

Key Research Findings

This analysis was based on the pre-determined criteria and measures listed below:

| Section | Description | Measures |
|-----------------------------|--|---|
| Student Demand | <p>Includes an assessment of OCAS (2007 - 2011) enrolment data at other colleges in terms of mean growth rate with a specific focus on Fleming's direct competitors where appropriate (Georgian, Sheridan, Seneca and Durham)</p> <p>Trends in certificate, diploma, degree, apprenticeship and continuing education (where available).</p> <p>Click Below to Access Full Source Document: Fall Enrollment Trend</p> | <ul style="list-style-type: none"> ● Strong = Fleming enrolment growth is outpacing system and is equal to or greater than 3% ● Moderate = Fleming enrolment growth is equivalent to system demand and is between 1.0 to 2.9% ● Weak = Fleming enrolment growth is less than the system demand and is less than 1% |
| Labour Market | <p>Includes projected employment rate growth based on a consolidation of various Ontario, Canadian, and US sources including HRSDC, Sector Council Reports US Bureau of Labour Statistics, and the MTCU Employment Profile.</p> | <ul style="list-style-type: none"> ● Strong = Between 5-6 positive labour market indicators ● Moderate = Between 3-5 positive labour market indicators ● Weak = Between 1-2 or no positive labour market indicators |
| Competitive Analysis | <p>Includes the number of actual colleges offering the program as well as the ratio of applications to acceptances at Fleming compared to other colleges and specific comment about Fleming's direct competitors where appropriate (Georgian, Sheridan, Seneca and Durham)</p> <p>Click Below to Access Full Source Document: Fall Conversion Report</p> | <ul style="list-style-type: none"> ● Strong = Fleming conversion ratio is greater than 2 below the system ● Moderate = Fleming conversion ratio is 1 above, below or equal to the system ● Weak = Fleming conversion ratio is greater than 2 above than the system |
| Financial Analysis | <p>Includes a review of Contribution to Overhead (CTO) for existing programs (2010-11)</p> <p>Click Below to Access Full Source Document: Costing Analysis</p> | <ul style="list-style-type: none"> ● Strong = CTO is greater than 35% ● Moderate = CTO is between 30 - 34% ● Weak = CTO is between 20 – 30% <p>No Contribution = 19% or less</p> |

Key Research Findings

| | | |
|-----------------------------------|--|--|
| Key Performance Indicators | <p>Includes KPI trends from the Key Performance Indicator Summary 5 Year Historical Overview KPI Data from Reporting Years 2008-2012.</p> <p>Click Below to Access Full Source Document: Key Performance Indicators</p> | <ul style="list-style-type: none">● Strong = Above system average in 6-7 indicators● Moderate = Above system average in 3-5 indicators● Weak = Above system average in 0-2 indicators. |
| Resource Analysis | <p>Requires school level assessment regarding space, technology, capital equipment and human resources. Recommendations from recent Program Review Reports included here</p> | |

Key Research Findings

Computer Security & Investigations (63002)

Student Demand¹

• **WEAK**

The following information consists of OCAS yearly student fall registration data as well as a mean growth rate and average student registration for each program under these categories:

Advanced Diploma

- There are only two schools offering this program, none of which are direct competitors to Fleming
- Fleming has a mean growth of **2%**, which is lower than the system's rate (**5%**)
- La Cite has the highest mean growth rate (**19%**), however Fleming has the highest average registration of **34 students**

Graduate Certificate

- Fanshawe and Georgian are the only two schools to offer this program
- Georgian has the highest mean growth rate (**7%**) and the highest average registration of **13 students**

Advanced Diploma

Program: 63002 - L'INFORMATION

| | % Change 2007 2008 (07-08) | | | % Change 2008 2009 (08-09) | | | % Change 2009 2010 (09-10) | | | % Change 2010 2011 (10-11) | | | % Mean Growth Rate (07-11) | 5 Year Average Reg. Students |
|-------------------|-------------------------------|----|-----|-------------------------------|----|----|-------------------------------|----|-----|-------------------------------|----|-----|-------------------------------------|---------------------------------------|
| FLEMING | 37 | 25 | -32 | 25 | 35 | 40 | 35 | 39 | 11 | 39 | 35 | -10 | 2 | 34 |
| LA CITÉ COLLÉGIAL | 13 | 20 | 54 | 20 | 26 | 30 | 26 | 18 | -31 | 18 | 22 | 22 | 19 | 20 |
| Total | 50 | 45 | -10 | 45 | 61 | 36 | 61 | 57 | -7 | 57 | 57 | 0 | 5 | 54 |

¹ Registration data obtained from the Program Counts by Applicant Type Report (RPT0050P) in the OCAS Reporting and Analytics Cube December 7, 2011.

