

Pathway	Program Name	Eligibility	CIP	Program Description	Assessments	SOC* Code	SOC* Job Title	Apprenticeships	Median Wages State	Median Wages National	Employment Trends State	Employment Trends National
Information Support & Services	Computer & Information Sciences, General	Yes	110101	A general program that focuses on computing, computer science, and information science and systems. Such programs are undifferentiated as to title and content and are not to be confused with specific programs in computer science, information science, or related support services.	CompTIA Strata IT Fundamentals NOCTI: Computer Networking Fundamentals, Computer Programming, Computer Technology Microsoft Technology Associate	15-1199	Computer Occupations, All Other	No	\$73,700	\$81,000	6%	8%
						15-1142	Network and Computer Systems Administrators	Yes	\$82,000	\$72,560	17%	28%
						11-3021	Computer and Information Systems Managers	Yes	\$136,900	\$120,950	11%	18%
						11-3021	Computer and Information Systems Managers	Yes	\$136,900	\$120,950	11%	18%
						15-1141	Database Administrators	Yes	\$87,700	\$77,100	20%	31%
						15-1143	Computer Network Architects	No	\$108,000	\$91,000	6%	22%
						15-1121	Computer Systems Analysts	Yes	\$79,700	\$86,900	15%	22%
						15-1111	Computer and Information Research Scientists	No	\$112,200	\$102,300	6%	19%
Information Support & Services	Information Technology	Yes	110103	A program that focuses on the design of technological information systems, including computing systems, as solutions to business and research data and communications support needs. Includes instruction in the principles of computer hardware and software components, algorithms, databases, telecommunications, user tactics, application testing, and human interface design.	CompTIA Strata IT Fundamentals NOCTI: Computer Networking Fundamentals, Computer Programming, Computer Technology Microsoft Technology Associate	15-1121	Computer Systems Analysts	Yes	\$79,700	\$86,900	15%	22%
						15-1111	Computer and Information Research Scientists	No	\$112,200	\$102,300	6%	19%
						11-3021	Computer and Information Systems Managers	Yes	\$136,900	\$120,950	11%	18%
						15-1122	Information Security Analysts	Yes	\$97,600	\$86,200	6%	22%
						15-1143	Computer Network Architects	No	\$108,000	\$91,000	6%	22%
						15-1132	Software Developers, Applications	Yes	\$93,700	\$90,100	17%	28%
						15-1133	Software Developers, Systems Software	No	\$107,300	\$99,000	20%	32%
Information Support & Services	Informatics	No	110104	A program that focuses on computer systems from a user centered perspective and studies the structure, behavior and interactions of natural and artificial systems that store, process and communicate information. Includes instruction in information sciences, human computer interaction, information system analysis and design, telecommunications structure and information architecture and management.								

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Information Support & Services	Data Processing and Data Processing Technology/ Technician	Yes	110301	A program that prepares individuals to master and use computer software programs and applications for inputting, verifying, organizing, storing, retrieving, transforming (changing, updating, and deleting), and extracting information. Includes instruction in using various operating system configurations and in types of data entry such as word processing, spreadsheets, calculators, management programs, design programs, database programs, and research programs.	Microsoft Technology Assoc	15-1199	Computer Occupations, All Other	No	\$73,700	\$81,000	6%	8%
						43-9011	Computer Operators	Yes	\$44,800	\$38,400	-14%	-9%
Information Support & Services	Information Science/Studies	Yes	110401	A program that focuses on the theory, organization, and process of information collection, transmission, and utilization in traditional and electronic forms. Includes instruction in information classification and organization; information storage and processing; transmission, transfer, and signaling; communications and networking; systems planning and design; human interfacing and use analysis; database development; information policy analysis; and related aspects of hardware, software, economics, social factors, and capacity.	CompTIA Strata IT Fundamentals NOCTI: Computer Networking Fundamentals, Computer Programming, Computer Technology Microsoft Technology Associate	11-3021	Computer and Information Systems Managers	Yes	\$136,900	\$120,950	11%	18%
						15-1199	Computer Occupations, All Other	No	\$73,700	\$81,000	6%	8%
						15-1133	Software Developers, Systems Software	No	\$107,300	\$99,000	20%	32%
						15-1111	Computer and Information Research Scientists	No	\$112,200	\$102,300	6%	19%

