

Conduct research into fundamental computer and information science as theorists, designers, or inventors. Solve or develop solutions to problems in the field of computer hardware and software.

Training Category: Doctoral degree

2007 Average Wage:	\$50.90
2006 Estimated Employment:	338
2016 Projected Employment:	403
Growth Rate, 2006-2016:	19.2%
Annual Openings:	16

Industry	2006 Share	2016 Share
5417 Scientific Research and Development Svcs	52.1%	47.6%
Self-Employed Workers	5.3%	4.5%
334 Computer and Electronic Product Mfg	n	n
511 Publishing Industries	n	n
5415 Computer Systems Design & Related Svcs	n	n
5416 Management & Technical Consulting Svcs	n	n

15-1021 Computer Programmers

LS

Convert project specifications and statements of problems and procedures to detailed logical flow charts for coding into computer language. Develop and write computer programs to store, locate, and retrieve specific documents, data, and information. May program web sites. *Examples: Computer Programmer Aide; Mainframe Programmer; Systems Programmer*

Training Category: Bachelor's degree

2007 Average Wage:	\$26.76
2006 Estimated Employment:	1,396
2016 Projected Employment:	1,362
Growth Rate, 2006-2016:	-2.4%
Annual Openings:	29

Industry	2006 Share	2016 Share
5415 Computer Systems Design & Related Svcs	45.1%	48.9%
511 Publishing Industries	7.3%	7.8%
Self-Employed Workers	3.9%	3.4%
332 Fabricated Metal Product Manufacturing	2.9%	2.6%
334 Computer and Electronic Product Mfg	n	n
6113 Colleges and Universities	n	n

15-1031 Computer Software Engineers, Applications

VF

Develop, create, and modify general computer applications software or specialized utility programs. Analyze user needs and develop software solutions. Design software or customize software for client use with the aim of optimizing operational efficiency. May analyze and design databases within an application area, working individually or coordinating database development as part of a team. *Examples: Applications Developer; Programmer Analyst; Software Designer*

Training Category: Bachelor's degree

2007 Average Wage:	\$41.21
2006 Estimated Employment:	4,534
2016 Projected Employment:	6,705
Growth Rate, 2006-2016:	47.9%
Annual Openings:	283

Industry	2006 Share	2016 Share
5415 Computer Systems Design & Related Svcs	37.5%	40.2%
511 Publishing Industries	17.8%	18.9%
334 Computer and Electronic Product Mfg	12.4%	9.2%
523 Financial Investment and Related Activities	6.0%	6.8%
423 Merchant Wholesalers, Durable Goods	2.3%	2.2%
524 Insurance Carriers & Related Activities	n	n

15-1032 Computer Software Engineers, Systems Software

VF

Research, design, develop, and test operating systems-level software, compilers, and network distribution software for medical, industrial, military, communications, aerospace, business, scientific, and general computing applications. Set operational specifications and formulate and analyze software requirements. Apply principles and techniques of computer science, engineering, and mathematical analysis. *Example: EDP Systems Engineer*

Training Category: Bachelor's degree

2007 Average Wage:	\$45.18
2006 Estimated Employment:	2,154
2016 Projected Employment:	2,575
Growth Rate, 2006-2016:	19.5%
Annual Openings:	73

Industry	2006 Share	2016 Share
5415 Computer Systems Design & Related Svcs	18.2%	22.1%
423 Merchant Wholesalers, Durable Goods	6.8%	7.5%
334 Computer and Electronic Product Mfg	n	n
425 Electronic Markets and Agents/Brokers	n	n
511 Publishing Industries	n	n
524 Insurance Carriers & Related Activities	n	n

15-1041 Computer Support Specialists

FA

Provide technical assistance to computer system users. Answer questions or resolve computer problems for clients in person, via telephone or from remote location. May provide assistance concerning the use of computer hardware and software, including printing, installation, word processing, electronic mail, and operating systems. *Examples: Customer Support Analyst; Help Desk Technician; Work Station Support Specialist*

