Q4, imputed where necessary with preliminary estimates updated to 2020Q2. Wages by occupation are as of 2019 provided by the BLS and imputed where necessary. Forecast employment growth uses national projections from the Bureau of Labor Statistics adapted for regional growth patterns. Occupation unemployment figures are imputed by Chmura.

Employment by Industry

The table illustrates the industries in Kansas which most employ occupations linked to Computer and Information Systems Security/Information Assurance. The single industry most employing these occupations in the region is Computer Systems Design and Related Services, NAICS 5415. This industry employs 2,352 workers in the linked occupations—employment which is expected to increase by 582 jobs over the next ten years; furthermore, 1,917 additional new workers in these linked occupations will be needed for this industry due to separation demand, that is, to replace workers in this occupation and industry that retire or move into a different occupation.

Industry Distribution for Occupations Linked to Computer and Information Systems Security/Information Assurance in Kansas

NAICS Code	Industry Title	Current			10-Year Demand		
		% of Occ Empl	Empl	Exits	Transfers	Empl Growth	Total Demand
5415	Computer Systems Design and Related Services	18.6%	2,352	427	1,490	582	2,499
5511	Management of Companies and Enterprises	11.1%	1,402	237	817	86	1,141
5173	Wired and Wireless Telecommunications Carriers	4.5%	565	79	280	-144	215
5416	Management, Scientific, and Technical Consulting Services	3.8%	486	87	304	105	496
5221	Depository Credit Intermediation	3.7%	473	77	265	-3	339
3364	Aerospace Product and Parts Manufacturing	3.6%	461	72	256	-24	304
9211	Executive, Legislative, and Other General Government Support	2.9%	363	61	201	-6	256
6113	Colleges, Universities, and Professional Schools	2.7%	346	58	194	4	257
6221	General Medical and Surgical Hospitals	2.7%	343	56	189	-9	237
5241	Insurance Carriers	2.6%	325	55	190	22	267
6111	Elementary and Secondary Schools	2.5%	316	53	172	-17	207
5413	Architectural, Engineering, and Related Services	2.3%	296	49	170	18	237
5611	Office Administrative Services	2.2%	280	52	174	61	287
5182	Data Processing, Hosting, and Related Services	2.2%	275	50	170	55	275
5242	Agencies, Brokerages, and Other Insurance Related Activities	1.9%	247	43	147	31	221
5613	Employment Services	1.9%	238	38	133	4	175
5191	Other Information Services	1.4%	172	32	111	46	190
4234	Professional and Commercial Equipment and Supplies Merchant Wholesalers	1.3%	167	27	94	-6	115
5417	Scientific Research and Development Services	1.1%	136	23	80	10	112
5412	Accounting, Tax Preparation, Bookkeeping, and Payroll Services	1.0%	127	21	73	3	98
	All Others	26.0%	3,291	551	1,844	-8	2,387

Source: JobsEQ®

Data as of 2020Q2 except wages which are as of 2019. Note that occupation-by-industry wages represent adjusted national data and may not be consistent with regional, all-industry occupation wages shown elsewhere in JobsEQ.

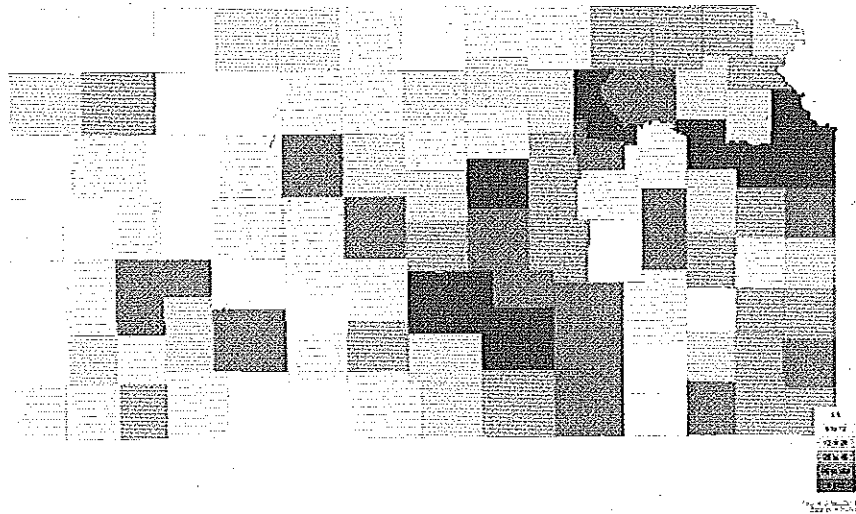
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Occupation employment data are estimated via industry employment data and the industry/occupation mix. Industry employment data are derived from the Quarterly Census of Employment and Wages, provided by the Bureau of Labor Statistics and currently updated through 2019Q4, imputed where necessary with preliminary estimates updated to 2020Q2. Forecast employment growth uses national projections from the Bureau of Labor Statistics adapted for regional growth patterns.

Geographic Distribution

The map below illustrates the county-level distribution of employed workers in Kansas in occupations linked to Computer and Information Systems Security/Information Assurance. Employment is shown by place of work.

Kansas, Occupation Concentration by Place of Work for Occupations Linked to Computer and Information Systems Security/Information Assurance



Top Counties with Employment Linked to Computer and Information Systems Security/Information Assurance, 2020Q2

Region	Employment
Johnson County, Kansas	4,802
Sedgwick County, Kansas	2,158
Wyandotte County, Kansas	890
Shawnee County, Kansas	858
Douglas County, Kansas	472
Riley County, Kansas	254
Reno County, Kansas	192
Leavenworth County, Kansas	183
Saline County, Kansas	182
Ellis County, Kansas	123

Source: JobsEQ®

Occupation employment data are estimated via industry employment data and the industry/occupation mix. Industry employment data are derived from the Quarterly Census of Employment and Wages, provided by the Bureau of Labor Statistics and currently updated through 2019Q4, imputed where necessary with preliminary estimates updated to 2020Q2

Demographic Profile

The population in Kansas was 2,908,776 per American Community Survey data for 2014-2018.

Of individuals 25 to 64 in Kansas, 34.5% have a bachelor's degree or higher which compares with 32.9% in the nation. Per American Community Survey 2014-2018 estimates, the region has about 40,194 students enrolled in grade 12.

