Geomatics Engineering
Undergraduate Student Handbook

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April 2007

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Welcome to the Undergraduate Program of Geomatics Engineering in the Department of Geodesy and Geomatics Engineering at UNB

Congratulations on considering a geomatics engineering education! On behalf of the faculty and staff, I would like to introduce you to the Department of Geodesy and Geomatics Engineering (GGE) at the University of New Brunswick.

Since 1961, more than 1000 students from 56 countries have graduated from our program after making their own unique contributions to university life here in Fredericton. From the classrooms and laboratories in Head Hall (the engineering building), our faculty and students have made important international contributions in everything from satellite positioning and earthquake prediction, through mapping and remote sensing, engineering surveys, geographic information systems, and right on into land administration and ocean mapping. We are proud of our international research reputation, of the graduates who have moved into important positions around the world, and of the high-calibre students we have in our program today.

We think you've made a good educational choice and want you to feel welcome in our Department. You probably still have lots of questions concerning policies, programs, people, and how things work on a day-to-day basis. This handbook – put together by students, staff, and faculty – has been designed to help answer some of those questions and to help you make informed choices and decisions before you arrive and while you're here. We realize the information contained inside won't solve all your problems, so it is also important for you to know that there is a good support network of people here ready to help address any special question or problem you may have. The network includes:

- Executive members of Geomatics Undergraduate Engineering Student Society (GUESS)
- Directors of undergraduate and graduate studies in the Department
- GGE PEP/Co-op Coordinator
- GGE faculty members and support staff

Beyond this group, a large network of people at the faculty and administration levels also supports you. If you have a question, we can help you find the answer. If you have a problem, someone will be ready to listen.

Once again, we hope this handbook will help to answer any questions you might have. We look forward to having you become a part of UNB.

Prof. Peter Dare, Ph.D.

TABLE OF CONTENTS

Page

Search ON Google "EME Technologies"

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1. GENERAL INFORMATION

Here is some helpful information that you need to know to kick-start your university experience. Rather than repeat information you have found in the undergraduate calendar, we simply say, look at the calendar

http://www.unb.ca/calendars.html

or connect to the following Web site for information on such things as fees and costs

http://www.unbf.ca/prospective/tuition.php

If you have any questions about financing your studies, call the UNB Financial Aid Office at 506-453-4796, or Undergraduate Awards (Registrar's Office) at 506-453-4894, or go to

http://www.unbf.ca/prospective/financialaid.php

For housing off campus, call the Off-Campus Housing Office at (506) 453-4800, or go to

http://www.unbf.ca/prospective/offcampushousing.php

To order books or a computer contact the UNB Bookstore at

www.unb.ca/bookstore

For a description of the BScE program in the Department of Geodesy and Geomatics Engineering go to

http://gge.unb.ca/Study/Undergraduate/Undergraduate.html

What we have chosen to show you in the rest of this section is how to get connected electronically to the University and to our Department. If after reading this you are confused about anything, please contact the administrative assistant, Kim Delorey at (506) 447-3142 or

delorey@unb.ca

or the director of undergraduate studies, Dr. James Secord, at (506) 453-5150 or

jsecord@unb.ca

or look at the Department's Web site at

http://gge.unb.ca/

Before anything, however, you should read the following sections on how to start your experience at UNB.

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1.1 My UNB e-Services

This is a service available to all faculty, staff, and students at the University of New Brunswick. You have access to this page through the UNB homepage

http://www.unb.ca

Simply click on My UNB e-Services to check your mail, register, access WebCT (online course communication system), view marks, financial information, and IT (Integrated Technology) information.

Content of My UNB e-Services tabs

Library Services	Access to all UNB libraries with services like QUEST (on-line catalogue of all resources in all libraries) examples of past exams, e-journals, and help.
Voting	Vote for Student Union representatives.
E-mail	Activate e-mail for the first time. Get and receive Webmail. Change the destination of your e-mail.
Personal	Demographics. Change PIN.
Financial	Fee statement. Buy print credits. Order official transcripts.
Academic	Course registration. WebCT. Fitness. Class timetable. Marks. Exam schedule. Application for undergraduate scholarships. Academic advisors. Tutor list.
Computing	Change PIN. Network and computing policy. Set or change Novell password. Set or change Unix password. Computer registration. Help desk.

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1.2 Your Personal Identifier Number (PIN)

Everyone at UNB has a unique PIN. This personal identifier allows you to access to a number of online services.

Your personal identifier is for your use only. For the security of your information at UNB, it is important that you do not share your PIN with others.

You need your PIN to:

1. access the online registration system,
2. activate your computer ID,
3. access your UNB e-mail,
4. retrieve personal information like your transcript or a personalized timetable,
5. use WebCT to access course materials,
6. access licensed databases at the UNB libraries,
7. download site licensed software.

You are required to set a Challenge question and answer. How will this be of help?

1. You can select and change your own, easier to remember, PIN.
2. If you forget your PIN you can reset it yourself by answering your challenge question correctly.
3. This access will be available any time/any place you have access to a web browser.
4. In the event that you forget both your PIN and Challenge answer, you will be required to provide either the Registrar's office or the Information Technology Services (ITS) Help Desk with proof of identity. They are able to "reset" your PIN to its first-time user setting, allowing you to select another PIN the next time you access secure web pages.
5. Look-up access to student PINs (previously required by some faculty for advising purposes) has been removed. Only you have access to your PIN – an important component for privacy of your information.

1.2.1 Claiming Your PIN

1. Go to http://www.unb.ca
2. Click on "My UNB e-Services"
3. Click on "First time logging in," or "your PIN was reset?"
4. Supply your:

a) UNB e-mail ID (everything to the left of the @ in your e-mail address) supplied in your acceptance package.

b) UNB student number (supplied in your acceptance package).

c) Birth year

d) Birth month

e) Birth date

5. Click “Authorize.”
6. Read the information provided, then type in what you would like your PIN to be. Remember, this PIN allows you to access very personalized information, so select something you can remember, but something that cannot be easily guessed. Using your name, your birth date, or your e-mail ID are dead giveaways; something comprised of letters and numbers is the most difficult for anyone to guess.
7. You will then be presented with UNB’s Network and Computing Policy. Please read this carefully, because if you disregard this policy, you may be held accountable.
8. Next, enter a challenge question. This should not be a question whose answer is generally known and should not be something that friends or others know, or can guess about you.
9. Supply your challenge question and answer and press “Submit.”
10. That’s it! Just don’t forget to logout when you’re done.

If you have any questions, please contact the ITS Help Desk at

helpdesk@unb.ca

or phone (506) 453-5199.

To change your PIN and/or challenge question and answer at any time, simply log into “My UNB e-Services,” select the “Personal” tab, then the appropriate link.

If you forget your PIN at any time, go to “My UNB e-Services,” then select “Forgot your PIN?” under the login box on the authentication page. Then follow the instructions as provided.

If you forget your PIN and your challenge question and answer, go to the ITS Help Desk window or to the Registrar’s Office, show your picture ID, and ask to have your PIN reset.

1.3 To set up a Novell account, e-mail, and PIN from the labs on campus

1. Go to one of the general access computer labs on campus.
2. Sit at an available machine and type the word “activate” in the Username box as shown in the image below. Leave the password box blank and press the 'OK' button

3. Follow the instructions as provided. Note: you will be required to enter your UNB Login ID, student number and your date of birth, so make sure you have this information. If you do not have this information, please visit the Registrar's Office with your UNB photo ID.
4. If you experience any problems during the activation process, contact the ITS Help Desk (453-5199, helpdesk@unb.ca, or visit room HD-11, Head Hall)
5. That's it! Once you get the 'Congratulations!' screen at the end of the activation process, you have successfully activated your Novell account (email and PIN) and you may now login with your Login ID and PIN.

1.4 To activate your Novell account, e-mail and PIN via the Web (on campus or off)

You can set up your Novell account from any of the open computer labs on campus, or via the web. In either case, you are required to enter your student number, PIN, and date of birth. You will be given a $5.00 print credit at the beginning of each year to use for printing in the labs.

All students are required to change their Novell password every 364 days. (Your new password can be a mix of letters and numbers, and is not case sensitive.) If, during the login process, you receive a message saying “You have 6 grace logins remaining, would you like to change your password?” select “Yes” and a password window will display, allowing you to set a new password. Please note that, if you do not reset your password after the 6 grace logins, your account will be locked. If this happens, you will have to visit the ITS Help Desk (between 8 a.m.- 4 p.m.) with your student ID to request to have your account unlocked.

1. Open your Web browser to the UNB homepage
2. Follow the link to "My UNB E-Services"
3. When the authentication screen appears, follow the link to "Activate your IT Services" (under the login box)
4. Follow the instructions as provided. Note: you will be required to enter your UNB Login ID, student number, and your date of birth, so make sure you have this

information. If you do not have this information, please visit the Registrar's Office with your UNB photo ID.

5. If you experience any problems during the activation process, contact the ITS Help Desk (453-5199, helpdesk@unb.ca, or visit room HD-11, Head Hall)
6. That's it! Once you get the 'Congratulations!' screen at the end of the activation process, you have successfully activated your Novell account (email and PIN). You may now create your UNB Professional Web page, FTP files to your home directory (F:\ drive), or login in the computer labs (with your Login ID and PIN) next time you're on campus.