Training Category: Associate's degree

2007 Average Wage:	\$22.09
2006 Estimated Employment:	2,778
2016 Projected Employment:	3,177
Growth Rate, 2006-2016:	14.4%
Annual Openings:	126

Industry	2006 Share	2016 Share
5415 Computer Systems Design & Related Svcs	12.8%	13.3%
511 Publishing Industries	12.6%	13.0%
517 Telecommunications	8.3%	8.1%
6113 Colleges and Universities	6.7%	6.8%
6111 Elementary and Secondary Schools	6.0%	6.1%
524 Insurance Carriers & Related Activities	n	n

15-1051 Computer Systems Analysts

VF

Analyze science, engineering, business, and all other data processing problems for application to electronic data processing systems. Analyze user requirements, procedures, and problems to automate or improve existing systems and review computer system capabilities, workflow, and scheduling limitations. May analyze or recommend commercially available software. *Examples: Health Systems Computer Analyst; Data Processing Systems Project Planner; Information Systems Consultant*

Training Category: Bachelor's degree

2007 Average Wage:	\$36.03
2006 Estimated Employment:	1,856
2016 Projected Employment:	2,411
Growth Rate, 2006-2016:	29.9%
Annual Openings:	105

Industry	2006 Share	2016 Share
5415 Computer Systems Design & Related Svcs	19.4%	21.7%
511 Publishing Industries	6.6%	7.1%
State Government, ex. Education and Hospitals	6.5%	5.8%
523 Financial Investment and Related Activities	5.9%	6.8%
Self-Employed Workers	5.8%	5.1%
524 Insurance Carriers & Related Activities	n	n

15-1061 Database Administrators

VF

Coordinate changes to computer databases, test and implement the database applying knowledge of database management systems. May plan, coordinate, and implement security measures to safeguard computer databases. *Examples: Automatic Data Processing Planner; Database Design Analyst; Database Security Administrator*

Training Category: Bachelor's degree

2007 Average Wage:	\$31.40
2006 Estimated Employment:	534
2016 Projected Employment:	698
Growth Rate, 2006-2016:	30.7%
Annual Openings:	22

Industry	2006 Share	2016 Share
523 Financial Investment and Related Activities	11.1%	12.6%
5415 Computer Systems Design & Related Svcs	5.6%	6.2%
State Government, ex. Education and Hospitals	3.9%	3.4%
524 Insurance Carriers & Related Activities	n	n
5613 Employment Services	n	n
6113 Colleges and Universities	n	n

15-1071 Network and Computer Systems Administrators

VF

Install, configure, and support an organization's local area network (LAN), wide area network (WAN), and Internet system or a segment of a network system. Maintain network hardware and software. Monitor network to ensure network availability to all system users and perform necessary maintenance to support network availability. May supervise other network support and client server specialists and plan, coordinate, and implement network security measures. *Examples: Network Control Operator; Network Security Administrator*

Training Category: Bachelor's degree

2007 Average Wage:	\$30.16
2006 Estimated Employment:	1,426
2016 Projected Employment:	1,813
Growth Rate, 2006-2016:	27.1%
Annual Openings:	72

Industry	2006 Share	2016 Share
6111 Elementary and Secondary Schools	8.6%	8.7%
5415 Computer Systems Design & Related Svcs	8.4%	9.6%
551 Management of Companies and Enterprises	6.0%	6.0%
6113 Colleges and Universities	6.0%	6.1%
5416 Management & Technical Consulting Svcs	5.3%	6.5%
334 Computer and Electronic Product Mfg	4.6%	3.7%

15-1081 Network Systems and Data Communications Analysts

VF

Analyze, design, test, and evaluate network systems, such as local area networks (LAN), wide area networks (WAN), Internet, intranet, and other data communications systems. Perform network modeling, analysis, and planning. Research and recommend network and data communications hardware and software. May supervise computer programmers. *Example: Systems Integrator*