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Information Support & Services	Data Modeling/ Warehousing and Database Administration	No	110802	A program that prepares individuals to design and manage the construction of databases and related software programs and applications, including the linking of individual data sets to create complex searchable databases (warehousing) and the use of analytical search tools (mining). Includes instruction in database theory, logic, and semantics; operational and warehouse modeling; dimensionality; attributes and hierarchies; data definition; technical architecture; access and security design; integration; formatting and extraction; data delivery; index design; implementation problems; planning and budgeting; and client and networking issues.		15-1141	Database Administrator	Yes	\$87,700	\$77,100	20%	31%
Information Support & Services	Information Technology Project Management	No	111005	A program that prepares individuals to design, develop, and manage information technology projects in a variety of companies and organizations. Includes instruction in principles of project management, risk management, procurement and contract management, information security management, software management, organizational principles and behavior, communications, quality assurance, financial analysis, leadership, and team effectiveness.								
Information Support & Services	Computer Support Specialist	Yes	111006	A program that prepares individuals to provide technical assistance, support, and advice to computer users to help troubleshoot software and hardware problems. Includes instruction in computer concepts, information systems, networking, operating systems, computer hardware, the Internet, software applications, help desk concepts and problem solving, and principles of customer service.	CompTia A+ NOCTI Computer Repair Technology Microsoft Technology Associate	15-1151	Computer User Support Specialists	Yes	\$50,100	\$46,400	8%	18%
						15-1152	Computer Network Support Specialists	Yes	\$65,300	\$59,100	8%	18%

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Network Systems	Computer and Information Systems Security/Information Assurance	Confer	111003	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.	CompTIA Security+ Cisco Certified Network Assoc Security	15-1121	Computer Systems Analysts	Yes	\$79,700	\$86,900	15%	22%
						15-1122	Information Security Analysts	Yes	\$97,600	\$86,200	6%	22%
Network Systems	Computer Systems Networking and Telecommunications	Yes	110901	A program that focuses on the design, implementation, and management of linked systems of computers, peripherals, and associated software to maximize efficiency and productivity, and that prepares individuals to function as network specialists and managers at various levels. Includes instruction in operating systems and applications; systems design and analysis; networking theory and solutions; types of networks; network management and control; network and flow optimization; security; configuring; and troubleshooting.	Cisco Certified Network Associate CompTIA Network+ NOCTI Computer Networking Fundamentals	15-1143	Computer Network Architects	No	\$108,000	\$91,000	6%	22%
						15-1121	Computer Systems Analysts	Yes	\$79,700	\$86,900	15%	22%
						15-1152	Computer Network Support Specialists	Yes	\$65,300	\$59,100	8%	18%
						15-1122	Information Security Analysts	Yes	\$97,600	\$86,200	6%	22%

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Network Systems	Computer Systems Analysis/Analyst	No	110501	A program that prepares individuals to apply programming and systems analysis principles to the selection, implementation, and troubleshooting of customized computer and software installations across the life cycle. Includes instruction in computer hardware and software; compilation, composition, execution, and operating systems; low- and high-level languages and language programming; programming and debugging techniques; installation and maintenance testing and documentation; process and data flow analysis; user needs analysis and documentation; cost-benefit analysis; and specification design.								
Network Systems	Network and System Administration/ Administrator	Confer	111001	A program that prepares individuals to manage the computer operations and control the system configurations emanating from a specific site or network hub. Includes instruction in computer hardware and software and applications; local area (LAN) and wide area (WAN) networking; principles of information systems security; disk space and traffic load monitoring; data backup; resource allocation; and setup and takedown procedures.	Cisco Certified Network Associate CompTIA Network+ NOCTI Computer Networking Fundamentals	11-3021 15-1122 15-1142 15-1143 15-1152	Computer and Information Systems Managers Information Security Analysts Network and Computer Systems Administrators Computer Network Architects Computer Network Support Specialists	Yes Yes Yes No Yes	\$136,900 \$97,600 \$82,000 \$108,000 \$65,300	\$120,950 \$86,200 \$72,560 \$91,000 \$59,100	11% 6% 17% 6% 8%	18% 22% 28% 22% 18%