Some programs/colleges may not be included because they were missing MCU codes in the OCAS dataset

Prepared by Fleming Data Research (07-2012)

Key Research Findings

Graduate Certificate

| Program: 73002 - INFORMATION SYSTEMS SECURITY | | | | | | | | | | | | | | |
|---|----------------------------------|----|-----|----------------------------------|----|-----|----------------------------------|----|-----|----------------------------------|----|-----|-------------------------------------|---------------------------------------|
| | 2007 2008 % Change (07-08) | | | 2008 2009 % Change (08-09) | | | 2009 2010 % Change (09-10) | | | 2010 2011 % Change (10-11) | | | % Mean Growth Rate (07-11) | 5 Year Average Reg. Students |
| FANSHAWE | | | | | | | 7 | | | 7 | 7 | 0 | 0 | 7 |
| GEORGIAN | 10 | 22 | 120 | 22 | 16 | -27 | 16 | 12 | -25 | 12 | 7 | -42 | 7 | 13 |
| Total | 10 | 22 | 120 | 22 | 16 | -27 | 16 | 19 | 19 | 19 | 14 | -26 | 21 | 16 |

Labour Market

• **MODERATE**

Employment Ontario²

Information Systems Analysts and Consultants (NOC – 2171)

- Employment Ontario Rating (2009-2013):
 - **Good**
- Education and Training
 - “A bachelor's degree in computer science, computer systems engineering, software engineering, business administration or a related discipline, or the completion of a college program in computer science is required. Experience as a computer programmer may be required. Knowledge of industry/business matters and practices is an advantage.”
 - “While technical skills are crucial, employers are placing more emphasis on written and verbal communication skills, project management skills, leadership and management skills, presentation skills and appropriate business experience. Employers also emphasize the need for industry-specific skills and experience, with an increasing emphasis on ERP applications.”
 - “The Ontario government supports programs that can help newcomers get their license or certificate in their profession or trade so that they can work in Ontario.”
- Demand
 - “Opportunities for employment in this occupation are expected to be good over the period from 2009 to 2013. Openings will be created both through expansion and replacement, as workers leave the labour force or move into managerial positions. In an economic downturn, employment in the high-tech sector can fall below the forecasted rate. However, companies across all sectors will continue to invest in information technologies, but at a more measured pace.”
 - “As technology becomes more complex, employers will demand a more skilled and educated workforce. New graduates with combined degrees in information and communication technology (ICT) as well as in business studies will have the best employment opportunities. Employers are constantly seeking candidates with strong communication and project management skills with advanced degrees in computer science, computer engineering, information science or an MBA in information systems.

² “2171 Information Systems Analysts and Consultants.” *Employment Ontario*. N.p., n.d. Web. 13 Aug. 2012. <http://www.tcu.gov.on.ca/eng/labourmarket/ojf/pdf/2171_e.pdf>.

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Experience in business analysis is often a prerequisite. Consulting and freelance work are areas of growth within this occupation. According to a recent study by the Information and Communications Technology Council (ICTC), employers are most in need of workers needs with a combination of technical, business and interpersonal skills, including: “

- Core technical skills
- Experience with specific applications and platforms
- Experience with specific business processes to which ict is a solution
- Communications skills
- Team work skills

HRSDC³

Information Systems Analysts and Consultants (NOC – 2171)

| | Level | Share |
|----------------------------------|---------|-------|
| Expansion Demand: | 88,401 | 58% |
| Retirements: | 46,688 | 31% |
| Other Replacement Demand: | 8,950 | 6% |
| Emigration: | 8,797 | 6% |
| Projected Job Openings: | 152,836 | 100% |
| | Level | Share |
| School Leavers: | 132,748 | 63% |
| Immigration: | 45,671 | 22% |
| Other | 32,242 | 15% |
| Projected Job Seekers: | 210,662 | 100% |

- “Over the 2011-2020 period, an occupation will be in excess demand (a shortage of workers) if the projected number of job openings is significantly greater than the projected number of job seekers. An occupation will be in excess supply (a surplus of workers) if the projected number of job openings is smaller than the projected number of job seekers. For **Computer and Information Systems Professionals**, over the 2011-2020 period, job openings (arising from expansion demand and replacement demand) are expected to total **152,836** and **210,662** job seekers (arising from school leavers, immigration and mobility) are expected to be available to fill the job openings.”
- “Although labour supply and demand in this occupation were recently balanced, projections indicate that the number of job seekers will be greater than the job openings over the 2011-2020 period. Job openings will mainly result from expansion demand. The majority of workers in this occupation are young so the need to replace workers who are retiring will be very small compared to the average. Although employment growth in this occupation will not reach the level of the 1990s, it will be one of the strongest over the projection period. This is because computer technology is now an integral part of the economy, which in general is increasingly knowledge-based. However, changes in technology that facilitate remote communication will increase competition in this industry since they will make it possible for Canadian companies to outsource information and communications technologies and development services to lower-