1.5 Signing Up for the GGE e-Mail List

PLEASE sign up as soon as possible. GGUGRADS@unb.ca is a list server containing the e-mail address of every undergraduate GGE student. When mail is sent to this list, every undergraduate student in the GGE department receives a copy of it.

Any information relevant to GGE students from faculty, staff, and students regarding classes or social activities will be forwarded only by means of the e-mail list. If you want to know about employment opportunities, Survey Society parties, cancelled classes, changed classrooms or assignments, and scholarship and prize information, you must be on the list.

Detailed instructions are given on our Web page at

http://gge.unb.ca/Study/MailingLists.html

You should receive an automatic confirmation message shortly after you sign up.

1.6 Registering For Classes

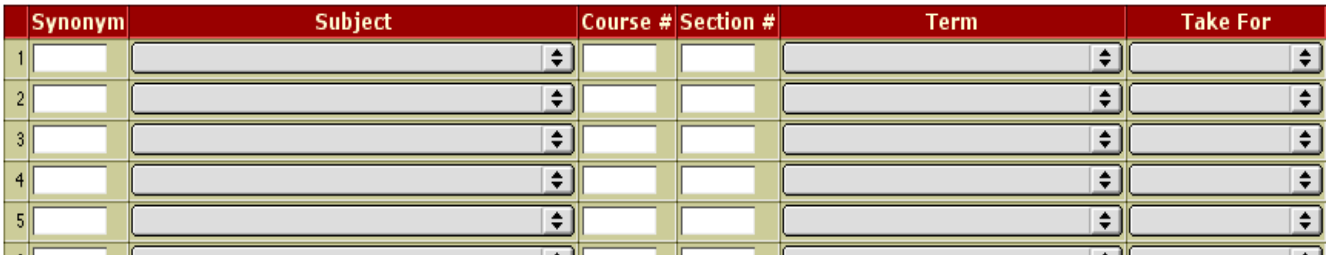
New students will not be able to register for classes for the first time ***until they have been advised by the Director of Undergraduate Studies, Dr. James Secord.*** Dr. Secord can advise you by e-mail if you are unable to make it into his office. You can contact him at jsecord@unb.ca.

To register for classes:

1. Go to “My UNB e-Service”
2. Click the “Academic” tab.
3. Click “Course Registration”
4. Check the Undergraduate Course Timetable, Fredericton, for the correct course number and synonym.
5. When you have a list of courses in which you would like to register, scroll to the bottom of the page and click “Continue”
6. Click “Register for Classes”

7. Supply your Student Number and your PIN, then click “Login”
8. Click “Register”
9. The information that you need for this screen can be found in the timetable at

   http://www.unb.ca/schedules/TimeTable.html



	Synonym	Subject	Course #	Section #	Term	Take For
1						
2						
3						
4						
5						

The synonym	6 digit number (unique to this section of this course, this term and this academic year)
Subject	GGE, CE, EE, etc.
Course number	e.g., GGE1001
Section number	e.g., FR01A
Term	e.g., 2002/FA
Take for	Credit

10. When you have listed all of your courses, scroll down and click “Submit.” Review the resulting screen carefully to ensure that you’ve been registered in the appropriate courses. If registration for a particular course fails, it will appear with a status of “Failed” along with the reason. Should you attempt to register for a course that is full, you may be automatically placed on the waitlist if one is available. These courses will appear with a status of “Waitlisted.” If you do not wish to remain on the waitlist, you may go to the “Drop Courses” screen to remove yourself.

If you have any problems, call the Registrar’s Office at 506-453-4864, e-mail the registrar’s office at

registrar@unb.ca

or call the office of the Department of Geodesy and Geomatics Engineering at 506-447-3142, or send an e-mail to Kim Delorey at

delorey@unb.ca

1.7 Course Requirements

During the first two weeks of a course, all professors must provide the course requirements. This will cover what textbooks you will require, any reference material, the marking scheme, any attendance policies, and the dates of any term tests. An outline of the topics that will be covered along with a rough timetable for when these subjects will be covered should also be provided. If you have any questions about what will be required of you, ask during these first two weeks. It is better to find out at the start of the term rather than at the end of it.

1.8 Adding Courses

Students have two weeks from the commencement (first day of lectures) of the first term to add any first term and full year courses to their timetables and two weeks from the commencement of the second term to add any second term courses. You are responsible for determining the requirements of any courses that you add and for making sure that you fulfill them.

1.9 Dropping Courses

To avoid academic penalty, pay particular attention to the following information concerning the meaning of symbols, based on the date of withdrawal from a course, which will appear on your official transcript. Students are strongly encouraged to consult with the GGE Director of Undergraduate Studies before withdrawing from a course.

Term Courses

1. Courses dropped up to two weeks after the commencement of classes are deleted from the record.

2. Courses dropped after that but within 5 weeks of the commencement of classes are recorded on the transcript as a “W” (withdrawn) and carry no academic penalty.

3. The last possible date to drop a course without academic penalty is always indicated on the Calendar of Academic Dates near the front of the UNB Undergraduate Calendar. If you miss this deadline, you either must complete the course or you will receive a “WF” (failure through not withdrawing in time and equated to a grade of “F” vs. “F” failure through failing the course) on your transcript and have a grade of zero (0) carried into your grade point average (GPA).

1.10 Photo ID Cards

Your UNB photo ID card is an important piece of identification during your time at UNB. It is your key to sign out library and reserve materials, to gain access to closed computer labs, and you may be asked to show it when you write your exams. You can also

show your ID to get many student discounts around town and to gain access to the gym facilities on campus.

For details on obtaining undergraduate cards for full-time, part-time, returning, and new students or if you have lost your ID card, go to the Web site

http://www.unbf.ca/its/imaging/products/photoid_st.html

Hats Off – Students are required to remove their hats for their ID photo.

Ownership – Cards are the property of the University of New Brunswick. ID cards must be surrendered to SECURITY, CAMPUS POLICE or other UNIVERSITY OFFICIALS when requested. Failure to do so may result in charges under the under the Student Disciplinary Code.

1.11 Computers

The UNB Bookstore is an agent for Gateway Computers and you can check their Web page at http://www.unb.ca/bookstore or phone 506-452-6308 for Ernie Cassie in computer sales (ecaissie@unb.ca). The "back to school" deals for computers usually begin in July.

1.12 Standings Requirements

In order to continue in good academic standing, an undergraduate student must achieve an assessment grade point average (GPA) of at least 2.0 for the assessment period. When you do, "In Good Academic Standing" appears at the end of your session record.

A student whose assessment GPA falls below 2.0 but is above 1.0 in an assessment period is placed on academic probation. A student is allowed to go on academic probation only once in a program.

While the final decision is always subject to review by the Engineering Faculty, a student who has previously been placed on academic probation and whose GPA in any subsequent assessment period falls below 2.0 will usually be required to withdraw from the University for at least 12 months. If such a student is readmitted, it is normally on academic probation.

A student whose GPA falls to 1.0 or below in any assessment period is required to withdraw from the University for at least 12 months. If such a student is readmitted, it is normally on academic probation.

1.13 Class Attendance

Students are expected to attend all classes, laboratories, tutorials, or other class meetings that are associated with a particular course. You are expected to complete all your assignments. Individual instructors may make specific requirements about attendance and class participation. An instructor may assign a final grade of F in the

course to a student who fails to meet any one of these requirements, including failure to maintain the stipulated attendance policy. Such requirements must be communicated in writing to students within the first two weeks of the course. It is the responsibility of a student who is absent during the first two weeks to determine the requirements of the course.

Students are advised to check course restrictions to determine the policy in effect concerning class attendance. Most problems caused by a student's absence from classes including absence from term tests can be resolved with the instructor concerned. If you are absent from classes, due to sickness or some other unavoidable cause, you must advise the instructors immediately upon return to their classes. It is fine to inform the professor of your absence by e-mail. The instructor may request suitable documentation if such confirmation is considered necessary. Health certificates will be accepted for consideration only from the health care professional that attended you during the period of absence.

2. GEODESY AND GEOMATICS ENGINEERING

2.1 What is Geodesy?

Geodesy is the science of mathematically determining the size and shape of the Earth and the nature of the Earth's gravity field. It deals with determining positions on the Earth, on other celestial bodies, and in space. UNB's leadership in this field is an important reason why our students have an edge in the workplace.

2.2 What is Geomatics Engineering?

Geomatics engineering deals with the practical, expert application of the sciences and technologies involved in acquiring, processing, integrating, and visualizing geographical information. Geomatics is one of North America's fastest growing information technology sectors and is vital to both economic growth and environmental protection. The field of geomatics is comprised of six different fields of study: geographical information systems (GIS); positioning and navigation; remote sensing and image analysis; and land information management.

2.2.1 Geographical Information Systems

UNB's Geographic Information Systems (GIS) specialists employ state-of-the-art systems — and develop new software tools — for the visualization, management, and analysis of spatial data. GIS is an exploding technology, and people with this expertise are in high demand.

2.2.2 Positioning and Navigation

The ability to locate oneself on Earth and navigate over its surface is a core theme of geomatics engineering. UNB students cover positioning on land, in the air, and in the oceans; satellite positioning using GPS; and the mathematical tools to both calculate positions and analyse the quality of the results.

