

TechnoScientific Career Guide

Choosing an Exciting
Career in

TECHNO SCIENCE



A Future... of Endless Possibilities

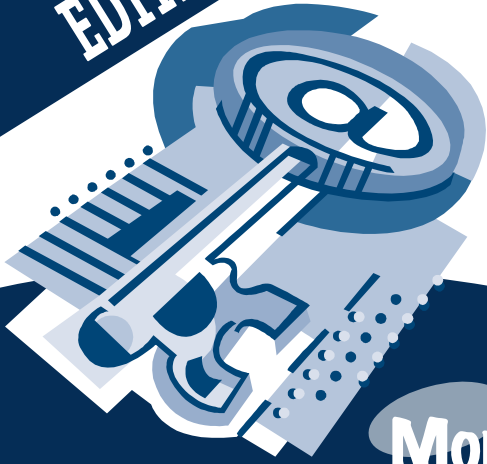
2005
EDITION

You may find it hard, choosing the right field of studies that will suit your taste and arouse your interest, leading to good prospects while paying a high salary ... in other words, a future! We have prepared this guide to help you discover sectors that hold a future in your area. It gives you an overview on two levels:

- Emerging trends of job creation in TechnoScience;
- A description of the most dynamic and promising sectors in the years to come.

In your dealings, remember these useful tips:

- *Take your abilities to their extreme:* whatever your tastes, skills, or region, there is an exciting career waiting for you in TechnoScience but first, you must finish your studies and obtain the best degree you possibly can (professional, technical or university)
- *Be ready for change:* you will probably be called upon to change careers several times – the days when you would have made your way in the same company all your life no longer exist!
- *Stay on the lookout:* you will have to remain open to continuing education programs and adapt to change, regardless of the path you choose. Versatility will be a precious asset.



Montreal

According to Montreal International, the city stands fourth among North American cities, so far as high technology job concentration goes, so that your knowledge and skills can be used in a multitude of fields.

Some strategic industries will probably catch your eye, such as aerospace, life sciences, ICT

(Information and Communications Technologies) and other important sectors, such as call centres, agrifood industries, logistics, and distribution. Technicians and professionals are in great demand; TechnoScience is everywhere, and it is for everybody!

Sherbrooke

Through its trunk roads and because of its proximity to U.S. markets, the Sherbrooke region, together with Montreal and Quebec, forms the most important industrial triangle in the province.

Traditional sectors are important here, but new diversified market niches are emerging: microelectronics, precision tooling, computerization, biomedical techniques, rubber-made products,

industrial minerals and composites ... All are areas with a future in the Sherbrooke region that will multiply your chances of obtaining an exciting career in TechnoScience.

In the field of research, there are 13 research scientists per 1,000 members of the active workforce, making it the third most important region in Quebec for research scientists. The Sherbrooke region's claim to the title of third technological pole in Quebec is fully warranted!

Saguenay / Lac St-Jean

According to the *Conseil de la Science et de la Technologie*, this region has come in second in Quebec for its share of highly successful upstart companies, also known as "gazelles": SMEs that have experienced very strong growth and which are rapidly leaping into the future!

The region has been diversifying its activities for the past few years; moreover, we also find many specialized educational institutions: specialized training and experimentation centers focusing on innovation and technological development, testing laboratories offering quick turnaround design implementation ... In short, the region holds the critical mass of knowledge necessary to become a winner in the new economic shift.

There will be sustained demand in employment and techniques pertaining to Information Technologies. Keep a sharp lookout for professions of electrical and electronic engineers, computer engineers, computer analysts and programmers, as well as those technically trained in electrical and electronics engineering.

Should you wish to be among those in "high demand" for the coming years in the Saguenay / Lac St-Jean area, you must develop a degree of versatility within the different specializations (robotics, computer systems, network management, and instrumentation and controls, among others).

Quebec

This region has resolutely embarked on a technological shift, a choice that has proven to be beneficial. It brings new investments and new employment opportunities in the region. It is therefore a growth area, sustained by a concentration of excellent centers in teaching and research, liable to bring an important contribution to the region's economy.