Summary¹

Demographics	Percent		Value	
	Kansas	USA	Kansas	USA
Demographics				
Population (ACS)	—	—	2,908,776	322,903,030
Male	49.8%	49.2%	1,449,413	158,984,190
Female	50.2%	50.8%	1,459,363	163,918,840
Median Age ²	—	—	36.5	37.9
Under 18 Years	24.6%	22.8%	715,545	73,553,240
18 to 24 Years	10.3%	9.6%	298,556	30,903,719
25 to 34 Years	13.2%	13.8%	383,220	44,567,976
35 to 44 Years	12.0%	12.6%	350,391	40,763,210
45 to 54 Years	12.1%	13.2%	353,237	42,589,573
55 to 64 Years	12.7%	12.8%	370,050	41,286,731
65 to 74 Years	8.4%	8.8%	245,020	28,535,419
Population Growth				
Population (Pop Estimates) ⁴	—	—	2,913,314	328,239,523
Population Annual Average Growth ⁴	0.3%	0.7%	8,061	2,146,799
People per Square Mile	—	—	35.6	92.9
Educational Attainment, Age 25-64				
No High School Diploma	8.8%	11.2%	128,354	18,885,967
High School Graduate	23.7%	25.8%	345,665	43,699,272
Some College, No Degree	23.5%	21.0%	341,813	35,525,113
Associate's Degree	9.5%	9.1%	138,269	15,389,737
Bachelor's Degree	22.4%	20.8%	326,291	35,261,652
Postgraduate Degree	12.1%	12.1%	176,506	20,445,749
Social				
Poverty Level (of all people) ⁵	12.4%	14.1%	350,280	44,257,979
Households Receiving Food Stamps/SNAP	8.1%	12.2%	90,685	14,635,287
Enrolled in Grade 12 (% of total population)	1.4%	1.4%	40,194	4,442,295
Disconnected Youth ^{3,5}	2.3%	2.6%	3,677	438,452
Children in Single Parent Families (% of all children) ⁵	29.3%	34.3%	200,697	23,973,249
Uninsured	9.0%	9.4%	256,512	29,752,767
Speak English Less Than Very Well (population 5 yrs and over)	4.6%	8.5%	125,376	25,647,781

Source: [JobsEQ](#)[®]

1. American Community Survey 2014-2018, unless noted otherwise

2. Median values for certain aggregate regions (such as MSAs) may be estimated as the weighted averages of the median values from the composing counties.

3. Disconnected Youth are 16-19 year olds who are (1) not in school, (2) not high school graduates, and (3) either unemployed or not in the labor force.

4. Census 2019, annual average growth rate since 2009

5. See Rio Arriba errata note in the Data Dictionary.

RTI (Job Postings)

Occupations

SOC	Occupation	Total Ads
15-1244.00	Network and Computer Systems Administrators	1,414
15-1212.00	Information Security Analysts	806
11-3021.00	Computer and Information Systems Managers	289
15-1242.00	Database Administrators	125
15-1243.00	Database Architects	57
15-1243.01	Data Warehousing Specialists	29
15-1241.00	Computer Network Architects	20
15-1241.01	Telecommunications Engineering Specialists	12
15-1231.00	Computer Network Support Specialists	5

Source: [JobsEQ®](#)

Data reflect online job postings for the 180 day period ending 10/18/2020

Note: Data are subject to revision. Time series data can be volatile with trends unrelated to actual changes in demand; use with caution.

Locations

Location	Total Ads
Overland Park, KS 66210	252
Overland Park, Kansas	219
Wichita, Kansas	117
Kansas City, Kansas	105
Topeka, Kansas	79
Overland Park, KS 66213	71
Topeka, KS 66625	69
Lenexa, Kansas	66
Kansas City, KS 66102	53
Kansas City, KS 66101	49

Source: [JobsEQ®](#)

Data reflect online job postings for the 180 day period ending 10/18/2020

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Employers

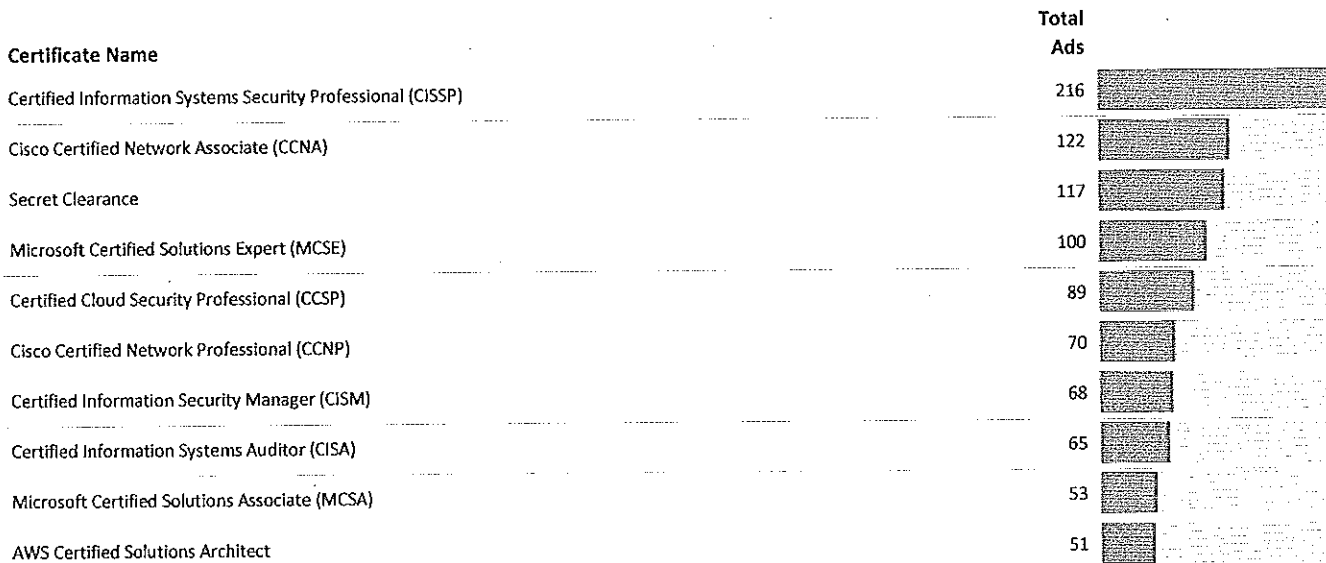


Source: [JobsEQ*](#)

Data reflect online job postings for the 180 day period ending 10/18/2020

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Certifications



Source: [JobsEQ*](#)

Data reflect online job postings for the 180 day period ending 10/18/2020

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Hard Skills



Source: JobsEQ®

Data reflect online job postings for the 180 day period ending 10/18/2020

Note: Data are subject to revision. Time series data can be volatile with trends unrelated to actual changes in demand; use with caution.

Soft Skills



Source: JobsEQ®

Data reflect online job postings for the 180 day period ending 10/18/2020

Note: Data are subject to revision. Time series data can be volatile with trends unrelated to actual changes in demand; use with caution.

Job Titles



Source: [JobsEQ*](#)
 Data reflect online job postings for the 180 day period ending 10/18/2020
 Note: Data are subject to revision. Time series data can be volatile with trends unrelated to actual changes in demand; use with caution.