2.2.3 Remote Sensing and Image Analysis

Image data can tell us the location of objects in the scene as well as the geometry of the scene itself. Our students work with data from a wide range of terrestrial, airborne, and space borne imaging systems ranging from the familiar camera to radiometers, radars, and lasers as well as marine acoustic systems.

2.2.6 Land Information Management

Geomatics is more than technology and mathematics. Managing information about ownership rights relating to land gets at the core of the way our society is organized. The issues relating to Land Information Management (LIM) systems are partly legal, partly economic, and partly sociological, and our graduates have the edge when it comes to a comprehensive geomatics education.

The information that you learn in these topics will allow you to do the following things once you graduate:

- use advanced positioning and electronic distance and angle measuring instrumentation for precise measurements in industry, engineering, mining, property development, and boundary delimitation projects;
- examine airborne and satellite data using state-of-the-art computerized image analyses for topographic, environmental, and resource monitoring and mapping;
- integrate position, time, and movement into sophisticated transportation, navigation, and management information systems;
- use image technology and computer analysis for industrial, medical, and robotics applications; and
- develop software to depict measurements and analyses of the Earth's surface.

2.3 Accreditation

The B.Sc.E. in Geomatics Engineering is an accredited engineering program as well as an accredited land surveying program.

The engineering profession expects competence of its members in engineering as well as an understanding of the effect of engineering on society. Therefore, accredited engineering programs must contain not only adequate mathematics, science, and engineering, but they must also develop communication skills and an understanding of the environmental, cultural, economic, and social impacts of engineering on society and of the concept of sustainable development. The processes of accreditation place emphasis on the quality of the students, academic staff, support staff, and educational facilities. The GGE program is accredited by the Canadian Council of Professional Engineers through the Canadian Engineering Accreditation Board.

The Geomatics Engineering, with the Cadastral Surveying Option, program is accredited by the Canadian Council of Land Surveyors. The purpose of accreditation with the CCLS is to identify those professional degree programs in surveying that satisfy the academic registration requirements of the provincial land surveying associations and incorporations.

Our B.Sc.E. degree is the first geomatics degree to be accredited by the Royal Institution of Chartered Surveyors (RICS) in North America. Our university is the

first university in Canada to have any degree accredited by RICS. Our own accreditation allows us to join the RICS global network of accredited courses and individual members

3. ALTERNATIVE ROUTE TO THE BScE DEGREE

Admission into Engineering requires grade 12 Chemistry (65%), English (60%), Mathematics (65%), and Physics (65%), and grade 11 Mathematics. A mark of at least 60% is required in each course with a minimum admission average of 75%.

Admission may still be granted if an applicant is deficient only by not having taken grade 12 Chemistry. In this case CHEM1801, extra to the BScE, may be taken at UNB.

If an applicant has successfully completed a two-year diploma in Geomatics Engineering Technology (GET) at a recognized technical college, then there may be an opportunity at UNB to continue studies even though the Engineering admission requirements have not yet been met.

The Department offers a Diploma in Geomatics Engineering, admission to which requires completion of a GET. While under the Diploma at UNB starting in a September, a student can take the necessary grade 12 courses (either at a Fredericton high school, or by correspondence, or by some other arrangement) and at the same time do some UNB courses. Once the high school deficiencies have been covered, application can be made into the BScE program starting in January or in September of the following year. The UNB courses under the Diploma can normally be counted toward the BScE in Geomatics Engineering.

For further details concerning the specializations under the Diploma go to:

http://gge.unb.ca/Study/Undergraduate/Undergraduate.html

Application to the Diploma may be made on-line by choosing “BScE in Geomatics Engineering” and by sending an e-mail to

admissions@unb.ca

with a copy to

jsecord@unb.ca

explaining that the application is for admission to the “Diploma in Geomatics Engineering” and that the choice of specialization is either “Cadastral Studies,” “Engineering and Exploration Surveying,” “Geodetic Surveying,” “Land Information Management,” or “Mapping and GIS.” If you have already applied for the BScE and have a UNB student number, be sure to indicate so in the on-line application and to include it with your full name and effective contact postal address in your e-mail.

If you have any questions, please feel free to contact James Secord, preferably by e-mail, at jsecord@unb.ca

4. CONCURRENT DEGREES IN COMPUTER SCIENCE AND GEOMATICS ENGINEERING

There are many emerging career opportunities in the information technology sector which demand a combination of in-depth computer programming and database management education as well as an understanding of positioning, mapping, geographic information systems (GIS) engineering, and spatial analysis acquired in geomatics engineering. The Department of Geodesy and Geomatics in the Faculty of Engineering and the Faculty of Computer Science at UNB in Fredericton are cooperating to make it possible for a student to graduate with fully-accredited bachelor degrees in both programs in five and a half years.

Graduates from this select program enter the work force with an understanding of computer hardware and software systems, computing theory, database management, and programming. In addition to their professional engineering core studies, they will possess a solid grounding in geodesy, satellite positioning, remote sensing, ocean mapping, GIS, advanced surveying, and land administration. Upon completion, graduates will be eligible for Canadian Professional Engineering accreditation with a specialization in this discipline.

This is an ideal program for students interested in applying a strong background in Computer Science to the development, testing, and management of positioning, measurement, mapping, and spatial analysis systems in high-technology organizations. The concurrent program is designed so that if a student decides to opt for either degree alone part way through the program, the adjustments can easily be made. Students in the concurrent program are able to count many of their courses towards the requirements of both degrees, so it is important to select courses carefully, in consultation with an advisor, from the outset.

For further information concerning the concurrent degree program contact:

Dr. James Secord
Director of Undergraduate Studies in Geomatics Engineering
(506) 453-5150
jsecord@unb.ca

Dr. Rodney Cooper
Assistant Dean of Computer Science
(506) 453-4566
morbius@unb.ca

5. DIPLOMA PROGRAMS

Diplomas in Geomatics Engineering

The Department offers programs leading to a Diploma in Geomatics Engineering with a specialization in Cadastral Studies, Engineering and Exploration Surveying, Geodetic Surveying, Land Information Management, or Mapping and Geographic Information Systems (GIS). These programs offer an opportunity for practising surveyors and other technical professionals to gain a thorough understanding of the theory and principles of specific applications of new technologies and methodologies. Each program area consists of selected courses as regularly offered in the

undergraduate B.Sc.E. (Geomatics Engineering) program. A total of at least 30 credit hours of specified and elective courses is required in each program. All of the courses in these programs are degree-credit courses. Those who successfully complete a diploma program and who are subsequently admitted to a degree program may receive credit for them. Students enrolled in a diploma program will be subject to all relevant university undergraduate regulations and to the General Regulations of the Faculty of Engineering.

It is recommended that applicants to a diploma program will have successfully completed a program of technology, of at least two years, which should have included or have been supplemented with courses in calculus, computer science, and probability and statistics at a level equivalent to first year university. It is important that applicants have a working knowledge of these three subject areas and have at least three years of relevant work experience (at least one of which should be as a party chief or equivalent).

6. EXCHANGE AGREEMENTS

The University, the Faculty of Engineering, and the Department of Geodesy and Geomatics Engineering have signed, or are in the process of signing, a number of exchange agreements or memoranda of understanding with universities around the world. These agreements are usually based on a spirit of reciprocity that allows for a one-to-one exchange of faculty, undergraduate students, and graduate students. The agreements are usually for a set term during which time the student will be assigned to a faculty member, will be eligible to take courses (without having to pay fees), and will participate in the faculty member's research. If you are interested, see the Department Chair.

Agreements with universities in countries where the first language is English pose no problem to Canadian students. In countries where the first language is other than English, however, a proficiency in the language of that country is required.

In all of the agreements, the students will pay any expenses attached to participating in these exchanges. UNB will still require the student participating in the exchange to pay UNB for tuition, medical coverage costs, and insurance costs that the student would normally pay. The student is responsible for accommodations, meals, travel, medical insurance if not covered by the UNB policy, books, clothing, passport, and visa costs, etc., in the exchange country.

The host university will not collect any examination fees, tuition fees, or other fees. The host university will help the students in such matters as health (beyond the coverage the students bring from Canada), accommodations, and local customs. The host university may provide office space, a desk, access to libraries, and access to a computer or computers.

The longest running agreement is with the Universität Hannover in Germany, which began in 1985. To participate in this exchange, the student would have to be proficient in German. The other agreements are with the:

1. University of Melbourne in Australia.
2. University of Warmia and Mazury in Olsztyn, Poland (Polish required).
3. Khajeh Nasair Toosi University of Technology in Tehran, Iran.
4. Hong Kong Polytechnic University
5. Universidad de Costa Rica
6. Universidad de Guadalajara, Jalisco, Mexico
7. Universidade Estadual Paulista, Brazil
8. Internacional Entre a Universidada, Brazil
9. Sabaragamuwa University of Sri Lanka.

7. PROFESSIONAL EXPERIENCE PROGRAMME (PEP)

The Professional Experience Programme (or PEP), established in 1989, is an official programme in the Faculty of Engineering at UNB. The PEP is based on establishing partnerships with participating organizations, which agree to provide professional work experience, supervision, and paid employment for selected engineering students.

Work experience has long been an important part of our program. Cooperative summer employment has been a mandatory requirement in the Department for almost 30 years. Today, all Geomatics Engineering students must obtain at least six months relevant practical experience prior to graduation. The PEP is an optional, enhanced form of co-operative education. In the PEP, a suitably-qualified student carries out an extended work term for a continuous period. During the work term, PEP students continue to register at UNB and they maintain their student status. Student work term activities are supported and monitored by the Department PEP Coordinator.

