Information Technology

Career Guide

Information Technology Experiences for Students and Teachers (ITEST)

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How to get started?

This career guide has been developed to help you explore career fields in Information Technology (IT). The guide's focus is on current and future job opportunities within the Red River of the North Basin. It also provides a connection to the colleges and universities that have educational degrees related to IT. Photos and information in this guide refer to real people doing real work within this region.

If you are interested in a career in IT, visit with your high school career counselor. They can provide you with career planning help and tools, arrange for job shadow experiences, and identify school and volunteer activities that will also help you develop your career interests.

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The Innovative Technology Experiences for Students and Teachers (ITEST) program provides opportunities for both school-age children and teachers to build the skills and knowledge needed to advance their study and to function and contribute in a technologically rich society.

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It’s an IT world!

We are surrounded everyday by the influences of technology, and you may think of things like computers, iPods, game systems or even cell phones as the most important IT tools of the 21st century. While these are the gadgets most of us spend our day using to communicate, socialize and complete tasks, they are a small sampling of IT tools. The opportunities to find a career in IT are nearly limitless if you take the time to go through this guide and challenge yourself to explore the possibilities.

IT is, and will continue to be, the largest industry in the US and worldwide. IT is computers and communications. IT is the driving force of business, education, entertainment, health care and government. IT is all about combining the power of computing with the study of managerial know-how and social issues to effectively solve problems and to creatively research future IT solutions. IT is the enabler of the information age which revolves around your everyday life.

Do you want to be a part of IT?

The computer - is an IT tool that “every job”, from service to science to saving the world requires us to have good basic skills. However, the better your computer skills, the more likely you are to land that “dream job” after school.
Let’s get started! Information technology careers are divided into four pathways. Do you see one pathway that might have captured your interest? Let’s explore further!

**Network Systems**

**Information Support and Services**

**Programming and Software Development**

**Interactive Media**
Overview

Because networks are configured in many ways, network systems and data communications analysts are needed to design, test, evaluate, and manage systems, such as local area networks (LANs), wide area networks (WANs), the Internet, intranets, and other data communications systems. Systems can range from a connection between two offices in the same building to globally distributed networks, voicemail, and e-mail systems of a multinational organization.

People with expertise in network systems are in high demand for a variety of positions in organizations of all sizes and types. These people do work such as creating and maintaining the infrastructure in medical facilities that enables multiple doctors to view the same patient’s X-rays to determine the diagnosis and best treatment.

Telecommunications specialists focus on the interaction between computer and communications equipment. These workers design voice and data communication systems, supervise the installation of the systems, and provide maintenance and other services to clients after the systems are installed.

Sample Occupations

**Network Design and Administration**
- Communications Analyst
- Data Communications Analyst
- Information Systems Administrator
- Information Systems Operator
- Information Technology Engineer

**Network:**
- Administrator, Analyst, Architect,
  Engineer, Manager
- Operations Analyst, Security Analyst,
  Specialist, Technician, Transport
  Administrator
- PC Support Specialist
- Systems Support Lead
- Systems: Administrator, Engineer
- Technical Support Specialist
- User Support Specialist
- Telecommunications Network Technician

**Industry Certificates**
- CompTIA/Network+
- Cisco Certified Network Associate
- Microsoft Certified Systems Engineer (MCSE)
- Certified Novell Engineer (CNE)
- Nortel NetKnowledge Certification
- CompTIA/ Security+

[1]
Overview
Careers in information support and services involve IT deployment, including implementing computer systems and software, providing technical assistance and managing information systems.

People with expertise in information support and services are in high demand for a variety of positions in organizations of all sizes and types. For example, they might improve service to customers by integrating multiple databases at a global investment company which allows employees to share information between the New York, Paris and Hong Kong offices.

With the Internet and electronic businesses generating large volumes of data, there is a growing need to be able to store, manage, and extract data effectively. Database administrators work with database management systems software and determine ways to organize and store data. Data integrity, backup systems, and database security have become increasingly important aspects of the job of database administrators.

Sample Occupations

Database Development and Administration

Data: Administrator, Analyst, Architect, Management Associate, Modeler, Modeling Specialist

Database: Administration Associate, Administrator, Analyst, Developer, Manager, Modeler, Security Expert

DSS (Decision Support Services), Knowledge Architect

Senior Database Administrator, Systems Analyst
Systems Administrator, Analyst Tester

Technical Writer:
Desktop Publisher, Document Specialist, Documentation Specialist, Editor
Electronic Publications Specialist, Publisher Instructional Designer, Online Publisher Technical Communicator, Editor, Publications Manager, Writer

Technical Support:
Analyst, Call Center Support Representative, Content Manager
Customer: Liaison, Service Representative, Service Professional
Help Desk: Specialist, Technician
Maintenance Technician, PC Support Specialist, PC Systems Coordinator, Product Support Engineer, Sales Support Technician, Systems Analyst
Technical: Account Manager, Support Engineer, Support Representative
Testing Engineer

Enterprise Systems Analysis and Integration:
Application Integrator, Business Continuity Analyst, Cross-Enterprise Integrator
Data: Systems Designer, Systems Manager, Warehouse Designer
E-Business Specialist, Electronic Transactions Implementer
Information Systems: Architect, Planner
Systems: Analyst, Architect, Integrator

[1]
Certificates and Degrees from Industry and Colleges

Oracle Certified Professional
CompTIA A+ Certification
Microsoft Certified Database Administrator
Associate Degree of Science in Technical Support
Bachelor of Science in Information Science

How about going to work for the college that helped you get your education? Young talented graduates are in high demand and can find an IT job on any college campus in the country.

Below: L. Prather, Classroom Technology Specialist at NDSU, develops a podcast. Photo by Randy Wald
Overview

Careers in programming and software development involve the design, development, implementation and maintenance of computer systems and software, requiring knowledge of computer operating systems, programming languages and software development.

While many of the career opportunities in this area are in software companies, large organizations of other types, such as financial services and business, also offer many opportunities.

People with expertise in programming and software development are in high demand, doing work such as creating the software that launches and runs NASA space shuttles.

Computer scientists work as theorists, researchers, or inventors. Their jobs are distinguished by the higher level of theoretical expertise and innovation they apply to complex problems and the creation or application of new technology. Those employed by academic institutions work in areas ranging from complexity theory to hardware to programming-language design. Some work on multidisciplinary projects, such as developing and advancing uses of virtual reality, extending human-computer interaction, or designing robots. Their counterparts in the private industry carry out tasks such as developing specialized languages or information technologies, designing programming tools or knowledge-based systems, and even computer games.