³ "Computer and Information Systems Professionals (217)." *Canadian Occupational Projection System (COPS)*. N.p., n.d. Web. 13 Aug. 2012. <<http://www23.hrsdc.gc.ca/occupationsummarydetail.jsp?&tid=37>>.

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cost countries. Although labour demand will be high, the number of job seekers is expected to be even higher. In fact, the number of computer science school leavers will continue to be high since this field of study continues to be very popular with young people. Immigration will also be an important source of job seekers since computer-related jobs remain one of the most attractive high-skilled occupations for immigrants, given that skills and knowledge acquired abroad in this field are easily transferable to Canada. Therefore, in spite of very strong growth in employment, the low replacement needs and the increase in the number of computer science graduates and immigrants will mean a surplus of workers in this occupation.”

US Bureau of Labour⁴

Information Security Analysts, Web Developers, and Computer Network Architects (SOC – 15-1179)

- Employment Growth (2010/2020): **22%**
 - **302,300** (2010) to **367,900** (2020)
- “Employment of information security analysts, web developers, and computer network architects is projected to grow 22 percent from 2010 to 2020, faster than the average for all occupations.
- Demand for information security analysts is expected to be very high. Cyberattacks have grown in frequency and sophistication over the last few years, and many organizations are behind in their ability to detect these attacks. Analysts will be needed to come up with innovative ways to prevent hackers from stealing critical information or creating havoc on computer networks.”
- “The federal government is expected to greatly increase its hiring of information security analysts to protect the nation’s critical information technology (IT) systems. In addition, as the healthcare industry expands its use of electronic medical records, ensuring patients’ privacy and protecting personal data are becoming more important. More information security analysts are likely to be needed to create the safeguards that will satisfy patients’ concerns.”
- “Demand for computer network architects will increase as firms continue to expand their use of wireless and mobile networks. This occupation will be needed to design and build these new networks, as well as upgrade existing ones. In addition, the expansion of healthcare information technology will cause an increase in the use of networking technology in that industry, and more computer network architects will be employed there.”
- “Adoption of cloud computing, which allows users to access storage, software, and other computer services over the Internet, is likely to cause a decrease in the demand for computer network architects. Organizations will no longer have to design and build networks in-house; instead, this will be done by firms that provide cloud services. However, because architects at cloud providers can work on more than one organization’s network, these providers will not have to employ as many architects as individual organizations to do the same amount of work, thereby reducing the overall need for network architects.”

⁴ "Information Security Analysts, Web Developers, and Computer Network Architects." *Occupational Outlook Handbook*. N.p., n.d. Web. 13 Aug. 2012. <<http://www.bls.gov/ooh/computer-and-information-technology/information-security-analysts-web-developers-and-computer-network-architects.htm#tab-6>>.

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- “Employment of web developers is expected to grow as ecommerce continues to grow. Online purchasing is expected to continue to grow faster than the overall retail industry. As retail firms expand their online offerings, demand for web developers will increase.”
- “Because websites can be built from anywhere in the world, some web developer jobs may be moved to countries with lower wages, lessening U.S. job growth. However, this practice may decline because of a growing trend of firms hiring workers in low-cost areas of the U.S. instead of in foreign countries.”
- “Prospects for information security analysts should be good. Information security analysts with related work experience will have the best opportunities. For example, an applicant with experience as a database administrator would have better prospects in database security than someone without that experience.”
- “Prospects for computer network architects should be favorable, as many companies report difficulty finding network architects due to the considerable amount of education and work experience required for these highly skilled positions.”

Sector Councils and Reports

- GIAC Certified Forensic Analyst GCFA
- Certified Computer Examiner International Society of Forensic Computer Examiners
- CISSP Certification

Ranked #1 in the top 20 coolest jobs in Information Security⁵

#1 - Information Security Crime Investigator/Forensics Expert - Top Gun Job

The thrill of the hunt! You never encounter the same crime twice!

Job Description

“This expert analyzes how intruders breached the infrastructure in order to identify additional systems/networks that have been compromised. Investigating traces left by complex attacks requires a forensic expert who is not only proficient in the latest forensic, response, and reverse engineering skills, but is astute in the latest exploit methodologies.”