This exciting programme has grown to involve a large number of partnerships resulting in work-term placements for UNB engineering students in many parts of Canada, the United States, and Europe. It provides a unique opportunity for practicing professionals and their employers to have a very profound impact on the practical training, experience, and hence the quality of the next generation of geomatics engineers before they graduate from university.

The PEP is open to a limited number of Geomatics Engineering students with good academic standing who have completed at least 110 credit hours (ch) of their engineering degree requirements, and have at least 15 ch remaining to be completed.

In order to be eligible for PEP, these students must have successfully completed a majority of the core technical courses. Consequently, PEP students:

1. usually have completed the required intermediate-level courses in surveying and mapping, geodesy and GPS, photogrammetry, GIS and, in certain cases, hydrography and remote sensing;
2. are comfortable with PC-based word-processing, spreadsheet, presentation, and Internet software;
3. have already employed special-purpose software packages for CAD, GIS, surveying and GPS processing;
4. have completed introductory courses and assignments in object-oriented programming; and
5. often have already completed at least 3 to 6 months of previous summer work experience in geomatics.

Upon completion of the PEP internship, the student must return to university studies at UNB for at least one academic term.

The minimum PEP work term is 8 months, usually May-June/December or January-July/August, but most are for 12 to 15 months. The intention is to provide students with a

meaningful, in-depth work experience at a competitive salary, and to offer a variety of challenges and responsibilities over the course of their internship.

PEP students have the opportunity to learn new job-related skills, and to acquire valuable work experience to complement their university courses. The employment income received during PEP helps students to finance the cost of their education. PEP students can also learn firsthand about the nature of their employer's work activities, which enables them to make better choices about career goals and permanent employment after graduation.

Recently, PEP students have worked in:

Fredericton, New Brunswick
Fort St. John, British Columbia
New Zealand
Aberdeen, Scotland.
Richmond Hill, Ontario

For further information on the PEP program, contact Prof. Peter Dare, the GGE Department's PEP Coordinator.

8. SCHOLARSHIPS AND PRIZES

As any student will tell you, extra money and recognition is always appreciated. Once you have enrolled at UNB you are eligible to apply for scholarships. Many prizes, awards, and scholarships are available to you as a student in the Geomatics Engineering program. Some are program specific, some are faculty specific, and some are university specific. Academic performance is not necessarily as important a criterion as may be other factors. Toward the end of the second term there is a due date, usually in the middle of April, by which all full-time undergraduate students may submit a scholarship application. These applications may be picked up at the Registrar's Office or be completed online. By filling out this single form you are making yourself eligible to receive any scholarship awarded by the university. Even if you are not a Dean's List student you should apply as there are many different scholarships awarded on the basis of financial difficulties, leadership abilities, and extracurricular participation.

All scholarships and prizes awarded by the University are listed in the Undergraduate Calendar. The Calendar also has a listing of scholarships for which you must apply on your own. In these cases the Awards Office may have information concerning the award and how to apply, or you may have to write the awarding agency for information, or visit their Web site. Any additional scholarship information pertaining specifically to GGE students will usually be e-mailed directly to you.

8.1 How to Apply On-Line

The applications for scholarships can be found on your "e-services" Web page under the "Academic" tab (see section 1.1). This application covers all undergraduate scholarships awarded and administered by UNB that are listed in the UNB calendar. For more information, check out the "Scholarships, Prizes and Awards" section of the UNB Undergraduate Calendar at

http://www.unb.ca/calendar/undergraduate/awards.cgi?tables=awards&title=Awards

or contact UNB's Assistant Registrar for Undergraduate Awards at

awards@unb.ca

IMPORTANT NOTE:

You are considered for scholarships only if you **fill out an Undergraduate Scholarship Application Form <u>every year</u>.**

8.2 Externally-Administered Scholarships and Prizes

The following awards are administered by the funding agencies.

Canadian Hydrographic Association Award

Value: $2000. *Number:* 1. *Duration:* 1 year. *Conditions:* Awarded to a full-time student in second year of a science or surveying engineering degree program at a Canadian university to assist in financing the student's education. *Apply:* Application must be into the CHA by 30 June (but the earlier the better). For the application form go to the website http://www.adm.utoronto.ca/awd/Notices/hydrography.pdf *Awarding Agency:* Canadian Hydrographic Association**.** *Donor:* Canadian Hydrographic Association.

The John Carroll Geodesy Award

Value: $500.00. *Number* 1. *Duration*: 1 year. *Conditions*: The Award is to promote an interest in geodesy and the CIG both within educational institutes offering surveying programs, and among students. Awarded by the Geodesy Committee of the CIG for the most outstanding student paper on the subject of geodesy written in the preceding year (1 April to 31 March). Although co-authored papers will be considered, all co-authors must meet the eligibility requirements. For more details, see Web site:

http://www.cig-acsg.ca/page.asp?IntNodeID=19

Awarding Agency: Canadian Institute of Geomatics from a pool of papers sent from universities with surveying as a speciality. *Donor*: Canadian Institute of Geomatics from the estate of Mr. Carroll, as well as from the proceeds received through CIG Geodesy Committee publications, activities, and seminars.

Geomatics Atlantic Scholarship

Value: $1,000.00. Number: 4. Duration: 1 year. Conditions: Awarded to assist deserving students to advance their education in the field of geomatics with an aim to improve geomatics awareness and education in the Maritimes.

Further information on how to apply for this scholarship is usually e-mailed to Geomatics Engineering undergraduate mailing list.

Geomatics Canada Scholarship

Value: $2000. *Number:*8 *Duration:* 1 year. *Conditions:* These annual scholarships shall be made to students in good standing, registered full time, in a recognized university in Canada. Students must be Canadian citizens or landed immigrants. Students must be continuing a course of study in the field of geomatics

within a full time, co-op program or post-graduate studies. *Awarding Agency:* Canadian Institute of Geomatics. *Donor*: Natural Resources Canada and Geoconnections. For more information go to

http://www.cig-acsg.ca/page.asp?IntNodeID=18

Further information on how to apply for this scholarship is usually e-mailed to Geomatics Engineering undergraduate mailing list.

The Intermap Award

Value: $300.00. *Number*: 1. *Duration*: 1 year. *Conditions*: The award is presented to stimulate authorship in Geomatica in all fields of the geomatics sciences. Papers are judged for originality, practical value, conciseness, clarity of expression, and general interest. *Awarding Agency*: Canadian Institute of Geomatics. To obtain an application and further information, contact

editgeo@magma.ca

The Hans Klinkenberg Memorial Scholarship Fund

Value: $500-$2,000. *Number:* 2. *Duration:* 1 year. *Conditions:* Open to full-time students studying Geomatics at university or community college. Applications are evaluated on the basis of scholastic achievement and the various required documents. *Awarding Agency:* Canadian Institute of Geomatics. *Donor:* Hans Klinkenberg Memorial Scholarship Fund. *Deadline*: 15 February. *Application:* To obtain an application and further information, please contact the Canadian Institute of Geomatics at E-mail: admincig@magma.ca or go to the Website:

http://www.cig-acsg.ca/files/CIG/aSCHOLARSHIP001.PDF

C. D. Howe Memorial Foundation Engineering Awards

Value: $7,500. *Number*: 2. *Duration*: 3 years or until first degree obtained, whichever occurs first. *Conditions*: Awarded to full-time engineering students entering the second year of their program at a Canadian university and who will graduate within the next two or three years. Must be Canadian citizen or permanent resident of Canada. *Awarding Agency*: Association of Universities and Colleges of Canada (AUCC) on the nomination of deans of engineering. Tel: (613) 563-1236. For more information, e-mail:

awards@aucc.ca

The Canadian Engineering Memorial Foundation Scholarships

Value: up to $5,000. *Number*: up to 5. *Duration*: 1 year. *Deadline*, mid-January. *Conditions*: Available to women accepted in the fall into their first, second, or third

year of an accredited undergraduate engineering program to encourage them to pursue engineering as a career. Marks are not a criteria. One scholarship is awarded in each of British Columbia, the Prairie Provinces, Ontario, Quebec, and the Atlantic Provinces. Scholarships are based primarily on demonstrated leadership and extracurricular activities, with special emphasis on leadership to recognize and encourage continued contribution to society. Work experience is also considered in awarding these scholarships. Applicants must be willing to act as role models and to take action in promoting engineering, particularly to young women. In honour of the 14 women from Ecole Polytechnique whose contributions to Canada ended on 6 December 1989. See the Web site:

http://www.cemf.ca/Scholarships/UgScholarships/UgAppGuidelines.htm

Email:

memorial.foundation@ccpe.ca

Governor General's Canada Scholarships

Value: $1,500. *Number*: 15. *Duration*: 1 year. *Conditions*: Awarded to students enrolled both in engineering and in environmental sciences programs to foster a higher environmental awareness in engineering. *Deadline*: 30 September. *Administered / Donated By*: Association of Universities and Colleges of Canada (AUCC). Tel: (613) 563-1236. Email:

ccarruth@aucc.ca

The following special awards can make a student very attractive to a potential employer in university or in industry, since the employer only has to "top up" what NSERC offers as a base salary. If you think you qualify, take the initiative to contact a potential employer, work out the details of a potential summer, Co-Op, or PEP research position, and make the application.