Sample Occupations

Programming/Software Engineering:
- Applications: Analyst, Engineer
- Business Analyst, Computer Engineer, Data Modeler
- Operating System: Designer/Engineer, Programmer/Analyst
- Program Manager, Programmer, Programmer/Analyst, Project Lead

Software Applications: Specialist, Architect, Design Engineer, Development Engineer, Engineer, QA Specialist, Tester

Systems: Analyst, Administrator, Test Engineer, Tester

[1]

Certificates and Degrees from Colleges and Universities

Microsoft Certified Solutions Developer
Associate/Bachelor of Science in Real Time Interactive Simulation
Bachelor of Science in Computer Science
Bachelor of Science in Information Science
Master of Science in Computer Science
Sun-Java Developer Certification [1]
Overview

Careers in interactive media involve creating, designing and producing interactive, multimedia products and services; including development of digitally-generated or computer-enhanced media used in business, training, entertainment, communications and marketing.

Organizations of all types and sizes use digital media (World Wide Web, CDROM, DVD) to communicate with existing and potential customers, track transactions, and collaborate with colleagues. Interactive media experts can find employment opportunities in organizations of all sizes and types, doing work such as creating e-business auction Web sites that allow people around the world to buy and sell items in real-time.

Webmasters are responsible for all technical aspects of a Web site, including performance issues, such as speed of access, and for approving the content of the site. Internet developers or Web developers, also called Web designers, are responsible for day-to-day site creation and design.

Sample Occupations

Digital Media:
2D/3D Artist, Animator, Audio/Video Engineer, Designer, Media Specialist, Media/Instructional Designer

Multimedia: Author, Authoring Specialist, Developer, Specialist Producer, Production Assistant, Programmer, Streaming Media Specialist, Virtual Reality Specialist

Web: Designer, Producer, Specialist

Web Development and Administration
Web: Administrator, Architect, Designer, Page Developer, Producer, Site Developer, Specialist, Webmaster – Level 1 & 2 (C)

Certificates and Degrees from Industry and Colleges
Certificate of Webmaster Technology CompTIA I-Net+
iGeneration™ Certified Creative Producer WOW (World Organization of Webmasters) Certified Professional Webmaster Associate/Bachelor’s Multimedia Communications [1]

Television and video production give talented graduates an opportunity to explore both sides of technology, being the IT expert or being the celebrity in front of the camera. Photo by Bruce Sundeen
Employment Fields

What are the odds you will land that IT dream Job? Take a look below!

### National IT occupation distribution (2004)

<table>
<thead>
<tr>
<th>Occupation</th>
<th>Number of Workers</th>
</tr>
</thead>
<tbody>
<tr>
<td>Network Systems and data communication analysts</td>
<td>231,000</td>
</tr>
<tr>
<td>Network and computer systems administrators</td>
<td>278,000</td>
</tr>
<tr>
<td>Database administrators</td>
<td>104,000</td>
</tr>
<tr>
<td>Computer support specialists</td>
<td>518,000</td>
</tr>
<tr>
<td>Computer systems analysts</td>
<td>487,000</td>
</tr>
<tr>
<td>Computer software engineers, application</td>
<td>460,000</td>
</tr>
<tr>
<td>Computer software engineers, system software</td>
<td>340,000</td>
</tr>
<tr>
<td>Computer programmers</td>
<td>455,000</td>
</tr>
<tr>
<td>Computer and information scientists, research</td>
<td>22,000</td>
</tr>
<tr>
<td>Multi-media artists and animators</td>
<td>94,000</td>
</tr>
<tr>
<td>Computer specialists, other</td>
<td>149,000</td>
</tr>
</tbody>
</table>
Job Outlook

The US Bureau of Labor Statistics [2] predicts that four of the five job categories with the largest expected percentage growth through 2012 in the U.S. will be in IT areas. Demand for qualified IT workers is expected to double in the next five years.

There is a growing demand for network systems and data communication analysts to help firms maximize their efficiency with available technology. Expansion of electronic commerce—doing business on the Internet—and the continuing need to build and maintain databases that store critical information on customers, inventory, and projects are fueling demand. The introduction of the wireless Internet, known as WiFi, creates new systems to be analyzed and new data to be administered. Also, the increasing importance placed on cybersecurity—the protection of electronic information—will result in a need for workers skilled in information security [2].

Employment of computer systems analysts and computer support specialists is driven by very rapid growth in computer system design and related services. The demand for networking to facilitate the sharing of information, the expansion of client–server environments, and the need for computer specialists to use their knowledge and skills in a problem-solving capacity will be major factors in the rising demand for computer systems analysts [2].

Employment of computer programmers is expected to grow more slowly than in previous years. Sophisticated computer software now has the capability to write basic code, which eliminates the need for many programmers to do this routine work. The consolidation and centralization of systems and applications, developments in packaged software, and advances in programming languages and tools means that more of the programming functions can be transferred from programmers to other types of information workers, such as computer software engineers [2].

Employment of multi-media artists and animators is expected to increase as consumers continue to demand more realistic video games, movie and television special effects, and 3D animated movies. An increasing demand for Web site development and for computer graphics adaptation from the growing number of mobile technologies will create additional job openings [2].

The North Dakota Career Resource Network [3] predicts that computer software engineers – applications and network systems and data communication analysts are among the fastest growing occupations in North Dakota, with a growth rate of 38.8 percent and 37.6 percent, respectively.

The Minnesota Department of Employment and Economic Development [4] estimates the biggest growth until 2012 for network systems and data communication analysts (37.3 percent), computer software engineers - applications (33 percent), and computer systems analysts (32.7 percent) in northwestern Minnesota.
IT professionals are employed in:

- Professional, scientific, and technical services industries (largest - computer systems design and related services)
- Internet service providers, web search portals
- Financial institutions
- Government agencies
- Insurance companies
- Educational institutions, universities
- Telecommunications companies
- Software publishers
- Wholesale and retail vendors of computers, office equipment, appliances, and home electronic equipment
- Manufacturers of computers, semiconductors, other electronic components
- Many self-employed
- Often on a temporary or contract basis
- Often as independent consultants

Working Conditions

Computer specialists and programmers, network analysts, and database administrators normally work in offices or laboratories in comfortable surroundings. They usually work about 40 hours a week—the same as many other professional or office workers do. However, evening or weekend work may be necessary to meet deadlines or solve specific problems. With the technology available today, telecommuting is common for computer professionals. As networks expand, more work can be done from remote locations through modems, laptops, electronic mail, and the Internet [10].

Computer support specialists and systems administrators constantly interact with customers and fellow employees as they answer questions and give valuable advice. Those who work as consultants are away from their offices much of the time, sometimes spending months working in a client’s office.
What are employers looking for?

If you are looking to the future perhaps you are wondering how do I prepare for the world of work. The following are key skills that employers of the 21st century – “your future boss” – are looking for in all fields of employment.

