

Benchmarks

Faculty of Engineering and Applied Science Winter 2005



Celebrating more than
30 years of
graduating
experienced
engineers



Memorial
University of Newfoundland



The Dean's message



Our researchers bring their expertise to the classroom to ensure that we offer first-rate, leading edge education to our undergraduate students.

It is a pleasure to welcome you to the Winter 2005 edition of *Benchmarks* which will give you a flavour of some of the exciting activities that are ongoing in the Faculty of Engineering and Applied Science at Memorial University. As you will see from the articles that follow, the Faculty of Engineering is an exciting and dynamic place to study and work.

The Faculty of Engineering has seen tremendous growth in research over the past several years and our faculty members, students and staff are engaged in exciting engineering research and development projects, many in collaboration with industry. We currently have four Canada Research Chairs (CRCs), with searches underway for two new CRCs. In addition, there are a number of Industrial Research Chairs held in the Faculty, including the Petro-Canada/NSERC Chair for Women in Science and Engineering, with several more searches in progress. New faculty members have been very successful in competing for major laboratory equipment support from the Canada Foundation for Innovation and have been able to develop innovative, research facilities in the faculty as a result. Our researchers bring their expertise to the classroom to ensure that we offer first-rate, leading edge education to our undergraduate students. The Faculty of Engineering has a very strong commitment to undergraduate teaching and we are particularly proud of colleagues who have received national, provincial and university recognition or awards for teaching excellence.

Our graduate programs continue to grow and we currently have over 220 graduate students studying and researching in

the Faculty of Engineering. We welcomed our first class of students from China to a new course-based Master of Applied Science in Computer Engineering (MASCE) which you can read about in this issue of *Benchmarks*. There are also several new graduate programs under development, including a Masters of Engineering Management (jointly with the Faculty of Business), a course-based Masters of Environmental Systems Engineering and Management (MESEM), and graduate degrees in oil and gas engineering.

In concluding my welcome message, I would like to express thanks to all of our co-op employers and supporters of the Faculty of Engineering. Your support of our students and their engineering education is critical to the success of our programs and to ensuring that Memorial continues to educate outstanding engineering graduates.

I hope that you find this issue of *Benchmarks* informative and enjoyable to read. If there is any further information that you would like about any of our activities, please do not hesitate to contact me.

With very best wishes,

Dr. Ray Gosine, P. Eng.
Class of '86



Researchers another step closer to autonomous underwater vehicles

Memorial University is partnering with Northstar Technical Inc., a subsidiary of Northstar Electronics, Inc. and the NRC Institute for Ocean Technology (IOT) to give a significant boost to oil and gas research.

Under the agreement, Northstar will provide sonar technologies such as obstacle avoidance, water depth and temperature, bottom finding, and vehicle pitch and roll to the autonomous underwater vehicle known as C-SCOUT, on which MUN and IOT have been collaborating. In turn, Northstar will receive valuable test data for its cutting edge sonar technologies being developed under the Aquacomm program.

By using our strengths as a cluster we can be competitive internationally when it comes to developing ocean technology systems such as C-SCOUT.

With this partnership, Northstar's Acoustic Modem will be the primary communications channel between C-SCOUT and the surface, enabling C-SCOUT to conduct complex missions with real time communications capability. The



Dr. Neil Bose with C-SCOUT

technology itself, originally developed for the fishing industry, is a nose cone with several sensors that are forward and down looking. The cone will be attached to C-SCOUT, which was primarily developed to research environmental monitoring of discharges of produced water, drilling mud and cuttings in the offshore oil and gas industry.

Dr. Neil Bose, Canada Research Chair in Offshore and Underwater Vehicles Design and professor of Ocean and Naval Architectural Engineering in the faculty, stated, "This is an ideal opportunity based on a match of expertise, ours in underwater vehicle technology and Northstar's in sonar development, where both organizations are developing equipment and products in areas that would be difficult without the expertise of the other."

Dr. Mary Williams, Director General of the National Research Council's IOT and honorary professor at Memorial, added that C-SCOUT could not be developed without collaboration among the research partners. "NRC has been fostering the ocean technology cluster in St. John's and this project is a perfect example of how much more we can accomplish collectively. By using our strengths as a cluster we can be competitive internationally when it comes to developing ocean technology systems such as C-SCOUT."



Engineering researcher receives funding for a Micro-Mechatronics Lab



Dr. Vlastimil Masek

Dr. Christopher Loomis, vice-president (research) of Memorial University recently welcomed the Canada Foundation for Innovation's (CFI) total investment of \$696,850 for four newly recruited faculty members. This includes \$159,269 to Dr. Vlastimil Masek, assistant professor of Electrical and Computer engineering, for the development of a Micro-Mechatronics Laboratory. This infrastructure will support research in the area of smart sensors and

sensor systems using Micro-Mechatronics concepts. In the application area of process industries, the proposed research aims at developing a multiphase flow characterization and flow rate measurement. The primary focus will be on the offshore oil and gas industry that has large economic potential for applying real-time multiphase meters.