You'd be surprised at how much bargaining power you might have coming into a position with some of your own funding already in place.

NSERC Undergraduate Student Research Awards (USRA) in Universities

Value: $350 per week for 16 weeks of employment; *Number*: It varies. In 2001, the Natural Sciences and Engineering Research Council assigned UNB 48 of these awards to be used by UNB students who apply and are selected.

Conditions: These awards are meant to stimulate your interest in research and encourage you to undertake graduate studies in the natural sciences and engineering. You must be a Canadian citizen or permanent resident of Canada; be registered (at the time you apply) as a full-time student in a bachelor's degree program in a natural sciences or engineering program at UNB; and have obtained a cumulative GPA of at least 3.0 or better. Apply: Speak to a GGE professor who may be interested in you as a potential summer, Co-Op, or PEP student. Then, complete the special "Form 202, Part I, Application for an Undergraduate Student Research Award" found on the

NSERC Web site at http://www.nserc.ca/forms/formtable_e.htm. Submit the completed form to the Geodesy and Geomatics Engineering Department Office.

Awarding Agency: The University of New Brunswick (on a competitive basis).

* A full description of the conditions may be found on the NSERC Web site at http://www.nserc.gc.ca/index.htm Applications are usually submitted no later than late January or early February, so act early if you want one of these.

NSERC Undergraduate Student Research Awards (USRA) in Industry

Value: $350 per week for 16 weeks of employment; *Number*: It varies.

Conditions: The same as the USRA University Awards. The only difference is they are designed to provide financial support to eligible students interested in doing research with a private company. *Apply*: Speak to a suitable industrial employer who may be interested in you conducting research as a potential summer, Co-Op, or PEP student. Then, complete the special "Form 202, Part I, Application for an Undergraduate Student Research Award" found on the NSERC Web Site at http://www.nserc.ca/forms/formtable_e.htm. Submit the completed form directly to NSERC. Note that the Employer must submit a form as well.

Awarding Agency: NSERC (on a competitive basis). Applications are usually evaluated within one month of being received.

* A full description of the conditions may be found on the NSERC Web site at http://www.nserc.gc.ca/index.htm Applications are usually submitted no later than late January or early February, so act early if you want one of these.

And... If you're in your final year, have sustained an average of "A" or better over your last two years, and are considering going on for post-graduate studies here at UNB or someplace else, you might consider the following.

NSERC Postgraduate Scholarships

Value: $17,000 — $19,000 per year for up to four years.

Conditions: To be considered eligible for support, as of the application deadline date, you must be a Canadian citizen, or a permanent resident of Canada; hold, or expect to hold (at the time you take up the award), a degree in science or engineering from a university whose standing is acceptable to NSERC; and intend to pursue in the following year full-time graduate studies and research at the master's or doctoral level in one of the areas of the natural sciences and engineering supported by NSERC. Unless there are exceptional circumstances, you must have obtained a GPA of 4.0 (a grade of "A") or better in each of the last two completed years of study. Full information may be obtained from NSERC's Web site at http://www.nserc.gc.ca/index.htm

Qualified GGE students have a good record of receiving NSERC Postgraduate Scholarships, so consider applying even if you haven't made up your mind about

what you're doing or where you want to go after graduation. It's good to have options!

9. FACILITIES

9.1 Computers

Many of your courses in the engineering program will require you to use a computer. Luckily, within Head Hall there are many computer labs. The GGE computer lab is located in E-7, and it is here that members of the GGE Undergraduate Society can obtain cheaper laser printing. Besides this lab, there are several labs found on C level and B level of Head Hall.

Wireless Access Points have been installed in the Department as well as the cafeteria and library in Head Hall. You can store and access all of your files on the UNB network through the wireless connection if you own a laptop complete with a wireless card.

As an arriving student, it will be necessary for you to claim your computer account. There will be posters on the lab walls telling you how to do this. Having claimed your account you will be able to log onto the computers, have access to your e-mail account, and be permitted to use any software that you will require for your courses. You are also provided with some disk storage on the F Drive where you can save any projects you may have produced for your courses. A word of advice is to always save any course assignments on both your F Drive and a diskette. It is an awful feeling to realize that you have lost an assignment and will have to start over again. Your F Drive, e-mail, and software are available from any computer on campus.

9.2 WEB CT

Besides placing material in the library, professors will also sometimes put course materials on the Internet. In order to access this material you first must go to

https://webct.unb.ca/webct/ticket/ticketLogin?action=print_login&request_uri=/webct/homearea/homearea%3F

and choose the "Login To WebCT" option. Following this you will be required to enter your e-mail ID as well as your pin number. Once you are logged on you select the course you want to view and then choose the links that will access the information that you want.

9.3 Libraries

There are a several libraries on campus: the Engineering Library located in Head Hall, the Science Library located between the Forestry and Physics buildings, the Law Library located in Ludlow Hall and the Harriet Irving Library located at the top of the hill beside Tilley Hall. Each of these libraries has study areas for groups and individuals. Professors will often put

the course textbook on reserve at the library. To borrow items that have been placed on reserve you must look up the call number (ask a librarian how) and then sign the item out at the main desk. Other course materials, old exams, and supplementary material may also be placed on reserve and it can be accessed in the same way as a textbook. At UNB, your student ID card serves as your library card. Library hours are posted on the Internet as well as on the library doors.

University libraries are just like any other library in that they have return dates, late fees, etc.

Overdue Item*s*

- You will be informed of an overdue item by e-mail. Even if you do not receive this e-mail you are still responsible for any late fees.
- Check the library web page http://www.unb.ca/libraries/ to see the current late fee rates.

Lost, Missing and Unreturned Items

Unreturned items are considered lost thirty days after becoming overdue. At that time you will have to pay overdue fines as well as the replacement cost for the item. The minimum replacement cost for items from the Engineering Library is currently $100. You will not be able to sign out anything else until these charges have been paid.

Unpaid Charges

Until all library charges have been paid, the Registrar's Office may withhold grades, transcripts, or diplomas.

If you are planning on using the library it would be a good idea to pick up a copy of the library's Circulation Policy, which is found at the main desk of each of the campus libraries. Also, towards the start of every term workshops are offered on how to effectively use the library. You will receive notification of these workshops via e-mail.

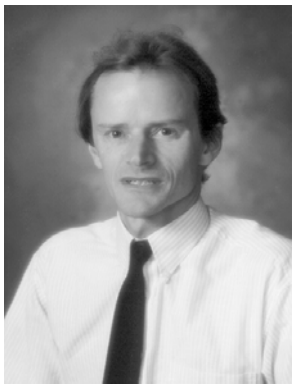
9.4 Photocopier

You may need to photocopy course notes or assignment solutions. Each of the libraries on campus (Harriet Irving, Science, and Engineering) has several photocopiers. In order to make copies, you will first have to buy a photocopy card at the main desk in these libraries. Cards cost either five or twenty dollars, but it is advisable to buy the twenty-dollar card as you get more copies for your money. Once you have used up all the copy credits, you can return the card for a one-dollar refund.

Search ON Google "EME Technologies"

10. FACULTY MEMBERS

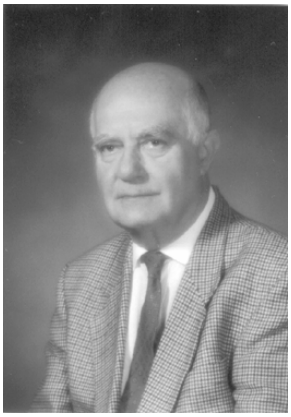
10.1 Professors



Dr. Peter J. Dare, Associate Professor; Chair; PEP and Co-op Coordinator (2000)

B.Sc. (N.E. London Polytechnic); M.A. Sc. (Toronto); Ph.D. (East London)
Phone 506-447-3016; email: dare@unb.ca
Areas of expertise: GPS; GPS for water vapour studies; geodesy.
Courses taught: Geodesy I; Advanced Surveying; Fellow, The Royal Institution of Chartered Surveyors; Member, American Geophysical Union; Member, FIG Working Group on Reference Frames in Practice. Member, RICS Geomatics Faculty Board.
Before joining UNB, for the previous 14 years Peter had been a senior lecturer in the School of Surveying at the University of East London, England. Before that he worked in the U.K. for Hunting Surveys Ltd. and D. J. Herriot Ltd.

Dr. Adam Chrzanowski, Professor Emeritus (1966)



Dipl.Eng., M.Sc., PhD(Krakow); Dr.h.c. (Olsztyn); P.Eng.
Phone: 506-453-5149; e-mail: adamc@unb.ca
Expertise: Geodetic, engineering, and mining surveys.
Motto: My work is my hobby.

- Director of Canadian Centre for Geodetic Engineering
- Chairman, FIG Working Group 6.1 on Deformation Surveys
- Co-founder and Presidium member, International Society for Mine Surveying
- Canadian Institute of Geomatics (CIG) Council member
- Chairman, CIG Committee on Engineering and Mining Surveys
- Associate editor, *Geomatica*
- Editorial Advisor, *Acta Geodaetica et Cartographica Sinica*, China.

Major honours: Honorary Professor (1986), Wuhan Technical University of Surveying and Mapping, China (1986); Knights Cross of the Order of Merit, Poland (1996); Honoris causa Professor Emeritus, University of New Brunswick (1998); Honorary Professor, University of Warmia and Mazuria, Poland (1999); Member of the Polish Academy of Arts and Sciences (2000); Doctor, honoris causa, University of Warmia and Mazuria, Poland (2002).