Education Levels



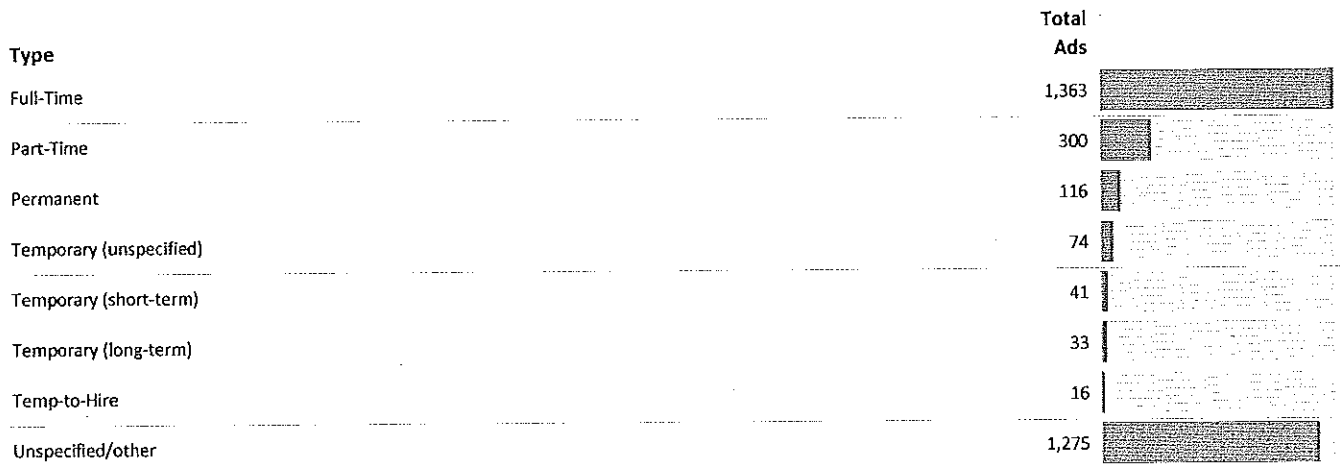
Source: [JobsEQ*](#)
 Data reflect online job postings for the 180 day period ending 10/18/2020
 Note: Data are subject to revision. Time series data can be volatile with trends unrelated to actual changes in demand; use with caution.

Programs



Source: [JobsEQ®](#)
 Data reflect online job postings for the 180 day period ending 10/18/2020
 Note: Data are subject to revision. Time series data can be volatile with trends unrelated to actual changes in demand; use with caution.

Job Types



Source: [JobsEQ®](#)
 Data reflect online job postings for the 180 day period ending 10/18/2020
 Note: Data are subject to revision. Time series data can be volatile with trends unrelated to actual changes in demand; use with caution.

Kansas Regional Map



FAQ

What is CIP?

The 2010 Classification of Instructional Programs (CIP) is taxonomy of instructional program classifications and descriptions. It was developed and has been updated by the U.S. Department of Education's National Center for Education Statistics (NCES).

What is SOC?

The Standard Occupational Classification system (SOC) is used to classify workers into occupational categories. All workers are classified into one of over 804 occupations according to their occupational definition. To facilitate classification, occupations are combined to form 22 major groups, 95 minor groups, and 452 occupation groups. Each occupation group includes detailed occupations requiring similar job duties, skills, education, or experience.

What is training concentration?

Training concentration analysis compares local postsecondary training output to the national norm. As an example consider registered nurses. If in the nation, one RN award is granted for every twelve RNs employed, that 1:12 ratio is the national norm. If in your region your schools also grant one RN award for every twelve RNs employed, then your region will be right at the national norm, or we say at 100% of the national norm which is termed a 100% training concentration. If your region grants two RN awards for every twelve employed, your region would be at twice the national norm or have a 200% training concentration. Similarly, if your region grants one RN award for every twenty-four employed, your region would be at half the national norm or have a 50% training concentration. (Note that this analysis, relying on data provided by Title IV postsecondary schools, provides an incomplete training picture for occupations receiving much of their training from other sources.)

What is the program-to-occupation crosswalk?

Training programs are classified according to the Classification of Instructional Programs (CIP codes). For relating training programs, this report uses a modified version of the CIP to SOC crosswalk from the National Center for Education Statistics (NCES). While this is a very helpful crosswalk for estimating occupation production from training program awards data, the crosswalk is neither perfect nor comprehensive. Indeed, it is hard to imagine such a crosswalk being perfect since many training program graduates for one reason or another do not end up employed in occupations that are most related to the training program from which they graduated. Therefore, the education program analyses should be considered in this light.

As an example of the many scenarios that may unfold, consider a journalism degree that crosswalks into three occupations: editors, writers, and postsecondary communications teachers. Graduates with a journalism degree may get a job in one of these occupations—and that may be the most-likely scenario—but a good number of these graduates may get a job in a different occupation altogether (the job may be somewhat related, such as a reporter, or the job may be totally unrelated, such as a real estate agent). Furthermore, a graduate may stay in school or go back to school for a degree that will lead to other occupation possibilities. Still another possibility includes the graduate not entering the labor market (maybe being unemployed, being a non-participant, or moving to another region).

What is separation demand?

Separation demand is the number of jobs required due to separations—labor force exits (including retirements) and turnover resulting from workers moving from one occupation into another. Note that separation demand

does not include all turnover—it does not include when workers stay in the same occupation but switch employers. The total projected demand for an occupation is the sum of the separation demand and the growth demand (which is the increase or decrease of jobs in an occupation expected due to expansion or contraction of the overall number of jobs in that occupation).

What is a location quotient?

A location quotient (LQ) is a measurement of concentration in comparison to the nation. An LQ of 1.00 indicates a region has the same concentration of an occupation (or industry) as the nation. An LQ of 2.00 would mean the region has twice the expected employment compared to the nation and an LQ of 0.50 would mean the region has half the expected employment in comparison to the nation.

What is NAICS?

The North American Industry Classification System (NAICS) is used to classify business establishments according to the type of economic activity. The NAICS Code comprises six levels, from the “all industry” level to the 6-digit level. The first two digits define the top level category, known as the “sector,” which is the level examined in this report.

About This Report

This report and all data herein were produced by JobsEQ®, a product of Chmura Economics & Analytics. The information contained herein was obtained from sources we believe to be reliable. However, we cannot guarantee its accuracy and completeness.