"These awards represent a strategic boost to Memorial's research capabilities," said Dr. Loomis. "These projects were selected following a thorough assessment process and will

help ensure that researchers and graduate students at Memorial have access to a world-class facility and training environment."

The CFI's New Opportunities Fund (NOF) announced \$23.7 million in funding to 32 universities in every region in the country. These NOF investments provide \$18.2 million for infrastructure support to newly recruited academic staff.

The CFI's New Opportunities Fund enables eligible universities to provide research infrastructure for newly-recruited faculty members, in their first full-time academic appointment in Canadian degree-granting institutions, so that these researchers can undertake leading-edge research. The fund also enables institutions to recruit new faculty members in the areas of research identified as priorities in their strategic research plans.

The CFI is an independent corporation created in 1997 by the Government of Canada to fund research infrastructure. The CFI's mandate is to strengthen the ability of Canadian universities, colleges, research hospitals, and non-profit research institutions to carry out world-class research and technology development that will benefit Canadians.

Collaboration with Dalhousie brings new research funding

Dr. Faisal Khan has received a substantial grant to create a software tool that will lead to better accident prevention and safety management of oil and gas operations. Dr. Khan has been working with Dr. Brian Veitch, also of the faculty and Dr. Paul Amyotte of Dalhousie University. The grant, worth close to \$100,000 over two years, comes from Petroleum Research Atlantic Canada (PRAC) and will help the researchers create a knowledge based expert system that will capture expertise to help improve the outcome of hazard and operability studies (HAZOP); making them more efficient, comprehensive, objective, and more reliable.

A typical HAZOP study, which is an integral part of a safety management system, is conducted by a team of experts who carry out brainstorming discussions of the entire process system line from start to finish covering every vessel, conduit, valve, and other control equipment employed in the process

line. The discussion focuses on things that may lead to changes in the plant operation due to human, process, or material failures, their likely consequences, and preventive measures. A typical HAZOP study requires a lot of expensive, expert manpower time. Dr. Veitch says HAZOP studies require an experienced, knowledgeable team, and an able leader. "It is not a calculation type exercise where the same answers will pop out of the pipe regardless of who is pressing the buttons."

The computer-aided tool these researchers hope to create will be used to complement the work of the HAZOP team, allowing them to interact with another 'expert' during a HAZOP study. "This knowledge-based expert system will considerably reduce the workload and man-hours, thus leading to considerable saving," explains Dr. Khan. "It will also improve the effectiveness of the study by eliminating the repetitious tasks; making it more focused." The team of researchers hopes that, over time, they will be able to capture other methods and expertise in an integrated suite of software tools that will improve the safety of offshore installations.



Alumni NEWS

Alumnus Gordon Jin has won the 2004 James A. Vance Award for his outstanding contributions to the Canadian Society of Civil Engineers (CSCE). Mr. Jin obtained his B.Eng. (Civil) from Memorial in 1982. Since 1996 Mr. Jin has worked with the Department of Transportation and Public Works as a senior bridge design engineer.

Established in 1977, this award is granted to a civil engineer and CSCE member whose dedicated service has furthered the advancement of the society. Mr. Jin has been actively promoting civil engineering by guiding and developing students and engineers in training.

He has served on many committees and organizations. Since joining CSCE as a student, Mr. Jin's commitment to the society has been exemplary, having held several Executive Committee positions in the CSCE Newfoundland and Labrador



Alumnus Gordon Jin accepting his award

section and he currently serves as chair. He also serves at the national level on the National Management Committee and is vice president, technical programs of the Board of Directors. In 2003, Mr. Jin was elected a Fellow of CSCE.

Entrepreneur reaches finals



Alumnus Mark Gillingham

Engineering alumnus Mark Gillingham was chosen one of three finalists for the CIBC student entrepreneur of the year award. The competition started with 120 applicants from across the country and Mark travelled to Halifax where he won over two other competitors to become the Atlantic Canada and Quebec finalist. The CIBC Student Entrepreneur of the Year award celebrates and showcases the

accomplishments of Canadian student entrepreneurs. It is open to full-time Canadian university and college students

who are primarily responsible for the management and operation of their own businesses.

Mark, a 27 year old from Gander, is one of the owners of Cathexis Innovations Inc., which provides wireless asset management solutions that allow for rapid and efficient deployment of barcode, Radio Frequency Identification (RFID). The founders of Cathexis, Mark Simms, Colin Power, Steve Taylor and Mark Gillingham, are all graduates of Memorial's undergraduate engineering program in electrical and computer engineering. Mark is currently working on a MBA at Memorial University.

In the past year, Cathexis Innovations was also nominated for the Newfoundland and Labrador Association of Technology Industries (NATI) Innovation Award for 2004.

Innovating alumni

Verafin Inc., the brainchild of a group of Memorial alumni, including three from the Faculty of Engineering and Applied Science, has won the 2004 St. John's Board of Trade's Business Innovation Award. The award recognizes excellence in research and development of a new product or service that has had a significant impact on the company and is deemed to be groundbreaking in their industry.