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Dr. David J. Coleman, Professor, Dean of Engineering (1993)

B.Sc.E., MScE (UNB); PhD (Tasmania); P.Eng.
Phone: 506-453-5194; e-mail: dcoleman@unb.ca
Expertise: Land information management; GIS; data communications and networking; spatial data standards and GIS interoperability.
Courses Taught: Introduction to Geodesy and Geomatics; Geographic Information Systems; Geomatics Management topics.
David worked as an engineer and executive in the Canadian geomatics industry for over 10 years before obtaining his PhD and joining UNB. His research interests are mapping and land information management policy, information infrastructure, and geomatics operations management. He is a member of the U.S. National Research Council's Mapping Sciences Committee, the Defence Science Advisory Board, the Champlain Institute Board of Directors, and the Research Management Committee of the GEOIDE Network of Centres of Excellence. He has acted as a consultant to clients across Canada, in the United Kingdom, and in Latin America.

Dr. Wolfgang Faig, Professor Emeritus and Dean Emeritus (1971)

Dipl.Ing.(Stuttgart); M.Sc.E.(UNB); Dr.Ing.(Stuttgart); P.Eng.; CLS; Certified Photogrammetrist (ASPRS)
Phone: 506-453-4874; e-mail: wfaig@nbnet.nb.ca
Honorary member, Association of New Brunswick Land Surveyors
Expertise: Engineering surveying and photogrammetry

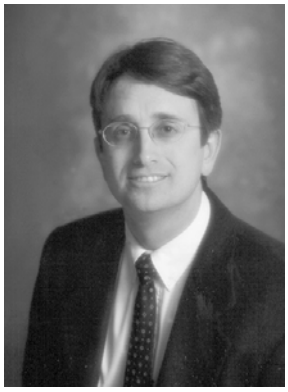
Angus C. Hamilton, Professor Emeritus (1987)

QuickTime™ and a
TIFF (Uncompressed) decompressor
are needed to see this picture.

B.A.Sc., M.A.Sc.(Toronto); P.Eng.; CLS
Phone: 506-458-7792; e-mail: ach@unb.ca
Former Department Chair (1971-1985), Angus retired in 1986 but continued to teach part time until 1993. The honorary rank of professor emeritus was conferred upon Angus in 1987. Between 1980 and 1989, Angus organized 10 LIS′90 workshops that set the stage for the integration of surveying, mapping, assessment, and land registry services in New Brunswick at the end of the decade. The Report of the Task Force on Control Surveys in the Maritime Provinces that he co-authored with Jim Doig in 1993 served as the blueprint for the selection and implementation of a new spatial reference system for the Maritime Provinces. Angus contributed the chapter on education for *Mapping a Northern Land*, and he is working on other history projects.

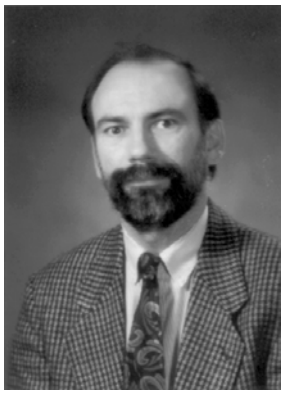
Search ON Google "EME Technologies"

Dr. John E. Hughes Clarke, Associate Professor; Chair in Ocean Mapping (1991)



B.A. (Oxford); M.Sc. (Southampton); Ph.D. (Dalhousie).
Phone: 506-453-4568; e-mail: jhc@omg.unb.ca
Expertise: Application of swath bathymetry and acoustic imagery toward understanding marine sedimentary processes.
Enthusiasms: (1) Developing and testing acoustic mapping systems for use on CSL Heron, a newly available 34-foot fully instrumented survey launch acquired through a joint partnering arrangement with the Canadian Hydrographic Service. (2) Any excuse to image sedimentary bedforms.

Dr. Richard B. Langley, Professor (1981)



B.Sc.(Waterloo); Ph.D.(York)
Phone: 506-453-5142; e-mail: lang@unb.ca
Richard Langley has been teaching and conducting research at UNB since 1981. He has a B.Sc. in applied physics from the University of Waterloo and a Ph.D. in experimental space science from York University, Toronto. After obtaining his Ph.D., Dr. Langley spent two years with the Department of Earth and Planetary Sciences of the Massachusetts Institute of Technology where he carried out research in geodetic applications of lunar laser ranging and very long baseline interferometry. Dr. Langley has worked extensively with the Global Positioning System. He is a co-author of the best-selling *Guide to GPS Positioning* published by Canadian GPS Associates and is a columnist and contributing editor of *GPS World* magazine. His research team is currently working on a number of GPS-related projects including ultraprecise real-time kinematic positioning and the study of atmospheric effects on the Wide Area Augmentation System now under development. Dr. Langley holds appointments to several national and international bodies. For his contributions to space geodesy, Dr. Langley shared two awards from the U.S. National Aeronautics and Space Administration.

Dr. John D. McLaughlin, Professor; President and Vice-Chancellor (1972)

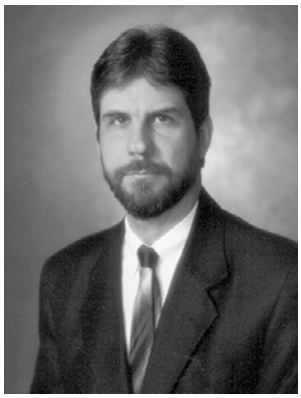
B.Sc.E., M.Sc.E.(UNB); Ph.D.(Wisconsin); P.Eng.; NBLS
Phone: 506-453-4801; Fax: 506-453-4908; e-mail: jdm@unb.ca
Professor McLaughlin continues to be an active member of the Department. He has recently co-authored two books, one on land administration and one on geospatial data infrastructures, which have been published by Oxford University Press. He still keeps a hand in the graduate program in land administration. On 1 July 2002, John became UNB's 17th President and Vice-Chancellor.

Dr. Susan E. Nichols, Professor, Director of Graduate Studies (1992)

B.Sc.(Acadia); M.Eng., Ph.D.(UNB); P.Eng.
Phone: 506-453-5141; e-mail: nichols@unb.ca

A graduate of the College of Geographic Sciences, Acadia University, and UNB, Sue is responsible for the land administration program in the Department. Her research interests include design and development of land administration systems, land tenure systems in transition, and law of the sea. She is a past-president of the Canadian Institute of Geomatics and was the Canadian delegate to Commission 7 (Cadastre and Land Management) of the FIG (1987-2000). Sue has worked primarily in Eastern Europe and southern Africa in land policy, land reform, and land registration. Recent work has included women's access to land and resources in Brazil, Zimbabwe, and for the UN Food and Agricultural Organization (FAO), where she spent a year as an advisor with the Land tenure Service. Maritime exploits include research on the role of marine boundary information in good ocean governance, Law of the Sea and marine policy, and coastal information systems.

Dr. Marcelo Santos, Associate Professor (2000)



B.Sc. (Rio de Janeiro), M.Sc. (Brazil National Observatory); Ph.D.(UNB)
Phone: 506-453-4671; email: msantos@unb.ca

Before joining UNB, Marcelo worked in the private sector; at the Directorate of Hydrography of the Brazilian Navy; as Associate Researcher at the Department of Geophysics, National Observatory; and as a professor at the Department of Geomatics, Federal University of Paraná, in Brazil. His research interests are related to geodesy, satellite positioning, and navigation.

Dr. James M. Secord, Senior Teaching Associate; Director of Undergraduate Studies (1986)

B.Sc.E., M.Sc.E., Ph.D.(UNB); O.L.S.; P.Eng.; A.N.B.L.S. (Associate)
Phone: 506-453-5150; e-mail: jsecord@unb.ca

Although having a pre-university background in cadastral surveying, James Secord's academic and research pursuits have been in precision measurements and in the monitoring of deformations. Along with being Director of Undergraduate Studies in the Department, he teaches undergraduate courses in surveying, metrology, survey law, and survey design. He is a full member of the Association of Ontario Land Surveyors and of the Association of Professional Engineers of New Brunswick, and is an associate member of the Association of New

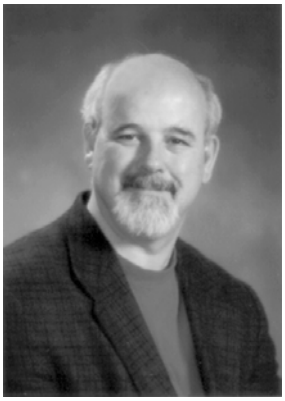
Brunswick Land Surveyors. Since October 1999, he has been the Registrar of the Atlantic Provinces Board of Examiners for Land Surveyors.

Dr. Petr Vaníček, Professor Emeritus (1971)

Dipl.Ing.(CVUT, Prague);Ph.D.(CSAV, Prague);DrSc(AVCR, Prague);P.Eng.
Phone: 506-453-5144; e-mail: vanicek@unb.ca

Specializes in geodesy, the more mathematical, the better. Has authored and co-authored some 390 publications, including *Geodesy: The Concepts*, a textbook used all over the world. Joined the Department in 1971 and designed and has taught, at one time or another, all the undergraduate courses in geodesy and adjustment calculus. Retired at the end of 1998/99 academic year.