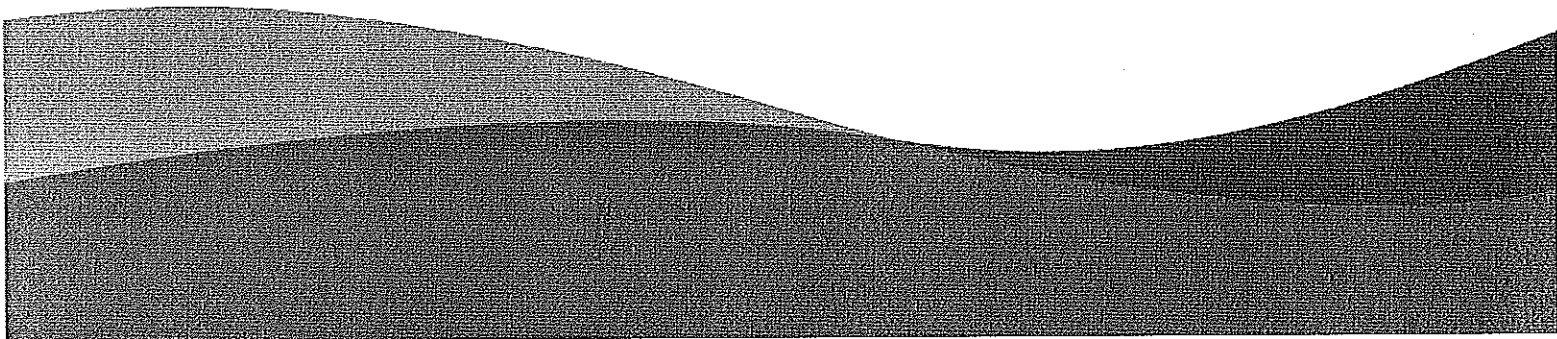


JOBS e e

Education Report

Computer and Information Systems Security/Information Assurance

Missouri



Definition of Computer and Information Systems Security/Information Assurance, CIP 11.1003..... 3
Awards..... 4
Occupation Crosswalk..... 5
Occupation Details 7
Employment by Industry 8
Geographic Distribution 9
Demographic Profile..... 10
RTI (Job Postings)..... 11
Missouri Regional Map..... 16
FAQ..... 17

Definition of Computer and Information Systems Security/Information Assurance, CIP 11.1003

A program that prepares individuals to assess the security needs of computer and network systems, recommend safeguard solutions, and manage the implementation and maintenance of security devices, systems, and procedures. Includes instruction in computer architecture, programming, and systems analysis; networking; telecommunications; cryptography; security system design; applicable law and regulations; risk assessment and policy analysis; contingency planning; user access issues; investigation techniques; and troubleshooting.

Awards

The table below is a list of postsecondary awards in CIP 11.1003 that were granted by institutions located in Missouri in the 2019 academic year.

Schools	Certs & 2yr Awards ¹	4yr Awards ²	Post-Grad Awards ³	Avg Net Price ⁴
Lindenwood University		68		\$18,654
University of Central Missouri		29	16	\$12,616
Southeast Missouri State University		23		\$12,468
Missouri State University-Springfield			16	\$15,783
University of Missouri-St Louis	7	7		\$9,481
Washington University in St Louis		4	9	\$27,931
Saint Louis Community College	9			\$7,700
Missouri Western State University			6	\$10,193
Missouri University of Science and Technology				\$13,994
William Woods University				\$20,934
Total	16	131	47	

1. Undergraduate certificates and associate's degrees

2. Bachelor's degrees and post-baccalaureates

3. Master's, post-master's, and doctorates

4. Data as of the 2017-2018 academic year

Awards data are per the National Center for Education Statistics (NCES) and JobsEQ for the 2019 academic year. Any programs shown here reflect only data reported to the NCES; reporting is required of all schools participating in any federal finance assistance program authorized by Title IV of the Higher Education Act of 1965, as amended—other training providers in the region that do not report data to the NCES are not reflected in the above.

Occupation Crosswalk

The below table lists all occupations linked with the program, Computer and Information Systems Security/Information Assurance, CIP 11.1003.

		Education and Training Requirements			Educational Attainment				
		Typical Education Needed for Entry	Work Experience in a Related Occupation	Typical On-the-Job Training Needed to Attain Competency in the Occupation	No College	Some College, No Degree	Associate's Degree	Bachelor's Degree	Postgraduate Degree
11-3021	Computer and Information Systems Managers	Bachelor's degree	5 years or more	None	3%	10%	7%	48%	31%
15-1212	Information Security Analysts	Bachelor's degree	Less than 5 years	None	5%	11%	10%	44%	30%
15-1231	Computer Network Support Specialists	Associate's degree	None	None	9%	20%	16%	41%	14%
15-1241	Computer Network Architects	Bachelor's degree	5 years or more	None	4%	17%	13%	44%	22%
15-1244	Network and Computer Systems Administrators	Bachelor's degree	None	None	6%	17%	14%	46%	17%
15-1245	Database Administrators and Architects	Bachelor's degree	None	None	4%	10%	7%	48%	30%

Education and training requirements are from the Bureau of Labor Statistics (BLS); educational attainment mix are regional data modeled by Chmura using Census educational attainment data projected to 2020Q2 along with source data from the BLS

Definition of Computer and Information Systems Managers (11-3021)

Plan, direct, or coordinate activities in such fields as electronic data processing, information systems, systems analysis, and computer programming. Excludes "Computer Occupations" (15-1111 through 15-1199).

Definition of Information Security Analysts (15-1212)

Plan, implement, upgrade, or monitor security measures for the protection of computer networks and information. May ensure appropriate security controls are in place that will safeguard digital files and vital electronic infrastructure. May respond to computer security breaches and viruses. Excludes "Computer Network Architects" (15-1143).

Definition of Computer Network Support Specialists (15-1231)

Analyze, test, troubleshoot, and evaluate existing network systems, such as local area network (LAN), wide area network (WAN), and Internet systems or a segment of a network system. Perform network maintenance to ensure networks operate correctly with minimal interruption. Excludes "Network and Computer Systems Administrators" (15-1142) and "Computer Network Architects" (15-1143).

Definition of Computer Network Architects (15-1241)

Design and implement computer and information networks, such as local area networks (LAN), wide area networks (WAN), intranets, extranets, and other data communications networks. Perform network modeling, analysis, and planning. May also design network and computer security measures. May research and recommend network and data communications hardware and software. Excludes "Information Security Analysts" (15-1122), "Network and Computer Systems Administrators" (15-1142), and "Computer Network Support Specialists" (15-1152).

Definition of Network and Computer Systems Administrators (15-1244)

Install, configure, and support an organization's local area network (LAN), wide area network (WAN), and Internet systems or a segment of a network system. Monitor network to ensure network availability to all system users and may perform necessary maintenance to support network availability. May monitor and test Web site performance to ensure Web sites operate correctly and without interruption. May assist in network modeling, analysis, planning, and coordination between network and data communications hardware and software. May supervise computer user support specialists and computer network support specialists. May administer network security measures. Excludes "Information Security Analysts" (15-1122), "Computer User Support Specialists" (15-1151), and "Computer Network Support Specialists" (15-1152).