Verafin Inc., started by engineering graduates Jamie King, Brendan Brothers, Raymond Pretty, and business graduate Saifuddin Mohamed, is an information technology company providing anti-money laundering (AML) software solutions to the financial services industry.

Regulatory agencies worldwide require that financial institutions detect and report unusual transactions as these

might be evidence of money laundering activity, which has been linked to the financing of terrorism activity. Verafin now holds the money laundering detection market with credit unions across the country and they are poised to be a leader in this technology. Mr. King says there is never a day at Verafin they don't stress the importance of innovation. "We see it as the single most important guiding principle to building a successful high tech business in Newfoundland and Labrador. Whether it is new product ideas or new ways to develop markets, we see innovation as the root of all progress and competitive advantage in the business world. It was extremely gratifying to the entire Verafin team to receive recognition for what we feel is the essence of the company itself."

Preparing students for leadership and innovation: Pilot course sends engineering students home to learn about business



Dr. Brian Veitch

Imagine sitting at home with just your computer and being able to hear interesting speakers from all over the world, and interact with a class full of people by clapping, laughing, drawing objects and even raising your hand to ask a question. The Faculty of Engineering and Applied Science and the Faculty of Business have teamed up with Dalhousie University and the University of New Brunswick to offer a course on-line that is introducing engineering students to entrepreneurship via a real time, virtual classroom.

Business Planning and Strategy in an Entrepreneurial Environment is designed to introduce engineering students to business concepts, and stimulate interest in entrepreneurship and new venture creation. It's one of the many aids the faculty offers to help students succeed in their engineering career after they've graduated. Dr. Brian Veitch of the Faculty of Engineering and Applied Science is one of the instructors. He says the aim is to enhance the business literacy of engineering students by developing a holistic learning model. "We're developing a culture – knocking down mental barriers while teaching engineers about entrepreneurship and how it works. We're also providing leadership and role modeling on inter-university and inter-disciplinary collaboration."

The class, requiring no pre-requisites, happens for three hours once a week in the evening and uses both WebCT for asynchronous learning activities and synchronous (vClass) software for real-time Web class instruction. The participant's screen has several icons, including a face which looks confused to let others know you need more explanation. And, as in a real classroom, there is a facilitator, but anyone can get the microphone. Although the students don't get the experience of sitting in a classroom and watching their instructors, the course has advantages that a classroom cannot provide. Instructors are utilizing a world class business simulation game (Capsim) enabling students to develop knowledge and skills in the execution of a business strategy. The participants form virtual student teams with students from each university on each business game team. And seeing as a large part of their grade is based on participation, it's in their best interest to interact as much as

possible. They are also using best in-class learning materials including Harvard Business School articles and case studies. In addition, they have the opportunity to learn from inspirational entrepreneurial speakers presenting to the class using vClass. One of the recent speakers was Bob Reiss who is the subject of the famous Harvard R&R case study.

Mark Fancey is a term 5 computer engineering student and one of the first students to take the course. He says the course, although a lot of work, was good for him because he plans on starting his own business as soon as possible. He says it taught him basic entrepreneurial skills like how to balance a budget, something he wouldn't have learned in an engineering course. "The course is well planned and it's nice having a lot of professors, contrary to what people may think. Doing the course on-line certainly doesn't interfere with learning. If anything it's a benefit because I can come home, have dinner, then, without having to physically go back to school, sit in the 'classroom'."

Women in Engineering Memorial Scholarship

This scholarship has been established to commemorate the sudden and tragic deaths of 14 women at L'Ecole Polytechnique in Montreal in 1989. It is hoped this annual \$2,500 scholarship will encourage more women to study and work in this profession, thereby increasing the contribution of women to engineering and scientific endeavours. Funding support is provided by the Faculty of Engineering and Applied Science, C-CORE, Memorial University Alumni Association and individual contributions. This award is tenable at Memorial University to female students regardless of age, who are entering the Faculty of Engineering and Applied Science. To be eligible, applicants must demonstrate a commitment to the advancement of women in engineering fields and an active involvement in wider issues of social concern to women, as well as sound scholastic ability. The committee may also consider applications from female students already enrolled in engineering studies, provided they meet the eligibility criteria above. A special committee, consisting of representatives from



Memorial President Dr. Axel Meisen, Petro-Canada's Kim Keating, Education Minister John Ottenheimer, Dr. Cecilia Moloney, NSERC President Tom Brzustowski, Dean of Engineering Dr. Ray Gosine



Dr. Cecilia Moloney talking to students

Women in Engineering

The Faculty of Engineering and Applied Science is, once again, at the forefront of engineering education. The faculty recently welcomed the appointment of Dr. Cecilia Moloney as the new NSERC/Petro-Canada Chair for Women in Science and Engineering (CWSE). Since starting in July, Dr. Moloney has wasted no time in demonstrating her commitment to increasing the presence of women as engineers and scientists. Dr. Moloney gave her first lecture at Memorial early this fall and in keeping with her regional mandate, toured Atlantic Canadian universities. As well, the national Chairs for Women in Science and Engineering met in Quebec City in November to discuss common interests and activities.