Dr. David E. Wells, Professor Emeritus (1980)



B.Sc. (Mt. Allison); B.A.Sc., M.A.Sc. (UBC); Ph.D. (UNB); P.Eng.
Phone: 506-453-5147; e-mail: dew@unb.ca

My travel memories from 30 years as a "geomatician" include fishing for Char in an ice lead off the north coast of Greenland; testing a new survival bag under a magnificent Aurora Borealis in -40< on the ice north of Alaska; watching an ice crack widen under my toes at 1 cm/minute as our ice camp at the North Pole broke in two; exploring the Taj Mahal on a day-trip from Delhi; watching the quacos scurry around Rottnest Island having sailed across the America′s Cup racing area off Perth; listening to a young girl playing the violin beautifully in a Darmstadt church; standing on Corcovado overlooking Rio; staying in Zhou-En-Lai′s former summer home in Xian; and having my scalp sliced open by the surfboard I let get out of control in the Kuta surf. My greatest achievements: I was replaced by a lathe operator when I resigned in 1980 after 15 years as a research scientist at the Bedford Institute; the St. Andrews public wharf was destroyed by fire after I spent the previous two weeks working there in 1994. It's been a gas!

Dr. Yun Zhang, Associate Professor (2000)

B.S. (Wuhan); M.Sc. (Shanghai); Ph.D. (Berlin).
Phone: 506-453-5140; email: yunzhang@unb.ca

Prior to coming to UNB, Yun gained research and teaching experience in geo-spatial information acquisition, analysis, and representation. He has worked at the University of Calgary, the German Aerospace Center (DLR), the Technical University of Berlin, the Free University of Berlin, the University of Bremen, the East China Normal University in Shanghai, the Wuhan Technical University of Surveying and Mapping, and the State Academy of Surveying and Mapping in Beijing. His current research interests are in algorithm and software development for information extraction; image and geospatial information fusion; and

geo-spatial information acquisition, modeling, and analysis for informed decision-making. Yun's current teaching areas are remote sensing, photogrammetry, and image processing.

10.2 Departmental Administrators

If you ever have any questions dealing with the Department, your best bet is to ask the departmental administrators. These administrators can be found in the Department office (E-54), which is on the top level of Head Hall at the Beaverbrook Street end. To get there climb up the stairs located by the main lobby of Head Hall. At the top, turn right and continue down the hall until you reach the glass doors on the left. Pass through these doors and continue down the hall to the last door on the right. If you come into the building from A-level (corner of Windsor Street and Beaverbrook Street, take either the stairs or the elevator to E-level, and straight ahead of you are the glass doors leading to the Department office. From left to right: Tracey Hawco Winchester (Research Project Assistant), Sylvia Whitaker (Graduate Student Secretary), Sheri Brokopp (Reception/Secretary) and Kim Delorey (Administrative Assistant).

If you are having computer troubles, you may find an answer at http://gge.unb.ca/Intranet/Intranet.html, which contains computing-related information for GGE students, faculty, and staff. If you cannot find a solution to your problem there, then contact Terry Arsenault. He can be found in his office (E-7A), which is located in the GGE computer lab (E-7).

Also located in the computer lab is David Fraser (E-7B) who is the department's mapping technologist and GIS lab manager.

Terry Arsenault

David Fraser

11. SERVICES

11.1 Off Campus Housing

If you have decided to live off campus, the University of New Brunswick maintains an Off-Campus Housing Office (a division of Residential Life & Conference Services). Hours of operation are Monday through Friday from 8:15 a.m. - 3:15 p.m. Apartment and house listings are provided online (http://www.unbf.ca/prospective/offcampushousing.php) and at the Off-Campus Housing Office. Since this list is constantly changing, listings are not mailed or faxed out. Copies are available in the main entrance of the Residence Administration Building, located on 20 Bailey Drive. Other online rental information is available and is also located at this website.

11.2 Banks

There is a Bank of Montreal located on campus in the same building as the bookstore, which is found on Dineen Drive. Besides having two, 24-hour bank machines, there is also staff working there during the day. Two other Bank of Montreal bank machines are found in the Student Union Building.

11.3 Counselling

If you ever need to talk to a counsellor about any sort of problem, they are available at Counselling Services, which is located in Room 19 on the lower floor of the Alumni Memorial Building. Their phone number is (506) 453-4820 and they can be contacted by e-mail at <counsel@unb.ca>. Regular office hours are from 8:15 am to 12:00 pm and from 1:00 pm to 4:30 pm Monday through Friday. In emergencies, help is available 24 hours a day. After hours, call UNB Security at (506) 453-4830 and they will contact a counsellor. For further information or to arrange an appointment, drop into their offices or phone them.

11.4 Student Health Centre

The Student Health Centre offers medical services for all full time UNB students. Health Services is staffed by three physicians and two nurses who provide diagnosis, treatment, and on campus/off campus referral services for students with health problems or questions. Students who access the Student Health Centre must be in possession of their correct provincial health card at the time of the visit. International students also must have health care coverage. (These students may be asked to pay directly for some services offered by off campus physicians.)

Appointments are recommended and can be booked with the doctor by calling (506) 453-4837. Students seeking services without an appointment will first meet with a primary care nurse, who will provide an assessment, and in some cases

treatment as well. “Walk-in” times for urgent medical problems are always available. Prescriptions may be filled at any drug store in the community.

The Student Health Centre is located in the Tibbits East residence, through the entrance at the far end of the parking lot. It is open from 8:00 am to 5:00 pm on weekdays and is closed on weekends and holidays. A doctor is on call during the evenings and can be reached by calling UNB Security at (506) 453-4830. The Student Health Centre’s telephone number is (506) 453-4837 and its fax is (506) 452-6087.

11.5 Lady Beaverbrook Gym

A great way to relieve stress while at school is to be physically active. The use of the LB Gym is free to all full time students at UNB with the presentation of your student ID card. Available for your use are a weight room, cardio room, climbing wall, racquetball and squash courts, dance studio, swimming pool, etc. During the year, many classes are offered in everything from yoga to belly dancing. If you are interested in team sports there are many extracurricular leagues. More information about league sign up times and the classes being offered can be found by picking up a Recreation booklet from the gym during the first couple weeks of classes in September. The Gym is located at the bottom of the campus beside the main gates on Beaverbrook Street.

12. FREQUENTLY ASKED QUESTIONS

12.1 How do I buy print credits?

Every time you print in a university computer lab you pay for each sheet of paper printed. The way you pay is based on an amount of credit that decreases each time you print. Every GGE undergraduate student is given $5.00 worth of print credits at the start each year. You can check the balance from your Novell session by placing the mouse over the "$" icon in the System Tray.

When your line of credit runs out you will have to buy more print credits, which can be done by completing the “Apply for Print Credits” form on the Web. Credits will normally be available for use a few minutes after the form is submitted. The minimum purchase is $5.00, and the amount is charged to your account with the University. In order to pay for this purchase you must go to the Business Office, which is found in the basement of the Physics Building.

Note: If you wish purchase less than $5.00 worth of Print Credit you can use the Vending Machine located in Lab GD118 of Head Hall.

Go to the university Website <www.unb.ca> and click on the “Current Students” option. From here enter the “Financial” section and then choose the “Print Credits” link. On this page you can buy various amounts of credit.

12.2 How can I find a tutor?

If you feel that you are getting behind in a course, the best thing you can do for yourself is to hire a tutor. The UNB Website < http://www.unb.ca/current/tutors.pdf > maintains a list of people willing to tutor, along with their subjects of expertise. If it is a GGE course that is giving you problems, you can either talk to your professor about recommendations for tutors, or e-mail the GGE undergrads mailing list. Tutors usually cost between ten and fifteen dollars per hour.

If you are having problems with math or writing skills you can contact the Writing and Math Centre, where assistance for students taking first-year courses is available free of charge. Experienced tutors work with individuals or small groups. The Writing and Math Centre is located in the Continuing Education Centre wing of the Wu Conference Centre, located on Duffie Drive (just inside the Montgomery St. gates).

The “Learning Centre” offers workshops towards the start of the term on the development of good study habits, organizational skills, etc. Remember to regularly check your e-mail as notices concerning the time and location of these workshops are usually e-mailed to all first-year students.

12.3 What is GUESS and what can it do for me?

GUESS stands for the Geomatics Undergraduate Engineering Student Society. Students can become a member of the Society. The Society organizes many events during the school year, including sporting events, two end-of-term parties, and various other activities. Becoming a member of the Society is a great way to meet other people in the Department. Your membership ensures that you will get cheaper rates for all GUESS and EUS (Engineering Undergraduate Society) events and, if you are printing in the GGE Computer Lab (E-7) you will get charged less per page for printing.

12.4 How do I calculate my GPA?

GPA stands for Grade Point Average. Here at UNB your final marks are assigned by a letter grade. Each letter grade is assigned a certain number of grade points:

LETTER GRADE	GRADE POINTS
A +	4.3
A	4.0
A –	3.7
B +	3.3
B	3.0
B –	2.7
C +	2.3
C	2.0
D	1.0
F	0

Grade point averages are calculated by dividing the total number of grade points obtained (credit hours x grade point weight) by the number of credit hours attempted during the period in question in the program. Grade point averages are shown to one decimal place.

In the GGE Department, the relationship between letter grades and numerical (or percentage) marks is usually as follows.