Definition of Database Administrators and Architects (15-1245)

Administer, test, and implement computer databases, applying knowledge of database management systems. Coordinate changes to computer databases. May plan, coordinate, and implement security measures to safeguard computer databases. Excludes "Information Security Analysts" (15-1122).

Occupation Details

As of 2020Q2, total employment for occupations linked to Computer and Information Systems Security/Information Assurance in Missouri was 30,064. Over the past three years, linked occupations added 1,910 jobs in the region and are expected to need in aggregate approximately 17,202 newly trained workers over the next seven years.

Snapshot of Occupations Linked to Computer and Information Systems Security/Information Assurance in Missouri¹

SOC	Occupation	Empl	Avg Ann Wages ²	Current			3-Year History		7-Year Forecast				
				LQ	Unempl	Unempl Rate	Online Job Ads ³	Ann %	Total Demand	Exits	Transfers	Empl Growth	Avg Ann Growth %
11-3021	Computer and Information Systems Managers	8,644	\$132,200	1.01	118	1.5%	229	3.7%	5,267	1,058	3,796	413	0.7%
15-1244	Network and Computer Systems Administrators	7,419	\$86,100	1.08	174	2.5%	1,200	0.3%	3,993	903	2,816	273	0.5%
15-1231	Computer Network Support Specialists	4,970	\$58,800	1.39	134	3.0%	1	2.0%	2,983	633	2,251	99	0.3%
15-1241	Computer Network Architects	3,205	\$95,300	1.07	21	0.8%	31	2.2%	1,716	299	1,288	129	0.6%
15-1245	Database Administrators and Architects	3,072	\$83,600	1.25	34	1.3%	223	0.4%	1,696	419	1,147	130	0.6%
15-1212	Information Security Analysts	2,754	\$86,400	1.14	57	2.4%	491	5.9%	1,547	277	1,126	144	0.7%
Total - Linked Occupations		30,064	\$95,600	1.12	538	2.0%	2,175	2.2%	17,202	3,589	12,424	1,189	0.6%
Total - All Occupations		2,971,850	\$48,900	1.00	147,245	4.9%	165,489	-0.4%	2,365,624	906,733	1,449,606	9,285	0.0%

Source: JobsEQ[®]

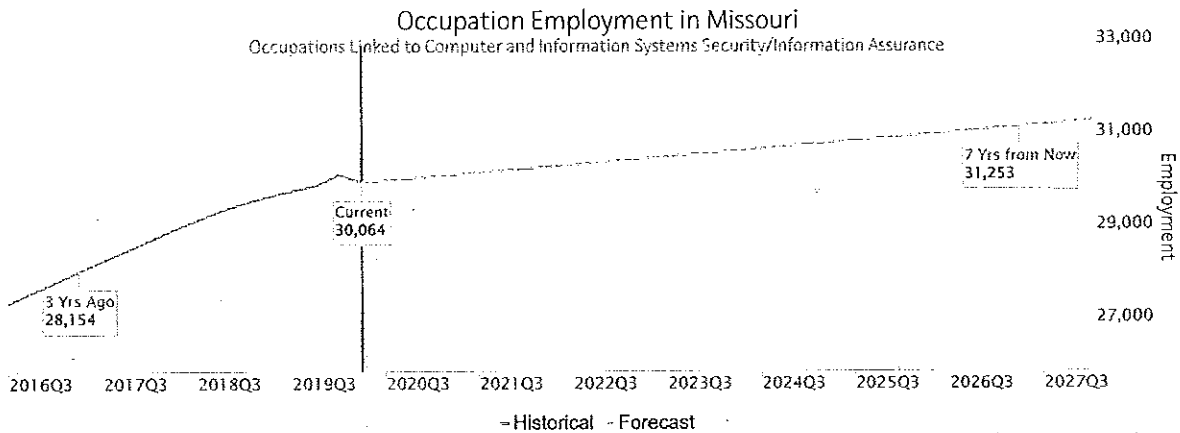
Data as of 2020Q2 unless noted otherwise

Note: Figures may not sum due to rounding.

1. Data based on a four-quarter moving average unless noted otherwise.

2. Wage data are as of 2019 and represent the average for all Covered Employment

3. Data represent found online ads active within the last thirty days in the selected region; data represents a sampling rather than the complete universe of postings. Ads lacking zip code information but designating a place (city, town, etc.) may be assigned to the zip code with greatest employment in that place for queries in this analytic. Due to alternative county-assignment algorithms, ad counts in this analytic may not match that shown in RTI (nor in the popup window ad list).



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Employment by Industry

The table illustrates the industries in Missouri which most employ occupations linked to Computer and Information Systems Security/Information Assurance. The single industry most employing these occupations in the region is Computer Systems Design and Related Services, NAICS 5415. This industry employs 7,092 workers in the linked occupations—employment which is expected to increase by 1,526 jobs over the next ten years; furthermore, 5,786 additional new workers in these linked occupations will be needed for this industry due to separation demand, that is, to replace workers in this occupation and industry that retire or move into a different occupation.

Industry Distribution for Occupations Linked to Computer and Information Systems Security/Information Assurance in Missouri

NAICS Code	Industry Title	Current			10-Year Demand		
		% of Occ Empl	Empl	Exits	Transfers	Empl Growth	Total Demand
5415	Computer Systems Design and Related Services	23.6%	7,092	1,280	4,506	1,526	7,312
5511	Management of Companies and Enterprises	11.5%	3,462	577	2,003	48	2,628
5182	Data Processing, Hosting, and Related Services	5.1%	1,531	280	967	310	1,556
5173	Wired and Wireless Telecommunications Carriers	4.9%	1,462	207	736	-399	545
5221	Depository Credit Intermediation	3.2%	962	156	544	-18	682
6221	General Medical and Surgical Hospitals	2.8%	850	141	478	-24	595
5241	Insurance Carriers	2.6%	769	130	451	42	622
6113	Colleges, Universities, and Professional Schools	2.4%	711	123	413	25	560
5416	Management, Scientific, and Technical Consulting Services	2.3%	699	124	434	121	680
6111	Elementary and Secondary Schools	1.8%	530	91	304	-9	386
4234	Professional and Commercial Equipment and Supplies Merchant Wholesalers	1.7%	512	82	285	-45	322
5613	Employment Services	1.7%	503	81	283	-1	363
5413	Architectural, Engineering, and Related Services	1.5%	462	76	264	10	350
5242	Agencies, Brokerages, and Other Insurance Related Activities	1.4%	427	75	254	37	366
5191	Other Information Services	1.4%	410	77	267	109	454
5211	Monetary Authorities-Central Bank	1.3%	380	60	214	-11	263
5412	Accounting, Tax Preparation, Bookkeeping, and Payroll Services	1.1%	334	55	195	6	256
3364	Aerospace Product and Parts Manufacturing	1.1%	322	49	177	-28	198
5112	Software Publishers	1.0%	315	57	197	47	300
5417	Scientific Research and Development Services	1.0%	303	50	176	10	236
	All Others	26.7%	8,030	1,351	4,582	-41	5,892

Source: JobsEQ®

Data as of 2020Q2 except wages which are as of 2019. Note that occupation-by-industry wages represent adjusted national data and may not be consistent with regional, all-industry occupation wages shown elsewhere in JobsEQ.