Here are some promising channels:

- Information Technology, particularly computer science and optoelectronics
- Biotechnology, notably in the environment field, biomedical and health sciences
- Metal processing industries, minerals and new materials
- Plastic processing and wood processing industry

The Quebec region has developed a remarkable know-how in geomatics, with its 30 corporations, 500 jobs and the Université Laval Geomatic Research Center. We can also add agrifood, with its 180 processing firms, 7,500 jobs and 8,000 farms. In Quebec City, there is without a doubt, a wide range of forward looking industries where you will be able to enjoy an exciting career in TechnoScience.

Gatineau

During the course of the last few years, this region has seen a solid core of high technology enterprises develop; companies in geomatics, telecommunications, biotechnology, environment, multilingual multimedia services ... These exciting companies have experienced an impressive growth rate in excess of 30%.

There is a plethora of innovative companies growing in the Gatineau region and furthermore, they account for 13.9% of highly educated positions, placing the region in the 5th rank in Quebec. We also find other major industries in the region such as printing, publishing, electronic and electrical products, wood

and chemicals, as well as an emerging industry in ICT. As a matter of fact, Gatineau region is currently working towards becoming a specialized pole in new Information Technologies, which may open numerous career possibilities for you. This is a shift one must not miss as ICTs are already a necessary tool in our everyday work and mastering these technologies would certainly make you a winner.

Relève TechnoScience is an ADRIQ initiative since 1999. The School Tour aims at encouraging our youth towards stimulating studies and careers in TechnoScience.

Publicité Merck Frosst

COMPUTER SCIENCE / SOFTWARE

Here's a fascinating field. Constantly changing, the computer science/software sectors combine scientific knowledge with advanced technologies.

The choice of a career in these sectors depends on your level of curiosity and your capability to adapt to ever-changing environments. But when we look closely, there are many types of

careers available at almost every possible level.

From computer maintenance to software engineering and consulting services, companies are offering various missions.

It is undeniable that computer science motivates many young people. However, be careful not to confuse the use of office computers (office automation), computer maintenance (installation and repairing) and the development sector (software, networks).

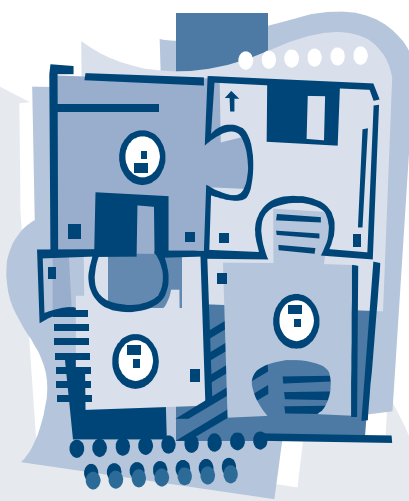
Each specialty has corresponding training.

EDUCATION AND TRAINING LEADING TO COMPETENCIES SOUGHT BY EMPLOYERS:

High School: Computer support

College: Technique in data processing, Data processing management

University: Computer engineering, Computer science, Computer management, Industrial computing, Computer mathematics, Computer physics, Business applications.



INDUSTRY LEADERS

3-SOFT
AD OPT Technologies
Alis Technologies
Discreet
eNGENUITY Technologies
GIRO
Groupe CGI
Groupe LGS
HyperShell
Oracle
Ubi Soft

80% of all technology we'll be using in 2015 has yet to be invented... including the new types of jobs to go with it! Stay alert!

INFORMATION AND COMMUNICATIONS TECHNOLOGY



Since 1998, one job out of seven in Montreal has been related to information and communications technology (ICT). Even though companies in the ICT sector have been severely hit by the stock market techno crash, there is still quite a bright future ahead, and the need for specialized labour is curiously blatant.

NEW ECONOMY

Montreal is not the only place in Quebec where the new economy is active. There are many other centers popping up in other regions. The province of Quebec will soon have some 16,000 jobs related with technology and the Internet.

SCIENTISTS WITH A KNACK FOR COMMUNICATIONS

Telecommunication goods are one of Quebec's top exports. Companies need quality products as well as specialists in sales and marketing. Scientists with a knack for communications often fill these positions.

A DIVERSIFIED SECTOR

There are many knowledge-intensive sectors of in ICT, but each is also in great need of specialized technicians.