Dr. Moloney, a professor of Electrical and Computer Engineering, is the second CWSE at Memorial University. The previous Chair was held by Dr. F. Mary Williams, now an honorary professor in the faculty. Dr. Moloney has been with the Faculty of Engineering and Applied Science since 1990. She teaches mainly in the areas of systems and signals, and signal processing. She is also an alumna of Memorial University, having received her bachelor of science (honours) in mathematics from here before completing her masters and doctorate in systems design engineering from the University of Waterloo.

Over her five year term, Dr. Moloney plans to introduce new initiatives to encourage women of all levels interested in science and engineering careers.

This past summer CWSE supported this year's Summer Student Employment Program (SSEP) which has been administered by WISE NL every summer for the past 15 years.

the Faculty of Engineering and Applied Science, C-CORE, Memorial University's Alumni Association, Women's Studies and Women in Science and Engineering (WISE) meets annually to consider applications for this scholarship. The award will be made by the Senate Committee on Scholarships on the recommendation of this committee.

Dr. Cecilia Moloney gave her inaugural lecture at Memorial in October under the title "The scientist in our midst: Who is she?" She also gave a presentation at the NECEC 2004 conference, titled "Women in electrical and computer engineering: status, barrier, strategies".

The General Motors Scholarship for Women in Engineering

This scholarship is one of several established by General Motors of Canada Limited with contributions to the University's Opportunity Fund Campaign. Interest from the fund will provide a scholarship valued at a minimum of \$1,000 annually to support and encourage more women to study and work in engineering, thereby increasing the contributions of women to engineering and scientific endeavours. This scholarship is tenable at Memorial University to female students regardless of age, with preference to those who are entering the Faculty of Engineering and Applied Science. However, female students already enrolled in engineering studies may be eligible if, in a given year, an eligible entering student is not available. The scholarship will be awarded by the Senate Committee on Undergraduate Scholarships and Financial Aid on the basis of scholarship standing and a recommendation from the Dean, Faculty of Engineering and Applied Science.

Wireless Software – Hot opportunities for Faculty of Engineering grads

BY LIBBY CAREW

Behind the doors of Consilient™ Technologies in St. John's, the usual office sounds of ringing phones, fax machines and the hum of running computers can be heard. With 55 employees and growing, Consilient is establishing a solid reputation as a development shop for innovative wireless software. The majority



President Meisen speaking with Consilient staff

of Consilient's employees are Memorial graduates, with computer engineering and computer science grads driving the innovation behind the products and with a co-development effort on the horizon with Oracle, Consilient is looking to recruit even more experienced computer engineering graduates.

Consilient's intellectual property focuses on developing sophisticated Application Programming Interfaces (APIs), to provide real-time integration of e-mail platforms on mobile devices. For customers, this means they can use Consilient software and run any e-mail platform on any mobile device. With the growing demand for wireless access to e-mail and other apps, Consilient's software is moving into global markets, especially in the U.S. where government agencies and Fortune 500 companies are looking to wirelessly extend their IT systems.

Consilient was started in 2000 by Trevor Adey and Rod White. Currently, Consilient has 5000 users and boasts a 95 per cent export rate to United States, Europe and Asia Pacific. Some of Consilient's customers include the U.S. Department of Justice, Ameristeel, Office of the Attorney General, Hyatt Hotels, Toyota Technical Center and MoboTel Ltd. In fact, the first release of Consilient software was installed at The New York City Fire Department (FDNY) headquarters on September 11, 2002, exactly one year after the attacks on the World Trade Centre.

When Adey and White founded Consilient in St. John's, the geographic preference was partially due to immediate access to MUN graduates. The head office is now the hub for corporate operations, research and development and product testing. And Consilient is intent on creating more opportunities for computer engineering graduates to develop advanced wireless technology in Newfoundland and build a knowledge-based economy. According to Mr. Adey, president of Consilient, "The Faculty of

Engineering has earned a reputation for preparing their students for the real world of codewriting and product engineering. When we recruit computer engineering graduates, we find they make a smooth transition from academia into the commercial demands of software releases and product roadmaps. Their work ethic is second to none and they can always handle any project that's given to them."

According to Shiladitya Sircar, B.Eng.'02, a team leader in code development, "MUN's computer engineering program prepared me for the software industry because I had an opportunity to get two years of real job experience through my work terms. I've always been fascinated with wireless communication and Consilient is the only company I can work with in Newfoundland in my area of study." Being able to work in Newfoundland is a bonus for Consilient staff. According to Matt Troke, B.Eng. '98, "I returned to Newfoundland after a year in Ottawa. I was determined to find work at home to be near my family. I enjoy the lifestyle here and I think it's important to develop an IT industry in this province and retain our talented people."

"Working at Consilient has allowed me to collaborate on leading-edge development projects. When you know the code you're writing is being used by the U.S. Department of Justice and the New York Fire Department then you feel an incredible sense of purpose and pride," said Troke.

Consilient is also launching a development effort for its next generation Consilient3 software for mobile phones. With 1.5 billion mobile phone users worldwide, there's significant opportunity for potential growth. With offices in San Francisco's Silicon Valley, Ottawa, Montreal and Vancouver, the future for Consilient includes new products, new IP and more opportunities for computer engineering graduates.