Training Category: Bachelor's degree

2007 Average Wage:	\$30.71
2006 Estimated Employment:	964
2016 Projected Employment:	1,478
Growth Rate, 2006-2016:	53.3%
Annual Openings:	71

Industry	2006 Share	2016 Share
5415 Computer Systems Design & Related Svcs	18.0%	20.8%
Self-Employed Workers	17.5%	16.1%
517 Telecommunications	6.3%	5.4%
519 Other Information Services	6.3%	6.1%
518 Data Processing, Hosting, and Related Services	5.8%	6.2%
551 Management of Companies and Enterprises	4.2%	4.2%

15-1099 Computer Specialists, All Other

VF

All computer specialists not listed separately. *Example: Computer Laboratory Technician*

Training Category: Associate's degree

2007 Average Wage:	\$35.34
2006 Estimated Employment:	966
2016 Projected Employment:	1,118
Growth Rate, 2006-2016:	15.7%
Annual Openings:	41

Industry	2006 Share	2016 Share
Federal Government, ex. Postal Service	8.4%	6.7%
511 Publishing Industries	8.1%	8.9%
Self-Employed Workers	6.5%	5.9%
524 Insurance Carriers & Related Activities	5.1%	4.8%
5415 Computer Systems Design & Related Svcs	n	n
6113 Colleges and Universities	n	n

15-2011 Actuaries

FA

Analyze statistical data, such as mortality, accident, sickness, disability, and retirement rates and construct probability tables to forecast risk and liability for payment of future benefits. May ascertain premium rates required and cash reserves necessary to ensure payment of future benefits. *Example: Actuarial Mathematician*

Training Category: Degree plus work experience

2007 Average Wage:	\$41.86
2006 Estimated Employment:	66
2016 Projected Employment:	76
Growth Rate, 2006-2016:	15.2%
Annual Openings:	3

Industry	2006 Share	2016 Share
524 Insurance Carriers & Related Activities	n	n
5416 Management & Technical Consulting Svcs	n	n

15-2031 Operations Research Analysts

LF

Formulate and apply mathematical modeling and other optimizing methods using a computer to develop and interpret information that assists management with decision making, policy formulation, or other managerial functions. May develop related software, service, or products. Frequently concentrates on collecting and analyzing data and developing decision support software. May develop and supply optimal time, cost, or logistics networks for program evaluation, review, or implementation. *Examples: Method Consultant; Standards Analyst*

Training Category: Master's degree

2007 Average Wage:	\$28.90
2006 Estimated Employment:	96
2016 Projected Employment:	101
Growth Rate, 2006-2016:	5.2%
Annual Openings:	3

Industry	2006 Share	2016 Share
491 Postal Service	5.2%	5.0%
State Government, ex. Education and Hospitals	5.2%	5.0%
221 Utilities	n	n
334 Computer and Electronic Product Mfg	n	n
523 Financial Investment and Related Activities	n	n
524 Insurance Carriers & Related Activities	n	n

15-2041 Statisticians

LF

Engage in the development of mathematical theory or apply statistical theory and methods to collect, organize, interpret, and summarize numerical data to provide usable information. May specialize in fields, such as bio-statistics, agricultural statistics, business statistics, economic statistics, or other fields. Include mathematical statisticians. *Examples: Biometrician; Sampling Expert; Statistical Analyst*

Training Category: Master's degree

2007 Average Wage:	\$27.12
2006 Estimated Employment:	47
2016 Projected Employment:	51
Growth Rate, 2006-2016:	8.5%
Annual Openings:	2

Industry	2006 Share	2016 Share
State Government, ex. Education and Hospitals	23.4%	23.5%
Federal Government, ex. Postal Service	17.0%	15.7%
Self-Employed Workers	6.4%	5.9%
325 Chemical Manufacturing	n	n
524 Insurance Carriers & Related Activities	n	n
551 Management of Companies and Enterprises	n	n