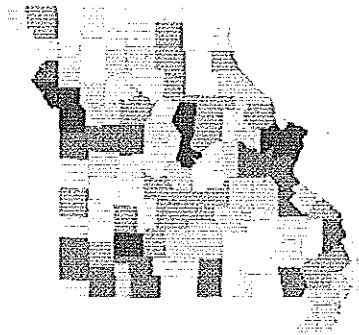
Note: Figures may not sum due to rounding.

Occupation employment data are estimated via industry employment data and the industry/occupation mix. Industry employment data are derived from the Quarterly Census of Employment and Wages, provided by the Bureau of Labor Statistics and currently updated through 2019Q4, imputed where necessary with preliminary estimates updated to 2020Q2. Forecast employment growth uses national projections from the Bureau of Labor Statistics adapted for regional growth patterns.

Geographic Distribution

The map below illustrates the county-level distribution of employed workers in Missouri in occupations linked to Computer and Information Systems Security/Information Assurance. Employment is shown by place of work.

Missouri, Occupation Concentration by Place of Work for Occupations Linked to Computer and Information Systems Security/Information Assurance



Top Counties with Employment Linked to Computer and Information Systems Security/Information Assurance, 2020Q2

Region	Employment
St. Louis County, Missouri	8,150
Jackson County, Missouri	5,576
St. Louis City, Missouri	2,922
Greene County, Missouri	1,675
St. Charles County, Missouri	1,592
Clay County, Missouri	1,205
Boone County, Missouri	999
Cole County, Missouri	604
Platte County, Missouri	436
Jasper County, Missouri	353

Source: JobsEQ*

Occupation employment data are estimated via industry employment data and the industry/occupation mix. Industry employment data are derived from the Quarterly Census of Employment and Wages, provided by the Bureau of Labor Statistics and currently updated through 2019Q4, imputed where necessary with preliminary estimates updated to 2020Q2.

Demographic Profile

The population in Missouri was 6,090,062 per American Community Survey data for 2014-2018.

Of individuals 25 to 64 in Missouri, 30.6% have a bachelor's degree or higher which compares with 32.9% in the nation. Per American Community Survey 2014-2018 estimates, the region has about 77,672 students enrolled in grade 12.

Summary¹

	Percent		Value	
	Missouri	USA	Missouri	USA
Demographics				
Population (ACS)	—	—	6,090,062	322,903,030
Male	49.1%	49.2%	2,988,772	158,984,190
Female	50.9%	50.8%	3,101,290	163,918,840
Median Age ²	—	—	38.5	37.9
Under 18 Years	22.7%	22.8%	1,385,063	73,553,240
18 to 24 Years	9.5%	9.6%	580,161	30,903,719
25 to 34 Years	13.3%	13.8%	809,024	44,567,976
35 to 44 Years	12.0%	12.6%	733,520	40,763,210
45 to 54 Years	12.9%	13.2%	787,960	42,589,573
55 to 64 Years	13.3%	12.8%	812,642	41,286,731
65 to 74 Years	9.2%	8.8%	561,486	28,535,419
Population Growth				
Population (Pop Estimates) ³	—	—	6,137,428	328,239,523
Population Annual Average Growth ⁴	0.3%	0.7%	17,634	2,146,799
People per Square Mile	—	—	89.3	92.9
Educational Attainment, Age 25-64				
No High School Diploma	9.1%	11.2%	285,139	18,885,967
High School Graduate	28.6%	25.8%	897,820	43,699,272
Some College, No Degree	22.9%	21.0%	720,174	35,525,113
Associate's Degree	8.8%	9.1%	277,838	15,389,737
Bachelor's Degree	19.4%	20.8%	610,001	35,261,652
Postgraduate Degree	11.2%	12.1%	352,174	20,445,749
Social				
Poverty Level (of all people) ⁵	14.2%	14.1%	837,930	44,257,979
Households Receiving Food Stamps/SNAP	11.6%	12.2%	278,848	14,635,287
Enrolled in Grade 12 (% of total population)	1.3%	1.4%	77,672	4,442,295
Disconnected Youth ^{3,5}	2.7%	2.6%	8,659	438,452
Children in Single Parent Families (% of all children) ⁵	34.1%	34.3%	445,603	23,973,249
Uninsured	9.7%	9.4%	581,002	29,752,767
Speak English Less Than Very Well (population 5 yrs and over)	2.2%	8.5%	124,173	25,647,781

Source: JobsEQ[®]

1. American Community Survey 2014-2018, unless noted otherwise

2. Median values for certain aggregate regions (such as MSAs) may be estimated as the weighted averages of the median values from the composing counties.

3. Disconnected Youth are 16-19 year olds who are (1) not in school, (2) not high school graduates, and (3) either unemployed or not in the labor force.

4. Census 2019, annual average growth rate since 2009

5. See Rio Arriba errata note in the Data Dictionary.

RTI (Job Postings)

Occupations

SOC	Occupation	Total Ads
15-1244.00	Network and Computer Systems Administrators	3,745
15-1212.00	Information Security Analysts	1,659
11-3021.00	Computer and Information Systems Managers	774
15-1242.00	Database Administrators	441
15-1243.00	Database Architects	224
15-1243.01	Data Warehousing Specialists	124
15-1241.00	Computer Network Architects	71
15-1241.01	Telecommunications Engineering Specialists	34
15-1231.00	Computer Network Support Specialists	10

Source: JobsEQ®

Data reflect online job postings for the 180 day period ending 10/18/2020

Note: Data are subject to revision. Time series data can be volatile with trends unrelated to actual changes in demand; use with caution.

Locations

Location	Total Ads
St Louis, Missouri	993
Houston, Missouri	515
Saint Louis, Missouri	509
Kansas City, Missouri	386
Kansas City, MO 64106	201
Saint Louis, Missouri 63101	167
Kansas City, MO 64101	155
Saint Louis, Missouri 63101	132
Saint Louis, MO 63101	115
Columbia, Missouri	111

Source: JobsEQ®

Data reflect online job postings for the 180 day period ending 10/18/2020

Note: Data are subject to revision. Time series data can be volatile with trends unrelated to actual changes in demand; use with caution.