SANS Courses Recommended

- [SEC408: Computer Forensic and E-discovery Essentials](#)
- [SEC508: Computer Forensics, Investigation, and Response \(GCFA\)](#)
- [SANS Forensics Summit](#)

Why It's Cool

"In the private world, the security guy just cleans up the mess to try and keep the ship afloat, but when criminals strike, the crime investigator gets to see that the bad guys go to jail. Want to see the face of your enemy... behind bars? It's a thrill like no other - being pitted against the mind of the criminal and having to reconstruct his lawless path."

How It Makes a Difference

- "You are what stands between your organization and the hackers/malware out there."
- "This is a core job that provides nuts and bolts technical security controls for any enterprise. When things go wrong, this is the person that we all need to ask for help. They are the ones that

⁵ "The 20 Coolest Jobs in Information Security ." SANS. N.p., n.d. Web. 13 Aug. 2012. <<http://www.sans.org/20coolestcareers/>>.

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will be able to look at the more esoteric logs and determine what happened, write a script to deal with problems, etc."

How to Be Successful

"Having mastered intrusion prevention/detection, computer forensics, hacker exploit techniques, and some reverse engineering of malware, this forensics expert thinks there is always more to learn and actively seeks out new learning opportunities daily."

- "Attend training, conferences, and summits that focus on methodologies described below.
 - "Listen to the latest podcasts discussing recent events. Use your blog reader to pull articles automatically found on Websites that focus on discussing the latest trends."
- "Stay abreast of the latest attack methodologies."
 - "How are attackers breaking into networks? Keep up to date on the latest attacker, pen testing, and red-team methodologies. Learn how to track an attacker across multiple system and technologies."
- "Stay ahead of the curve on the latest forensic and incident response methodologies."
 - "In addition to traditional forensic methodologies, you need to master live data analysis and collection. Learn how to examine volatile data and collect it effectively. Learn how to identify personal identifiable information and payment card information quickly."
- "Get familiar with techniques that enable you to quickly analyze malware found on your network."
 - "A skilled investigator can examine malware and network signatures to create malware indicators on the network in order to discover additional systems that may have been breached."

-Rob Lee, Forensic/Incident Response Faculty, SANS
Principal Consultant, Mandiant Inc.

Working in Canada⁶

Information Systems Analysts and Consultants (NOC – 2171)

• Employment Rating by Region:

| Location | Employment Potential |
|------------------------------------|----------------------|
| Hamilton--Niagara Peninsula Region | N/A |
| Kingston - Pembroke Region | N/A |
| Kitchener--Waterloo--Barrie Region | Fair |
| London Region | N/A |
| Muskoka-Kawartha Region | N/A |
| Northeast Region | N/A |
| Northwest Region | N/A |
| Ottawa Region | Fair |
| Stratford--Bruce Peninsula Region | N/A |
| Toronto Region | Fair |
| Windsor-Sarnia Region | N/A |

⁶ "Information Systems Analysts and Consultants (NOC 2171)." *Working in Canada*. N.p., n.d. Web. 13 Aug. 2012.
<<http://www.workingincanada.gc.ca/report-eng.do?lang=eng&noc=2171&area=8792&titleKeyword=computer+consultant@ionKeyword=Peterborough,+Ontario&source=&action=final>>.

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• Wage Range by Region:

| Location | Wage (\$/hr) | | |
|------------------------------------|--------------|--------|-------|
| | Low | Median | High |
| Ontario | 19.59 | 36.06 | 52.75 |
| Hamilton--Niagara Peninsula Region | 20.00 | 30.77 | 52.88 |
| Kingston - Pembroke Region | N/A | N/A | N/A |
| Kitchener--Waterloo--Barrie Region | 19.23 | 33.33 | 48.08 |
| London Region | N/A | N/A | N/A |
| Muskoka-Kawartha Region | N/A | N/A | N/A |
| Northeast Region | N/A | N/A | N/A |
| Northwest Region | N/A | N/A | N/A |
| Ottawa Region | 23.08 | 37.95 | 52.88 |
| Stratford--Bruce Peninsula Region | N/A | N/A | N/A |
| Toronto Region | N/A | N/A | N/A |
| Windsor-Sarnia Region | N/A | N/A | N/A |

Competitive Analysis⁷

• MODERATE

The following information consists of OCAS yearly fall application and registration data as well as a conversion ratio for each program under this category:

Advanced Diploma

- Both Fleming and La Cite had an equal conversion ratio to the system (**3:1**) in 2011