**Employers look for a combination of:**

**Technical Skills**
A highly specialized technical skill set related to specific programming languages; database, networking, and operating systems, and other technologies. These technical skills can be combined in many ways.

**Experience**
Hands-on, real-world experience in the application of the technical skill set; sometimes, experience related to the application of IT in a particular industry setting.

**Soft and Business Skills**
A range of soft skills and business skills, such as oral and written communication skills, ability to work in teams, and project management skills.

**Formal Education**
Generally at least a four-year degree, often a technical degree.
Technical skills

A competency profile for IT occupational areas identified the following basic, essential IT skills:

**Knowledge**

- of the Internet, Internet access, and how to use Internet-based services
- of computer hardware design, operation, and maintenance, including knowledge of computer components and systems, ability to install a computer system, and troubleshooting
- of operating system components, computer memory, and computer security, and the ability to operate and maintain these systems
- of different networking systems, platforms, standards, and protocols, and knowledge of network connectivity
- of database systems and principles, and basic competency in their development, implementation

**Proficiency**

- in basic computer applications (word processing, design and use of databases, spreadsheets, desktop publishing, and graphics)
- in basic data communications, accessing information from electronic sources, and e-mail
- in basic computer user support (identifying technical support needed and providing technical assistance/training to users)
- in installing and configuring software programs, evaluating their utility in meeting user needs.

[5]

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**Technical skills in different IT disciplines [6]:**

<table>
<thead>
<tr>
<th>Programming/Software Engineering</th>
<th>Web Development Subset</th>
<th>Technical Support</th>
</tr>
</thead>
<tbody>
<tr>
<td>Java</td>
<td>Java</td>
<td>Windows NT/2000/98</td>
</tr>
<tr>
<td>C++</td>
<td>JavaBeans</td>
<td>Unix</td>
</tr>
<tr>
<td>C</td>
<td>SQL</td>
<td>Microsoft</td>
</tr>
<tr>
<td>Visual Basic</td>
<td>Perl</td>
<td>Applications</td>
</tr>
<tr>
<td>XML</td>
<td>Active Server Pages</td>
<td>LAN/WAN</td>
</tr>
<tr>
<td>HTML</td>
<td>CGI</td>
<td>Novell Netware</td>
</tr>
<tr>
<td>Unix</td>
<td>JavaScript</td>
<td>TCP/IP</td>
</tr>
<tr>
<td>Windows NT/2000</td>
<td>Cold Fusion</td>
<td>Sybase</td>
</tr>
<tr>
<td>Linux</td>
<td>HTML</td>
<td>Novell Netware</td>
</tr>
<tr>
<td>SQL</td>
<td>XML</td>
<td>TCP/IP</td>
</tr>
<tr>
<td>Perl</td>
<td>CGI</td>
<td>PC Hardware</td>
</tr>
<tr>
<td>Active Server Pages</td>
<td>Java</td>
<td>Solaris</td>
</tr>
<tr>
<td>CGI</td>
<td>Java Server Pages</td>
<td></td>
</tr>
<tr>
<td>JavaScript</td>
<td>XML</td>
<td></td>
</tr>
<tr>
<td>Solaris</td>
<td>Cold Fusion</td>
<td></td>
</tr>
</tbody>
</table>
Experience

Experience is a very high priority in employer hiring considerations.

Interviewed IT workers cited that lack of experience in a specific skill or skills as one of the largest barriers they face in getting an IT job.

Employers may be willing to accept academic degrees, demonstrated soft skills, or IT certifications that closely match their needs instead of job experience in hiring for a trainee or entry-level position.

There are already many ways to collect IT experience for High School students:

- part-time computer jobs at the High School (creating and maintaining the school’s website as a Network Administrator Assistant, helping the teacher in charge for the computers, or participating in the implementation of an online homework grade program for the students)
- designing the graphic part of the High School Annual
- shooting a video of the last High School Football event etc.

College students can gather experience with internships, summer jobs, or campus employment [5].

So how do I get where I want to go? Set a goal, find a good college program and start building your skills through your jobs, volunteer work or internships.

If you think computers are for office workers, think again. Most of today’s workforce out in the field carries a laptop computer and needs the same computer skills as their colleagues back in the office. Above: A field technician from Fargo based Butler Machinery Company uses a computer in the field when managing the big machines out engineering the landscape. Photo by Butler Machinery, Inc.
Key Soft Skills

As IT has become omnipresent throughout organizations and central to mission-critical operations, employers have placed an increasing emphasis on IT workers’ business skills and soft skills, such as the ability to communicate effectively and to work in a collaborative environment [5].

- Communication Skills
- Interpersonal/Team Skills
- Systems Thinking
- Creative, Critical, and Analytical Thinking
- Skills/Problem Solving
- Ability to Learn Quickly/Adaptability
- Change Agent/Initiative/Leadership

Business Skills

- Needs Analysis
- Project Management
- Client/Customer Relations
- Understanding company financial information
- Cost-Benefit Analysis

Guess who makes the celebrities look good? That’s right - it is a media specialist behind the scenes with many of the same skills teens learn while playing video games, designing YouTube videos or uploading your favorite photos on MySpace or Facebook. Below: Technicians at the Prairie Public Television studio make the on-air talent in the studio look and sound great. Photo by Joe Courneya
Formal Education

A postsecondary education is necessary for professional-level IT jobs [5].

- a four-year degree (Bachelor’s degree), especially a technical degree (computer science or computer engineering) is preferred in:
  - research
  - developing new software, IT products
  - enterprise-level applications

The majority of college degree workers in IT have degrees in science, math, or engineering disciplines.

- a two-year degree (Associate’s degree) is needed for:
  - tech support/call center jobs
  - web development and administration
  - database-related jobs
  - network design and administration
  - PC maintenance and repair technicians
    - often geared more toward meeting the needs of local businesses, more occupation specific than 4-year degree programs

- a certifications (often 1 year degree) from IT vendors Microsoft, Cisco, Novell, and Oracle is needed for lower level IT positions, demonstrates a level of competence in a particular field

Of the 12 professional-level IT occupations, for which the U.S. Department of Labor’s Bureau of Labor Statistics collects information, it is indicated that 10 of these occupations typically require at least a bachelor’s degree [5].