For more information about working at Consilient, go to www.consilient.com or call 1.866.576.1706.

Consilient Technologies of St. John's, Aliant and Memorial University are establishing a Senior Industrial Research Chair in Mobile and Wireless Computing at Faculty of Engineering and Applied Science. The Chair will build a research program, in collaboration with the industrial partners, focusing on applied research in the area of mobile computing and wireless communications. Research topics for the Chair include mobile computing applications, mobile computing middleware, and wireless communication technologies applicable to low-power mobile computing devices.



Formula MUN: Around the bend



Members of the Formula MUN team working on the 2006 car

The Formula MUN team is gearing up for another international competition. Over the next year, the Formula MUN team will be focusing its energy on preparing for the 2006 Formula SAE competition. Term 3 mechanical student from Labrador City, Adam Dwyer is the current team leader. He says they will take the 2005 season to re-build both the team and the car. "We'll come up with a comprehensive plan for the

next year and a half, in terms of research, design, financing, and manufacturing. We'll also have more time for fund-raising, promotion, design, manufacturing and testing benefiting both the team and our supporters. I believe it will result in the best Formula MUN car yet."

The focus over the next year or so will be to build on the successes of the 2004 car. Some planned design changes include cheaper chassis material, thinner material for weight reduction, lower centre of gravity with different chassis design and a more ergonomic clutch design. "But the 2006 car will not likely see any radical design changes," says Dwyer. "Currently, a drive-train prototype is in the manufacturing stage. The core Formula MUN team consists of four returning members working on design as well as twenty additional members from various programs who will be helping with other aspects of the team's needs such as marketing and fund-raising. In addition, they are recruiting experienced engineers and graduate students for design input and research help.

Dwyer believes the Formula MUN team is a valuable university organization. "It provides an opportunity for engineering students to apply the knowledge learned in the classroom to a hands-on project. The marketing, public relations and accounting demands of such a high-profile competition also provide valuable opportunities for business students to adapt their knowledge to a very unique industry experience."

The Formula MUN team began in 1996 with a small group of senior engineering students. Since then, they have competed in the 2001 competition where they came in ahead of 36 out of 130 cars representing colleges and universities from around the world. They competed again in 2002, where they finished ahead of 51 teams. In 2003, the team came ahead of over 100 teams in design. In 2004, the team built the lightest and fastest car to date. This car took the largest step up in design since the beginning of Formula MUN, achieving 48th place in this category.

Formula SAE is an international competition held in the United States, the United Kingdom and Australia, in which

students design, fabricate, and compete with small formula-style racecars. The vehicles are judged in three different categories: static inspection and engineering design, solo performance trails, and high-performance track endurance. See: students.sae.org/competitions/formulaseries/fsae/

The Formula MUN project is a multi-year project with a budget of about \$40,000 including cash and in-kind support. In the past, Formula MUN supporters have gained international as well as local exposure. As a sixth year team, the Formula MUN race team has the knowledge and infrastructure to be a successful international competitor. With community support they can continue to compete internationally. For more information on any of the team's activities, or the benefits of sponsorship, please contact:

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THANK YOU TO OUR PAST SPONSORS

We wish to send out a sincere thank you from Atlantic Canada's only Formula SAE team for your generous contributions and we look forward to working with you in the future.

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Co-operating on education: graduating experienced engineers

When Dave Rees graduated from engineering at Memorial University in 1974, he wasn't just launching his career he was making history at Newfoundland and Labrador's only university. Dave, now the president of Quidi Vidi Brewing Company, was one of the first graduates of the Faculty of Engineering and Applied Science as we know it today.

Until 1974, students completed a diploma program at Memorial, but then spent two years at the Nova Scotia Technical College to earn their degree. That's when the faculty introduced the mandatory co-operative education program. Dave says everyone in his class knew they were making engineering history. "We were proud to say we were the first graduates of the engineering degree program at Memorial." Dave adds that the faculty was like one big family then. "I loved it. Our professors were excellent, even the support staff were great and were really involved with the students. Everyone knew everyone. It was a great place to get an education. And the co-op program certainly helped most of us launch our careers."

When the graduating class of 2004 collected their degrees in May, they marked the 30th anniversary of graduates from the faculty's co-operative engineering degree programs. Today, co-op work terms alternate with academic terms after the completion of academic term 2. In total, students will complete six work terms before graduating, giving them a total of two years work experience. That adds up to a very significant advantage when it's time to pursue career options after graduation.

Leo White is the program manager of Co-operative Education in the faculty. He was one of those pre-co-op graduates. "A big drawback was that a very small percentage of graduates were returning to Newfoundland once they graduated with their degrees in Nova Scotia; as little as five per cent." Leo was also one of the advocates who helped get the program in place here at Memorial. "While I was going through the engineering program I was part of a committee



Civil engineering student Aaron Higden

that was looking at engineering education in Newfoundland from the students perspective and one of the recommendations we made to the dean at the time was that Memorial look at granting a full degree in engineering and introducing the concept of a co-operative program." Leo says, it was a very new concept as there was only one other university in Canada and a few in the United States offering a co-op engineering degree.