Graduate Certificate

- Fanshawe had a slightly higher conversion ratio (**4:1**) than the system (**5:1**), and Georgian had the lowest ratio (**6:1**) in 2011

Advanced Diploma

Program: 63002 - L'INFORMATION

| | App. 2007 | Reg. 2007 | Conversion Ratio | App. 2008 | Reg. 2008 | Conversion Ratio | App. 2009 | Reg. 2009 | Conversion Ratio | App. 2010 | Reg. 2010 | Conversion Ratio | App. 2011 | Reg. 2011 | Conversion Ratio |
|-------------------|--------------|--------------|---------------------|--------------|--------------|---------------------|--------------|--------------|---------------------|--------------|--------------|---------------------|--------------|--------------|---------------------|
| FLEMING | 100 | 37 | 3:1 | 66 | 25 | 3:1 | 83 | 35 | 2:1 | 93 | 39 | 2:1 | 94 | 35 | 3:1 |
| LA CITÉ COLLÉGIAL | 34 | 13 | 3:1 | 35 | 20 | 2:1 | 57 | 26 | 2:1 | 52 | 18 | 3:1 | 62 | 22 | 3:1 |
| Total | 134 | 50 | 3:1 | 101 | 45 | 2:1 | 140 | 61 | 2:1 | 145 | 57 | 3:1 | 156 | 57 | 3:1 |

⁷ Application data obtained from OCAS College Count Cube October 19, 2011

Registration data obtained from the Program Counts by Applicant Type Report (RPT0050P) in the OCAS Reporting and Analytics Cube December 7, 2011.

Some programs/colleges may not be included because they were missing MCU codes in the OCAS dataset

Prepared by Fleming Data Research (07-2012)

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Graduate Certificate

| Program: 73002 - INFORMATION SYSTEMS SECURITY | | | | | | | | | | | | | | | |
|---|--------------|--------------|---------------------|--------------|--------------|---------------------|--------------|--------------|---------------------|--------------|--------------|---------------------|--------------|--------------|---------------------|
| | App. 2007 | Reg. 2007 | Conversion Ratio | App. 2008 | Reg. 2008 | Conversion Ratio | App. 2009 | Reg. 2009 | Conversion Ratio | App. 2010 | Reg. 2010 | Conversion Ratio | App. 2011 | Reg. 2011 | Conversion Ratio |
| ALGONQUIN | 24 | | | 0 | | | 0 | | | 0 | | | 0 | | |
| FANSHAWE | 0 | | | 0 | | | 7 | | | 26 | 7 | 4:1 | 30 | 7 | 4:1 |
| GEORGIAN | 19 | 10 | 2:1 | 46 | 22 | 2:1 | 47 | 16 | 3:1 | 42 | 12 | 4:1 | 40 | 7 | 6:1 |
| Total | 43 | 10 | 4:1 | 46 | 22 | 2:1 | 54 | 16 | 3:1 | 68 | 19 | 4:1 | 70 | 14 | 5:1 |

Financial Analysis

• **STRONG**

Source: Program Costing Analysis 2010/2011

- Contribution to Overhead: 44.3%
- Program Weight: 1.00
- Funding Unit: 3.80

Key Performance Indicators

• **WEAK**

Source: Key Performance Indicator Summary 5 Year Historical Overview KPI Data from Reporting Years 2008-2012

| | |
|-------------------------------------|-------------------|
| KPI1-Graduation Rate | -1% below system |
| KPI2-Working | +1% above system |
| KPI3-Working Related | Even with system |
| KPI4-Grad. Satisfaction | -10% below system |
| KPI8-Student Satisfaction-Learning | -1% below system |
| KPI9-Student Satisfaction- Teachers | +1% above system |
| KPI11-Grad. Satisfaction-Program | -6% below system |

Resource Analysis

Equipment

Staffing

Space

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Appendix

The following is the original environmental scan conducted by the Library Researchers to form the basis of the previous summary of Key Research Findings Report.

Computer Security & Investigations
Program Research 2012

Overview of the Profession

NOC: 2171 Information Systems Analysts and Consultants

2171 Information systems analysts and consultants

Information systems analysts and consultants analyze systems requirements, develop and implement information systems development plans, policies and procedures, and provide advice on a wide range of information systems issues. They are employed in information technology consulting firms and in information technology units throughout the private and public sectors, or they may be self-employed.