Employers

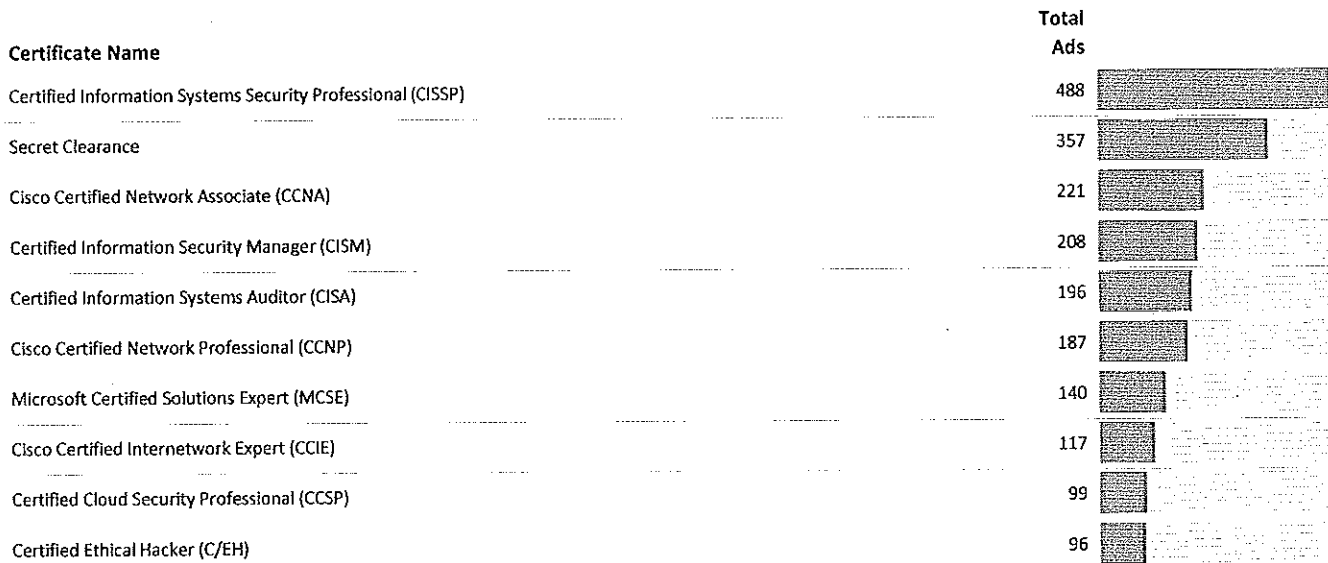


Source: [JobsEQ®](#)

Data reflect online job postings for the 180 day period ending 10/18/2020

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Certifications



Source: [JobsEQ®](#)

Data reflect online job postings for the 180 day period ending 10/18/2020

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Hard Skills

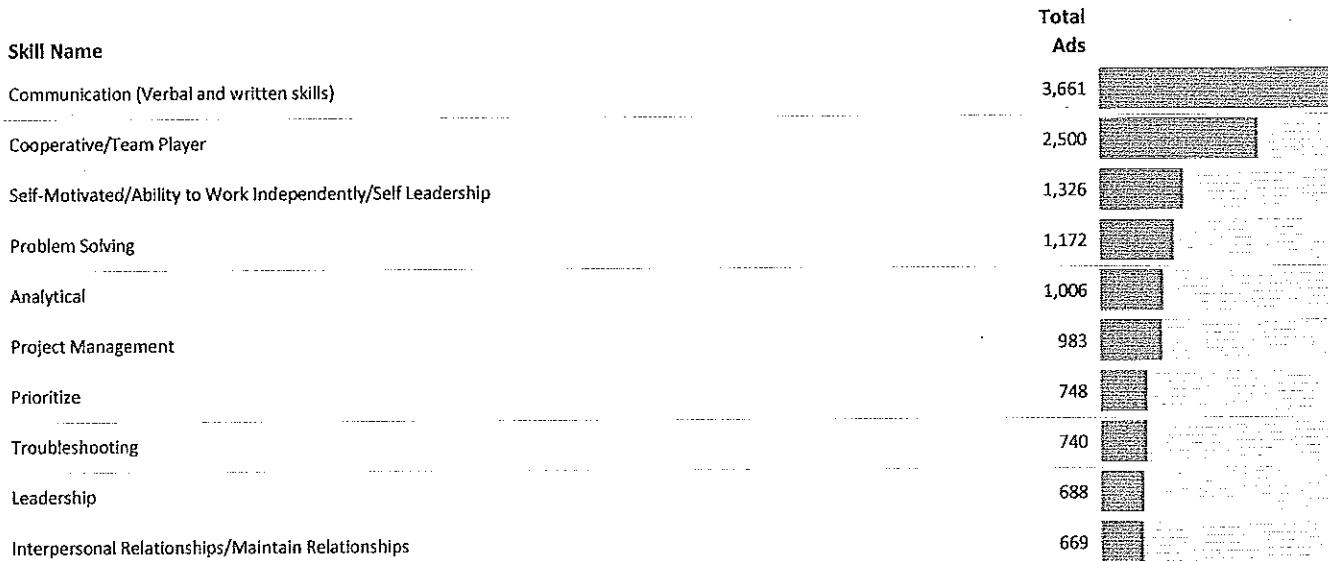


Source: [JobsEQ®](#)

Data reflect online job postings for the 180 day period ending 10/18/2020

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Soft Skills



Source: [JobsEQ®](#)

Data reflect online job postings for the 180 day period ending 10/18/2020

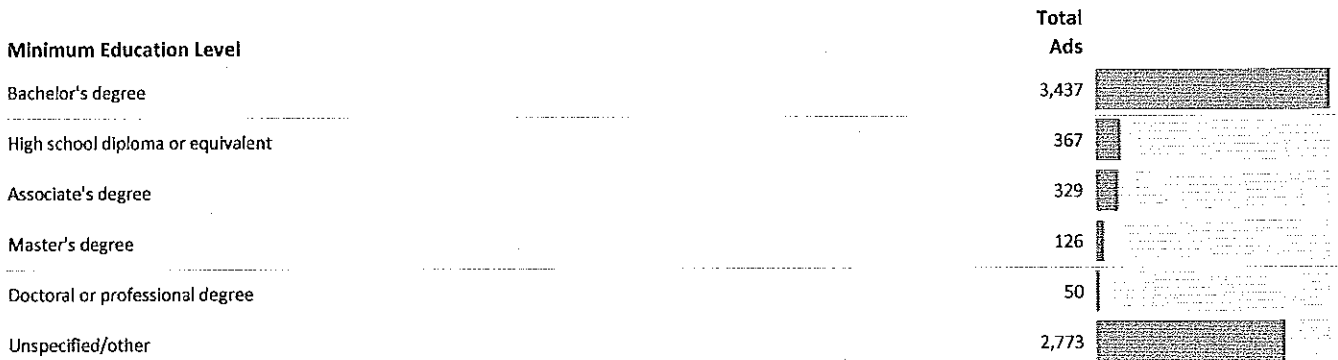
Note: Data are subject to revision. Time series data can be volatile with trends unrelated to actual changes in demand; use with caution.