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Network Systems	System, Networking, and LAN/WAN Management/Manager	No	111002	A program that prepares individuals to oversee and regulate the computer system and performance requirements of an entire organization or network of satellite users. Includes instruction in performance balancing; redundancy; local area (LAN) and wide area (WAN) network management; system migration and upgrading; outage control; problem diagnosis and troubleshooting; and system maintenance, budgeting, and management.								
Programming & Software Development	Computer Programming/Programmer, General	Yes	110201	A program that focuses on the general writing and implementation of generic and customized programs to drive operating systems and that generally prepares individuals to apply the methods and procedures of software design and programming to software installation and maintenance. Includes instruction in software design, low- and high-level languages and program writing; program customization and linking; prototype testing; troubleshooting; and related aspects of operating systems and networks.	NOCTI Computer Programming	15-1152	Computer Network Support Specialists	Yes	\$65,300	\$59,100	8%	18%
						15-1131	Computer Programmers	Yes	\$82,200	\$74,300	5%	12%
						15-1132	Software Developers, Applications	Yes	\$93,700	\$90,100	17%	28%
						15-1133	Software Developers, Systems Software	No	\$107,300	\$99,000	20%	32%
						15-1134	Web Developers	No	\$70,200	\$62,500	6%	22%
Programming & Software Development	Computer Programming, Specific Applications	Confer	110202	A program that prepares individuals to apply the knowledge and skills of general computer programming to the solution of specific operational problems and customization requirements presented by individual software users and organizational users. Includes training in specific types of software and its installation and maintenance.	NOCTI Computer Programming	15-1131	Computer Programmers	Yes	\$82,200	\$74,300	5%	12%
						15-1132	Software Developers, Applications	Yes	\$93,700	\$90,100	17%	28%
						15-1133	Software Developers, Systems Software	No	\$107,300	\$99,000	20%	32%

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Programming & Software Development	Computer Programming, Vendor/Certification	Confer	110203	A program that prepares individuals to fulfill the requirements set by vendors for professional qualification as certified installation, customization, and maintenance engineers for specific software products and/or processes. Includes training in specific vendor-supported software products and their installation and maintenance.	NOCTI Computer Programming	15-1131	Computer Programmers	Yes	\$82,200	\$74,300	5%	12%