MANUFACTURING OF ICT

- Computer hardware
- Audio-visual components
- Instruments
- Electronic components
- Wires and cables
- Business related hardware

SERVICES IN ICT

- Software and data processing services
- Telecommunications services
- Cable television
- Wholesale, distribution and rental

EDUCATION AND TRAINING LEADING TO COMPETENCES SOUGHT BY EMPLOYERS:

High School: Installation / Repairs of telecommunication equipment

College: Customer service, Electronic / Telecommunication, Data processing

University: Software engineering, Electrical engineering, Telecommunication, Computer engineering, Industrial computing, Business applications

INDUSTRY LEADERS

Bell
Ericsson
Harris
Hewlett Packard
IBM
Marconi
Matrox
Memotec

Microcell
Nexxlink
Nordx/CDT
Rogers
SR Télécom
Telus
Videotron

It is tough to predict what the tomorrow's ICT sector will be like... We have to see the future coming, be able to constantly adapt, and be flexible.

BIOTECHNOLOGIES / PHARMACEUTIQUE

INDUSTRY LEADERS

BIO-FOOD
Advitech
BioEnvelop
Colarôme
Lallemand

BIO-ENVIRONMENT / BIO-AGRICULTURE
Bioflo
Biogénie
Biothermica
Biovet
Nexia biotechnologies
Sodexen

BIO-SUPPLIERS
Biomatera
Steris
SiliCycle
Quélab

BIO-COMPUTING
Chemical Computing

BIO-MATERIAL / BIO-PROCESSES
BioSyntech
Biozymes
DSM Biotechnologies
Infectio Diagnostic
IPS Thérapeutique

BIO-PHARMACEUTICAL
Aeterna
SBFC Anapharm
AstraZeneca
Aventis
Axcan Pharma
Bristol-Myers Squibb
Merck Frosst
Novartis
Pharmascience
Sabex
Wyeth

BIOTECHNOLOGY / PHARMACEUTICAL

Biotechnology is found in various sectors, all linked by a common denominator: deep knowledge of the living world and marked by wondrous scientific breakthroughs. Although they are defined differently, they mix together very frequently.

Companies in biotechnology are often related to the sectors of health or food.

HEALTH

New medicines and vaccines, innovative treatments, leading edge medical techniques, better understanding of the genetic field; these few examples show interesting leads on what biotechnology can do for the health sector.

Companies and research centers operate in three sub-sectors: Bio-Medical, Bio-Pharmaceutical and Bio-Materials/Bio-Processes.

FOOD

Genetically Modified Organisms (GMO) are the most talked about biotechnological products in the media. This sector is also making remarkable progress in other fields, such as agriculture, nutrition and aquaculture.

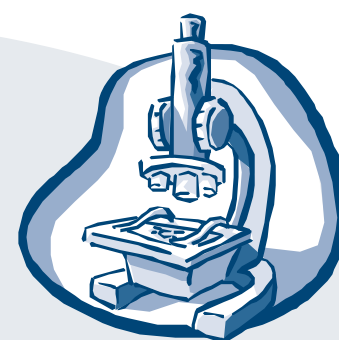
Everyone has heard of Dolly the sheep, the first cloned adult mammal, and about plants that can defend themselves against their enemies without adding any pesticides. We have also seen much development with our food becoming more efficient as a medicine...

EDUCATION AND TRAINING LEADING TO COMPETENCIES SOUGHT BY EMPLOYERS:

High School: Technical assistance in pharmacy

College: Biomedical analysis technology, Water purification, Technique in Chemistry-Biology, Technique of chemical process

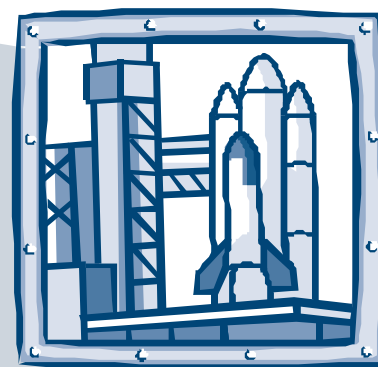
University: Chemistry, Biology, Biophysics, Chemistry engineering, Microbiology, Mechanical engineering, Industrial engineering, Food engineering, Immunology, Medicine, Pharmacology, Agronomy, Dietetics



All sequences of the human genome will soon be known... We'll definitely need many specialists in genomics and bio-computing.
-Michel Desrochers, Biotechnology Research Institute

An exciting career for you in ...

AERONAUTIC / AEROSPACE INDUSTRY



THE MAJOR PLAYERS

They design, assemble and deliver the products: airplanes, satellites...

THE EQUIPMENT EXPERTS

They supply the components and specialized services to the major players: landing gears, electronic components...