Main duties

The following is a summary of the main duties for some occupations in this unit group:

- Information systems business analysts and consultants confer with clients to identify and document requirements, conduct business and technical studies, design, develop, integrate and implement information systems business solutions, and provide advice on information systems strategy, policy, management, security and service delivery.
- Systems security analysts confer with clients to identify and document requirements, assess physical and technical security risks to data, software and hardware, and develop policies, procedures and contingency plans to minimize the effects of security breaches.
- Information systems quality assurance analysts develop and implement policies and procedures throughout the software development life cycle to maximize the efficiency, effectiveness and overall quality of software products and information systems.
- Systems auditors conduct independent third-party reviews to assess quality assurance practices, software products and information systems.

Employment requirements

- A bachelor's degree in computer science, computer systems engineering, software engineering, business administration or a related discipline
or
Completion of a college program in computer science is usually required.
- Experience as a computer programmer is usually required.
- Certification or training provided by software vendors may be required by some employers.

Classified elsewhere

- *Computer and information systems managers* ([0213](#))
- *Computer engineers (except software engineers and designers)* ([2147](#))

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- *Computer programmers and interactive media developers* ([2174](#))
- *Database analysts and data administrators* ([2172](#))
- *Financial auditors and accountants* ([1111](#))
- *Professional occupations in business management consulting* ([1122](#))
- *Software engineers and designers* ([2173](#))
- *Web designers and developers* ([2175](#))

Common Job Titles

IT (information technology) consultant
 computer systems analyst
 informatics consultant
 informatics security analyst
 information systems business analyst
 information systems quality assurance analyst
 management information systems (MIS) analyst
 systems auditor
 systems consultant
 systems security analyst

Starting salaries for many positions are \$40,000 to \$60,000. Industry surveys identify that IT security professionals, with the security skills you will acquire, consistently earn higher income than others in the industry.

Typical Employers

Graduates may find employment in a variety of domains in the private, industrial, governmental and service sectors such as: Privately managed security firms; Security audit/penetration consulting firms; Law enforcement agencies (RCMP, OPP, local police forces, etc.) and associated security agencies (CSIS, CSE, etc); Information Technology consulting firms; Primary communications carriers and information service providers; and users of information networks, including government organizations; small, medium-sized and large business enterprises; public organizations (financial, health care, etc.).

Labour Market

In “Working in Canada”, an Employment Potential is not given, nor is a Median Wage.

HRSDC

Search Result : Computer and Information Systems Professionals (217)

Skill Level:

Occupations Usually Requiring University

Occupations in this Group:

Information Systems Analysts and Consultants (2171), Database Analysts and Data Administrators (2172), Software Engineers (2173), Computer Programmers and Interactive Media Developers (2174), Web Designers and Developers (2175)

Employment (non-student) in 2010:

372,786

Median Age of workers in 2010:

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39.5 years old

Average Retirement Age in 2010:

61 years old

Over the 2008-2010 period, employment growth in this occupation was strong. The unemployment rate increased more quickly than for all occupations but still remained below 5% in 2010. According to key labour market indicators, the number of job seekers was sufficient to fill all job openings in this occupation.

Over the 2011-2020 period, an occupation will be in excess demand (a shortage of workers) if the projected number of job openings is significantly greater than the projected number of job seekers. An occupation will be in excess supply (a surplus of workers) if the projected number of job openings is smaller than the projected number of job seekers. For **Computer and Information Systems Professionals**, over the 2011-2020 period, job openings (arising from expansion demand and replacement demand) are expected to total **152,800** and **210,662** job seekers (arising from school leavers, immigration and mobility) are expected to be available to fill the job openings.

Although labour supply and demand in this occupation were recently balanced, projections indicate that the number of job seekers will be greater than the job openings over the 2011-2020 period. Job openings will mainly result from expansion demand. The majority of workers in this occupation are young so the need to replace workers who are retiring will be very small compared to the average.

Although employment growth in this occupation will not reach the level of the 1990s, it will be one of the strongest over the projection period. This is because computer technology is now an integral part of the economy, which in general is increasingly knowledge-based. However, changes in technology that facilitate remote communication will increase competition in this industry since they will make it possible for Canadian companies to outsource information and communications technologies and development services to lower-cost countries. Although labour demand will be high, the number of job seekers is expected to be even higher. In fact, the number of computer science school leavers will continue to be high since this field of study continues to be very popular with young people.