<table>
<thead>
<tr>
<th>Occupation name</th>
<th>Required degree</th>
</tr>
</thead>
<tbody>
<tr>
<td>Computer Programmer</td>
<td>Bachelor’s Degree</td>
</tr>
<tr>
<td>Computer Support Specialist</td>
<td>Associate’s Degree</td>
</tr>
<tr>
<td>Computer Systems Analyst</td>
<td>Bachelor’s Degree</td>
</tr>
<tr>
<td>Computer Software Engineer, Applications</td>
<td>Bachelor’s Degree</td>
</tr>
<tr>
<td>Computer Software Engineer, Systems Software</td>
<td>Bachelor’s Degree</td>
</tr>
<tr>
<td>Computer and Information Systems</td>
<td>Manager Degree Plus Working Experience</td>
</tr>
<tr>
<td>Network and Computer Systems Administrator</td>
<td>Bachelor’s Degree</td>
</tr>
<tr>
<td>Network Systems and Data Communications Analyst</td>
<td>Bachelor’s Degree</td>
</tr>
<tr>
<td>Database Administrator</td>
<td>Bachelor’s Degree</td>
</tr>
<tr>
<td>Computer Hardware Engineer</td>
<td>Bachelor’s Degree</td>
</tr>
<tr>
<td>Computer and Information Scientist, Research</td>
<td>Doctoral Degree</td>
</tr>
<tr>
<td>All Other Computer Specialists</td>
<td>Postsecondary Vocational Award</td>
</tr>
</tbody>
</table>
Educational Landscape

**IT Bachelor's Degree Programs**

Bachelor's degree programs in IT generally provide a broad, high-level conceptual understanding of IT in systems architecture, computer programming, and computer network systems.

On the other hand, traditional four-year technical degree programs offer less in terms of hands-on practical experience and do not typically provide business-related skills or link the learning to solving specific business problems. In addition, some programs at universities may be out-of-date because they are unable to match the speed of change in IT.

**IT Minor**

At many universities across the Nation, undergraduates from a wide range of academic majors seeking IT knowledge and skills can obtain an IT-related minor—generally referred to as a minor in computer science, information technology, or management information systems. IT minors can offer important complementary knowledge to those majoring in a natural science, engineering, business, or other discipline.

Remember the web design class from high school? If you like working with the web, there is a career waiting for you after high school. Photo by Randy Wald

**Combined IT Bachelor’s/Master’s Degree (BS/MS) Programs**

Some universities offer a combined BS/MS program in computer science, computer engineering, or both, to encourage their students to seek higher level degrees by enabling them to earn them faster. These programs can reduce the time it takes to earn both degrees separately by as much as two semesters.

**IT-Related Master of Science (MS) Programs**

MS programs address a range of IT professionals' needs. Some programs offer preparation for advancement to higher level jobs, such as those in IT organization management and IT business management, or for more technically complex jobs, such as advanced IT development work. Other IT-related MS programs are geared toward expanding IT professionals' portfolios of skills into new IT disciplines, such as telecommunications, or toward preparing them for work in a highly specialized IT application area, such as bioinformatics.
Techno-MBAs

A new class of MBA programs has arisen in recent years, focused on the integration of management and technical knowledge. In contrast to an MBA with a technical concentration, these programs—often referred to as “Techno-MBAs”—focus on understanding the business value of technology, technology’s contribution to the bottom line, and technology as a means rather than an end. Generally, these degrees are designed for people with technical backgrounds who want to advance into management positions.

Two-Year Degrees at Community Colleges

Community colleges offer a range of IT education and training opportunities. These programs are popular, in part, because they are convenient, economical, and offer training opportunities for both full-time students and working adults who are seeking to upgrade their skills or prepare for a career change by attending training on a part-time basis. Community colleges primarily provide preparation for low- and intermediate-level IT jobs, and their offerings focus more on practical applications of IT than on theoretical studies. Some programs are responding to employer demands for soft skills by adding group projects and writing requirements to the IT curriculum.

Transfer track programs, focused on computer science or computer information systems management, prepare students for transfer to an IT program at a four-year college or university; these students are working toward a bachelor’s degree in computer science, computer engineering, or management information systems. Terminal track programs are designed for students who intend to move directly into the workforce after earning their two-year degree. These programs—which often focus on programming, network and database administration, and technical support—have a higher concentration of courses in the technical discipline. The curriculum typically places less emphasis on concepts and theory than do transfer track programs, and greater emphasis on practical knowledge.
IT Certificate Programs at colleges

IT certificate programs offer a wide range of opportunities for potential and current IT workers to acquire, upgrade, and expand their IT skills. These programs — designed for introductory, intermediate, and advanced skill levels — are offered at community colleges and universities at both the undergraduate and graduate levels.

The adult continuing education programs typically specialize in providing in-depth teaching in some particular IT specialty, such as networking, e-commerce, or IT security; in a specific technical skill, such as Java or C++ programming; or in a particular vendor’s technology, such as Oracle databases. While IT certificate programs focus mainly on the provision of technical skills, some programs address knowledge and development in business skills and soft skills. These concentrated programs of study can add depth to an IT worker’s knowledge and skill in a particular specialized IT discipline or help the worker expand his or her skills into new discipline areas. While certificate programs can vary significantly in length and cost, they are often less costly, faster, and more focused with more links to jobs and careers than advanced degree programs.

Variability in program content, length, and cost — even when certificates have the same name — means that IT workers and employers face challenges in understanding and considering their IT certificate training options. Both IT workers and employers face a confusing maze of offerings and a credential—the certificate—that has no standard meaning of accomplishment across the academic enterprise.
The field of computer engineering takes good math and computer skills and offers a good paycheck for both men and women. If you are math savvy, this may be a field to explore. Left and below: Computer and Electrical Engineering students at NDSU work on computer parts. Photos by Grit May

Private, For-Profit IT Education and Training Institutions

Private, for-profit institutions offer a wide scope and varying levels of IT education and training to prospective and current IT workers. IT workers commented that programs at private IT schools often use the latest technologies and have industry instructors with current experience, but the programs are very expensive.

Approximately 300 IT certifications are sponsored by IT vendors and professional and industry associations. These certifications—awarded for passing exams—provide independent verification of specific skills related to specific IT products. The certifications do not represent a multidimensional assessment of knowledge, soft and business skills, or experience. These credentials may help entry-level or inexperienced IT job seekers convince an employer to give them a try. They also can expand a current IT worker’s portfolio of credentials and may help an experienced IT worker move into a new IT discipline. Preparing for certification can represent a large investment of time and money.

Cisco Networking Academy Program

High School students interested in IT can take part in a high-school learning program called the Networking Academy, offered by Cisco. The company works with high schools across the United States to establish programs that let students from age 12 on get an early start on their IT education. Many high schools and educational community institutions in the Red River Basin participate in this program.

Here is the web address to locate the nearest academy: http://locators.netacad.net/cnams/locators/AcademyClassLocator.jsp [5]
**Recommended High School Courses**

Believe it or not, High School is the place to start planning for your future. Want to get ahead of the crowd? Then read below how to plan for your future while still in high school.