Job Titles



Source: [JobsEQ®](#)
 Data reflect online job postings for the 180 day period ending 10/18/2020
 Note: Data are subject to revision. Time series data can be volatile with trends unrelated to actual changes in demand; use with caution.

Education Levels



Source: [JobsEQ®](#)
 Data reflect online job postings for the 180 day period ending 10/18/2020
 Note: Data are subject to revision. Time series data can be volatile with trends unrelated to actual changes in demand; use with caution.

Programs

Program Name	Total Ads
Computer Science	1,842
Engineering	719
Information Technology	554
Information Systems	427
Management Information Systems	420
Mathematics	354
Technical	228
Computer Engineering	179
Business	170
Physics	165

Source: JobsEQ®

Data reflect online job postings for the 180 day period ending 10/18/2020

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Job Types

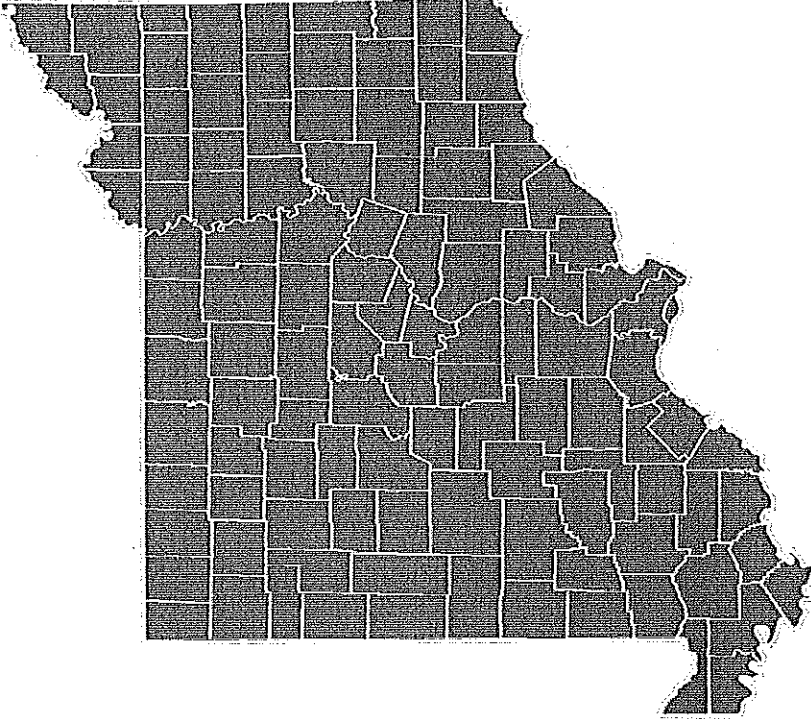
Type	Total Ads
Full-Time	3,789
Part-Time	686
Temporary (unspecified)	370
Permanent	292
Temporary (short-term)	148
Temporary (long-term)	148
Temp-to-Hire	92
Unspecified/other	2,717

Source: JobsEQ®

Data reflect online job postings for the 180 day period ending 10/18/2020

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Missouri Regional Map



FAQ

What is CIP?

The 2010 Classification of Instructional Programs (CIP) is taxonomy of instructional program classifications and descriptions. It was developed and has been updated by the U.S. Department of Education's National Center for Education Statistics (NCES).

What is SOC?

The Standard Occupational Classification system (SOC) is used to classify workers into occupational categories. All workers are classified into one of over 804 occupations according to their occupational definition. To facilitate classification, occupations are combined to form 22 major groups, 95 minor groups, and 452 occupation groups. Each occupation group includes detailed occupations requiring similar job duties, skills, education, or experience.

What is training concentration?

Training concentration analysis compares local postsecondary training output to the national norm. As an example consider registered nurses. If in the nation, one RN award is granted for every twelve RNs employed, that 1:12 ratio is the national norm. If in your region your schools also grant one RN award for every twelve RNs employed, then your region will be right at the national norm, or we say at 100% of the national norm which is termed a 100% training concentration. If your region grants two RN awards for every twelve employed, your region would be at twice the national norm or have a 200% training concentration. Similarly, if your region grants one RN award for every twenty-four employed, your region would be at half the national norm or have a 50% training concentration. (Note that this analysis, relying on data provided by Title IV postsecondary schools, provides an incomplete training picture for occupations receiving much of their training from other sources.)

What is the program-to-occupation crosswalk?

Training programs are classified according to the Classification of Instructional Programs (CIP codes). For relating training programs, this report uses a modified version of the CIP to SOC crosswalk from the National Center for Education Statistics (NCES). While this is a very helpful crosswalk for estimating occupation production from training program awards data, the crosswalk is neither perfect nor comprehensive. Indeed, it is hard to imagine such a crosswalk being perfect since many training program graduates for one reason or another do not end up employed in occupations that are most related to the training program from which they graduated. Therefore, the education program analyses should be considered in this light.

As an example of the many scenarios that may unfold, consider a journalism degree that crosswalks into three occupations: editors, writers, and postsecondary communications teachers. Graduates with a journalism degree may get a job in one of these occupations—and that may be the most-likely scenario—but a good number of these graduates may get a job in a different occupation altogether (the job may be somewhat related, such as a reporter, or the job may be totally unrelated, such as a real estate agent). Furthermore, a graduate may stay in school or go back to school for a degree that will lead to other occupation possibilities. Still another possibility includes the graduate not entering the labor market (maybe being unemployed, being a non-participant, or moving to another region).

What is separation demand?

Separation demand is the number of jobs required due to separations—labor force exits (including retirements) and turnover resulting from workers moving from one occupation into another. Note that separation demand

does not include all turnover—it does not include when workers stay in the same occupation but switch employers. The total projected demand for an occupation is the sum of the separation demand and the growth demand (which is the increase or decrease of jobs in an occupation expected due to expansion or contraction of the overall number of jobs in that occupation).

What is a location quotient?

A location quotient (LQ) is a measurement of concentration in comparison to the nation. An LQ of 1.00 indicates a region has the same concentration of an occupation (or industry) as the nation. An LQ of 2.00 would mean the region has twice the expected employment compared to the nation and an LQ of 0.50 would mean the region has half the expected employment in comparison to the nation.

What is NAICS?

The North American Industry Classification System (NAICS) is used to classify business establishments according to the type of economic activity. The NAICS Code comprises six levels, from the “all industry” level to the 6-digit level. The first two digits define the top level category, known as the “sector,” which is the level examined in this report.

About This Report

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