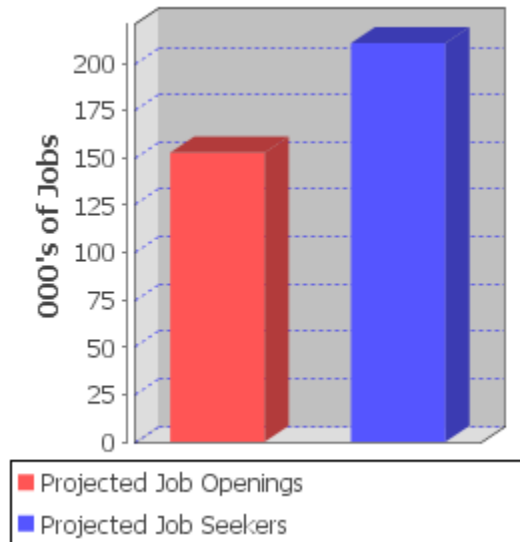
Immigration will also be an important source of job seekers since computer-related jobs remain one of the most attractive high-skilled occupations for immigrants, given that skills and knowledge acquired abroad in this field are easily transferable to Canada. Therefore, in spite of very strong growth in employment, the low replacement needs and the increase in the number of computer science graduates and immigrants will mean a surplus of workers in this occupation.

Projection of Cumulative Job Openings and Job Seekers over the Period of 2011-2020

| | Level | Share |
|----------------------------------|---------|-------|
| Expansion Demand: | 88,400 | 58% |
| Retirements: | 46,688 | 31% |
| Other Replacement Demand: | 8,950 | 6% |
| Emigration: | 8,797 | 6% |
| Projected Job Openings: | 152,800 | 100% |

| | Level | Share |
|-------------------------------|---------|-------|
| School Leavers: | 132,748 | 63% |
| Immigration: | 45,671 | 22% |
| Net Mobility | 9,940 | 5% |
| Projected Job Seekers: | 210,662 | 100% |

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US Bureau of Labour Statistics

Quick Facts: Information Security Analysts, Web Developers, and Computer Network Architects [2010](#)

[Median Pay](#) \$75,660 per year

\$36.37 per hour [Entry-Level Education](#) Bachelor's degree [Work Experience in a Related Occupation](#) 1 to 5 years [On-the-job Training](#) None [Number of Jobs, 2010](#) 302,300 [Job Outlook, 2010-20](#) 22% (Faster than average) [Employment Change, 2010-20](#) 65,700

What Information Security Analysts, Web Developers, and Computer Network Architects Do



Network architects design LANs, WANs, and intranets.

Information security analysts, web developers, and computer network architects all use information technology (IT) to advance their organization's goals. Security analysts ensure a firm's information stays

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safe from cyberattacks. Web developers create websites to help firms have a public face. Computer network architects create the internal networks all workers within organizations use.

Duties

Information security analysts plan and carry out security measures to protect an organization's computer networks and systems. Their responsibilities are continually expanding as the number of cyberattacks increase.

Information security analysts typically do the following:

- Research the latest information technology security trends
- Monitor their organization's networks for security breaches and investigate a violation when one occurs
- Help plan and carry out an organization's way of handling security
- Develop security standards and best practices for their organization
- Install and use software, such as firewalls and data encryption programs, to protect sensitive information
- Recommend security enhancements to management or senior IT staff
- Help computer users when they need to install or learn about new security products and procedures

Information security analysts must continually adapt to stay a step ahead of cyberattackers. They must stay up to date on the latest methods attackers are using to infiltrate computer systems and on IT security. Analysts need to research new security technology to decide what will most effectively protect their organization. This may involve attending cybersecurity conferences to hear firsthand accounts of other professionals who have experienced new types of attacks.

IT security analysts create their organization's disaster recovery plan, a procedure that IT employees follow in case of emergency. The plan lets an organization's IT department continue functioning. It includes preventative measures such as regularly copying and transferring data to an offsite location. It also involves plans to restore proper IT functioning after a disaster. Analysts continually test the steps in their recovery plans.

Because information security is important, analysts usually report directly to upper management. Many information security analysts work with an organization's Chief Technology Officer (CTO) to design security or disaster recovery systems. For more information on chief technology officers, see the profile on [computer and information systems managers](#).

Industry Standards and Professional Associations

This occupation is not regulated.