According to the Department of Education, typical admissions requirements for four-year colleges include:

- 4 years of English (grammar and composition, American literature, English literature, world literature)
- 3–4 years of mathematics (algebra I and II, geometry, trigonometry, precalculus, calculus)
- 2–3 years of history and geography
- 3–4 years of laboratory science (biology, chemistry, physics)
- 2–3 years of foreign language
- 1 year of the visual and performing arts
- 1–3 years of appropriate electives (computer science)

Higher levels of preparation in mathematics and laboratory sciences may aid in admission to some colleges’ IT bachelor’s programs [7].
Universities and Colleges in the Red River Basin

So where do I go to study all this IT stuff? There are numerous locations in our region to earn an IT degree. This map and corresponding grid of colleges and programs should help you explore every opportunity in our region including Canada.

*Click here for the interactive map (cities/towns)*
### Universities & Four Year Colleges

<table>
<thead>
<tr>
<th>Career Field</th>
<th>Minnesota</th>
<th>North Dakota</th>
<th>Manitoba</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>MSUM Moorhead</td>
<td>UMC Crookston</td>
<td>BSU Bemidji</td>
</tr>
<tr>
<td>Network System</td>
<td>BS Major/Minor</td>
<td>BS Major/Minor</td>
<td>BS Major/Minor</td>
</tr>
<tr>
<td>Information Support/Services</td>
<td>BS Major/Minor</td>
<td>BS Major/Minor</td>
<td>BS Major/Minor</td>
</tr>
<tr>
<td>Programming and Software Development</td>
<td>BS Major/Minor</td>
<td>BS Major/Minor</td>
<td>BS Major/Minor</td>
</tr>
<tr>
<td>Interactive Media</td>
<td>BS Major</td>
<td>BS Minor</td>
<td>BS</td>
</tr>
</tbody>
</table>

### Degrees

- **BS** (Bachelor of Science)
- **BA** (Bachelor of Arts)
- **BaS** (Bachelor of Applied Science)
- **BS Edu** (Bachelor of Science in Education)
- **MS** (Master of Science)
- **PhD** (Doctor of Philosophy)
- **Grad Certif** (Graduate Certificate)
- **AAS** (Associate in Applied Science Degree)
<table>
<thead>
<tr>
<th>Career Field</th>
<th>Minnesota</th>
<th>North Dakota</th>
<th>Manitoba</th>
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<tbody>
<tr>
<td></td>
<td>MSCTC Fergus Falls/Moorhead</td>
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<tr>
<td></td>
<td>MSCTC Moorhead</td>
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<tr>
<td></td>
<td>MSCTC Detroit Lakes</td>
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<tr>
<td></td>
<td>MSCTC Wadena</td>
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<tr>
<td></td>
<td>ATC Alexandria</td>
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<td></td>
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<tr>
<td></td>
<td>NCTC East Grand Forks</td>
<td></td>
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<tr>
<td></td>
<td>NCTC Thief River Falls</td>
<td></td>
<td></td>
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<tr>
<td></td>
<td>NTCMN Bemidji</td>
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<tr>
<td></td>
<td>NDSCS Wahpeton</td>
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<tr>
<td></td>
<td>LRST Devils Lake</td>
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<td></td>
<td>RRC Winnipeg</td>
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<td></td>
<td>WTC Winnipeg</td>
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</tr>
<tr>
<td>Network System</td>
<td>AS</td>
<td>AAS</td>
<td>Diploma</td>
</tr>
<tr>
<td>Information Support/Services</td>
<td>AAS</td>
<td>AS</td>
<td>Certif</td>
</tr>
<tr>
<td>Programming and Software Development</td>
<td>Diploma</td>
<td>AAS</td>
<td>Certif</td>
</tr>
<tr>
<td>Interactive Media</td>
<td>Diploma</td>
<td>AAS</td>
<td>Certif</td>
</tr>
</tbody>
</table>

**Degrees**

- **Certif** (Graduate Certificate)
- **AS** (Associate Science Degree)
- **AAS** (Associate in Applied Science Degree)
- **Diploma**
<table>
<thead>
<tr>
<th>Carrier Field</th>
<th>Minnesota</th>
<th>North Dakota</th>
<th>South Dakota</th>
</tr>
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<tbody>
<tr>
<td>Network System</td>
<td>WETCC Mahnomen</td>
<td>LLTC Cass Lake</td>
<td>TMCC Belcourt</td>
</tr>
<tr>
<td>Information Support/Services</td>
<td>AAS</td>
<td>AAS</td>
<td>AAS</td>
</tr>
<tr>
<td>Programming and Software Development</td>
<td></td>
<td>AS</td>
<td></td>
</tr>
<tr>
<td>Interactive Media</td>
<td></td>
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<td></td>
</tr>
</tbody>
</table>

Degrees

- **Certif** (Graduate Certificate)
- **AS** (Associate Science Degree)
- **AAS** (Associate in Applied Science Degree)
- Diploma

Tribal Colleges
- **WETCC** White Earth Tribal & Community College, Mahnomen
- **LLTC** Leech Lake Tribal College, Cass Lake
- **TMCC** Turtle Mountain Community College, Belcourt
- **CCCC** Cankdeska Cikana Community College, Fort Totten
- **SWC** Sisseton Wahpeton College, Sisseton
What is the earning potential?

Here is a “real world” look at pay rates in various career fields. If you are good at what you do, here is what you can expect an employer in our region consider to paying for your skills.

Remember the median wage is the middle wage. It means that 50 percent of the wages will be less than this value and 50 percent greater.

<table>
<thead>
<tr>
<th>Occupations</th>
<th>Northwestern Minnesota Median</th>
<th>Eastern North Dakota Median</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Data - 9/2007</td>
<td>Data - 12/2006</td>
</tr>
<tr>
<td>Network Systems</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Network system and data communication analysts</td>
<td>$52,100</td>
<td>$40,354</td>
</tr>
<tr>
<td>Network and computer systems administrators</td>
<td>$50,055</td>
<td>$47,456</td>
</tr>
<tr>
<td>Information Support and Services</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Database administrators</td>
<td>$42,450</td>
<td>$49,599</td>
</tr>
<tr>
<td>Computer support specialists</td>
<td>$34,058</td>
<td>$34,554</td>
</tr>
<tr>
<td>Computer systems analysts</td>
<td>$54,801</td>
<td>$54,894</td>
</tr>
<tr>
<td>Programming and Software Development</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Computer Software Engineers, Applications</td>
<td>$59,334</td>
<td>$52,866</td>
</tr>
<tr>
<td>Computer Software Engineers, Systems Software</td>
<td>$68,094</td>
<td>$72,565</td>
</tr>
<tr>
<td>Computer programmers</td>
<td>$50,367</td>
<td>$45,922</td>
</tr>
<tr>
<td>Interactive Media</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Multi-Media Artist and Animator</td>
<td>$31,458</td>
<td>$35,916</td>
</tr>
</tbody>
</table>

[8] and [9]

Starting offers for graduates with a **bachelor’s degree** national (averaged 2005)