A co-op program allows for integration between work and study. Students get to apply what they've learned. But, Leo adds, testing the theories they've been taught doesn't just benefit the student. "They bring that knowledge back to the classroom so it greatly benefits other students and the instructors. Faculty gets to educate students who have actually done what they're teaching them." These students, however, are often working and living away from home for the first time in their lives so they are also learning life skills, which prepare them for the work force." David Haire is the production manager at Terra Nova Shoes in Harbour Grace. He says he's had the opportunity to hire many co-op students over the last number of years and he says the engineering program at Memorial is producing some very bright people. "The students are gaining exposure to a manufacturing environment and using their problem solving skills every day here. I've found MUN students very professional." David says he's hired about 10 Memorial engineering students in the last two years and, before that, about 30 students while working at a company in Ontario.

“Even though I was in a different province, I always tried to hire Newfoundland engineering students. I came out of a co-op program myself, so I support it as much as I can.”

In the fall term, the co-op placement rate in engineering was 95 per cent. “Our program does very well when compared to others across the country. If you look at the rate at which our graduates are promoted, our reputation with employers and the rate at which we earn, our program is doing really well,” explains Leo. “Some of our students are doing designs, weight calculations, and inspections on equipment that will go out into the middle of the ocean and people’s lives will be at stake. They’re relying on our students to make them safe.”

Memorial’s Faculty of Engineering and Applied Science is still one of the few mandatory co-operative engineering

programs in Canada despite increased competition from competing engineering programs and uncertainties in the job market. Leo says, in 30 years, the program hasn’t changed in structure but there have been changes in regulations, research activities and in new programs like ocean and naval engineering, computer engineering and the recent oil and gas option. In 1975, faculty accepted 120 students, now they take in 240 – double the number of students and every year, the number of qualified students applying increases. So, co-op coordinators have to work a lot harder at finding jobs for all of them. And they succeed. “You definitely have to be forward thinking when you’re seeking opportunities for about 300 students every term.” Leo says, 20 per cent of engineering students work in the US or overseas in any given work term. “Right now we’re relying heavily on the Free Trade Agreement between Canada, the United States and Mexico because it allows our students to enter those countries as scientific technicians. It’s easier to get work visas for them.”

Dean Ray Gosine, believes strongly in the importance of learning by experience and he considers the co-op program to be an essential feature of the undergraduate program. “Our ability to continue to offer excellent academic and work experiences to our students is a result of the tremendous dedication of our staff and faculty, as well as the exceptional support of our co-op employers and supporters. We have some of the best educated and prepared students in the country and this exceptional element of our program allows our students to flourish both in school and out of school.” The benefits are numerous for both the students and the employers. Employers receive students who are eager to learn and can make a valuable contribution to their projects. Numerous employers have commented on the commitment, focus, and creativity of our students. It should come as no surprise, therefore, that many work term placements lead to permanent positions upon graduation.



Civil engineering student Heather Davis

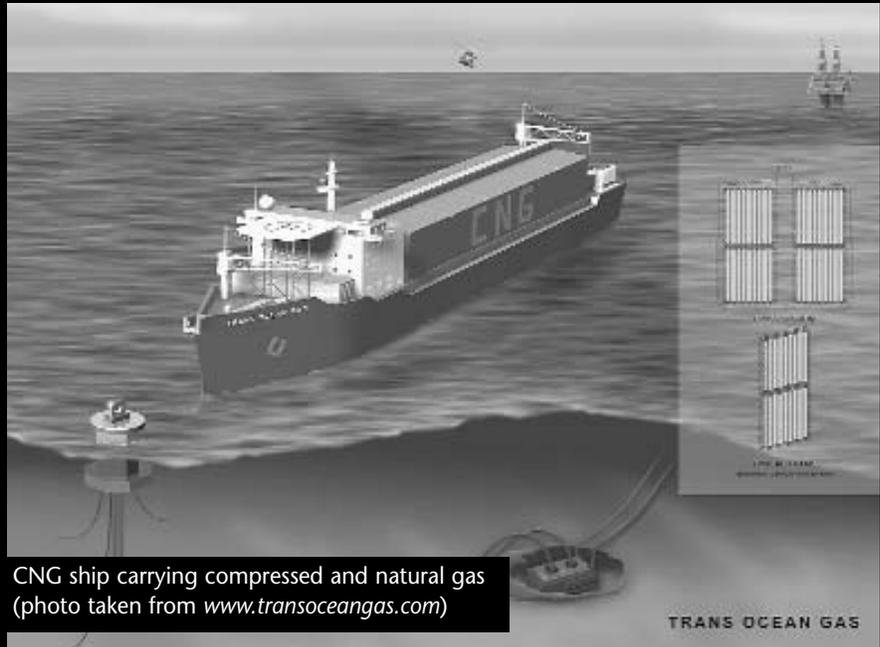
“The students are gaining exposure to a manufacturing environment and using their problem solving skills every day here. I’ve found MUN students very professional.”