THE SUB-CONTRACTORS

They build and supply goods and services for the first two levels: composite materials, mechanisms, tools, interior planning...

A SECTOR FOR THE FUTURE

Montreal ranks third in the world in the aeronautical industry; Toulouse and Seattle Washington, coming in first and second. But, Montreal is the only place where all the components necessary to build an airplane are readily available. In the greater Montreal area, one person out of 200 works in the aeronautical industry. In the last 5 years, sales in that sector soared by more than 50 % and employment by 21 %

EDUCATION AND TRAINING LEADING TO COMPETENCIES SOUGHT BY EMPLOYERS:

High School: Circuits and Wires assembly in the aerospace industry, Structure assembly in the aerospace industry, Mechanical assembly in the aerospace industry, Sheet metal manufacturing, Sheet metal mechanic in the aerospace industry, Manufacturing technique, Driving of industrial engines, Draughtsmanship, Moulding, Manufacturing with tool-machinery with numerical commands, Manufacturing technique

College: Avionic, Construction, Aeronautic, Airplane maintenance, Technique in mechanical engineering, Technology in physics

University: Aeronautic/Aerospace engineering, Electrical engineering, Computer engineering, Mechanical engineering, Physical engineering

INDUSTRY LEADERS

Bell Helicopter Textron Bombardier Aéronautique CAE CMC Électronique EMS Technologies Héroux-Devtek Honeywell	Lockheed Martin Canada Messier-Dowty Oerlikon Aérospatiale Pratt & Whitney Canada Rolls-Royce
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CMC electronics

is a leader in the aviation, infrared sensing, global positioning and space markets.

Exiting career opportunities:
www.cmcelectronics.ca

- Patrick Champagne
VP Engineering and Continuous Improvement

ENERGY / ENVIRONMENT

Companies in the environment industry are providing jobs to many scientists, professionals, specialized technicians and support staff. The four sectors of environment industry are water, air, waste and recycling, including the contaminated grounds and soils.

The Quebec energy industry will particularly become dynamic in the coming years. In the next 5 years, Hydro-Québec is planning to hire no less than 3 000 qualified personnel in all areas: Professionals, Electronic Technicians, Electrical, Mecanic and Civil Engineers.

In the next 10 years, the creation of new projects will ensure employment for thousands of qualified people.

The sub-contractors such as Manufacturers, Electric, Professional services, will equally benefit from the wave of job creation in the energy sector.

EDUCATION AND TRAINING LEADING TO COMPETENCIES SOUGHT BY EMPLOYERS:

High-School: Water purification, Protection and exploitation of fauna territories, Sylviculture, Erection of electrical lines, Manufacturing techniques, Engineering Technologist, Electrical Engineering, Control Instrumentation

College: Biology, Chemistry, Water purification, Technique in natural environment, Horticultural production and Environment technology, Technique in applied Geology
Technique in natural environment, Engineering Specialist, Control Instrumentation

Over the next 10 years, Hydro-Québec will be hiring several thousand people throughout Québec. Our future projects will depend on a new generation of employees.

Jean-Luc Chabot, Director - Succession Planning and Development

INDUSTRY LEADERS

Biogénie Boralex Cermenco Enviroconseil Enerkem Gazifère Gaz Métro Hydro-Québec	Technisol Bioflo Biothermica Sanexen Sodexen SPG Hydro
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University: Agronomy, Chemical analysis, Biology, Ecology, Civil, Electric, Forestry, Mechanic and Geological Engineering, Urbanism, Geology and Microbiology

We work in an industry where a 35-year-old is regarded as an old timer. However, the industry needs people with experience.

Claude Dagenais, General Manager Alliance NumériQC

MULTIMEDIA AND INTERNET

Multimedia is here to stay. There is as important cluster in Montreal (Cité du Multimédia), but the sector is also quickly developing in other regions: Carrefour de la Nouvelle Économie (CNE), Centre de Développement en Technologie de l'Information (CDTI), Centre National de Nouvelles Technologies...

- 300 companies in Quebec
- Over 7,000 jobs in the Cité du Multimédia alone

A BETTER GENERAL EDUCATION

Employers are now seeking employees with better general education. A DEC or Bachelor's degree is necessary. It is expected that jobs won't be easily accessible for candidates with lesser education.