<p>| | |</p>
<table>
<thead>
<tr>
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</thead>
<tbody>
<tr>
<td>in Computer Science</td>
<td>$50,820</td>
</tr>
<tr>
<td>in Management Information Systems</td>
<td>$46,189</td>
</tr>
<tr>
<td>in Information Sciences and Systems</td>
<td>$44,775</td>
</tr>
<tr>
<td>in Computer Systems Analysis</td>
<td>$44,417</td>
</tr>
</tbody>
</table>

[10]

Starting offers for graduates with a **doctoral degree** national (averaged 2005)

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<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>in Computer Science</td>
<td>$93,050</td>
</tr>
</tbody>
</table>
Sources


[5] Ohio Information Technology Competency Profile, developed by the Joint Council of the Ohio Board of Regents and the State Board of Education for itWORKS.OHIO initiative, Ohio Department of Education, IT Programs


Have we got you interested? The more you search and learn about the opportunities that await you, the better off you will be. Remember though, that some jobs in the IT field have not yet even been discovered. So do your leg work but be prepared for additional new and exciting opportunities.

**General College and Career Planning Links**

Mapping your Future  http://mapping-your-future.org
This award winning site provides information to help you plan your career, select a school and pay for your education.

Career one stop  http://www.careeronestop.org
A source for employment information and inspiration.

Career Planning 'Michigan Reach Out'!  http://reachoutmichigan.org/career/career.html
A website that provides educational and career exploration opportunities both inside and outside the classroom.

10 steps interactive career planning guide.

Collegenet  http://www.collegenet.com

**Job Links**

IT careers  http://www.itcareers.com/
Microsoft Learning  http://www.microsoft.com/learning/trainingcareers/prepare.mspx
Career Voyages  http://www.careervoyages.gov/infotech-main.cfm
Computer, Tech, IT jobs  http://www.tech-centric.net/
UniXL  http://www.unixl.com/dir/information_technology/

**Salary Information**

Salary  http://www.salary.com

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**Examples of job announcements in the Red River Basin**

Ok - so on the next page are some real jobs, being done by real people. If you see one you might like, check out the job duties, the pay and the possibility to take advantage of your great skills.
Network Applications Developer

Spherion Corporation  
Fargo, North Dakota

Implement and support services for application and database development/architecture. Develop, implement and maintain internally developed solutions according to established company standards and specifications. Implement and document database, application and website changes. Communicate or direct communication for any database or application changes to affected parties. Understand the impact of database and/or application changes and make recommendations as appropriate. This includes, but is not limited to, data warehouse, enterprise reporting, internal development solutions and other application environments.

Primary Duties
• Database/Application/Web Administration & Documentation
• Application & Web Development
• Support Services
• Backup Support
• Internal Project Management

Job Skills Required
• A degree in information technology, networking or related field, with a minimum of 3-5 years experience with application and database development/architecture, and web solutions.
• Knowledge of IIS and SQL required.
• Certifications preferred: MCDBA/MCSE/MCP.
• Technical experience in database designs a must. Individual should be skilled in software development life cycles, oral and written communication, team work, learning on-the-fly, and the desire to succeed. Must be able to manage complex projects, implement and maintain excellent design and development processes, and deliver complex systems on schedule. Individual must be highly motivated, very results oriented, work well both independently and in a team environment. Individual must possess strong analytical skills in order to quickly identify and resolve problems.

Position Type: Full-Time, Employee

Experience: 2-5 Years Experience
Information Technologist 3 (LAN Container Administrator)

University of Manitoba, Physical Plant Department
Winnipeg, Manitoba

Salary: $50,919.18 - $66,092.00

Representative Duties

• Manages container User ID’s and trustee rights; monitors security; creates and maintains login scripts and menus; instructs users in use of network
• Assists users with data transfer and/or conversion
• Maintains inventory of computer hardware, printers, and input/output devices
• Maintains database of current application licenses
• Acts as primary contact for any hardware, software, or network problems
• Responsible for a disaster recovery plan for all network data; performs archiving and backup regularly
• Selects, orders, and sets up user workstations, including operating system, network and printer drivers, local and corporate applications, virus software
• Installs and configures Novell and Zenworks client; configures machines to use DHCP
• Troubleshoots and/or assists user with troubleshooting of hardware problems
• Monitors availability of updates, and performs installation tests
• Administers IP numbers; arranges/installs the required Internet tools; instructs users on basic Internet/campus resources
• Develops programs for department use in work scheduling, archiving, document retrieval; develops custom databases to assist with record keeping needs
• Provides backup to database support person as required

Qualifications

• Bachelor’s degree in Computer Science or a technical diploma in Information Systems Technology.
• Must have several years directly related working experience with Novell netware operating system and demonstrated working experience with DOS, Macintosh and Windows.
• An acceptable equivalent combination of education and experience may be considered.
• Proficient knowledge in configuring and troubleshooting personal computers, networks and printers.
• Proven experience in business application installation, implementation, maintenance, and support required.
• Experience in database administration, programming, and support required.
• Experience with wider area networking is an asset.
• Good manual dexterity, mobility and eyesight.
• Moderate keyboarding speed required.
• Strong oral and written communication skills, particularly skills in dealing effectively with users having varying levels of computer knowledge.
• Must have excellent organizational skills and demonstrated ability to work independently with minimum supervision and direction in order to ensure the reliable and trouble-free operation of all Physical Plant computer systems and equipment.
• Must be able to solve challenging problems, plan and carry out procedures and master new and difficult techniques.
• Must be committed to continuous personal development to a rapidly changing field.
Network Administrator

North Dakota State University - Information Technology Services (ITS)
Fargo, North Dakota

Salary: $43,000+/year

ITS seeks an individual who will provide a high-level support for the NDUS Wide Area Network ((WAN) and assist with the planning, monitoring and design of the NDSU Local Area Network (LAN). Responsibilities include but are not limited to, monitoring and analyzing traffic for performance, implementing and maintaining complex routing protocols, preparing and maintaining operational procedures, writing technical specifications and various forms of graphical and text based documentation, assisting with the maintenance of centralized network management applications, configuring security applications as required (Firewalls, VPN, IPS, IDS, etc) and working directly with security officers to mitigate security threats.

Will work as a team member and actively participate in proving leadership in the design and implementation of host and network based security solutions and policy development.