Memorial chosen for international forum

The Faculty of Engineering and Applied Science recently hosted experts from around the globe for the First International Marine Compressed Natural Gas Standards Forum. Participants addressed issues related to the emerging industry of marine transport of compressed natural gas (CNG), which is attracting interest as an efficient and flexible way of delivering stranded gas via ocean transport. It is of particular interest in transportation for example, from offshore Newfoundland to New England, where pipelines or liquefied natural gas pose major challenges.

Sponsored by the Centre for Marine Compressed Natural Gas (CMCNG) here at Memorial University, the forum educated and promoted understanding of the requirements for marine transport of CNG and encouraged discussion on standards and guidelines. Leading shipping companies, operators, CNG technology proponents and industry experts from Europe, Pacific Rim countries and North America talked about such topics as gas handling systems, hazards management, and terminal and offshore gas-port rules.

Industry, in partnership with Memorial, has led the way in creating the Centre for Marine Compressed Natural Gas



(CNG), the world's first research and development facility dedicated to the efficient, safe and competitive transportation, storage, handling and usage of compressed natural gas. The centre is a federally incorporated not-for-profit entity located on the campus of Memorial University. This world-class, open-access CNG centre is also establishing a large-scale, dynamic testing facility for research and development dedicated to marine transport of CNG.

Introducing innovative programs

Twenty-five students have travelled around the globe to Memorial University to take part in a new program being offered by the Faculty of Engineering and Applied Science. The students, all from China, are spending 18 months at Memorial for the new Master of Applied Science in Computer Engineering (MASCE) program.

This innovative program is designed to prepare individuals for careers in various sectors of the economy, including information technology, telecommunications and computer systems. The degree provides a balanced background in computer hardware and software and an in-depth knowledge of important applications such as networks, communications and data processing.

Student, Wang Guan, says this program is an excellent opportunity for them to advance their education at a first-rate institution. "There are significant advantages to studying and researching at Memorial compared to some universities in China. There are more Internet and library resources here, which help a lot." He adds that the engineering faculty have also been extremely helpful and they look forward to enjoying more of the local culture. "Newfoundland is a very beautiful place. It's very peaceful."

The MASCE program began in September with an intensive eight-week session of English language instruction and an introduction to Canadian culture. This is followed by four semesters of advanced courses and project work in computer engineering topics.



Student news

PhD student Angela Tate won first place and master's student Diane Durnford won third place in the Association of Canadian Ergonomists (ACE) Atlantic Chapter student poster competition in March at the ACE Atlantic Conference. As well, Angela Tate recently won an Imperial Order of the Daughters of the Empire Scholarship for a Canadian Woman pursuing a doctorate, valued at \$15,000.

The Women in Science and Engineering Graduate Student Section (WISE GSS) received the Excellence in Community Service Award, presented by the Graduate Students Union (GSU) in September. Current or recent graduate students in engineering were among those named in this award: Lori Hogan, Angela Tate, Padmini Vellore and Fang Yang. In addition, WISE GSS has achieved a national profile through a workshop "Making Graduate School a WISE Place" prepared and presented by Angela Tate, Joy Williams, Padmini Vellore, and Cherie-Lee Fietsch at the Canadian Coalition of Women in Engineering, Science, Trades and Technology Conference at Brock University in June 2004.

Memorial engineering students from the Women in Science and Engineering Undergraduate Program (WISE UP) have begun visiting Girl Guide groups in the St. John's area



to help the girls earn their engineering badge. Female students from various engineering terms and disciplines took part in activities with the Guides. The WISE UP group plans to visit several more Girl Guide groups in the New Year.

The VP External for the Engineering Undergraduate Student Society 'A' (ESS) has recently begun distributing a biweekly newsletter entitled *Soc Talk* to keep engineering undergraduate students informed about events and relevant academic issues. The newsletter is directed towards the student body and is intended to be both informative and entertaining.

Coming up in 2005: Our Speaking of Engineering series continues Icebergs and offshore rigs — 20 years of research at Memorial



Dr. Ian Jordaan
Thursday, Feb. 3, 2005

For 10 years, Dr. Ian Jordaan held the NSERC-Mobil Industrial Research Chair in Ocean Engineering, established in the Faculty of Engineering and Applied Science. Through his ice research, including field work in the Arctic and extensive involvement with industry, Dr. Jordaan

has pioneered methods of risk analysis for engineering in harsh environments. He has been involved in several major studies, including several related to arctic shipping. These research programs have led to an appreciation of the importance of high pressure zones in the ice, including their failure. Join Dr. Jordaan as he highlights ice research at Memorial over the last 20 years.

Anything you can do...

Caroline Koenig normally spends her working day encouraging women and girls to get involved in science and engineering. But she spent several days this past summer convincing women to learn how to swing a hammer or install plumbing pipes. Caroline used a week of her vacation from her job here in the faculty as Assistant to the Chair for Women in Science and Engineering (CWSE) to help Cabot Habitat for Humanity.