[GIAC Certified Forensic Analyst GCFA](#)

[Certified Computer Examiner International Society of Forensic Computer Examiners](#)

[CISSP Certification](#)

[The 20 coolest careers in information security](#)

Key Research Findings

Educational Competitors

[Computer Security Programs at Ontario Colleges](#)

[Abertay University Ethical Hacking & Computer Security](#)

| College 1 | Program | MTCU # | | Weight | Funding | Degree |
|--------------|---|-----------|---|--------|---------|--------|
| ALGO | Information Systems Security | 73002 | Information Systems Security | 1.00 | 0.90 | 1.00 |
| FANS | Information Security Management | 73002 | Information Systems Security | 1.00 | 0.90 | 1.00 |
| GEOR | Computer And Network Systems Security | 73002 | Information Systems Security | 1.00 | 0.90 | 1.00 |
| MOHA | Advanced Network Security And Connectivity | 73002 | Information Systems Security | 1.00 | 0.90 | 1.00 |
| College | Program | MTCU # | | Weight | Funding | Degree |
| SHER | Bachelor Of Applied Information Sciences (information Systems Security) | 80509 | Bachelor Of Applied Information Sciences (information Systems Security) | 1.20 | 3.30 | 4.00 |

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Employment Opportunities

IT Security Analysts

Key Research Findings

JOB DESCRIPTION

Eagle is currently seeking two (2) Security Analysts for permanent job opportunities. These positions are based in Tiverton, Ontario, 3 hours northwest of Toronto in the Kincardine/Port Elgin area and successful candidates are expected to maintain a permanent residence in the area.

Key Responsibilities

The successful candidate will be responsible for:

- ☐ Configuring, implementing, managing and maintaining security applications, as well as providing general knowledge and recommendations for security best practices.
- ☐ Assessing and establishing mitigating steps to ensure appropriate responses to various security threats/issues.
- ☐ Assisting senior staff with activities such as investigations, removing malware or identifying suspicious network activity.
- ☐ Adhering to strict security protocols associated with all levels in the management of security.
- ☐ Displaying a high level of discretion when dealing with sensitive information.

Skills and Qualifications

The qualified candidate must have:

- ☐ A minimum of 8 years of experience working with computer operating systems and networks with an emphasis on security.
- ☐ Experience with Firewalls, ITS systems and SICM systems.
- ☐ Experience with network forensics and security incident management.
- ☐ Graduation from a recognized educational institution in Information Technology/Computer Science.
- ☐ CISSP or equivalent certification preferred.
- ☐ Excellent written and verbal communication skills.
- ☐ Demonstrated ability to resolve issues by analyzing and evaluating possible solutions.
- ☐ Excellent organizational and time management skills in order to manage multiple priorities and competing deadlines.

Please note that our client requires that successful candidates go through a detailed security clearance process including work and education verification, credit check, etc.

Don't miss out on this opportunity, apply online today!

System Security Administrator

Job Number: 51356761

Company Name: Honeywell

Location: Edmonton, AB CA

Career Focus: Information Technology

[Apply to Job](#)

Updated: 5/20/2012

Key Research Findings

System Security Administrator

Title: System Security Administrator

Location: AB-Edmonton

Honeywell has been selected as one of Canada's Top 100 Employers and has ranked 3rd on Fortune 500's Most Admired Companies list consecutively. We are proud to be on both these prestigious lists and we are delighted to be recognized for our best practices.

Honeywell Automation and Control Solutions (ACS) is a \$12 billion strategic business group applying sensing and control expertise that helps create safer, more comfortable, more secure, and more energy efficient and productive environments.

Honeywell Process Solutions (HPS) is a \$2 billion strategic business unit that forms part of the ACS business group. It improves the productivity and profitability of industrial facilities on every continent around the world. HPS offers a full range of automation and control solutions to key vertical markets, including Energy, Pulp & Paper, and Chemicals/Pharmaceuticals, and develops/markets industrial automation systems and advanced software applications.

Honeywell is searching for a System Security Administrator to join it's growing team in Edmonton, AB.

This position is for an entry level Industrial Cyber Security Consultant whose main duties shall include: providing industrial cyber security / IT consultation services to our clients within the various industrial sectors (oil and gas, petrochemical, refining, etc.), providing subject matter expertise on projects involving regulatory compliance (NERC CIP, CFATs, etc.), procuring and deploying hardware and software to support project deliverables and assisting in the design of industrial networks.

Basic Qualifications:

- The applicant shall possess a degree or technical diploma in Network Engineering or Computer Systems Technology, or have a minimum of three years of related work experience.

Preferred Qualifications:

- In addition, the applicant shall be familiar and comfortable with process control IT systems (DCS, PLCs, SCADA systems, etc.) , industrial network and security fundamentals and be experienced with the Microsoft Windows (XP, Server 2000/2003/2008) and Linux Operating Systems.
- The applicant shall also be familiar with networking concepts such as switching, routing, access control and network design.
- Previous experience with IT / Process Control Network Security is a huge benefit but not required.
- The applicant shall possess good written and oral communication skills (in English), excellent analytical and trouble-shooting skills, flexibility to travel to multiple locations for periods of up to 1 and a half months and the desire and drive to learn new techniques and technologies in order to expand his/her skill set.