Minimum Qualifications

• Bachelor's Degree or equivalent work experience in related field
• Experience in network administration
• Experience in DNS and/or DHCP Administration or maintenance
• Experience in designing, implementing and maintaining network security and authentication solutions (such as. Radius, Kerberos, Firewalls/VPNs IDS, IPS, etc.)
• Written and verbal communication skills
• Experience with network or circuit analysis tools

Preferred Qualifications

• UNIX/Linux/Windows experience
• Experience in infrastructure design
• Professionalism & leadership experience Certifications (BICSI, Cisco, Security, Vendor Neutral Networking)
• Experience in Higher Education

Submit the following supporting documents to the Office of Human Resources by the close of business on the screening date:

1) cover letter addressing qualifications
2) current resume
3) names, addresses, and phone numbers of three professional references
Information Technology Specialist 2

Public Safety Dept - Division/Bureau: BCA/BRO/Lab/P073190
Bemidji, Minnesota

Salary: $18.09-$29.41 hourly, $37,772-$61,408 annually

Work with Laboratory staff and specified vendors to help choose hardware and software applications that allow that scientists to create documentation directly into an electronic format.

Work with CJIS tech support to install and test hardware and software.

Support new software as necessary.

Work with CJIS tech support to provide some desktop support for all Laboratory applications.

Minimum Qualifications

• 2 year information systems degree OR equivalent experience in an IT environment
• Professional level experience working in an Information Technology (IT) Help Desk or Customer Support position
• Knowledge of personal computer hardware including installation, configuration and maintenance
• Knowledge of basic computer networking concepts and terminology including TCP/IP networking
• Working knowledge of Microsoft Office products including Microsoft Word and Excel
• Excellent written and verbal communication skills in English
• Ability to stay calm under pressure and resolve computer problems in a timely manner

NOTE: Please make sure your resume clearly indicates that you have experience in the above.

Requires occasionally lifting such articles as file boxes and heavy hand tools or heavier materials with the help from others and/or lifting and carrying light objects frequently. Even though the weights being lifted may only be a negligible amount, a job in this category may require walking or standing to a significant degree or may involve sitting most of the time with a degree of pushing and pulling of arm and/or leg controls.

Preferred Qualifications

• 4-year information systems, computer science or related degree or equivalent experience
• Remedy Help Desk software experience
• Computer network skills in a client server environment including Windows 2000/XP and TCP/IP internetworking
• Experience supporting and troubleshooting web-based applications
• CompTIA A+ Certification or related Microsoft certification
• Strong problem solving, analytical and communication skills and the ability to effectively communicate with customers via telephone, email and in-person

Working Title: BCA - ITS-2 - Bemidji Lab

Days of Work: Monday-Friday, 08:00 AM-04:30 PM
.Net Developer

_U.S. Transcription Inc._
_Hawley, Minnesota_

**Salary Range:** $28,000.00

**Position Description**

U.S. Transcription, Inc, a growing medical transcription service is seeking an experienced .Net Developer for the Technology Division located in Hawley, MN. This position provides the opportunity to exercise technical and interpersonal skills in assisting a wide range of clients to meet their medical transcription business concerns. You will work under the direction of the IT manager to define technical strategy; i.e. technologies, methodologies, etc. Assist in proposal review, reviewing project master, statement of work, deliverables. Assist with the process of identifying needed technical resources. Identify and implement software tools to aid in project delivery. Perform analysis, design, Development and Support. You can expect a different experience working at U. S. Transcription, Inc.; one that is truly caring and supportive; one where you play an active role in your career; and one where you have the opportunity to make an impact.

**Qualifications:**

- Two year degree in Computer Science
- 1+ Years of experience
- Excellent written and oral communication skills
- Experience with VB.NET, ASP, ASP.NET, C#, SQL Server and Crystal Reports

**Education Requirement:**

2 year college or full-time technical/vocational school

**Months of Experience Requirement:** 12

**Salary Comments:**

Salary is negotiable based on experience.

**Hours per Week:** 40

**Shift:** Rotating

**Benefits:**

401K - Education Assistance - Extended (Family) Sick Leave - Flexible Benefit Account - Health Insurance - Holidays - Sick Leave - Vacation
IT Specialist

Northland Community & Technical College
Thief River Falls, Minnesota

Salary: $16.40-$24.60 hourly, $34,243-$51,365 annually

This position primarily exists to provide technical assistance to students and employees to maximize computer technology services in a learning environment and to operate in a help desk role. This includes basic problem resolution, installation of new hardware and software, computer hardware troubleshooting and repair, basic networking, and answering support questions.

Minimum Qualifications

• Ability to convey information effectively is essential
• Working knowledge and understanding of computer hardware/software and technology equipment use
• Ability to make repairs, perform maintenance on hardware and trouble-shoot software problems
• Excellent problem-solving
• Organizational skills and the ability to multi-task
• Ability to work independently as well as in a team environment and share resources amongst fellow IT staff

Preferred Qualifications

• Two-year computer related degree or two years of work experience

The selection process is a resume-based, skill-matching process. Your resume will be entered into a database. The software program matches your skills with the skills needed to perform the duties of the position. If your skills match the required skills for this position, the department may contact you.

You are strongly encouraged to submit your resume through the online Resume Builder. You may copy and paste in your existing resume or let the software create a resume for you. If you wish to apply with a paper copy, submit your resume and a completed State of Minnesota Employment Application form.
A leading developer of life and health insurance and annuity software is currently seeking experienced COBOL software engineers for client server-based application development and support positions.

Qualifications:
- 5-10 years development experience with Life and/or Health Insurance and/or Annuity applications.
- Extensive development experience with Fujitsu COBOL and/or NetCOBOL for .NET and MS SQL 2000 / MS SQL 2005.
- Strong technical, troubleshooting, problem resolution and communication skills.
- BS in Computer Science or equivalent experience.

Education Requirement: Bachelors degree or equivalent

Months of Experience Requirement: 60

Hours per Week: 40

Shift: Day


To apply, send resume and cover letter to Software Engineers.
Web/Data Application Programmer

*Alexandria Technical College*  
*Alexandria, Minnesota*

**Salary:** $18.09-$29.41 hourly, $37,772-$ 61,408 annually

Second-level professional work requiring general proficiency in information technology

Under general supervision, this position focuses specifically on supporting the development and maintenance of Alexandria Technical College’s web data. This person will work cooperatively with the college’s Database Administrator and Web Graphics Specialist to provide integrated information for the college websites. This position fundamentally is a software programming position using .NET technologies to link the web and the database managed information of the college.

**Minimum Qualifications**

- AAS degree or higher with 1 year related work experience or equivalent in programming or web development
- Demonstrated work experience in dynamic web applications development
- Knowledge and experience of databases (SQL or Oracle).