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Programming & Software Development	Computer Science	Yes	110701	A program that focuses on computer theory, computing problems and solutions, and the design of computer systems and user interfaces from a scientific perspective. Includes instruction in the principles of computational science, computer development and programming, and applications to a variety of end-use situations.	NOCTI Computer Programming	15-1152	Computer Network Support Specialists	Yes	\$65,300	\$59,100	8%	18%
						15-1131	Computer Programmers	Yes	\$82,200	\$74,300	5%	12%
						15-1132	Software Developers, Applications	Yes	\$93,700	\$90,100	17%	28%
						15-1133	Software Developers, Systems Software	No	\$107,300	\$99,000	20%	32%
						15-1199	Computer Occupations, All Other	No	\$73,700	\$81,000	6%	8%
						15-1121	Computer Systems Analysts	Yes	\$79,700	\$86,900	15%	22%
						11-3021	Computer and Information Systems Managers	Yes	\$136,900	\$120,950	11%	18%
Programming & Software Development	Modeling, Virtual Environments and Simulation	Yes	110804	A program focusing on the principles of applied visual simulation technology and the application of quantitative analyses to human- computer interaction. Includes instruction in object-oriented programming, artificial intelligence, computer communications and networks, computer graphics, virtual worlds and simulation systems, probability, statistics, stochastic modeling, data analysis, human- performance evaluation, and human-behavior modeling.								
Programming & Software Development	Computer Engineering, General	Yes	140901	A program that generally prepares individuals to apply mathematical and scientific principles to the design, development and operational evaluation of computer hardware and software systems and related equipment and facilities; and the analysis of specific problems of computer applications to various tasks.	Microsoft Technology Assoc IEEE Certified Software Development Assoc	15-1143	Computer Network Architects	No	\$108,000	\$91,000	6%	22%
						15-1132	Software Developers, Applications	Yes	\$93,700	\$90,100	17%	28%
						15-1133	Software Developers, Systems Software	No	\$107,300	\$99,000	20%	32%
						17-2061	Computer Hardware Engineers	No	\$102,800	\$100,900	2%	9%

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Programming & Software Development	Computer Software Engineering	No	140903	A program that prepares individuals to apply scientific and mathematical principles to the design, analysis, verification, validation, implementation, and maintenance of computer software systems using a variety of computer languages. Includes instruction in discrete mathematics, probability and statistics, computer science, managerial science, and applications to complex computer systems.								
Programming & Software Development	Artificial Intelligence	No	110102	A program that focuses on the symbolic inference, representation, and simulation by computers and software of human learning and reasoning processes and capabilities, and the computer modeling of human motor control and motion. Includes instruction in computing theory, cybernetics, human factors, natural language processing, and applicable aspects of engineering, technology, and specific end-use applications.								
Web & Digital Communications	Web Page, Digital/Multimedia and Information Resources Design	Yes	110801	A program that prepares individuals to apply HTML, XML, Javascript, graphics applications, and other authoring tools to the design, editing, and publishing (launching) of documents, images, graphics, sound, and multimedia products on the World Wide Web. Includes instruction in Internet theory, web page standards and policies, elements of web page design, user interfaces, vector tools, special effects, interactive and multimedia components, search engines, navigation, morphing, e-commerce tools, and emerging web technologies.	NOCTI Web Design Adobe Certified Assoc in Web Communication	15-1134	Web Developers	No	\$70,200	\$62,500	6%	22%
						15-1199.03	Web Administrators	No	\$73,700	\$81,400	8%	6%
						27-1014	Multimedia Artists and Animators	No	\$57,600	\$61,400	6%	8%

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Web & Digital Communications	Computer Graphics	Yes	110803	A program that focuses on the software, hardware, and mathematical tools used to represent, display, and manipulate topological, two-, and three-dimensional objects on a computer screen and that prepares individuals to function as computer graphics specialists. Includes instruction in graphics software and systems; digital multimedia; graphic design; graphics devices, processors, and standards; attributes and transformations; projections; surface identification and rendering; color theory and application; and applicable geometry and algorithms.	Adobe Certified Assoc in Visual Communication	15-1131	Computer Programmers	Yes	\$82,200	\$74,300	5%	12%
						27-1024	Graphic Designers	Yes	\$45,700	\$44,150	6%	13%
Web & Digital Communications	Computer Software and Media Applications, Other	No	110899	Any instructional program in computer software and media applications not listed above.								
Web & Digital Communications	Web/Multimedia Management and Webmaster	Yes	111004	A program that prepares individuals to develop and maintain web servers and the hosted web pages at one or a group of web sites, and to function as designated webmasters. Includes instruction in computer systems and networks, server installation and maintenance, web page design and editing, information resources management, web policy and procedures, Internet applications of information systems security, user interfacing and usability research, and relevant management and communications skills.	NOCTI Web Design Adobe Certified Assoc in Web Communication	15-1134	Web Developers	No	\$70,200	\$62,500	6%	22%