CREATIVE ARTISTS AND ENTREPRENEURS

In order to market its products efficiently, the industry needs people with solid business skills and creativity, not just people who master software programs. "You may know how to use the software, but if you don't have any artistic talent, the computer won't do it for you!"

EDUCATION AND TRAINING LEADING TO COMPETENCIES SOUGHT BY EMPLOYERS:

High School: None

College: Technique of multimedia integration

University: Computer science, Graphic communication, Communication, Editing and multimedia, Computer management

INDUSTRY LEADERS

Coreco Copernic De Marque	Institut Descartes SoftImage TMI Innovaxion
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Publicité Pratt & Whitney Canada

GEOMATICS

Geomatics is the science and technology that consists in gathering, analyzing, interpreting, distributing and using geographical information. The origins of the word come from "Geo" which means earth and "matics" that comes from the French word "informatique" (computer), which means automatic processing of information.

Geomatics uses knowledge from many different fields: Geodesy (Precise measurement of the earth), Topographical and thematic cartography, Photogrammetry (Measurement of aerial photographs), Hydrography (Measurement in marine environment), Geographical information systems (to gather cartographic data and other measurements), Satellite positioning (ex. GPS), Teledetection (measurements of satellite images), Topometry (surveying) and data processing, Mathematics, Physics, Management....

The word Geomatics finds its origins in Quebec... Our graduates "invented" the word, and it stayed ever since.

-Michel Mainville,
Laval University

EDUCATION AND TRAINING LEADING TO COMPETENCIES SOUGHT BY EMPLOYERS:

High School: Surveying and Topography, Wood cutting and shaping, Classification of sawed-up wood, Driving of heavy machinery in forest area, Forest development, Harvesting of forest materials, Forestry, Sharpening, Sawing, Pulp and paper

College: Cartography (Geomatics technology) Geodesy (Geomatics technology), Development of forest resources (Techniques in natural field), Forest technology



University: Geomatics sciences, Forest development and environment (Forest engineering), Forest operation

INDUSTRY LEADERS

Kheops Technologies Intélec Géomatique
ESRI Canada Korem
Géomatique EMCO ViaSat
geoPLUS

OPTICS / PHOTONICS

Optics and Photonics represent the fibre optic sector. Companies in this emerging sector are constantly developing new ways to use lasers and light beams. Did you know that we also use them to transmit data (like high-speed Internet)?

This technology has many uses and is considered an "enabling" technology, meaning that it makes other applications become possible.

From telecommunications to general medicine and the factory industry, optics / photonics play a major role in our every day life.

If we consider how electronics have marked the 20th century, the 21st century will equally be marked by optics / photonics, where we live at over 300 000 Km/second (speed of light).

EDUCATION AND TRAINING LEADING TO COMPETENCIES SOUGHT BY EMPLOYERS:

High School: None

College: Electrical engineering, Mechanical engineering, Computerized systems

University: Physics, Electromechanics, Electrical engineering, Mechanical engineering, Computer engineering

INDUSTRY LEADERS

Exfo
Institut national d'optique
CorActive High-Tech
DiCOS Technologies

Fiso
Teraxion
Telops
Optel Vision



PLASTICS / COMPOSITES

The plastic industry is a strange animal. We commonly find such products all around the house: the rubber-ducky in the bathtub, the patio furniture, the bathtub itself perhaps, the computer and even our cars.

It is undeniable that plastic is everywhere around us. However, the industry is rather young. Its evolution is closely tied to various technological breakthroughs at the chemical compound and moulding processes levels.

The new materials allow for the creation of great products, through the modification of their structures, making them more sturdy and rigid. It is also possible to achieve lower costs by finding new alloys.

EDUCATION AND TRAINING LEADING TO COMPETENCIES SOUGHT BY EMPLOYERS:

High School: Adjustment and operation of moulding machinery, Manufacturing of composite materials

College: Technique in analytical chemistry, Technique in chemical engineering, Technique in chemical processes, Technique in composite material manufacturing, Technique in plastic material manufacturing

University: Chemistry, Chemical engineering

INDUSTRY LEADERS

IPL
Produits American Biltrite
Datran
Waterville TG
Camoplast
Genpak
Ritvik

The first commercial application of plastic dates back 140 years: plastic had then replaced ivory in the production of billiard balls and piano keys.



An Invitation to Consider Science and Technology

AN INITIATIVE BY



HOW TO REACH US

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