**Preferred Qualifications**

- Knowledge of the following programming languages: ASP.NET (VB), JAVA, SQL, JavaScript, and other web languages and design technologies
- Application of development methodologies (RAD) and project lifecycle
- Operating system: Windows 2000/XP
- Knowledge and experience with IIS
- Knowledge and experience with SQL Server
- Knowledge and experience Microsoft Access
- Knowledge and experience in relational database management and programming
- Knowledge and experience with project management software
- Knowledge and experience with Visual Studio.NET and other web/application development software
- Knowledge and experience with graphical development software such as Fireworks, Flash, or Photoshop
- Ability to multi-task and prioritize multiple ongoing projects of various scales
- Ability to comprehend reference materials
- Ability to communicate effectively (verbal, written, listening)
- Ability to work effectively with teams
- Possession of good customer service skills
- Ability to work flexible hours

**Selection Process**

The selection process is a resume-based, skill-matching process. Your resume will be entered into a database. The software program matches your skills with the skills needed to perform the duties of the position. If your skills match the required skills for this position, the department may contact you.
C++ Programmer

AATRIX SOFTWARE
Grand Forks, North Dakota

Salary Range: $30,000.00 - $55,000.00

Due to new contracts, a C++ programmer is needed.

Requirement:

• 2 years experience on C++ on either windows or macintosh platform
• Must be knowledgeable in one or more of the following areas:
  • TCP/IP
  • WINDOWS SOCKETS
  • ENCRYPTION
  • COMMUNICATION PROTOCOLS
  • MFC
  • THREADING
  • WIN32 API
  • SQL RELATIONAL DATABASE
  • ADO

Education Requirement: Bachelors degree or equivalent

Months of Experience Requirement: 24

Hours per Week: 40

Benefits: 401K - Extended (Family) Sick Leave - Flexible Benefit Account - Health Insurance - Holidays - Stock Options - Vacation
Interactive Design Manager

Vtrenz, Inc.
Fargo, North Dakota

As a designer of the Vtrenz iMarketing Automation interface, you will own and control the user interaction experience and information flow in architecture of the application, as well as the visual interface design and look-and-feel of iMarketing Automation. Your mission will be to create a user experience that results in successful usage of iMarketing Automation features and functions for both end users and systems administrators.

**Essential Duties & Responsibilities**

- Drive development of clean, efficient, industry-leading interface designs from conceptualization to through implementation and documentation
- Collaborate with branding and graphics specialists on the visual interface design of Vtrenz iMarketing Automation
- Translate user requirements and complicated business problems into highly usable Web applications
- Construct prototypes, storyboards, and mockups to effectively communicate interaction designs
- Assist product management in authoring functional interaction requirements specifications
- Work closely with product management and development to implement designs
- Work with usability specialists to conduct customer studies of prototypes and existing interfaces; integrate changes based on usability tests
- Conceive, document, and evangelize user interface guidelines and standards
- Ensure a consistent look and feel across the application; raise all application interfaces to a consistently high standard of user-centered design

**Knowledge & Skills**

- 4 years of professional design experience, including at least 2 years of interaction design experience for enterprise applications
- Bachelor’s or higher degree in Human-Computer Interaction, Interaction Design or related field
- Strong conceptual skills and proven ability to create prototypes and mock-ups
- Demonstrated web UI design skills with ability to show relevant work
- Extensive knowledge of HTML and CSS including CSS box model and JavaScript DOM for all browsers
- Familiarity with ColdFusion MX, SQL/PostgreSQL
- Working knowledge of advanced JavaScript, DHTML, AJAX, COMET, Flash Action script is a plus
- Adobe Flex, OpenLaszlo, XSLT, XML and XPath knowledge a plus
- Expert knowledge of visual design tools including Visio, Photoshop, Dreamweaver and Illustrator
- Expert in user-centered design methods and best practices
- Focused on providing best-of-breed UI designs without losing sight of the real-world user’s need for “fast and simple”
- Independent self-starter with strong project management skills
- Ability to work as part of a team
IT Specialist (Web Design)

Bemidji State University
Bemidji, Minnesota

Salary Range: $18.09-$29.14 hourly, $37,772-$61,408 annually

This position will assist with Bemidji State University web site design, development, maintenance, and support. The position will perform numerous web development functions for the University including assisting with deployment and use of a content management system, web application development, database management services, and web site development. This position will assume a development role in the use and application of a variety of hardware and software, including use of Apache, Linux, HTML, XHTML, DHTML, XML, PHP, Cold Fusion, Perl, JavaScript and other web utilities with an emphasis in database design (MySQL, MSSQL, Oracle), programming and other web related productions.

This position will consult and/or assist in content production, design, development and maintenance of department, office, and program web environments as well as provide client consultation in the design and development of departmental or programmatic web environments. This position is also responsible for meeting W3C/ADA web compliance standards.

Minimum Qualifications

• Minimum of 3 years full-time (or equivalent) experience in web design/development, web application and database management experience.
• Final applicants will be required to show a sample of their work exhibiting skills in Apache, Linux, HTML, XHTML, DHTML, XML, PHP, Cold Fusion, Perl, JavaScript and other web utilities.

Preferred Qualifications

• Bachelors Degree

Permanent, Full-time, Monday-Friday, 08:00 AM-04:30 PM

The selection process is a resume-based, skill-matching process. Your resume will be entered into a database. The software program matches your skills with the skills needed to perform the duties of the position. If your skills match the required skills for this position, the department may contact you.

You are strongly encouraged to submit your resume through the online Resume Builder. You may copy and paste in your existing resume or let the software create a resume for you. If you wish to apply with a paper copy, submit your resume and a completed State of Minnesota Employment Application form.
Web Designer

Ecliptic Technologies
Fargo, North Dakota

We are looking for a well-rounded web designer who is able to create and maintain visually appealing web sites. You should know industry standards for web design/development, as well as have practical production experience using industry tools. Knowledge of CSS, web standards, graphic design, and general server side programming is a definite plus.

We want this position to contribute to the broader growth, ideals, processes, and culture of Ecliptic Technologies, Inc. We want you to become part of our team, not just another employee.

Responsibilities

• Create and maintain custom web sites in a variety of technologies
• Develop visual interpretations of client’s desires
• Work with web based technologies such as: HTML, JavaScript, and CSS
• Complete duties assigned by your team lead
• Handle large volumes of email, IM, and project management system communications

Required Knowledge/Experience/Qualities

• Must be able to hand code (without the use of WYSIWYG editors)
• An eye for good design/layout
• Creative thinker
• Knowledge in HTML and advanced CSS design
• Understanding of web development standards and browser differences
• Takes initiative to keep technology skills current
• A can-do, self starter attitude

Desired Knowledge/Experience/Qualities

• Knowledge in building server-side web applications
• C# (ASP.NET) or JAVA (JSP)
• Well-rounded individual with a variety of skills and abilities
• Two or more years experience building web sites
• Great written and oral communication skills
• Knowledge of source control systems, such as SVN
• A degree or appropriate industry experience

Pay Comments: DOE (Depends on Experience)

Benefits: 401K - Dental Insurance - Extended (Family) Sick Leave - Health Insurance - Sick Leave – Vacation - Vision Insurance
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