A+	A	A-	B+	B	B-	C+	C	D	F
90-100	80-89	75-79	70-74	65-69	60-64	55-59	50-54	45-49	0-44

While most GGE course instructors use this conversion table, this relationship can vary dramatically from professor to professor and from faculty to faculty across the university. It is up to the student to make sure he or she has a clear understanding of the marking scheme being used in any given course.

12.5 Why should I use my UNB e-mail account?

All UNB students are assigned their own e-mail account. Many professors use e-mail as a way of notifying students of changes to assignments, cancellation of classes, etc. These professors assume you are receiving this mail therefore it is important to always check your UNB account so as not to miss an important message. If you do not want to ever use your UNB account you should have your e-mail forwarded to the address of the account you wish to use.

12.6 What is GGUGRADS@UNB.CA?

GGUGRADS@unb.ca is a list server containing the e-mail address of every undergraduate student in the Department of Geodesy and Geomatics Engineering. When mail is sent to this list, every undergraduate student in the department receives a copy of it.

12.7 What is 'safe ride'?

If you live off campus and have to stay late at school to work, or you are short on cash for a cab, you may feel uncomfortable walking home alone. The Student Union runs a service called Safe Ride. During the evening you may go to the front of the Student Union Building and wait for the Safe Ride van. This van will drive you directly to your doorstep free of charge. Information concerning its hours of operation can be found on the UNB Website. If the van is not there right when you get there it will be around shortly and if the service is not running that evening there will be signs posted around the entrance to let you know. Contact: 458-7655; e-mail: <univaff@unb.ca>.

12.8 What if I've suffered sexual harassment? Who can I turn to for help?

(We sincerely hope this is not a frequently asked question.) Any member of faculty or Student Services in the SUB should be responsive to you, however, UNB has appointed a female member of the engineering faculty to be a sexual harassment advisor. Please feel free to contact Katy Haralampides at 453-5125. Her office is room B-4 on B-level in Head Hall, and her e-mail address is <katy@unb.ca>. For the complete policy, see

<www.unb.ca/hr/Policies/harassment.html>

12.9 What are E-1A and E-7?

E-1A is a lounge for undergraduate students in Geomatics Engineering. It is located on E-level of Head Hall. In order to get to E-Level climb to the top of the stairs located beside the main lobby of Head Hall. At the top turn to the right and continue to the end of the hall. E-1A is a great place to go if you want to meet other

students, and there is always someone in there who will be ready to answer any questions that you might have.

E-7 is the GGE computer lab. It can be found in the same way as E-1A except that it is on the left-hand side of the hallway about half way down the hall. As previously mentioned, members of GUESS can get cheaper printing in this room.

12.10 Where is the GGE Department's publications room?

Sometimes you will have to buy course notes from the Department publications room, which is open at the start of every term. The publications room, E-36, is located in the hallway across from the glass doors leading to the main office and beside the glassed-in display room. The publications you purchase are sold at cost plus $0.50 by a volunteer member of the Survey Society. The extra money goes directly to the Survey Society.

12.11 What do TAs do?

TA is short for "Teaching Assistant". TAs are usually upper-year undergraduate students or post-graduate students. The purpose of a TA in GGE courses is to come to all the labs and answer any questions, demonstrate how to use the equipment and/or software, and make sure that you understand the exercise. In some cases, a TA may also mark the assignments and lab reports for the course. Remember that TAs are there to help you, so do not be shy about asking them questions.

12.12 What is a practicum (survey camp)?

Every Geomatics Engineering student is required to do three Practica, unless advanced credit has been awarded. These practica, which may or may not take place at the university, usually run for the first two weeks of May. The point of the practica is to take the knowledge you have attained in the GGE courses you took during the year and to actually apply this knowledge in order to complete a related project. Depending on how hard you work, you may be able to complete the course in less than two weeks. Since these practica are actual courses that are required for your degree it is important that you make sure your summer employer knows you cannot start work until you have completed them. Also, you should not make plans to go home any earlier than the last possible day of camp as you may not be able to predict how long it will take you to complete the exercises.

12.13 What is the Computing Help Desk?

The Computing Help Desk is located on D-level of Head Hall. In order to get there take the stairs located in the main lobby of Head Hall. D-level is the next floor up from the lobby. The Help Desk is to the right of the stairs. The Computing Help Desk hours are posted on their Website at http://www.unb.ca/helpdesk/ The Help

Desk personnel are there to answer any questions you may have. While they can help you learn how to buy print credits or find out why your e-mail account will not work, they are not there to do your computer science assignments for you.

12.14 How do I provide feedback about courses, professors, and TAs?

If you are having problems related to (for example) how course material is being presented, the nature and content of assignments and tests compared to what is covered in classes and labs, potentially unfair or inconsistent marking of assignments or tests, perceived harassment by an instructor, a TA, or another student, etc., start by talking frankly with the course instructor and/or the TA about your concerns.

In cooperation with the GUESS, the Department of Geodesy and Geomatics holds a Student/Faculty Meeting at least once each term. These meetings are held so that students can provide general feedback, ask questions, and make comments to the faculty. These meetings are your opportunity to make sure that any problems or issues concerning GGE courses are heard and, where possible, addressed.

If a situation arises where you would not like to share a problem in a group setting or you do not feel comfortable talking directly with the professor of the TA involved, you have the option of approaching (in confidence) either the GGE Department Chair or UNB's Director of Student Affairs and Services. Don't let such problems drag on for too long before approaching someone – it may be too late to find a solution if you wait until near the end of term to do something about it.

Finally, at the end of each term you will be given two different evaluation forms for each course you are taking. One of these evaluation forms (a UNB-wide form) addresses issues including the teaching ability of the professor, the usefulness of course materials, the suitability of tests and assignments, and so on. A second evaluation form (developed by and for the GGE Department) addresses the effectiveness of the course TA. These forms provide important feedback to the University, so be sure to fill them out.

12.15 Where do I park my car on campus?

There are several parking areas on the UNB campus that are designated for the use of UNB students (. In order to park in these areas between the hours of 8:00 am and 4:00 pm, Monday to Friday, you must purchase a parking permit. This permit may be purchased from the UNB Security and Traffic Department, located in the Wu Centre just inside the Montgomery Street gates. Annual parking permits are normally issued during the months of August and September, though they are available at any time of the year. Annual permits are valid until August 31 of the following year. The cost of a student parking permit is:

12 month permit	–	$179
8 month permit	–	$70
4 month permit	–	$50

Vehicles parked on campus without a parking permit will be fined and could be towed away. Failure to pay any fines may result in the University withholding transcripts, marks, etc. Further information concerning parking on campus can be found at

<http://www.unbf.ca/security/parking>

This Website contains information on where you can park, how to obtain a permit, when fines are given, and when cars are towed along with other information that you may need to know if you plan to park on campus.

12.16 Where can I find summer employment or permanent employment on graduation?

There is a rich and varied collection of opportunities available to GGE students and graduates if: (1) they are proactive and get to work early to select and contact suitable employers that interest them; (2) they are prepared to send out many applications in order to have a choice of jobs; and (3) they are prepared to travel (especially outside the Maritimes). While jobs are posted on the bulletin board across from Room E-36 and notices are often sent via e-mail to all GGE students, rely on your own initiative to get that summer job or to kick-start your career.

You can start by going to the GGE Web site and checking out *<gge.unb.ca/Study/Employers.html>* to get a better idea of: (1) geomatics job opportunities across North America and beyond; and (2) a list showing a small selection of employers of GGE grads already. The addresses and contact information obtained from here can give you an idea of the market for permanent positions and what kinds of companies are offering what types of jobs.

GGE professors and instructors are also often a good source of information concerning who on or off campus may be looking for students or graduates.

As well, the UNB Employment Services Web Site at <www.unb.ca/employment/> contains lots of useful information and a great set of links to other job search sites. The bulletin boards in their office in the Neville Homestead (Building #49 on the Campus Map) usually contain information on local job opportunities.

HINT: When you're searching one of the many on-line databases for suitable summer employment — or when you're adding keywords to a special job application form — be creative and aggressive. By all means, use keywords like "geomatics," "engineering," "surveying," and "mapping." However, if you have successfully taken the courses already, don't be afraid to include keywords like "GPS," "GIS," "remote sensing," "hydrography," "navigation," "positioning," and even "spatial."

Finally, a rich list of contact information for potential employers across the country may be found by checking out the "Canadian Geomatics Source Book," which is available on-line at <http://www.giac.ca/site/info/source.cfm>.

Search ON Google "EME Technologies"

Don’t be shy about applying to organizations where the types of jobs, opportunities, or locations may appeal to you. Even if you don’t think you are qualified for a job being offered at the time, an employer may still be willing to consider you in an entry-level, summer, or PEP position. Think a bit about what interests you — be honest and realistic, but be creative. By no means should you sell you or your education short — somebody is going to get a given job and, if you think it’s in an area that interests you, then go for it! You may just be the most qualified or the most interesting candidate who applies.

The most important thing to know about your life at UNB is that the Department faculty and staff understand that things will be very different for you here and that you will probably run into one problem or another during your time with us. Please feel free to talk to the people around you if you need help. Sometimes the trick to solving problems is knowing who to ask for help. We can help you with that.

If you have any suggestions for improving this handbook, please feel free to send them to Kim Delorey at delorey@unb.ca.