Cabot Habitat for Humanity is an affiliate of Habitat for Humanity Canada, serving St. John's and Mount Pearl. This year, Cabot Habitat is celebrating its 10th anniversary and to commemorate, they organized Blitz Build 2004 where they built six homes in six days in August.

Caroline, who was the procurement project manager for Blitz Build, says they started on a Monday morning at 7:00 a.m. and by 9:00 p.m. that night all six houses were water tight. "I arrived at the site and said 'Put me in the house where I'll learn the most. Show me plumbing and I'll do it. Show me electrical and I'll do it.' I've tried everything from putting in roof trusses to overseeing the installation of lawns."

In a typical five minute walk through the site, Caroline deals with supply shortages, safety issues and the logistics of getting all of the volunteers to a meeting and back at the site by 7:30 a.m. But, everyone there is smiling and doing whatever they can to help the person beside them. "I decided a long time ago that I wanted to do something like this for charity and when this opportunity came up I thought 'This is perfect!'" Habitat volunteers, experienced in blitz building, came to St. John's from other parts of Canada, the United States and Europe. They joined approximately 300 local volunteers to meet the challenges of the project. The visiting volunteers stayed at the residences of Memorial University and at Pippy Park. In the past 10 years, Cabot Habitat has built 19 homes for low-income working families.



Caroline Koenig on site at Habitat for Humanity

Faculty member pitches in

Dr. A.S.J. Swamidas, a professor in the faculty, also volunteered with Habitat for Humanity this past summer. Dr. Swamidas heard about Blitz Build 2004 through his church, as one of the homes was being built for a family in the church. He says when he entered the auditorium for the first inaugural meeting he was not ready for the number and the diversity of people he met there. "Starting from political leaders, it included members of the business community, armed forces, professionally trained lay personnel, high school and university students, church members and many others who wanted to help in the building of these homes."

Volunteers started their day with breakfast at 6:30 a.m. each morning. Dr. Swamidas was allocated to Site Services, which involved keeping the construction site clean of all the waste pieces of wood, sidings, gypsum wallboards, wrapping materials, flooring materials, shingles and dropped nails. "I had to pick them and cart them to a large dump truck that was periodically removed for wastage disposal. In addition, I had to unload and move building materials that were replenishing the already used up materials," he says. Towards the end of the project he also helped mark car parking space in each house lot.

"I enjoyed my volunteer work for Habitat for Humanity. In this grueling five days of hard work I rubbed shoulders with a number of people, from various walks of life, whose main focus seemed to be finishing the job to which they had committed themselves wholeheartedly and willingly. I learned that when people come together with a focus and put their shoulders to the task at hand, the work gets completed. Giving our time and effort to help others brings an internal fulfillment and satisfaction in knowing that you have given your best to share in the removal of the misfortunes of others."



Reflections about the CSCE

by GORDON JIN, P.Eng., FCSCE

As an alumnus of Memorial's Faculty of Engineering and Applied Science (B.Eng. '82), I am delighted to be able to share some thoughts about the Canadian Society for Civil Engineering (CSCE) and its role in promoting this worthy profession.

Since 1887, the CSCE has been the only learned society for civil engineering in Canada, with a history of helping Canada grow, develop and prosper as a nation. In recognition of the civil engineering profession's contribution, the CSCE was honoured as the 2002 recipient of Canada's National History Society's Pierre Berton Award which celebrates great civil engineering minds and projects that have built our country.

I have fond memories of the CSCE over the past 25 years. In particular, my involvement on the Executive Committee of the Newfoundland and Labrador Section this last decade has culminated in my current role on the national scene as vice-president (technical programs) for the Programs Coordinating Committee. It has been a very rewarding experience as I've had the opportunity to network and participate in professional development activities with civil engineers from across this country and from around the world.

Like all learned societies, the CSCE can only effectively deliver its services through the work of its many volunteers (including students). These volunteers come from all sectors including business, industry, education and government, bringing a wealth and diversity of experience and knowledge to the society. They serve on the CSCE's many committees at the national, regional and sectional levels, devoting their time, talents and energies. Without these individuals, the society would not exist.

The CSCE has 23 sections nationwide and the Newfoundland and Labrador Section, which is celebrating its 20th year, was formed under the leadership of Dr. Jim Sharp, FCSCE, and professor emeritus at Memorial. CSCE's affiliation to MUN dates back prior to 1984 and today, many of the civil faculty are Fellows of the CSCE. Many civil

Since 1887, the CSCE has been the only learned society for civil engineering in Canada, with a history of helping Canada grow, develop and prosper as a nation.

engineering alumni are also members and linkages with the civil engineering students at Memorial strengthen each year. The students are the life and future of CSCE and as such, the

local CSCE section has continually sponsored student

activities such as Civil Nite, the CSCE Prize for CE 8700 Project Course, the CSCE Convocation Award, the Concordia University Bridge Building Competition and the CSCE Concrete Canoe and Concrete Toboggan competitions.

We recognize that in order to be relevant to the community we serve, we must work in partnership with others to achieve our vision.

Our history of partnership, cooperation and collaboration has been a cornerstone of civil engineering in this province. The society has embraced this relationship, and over the last two years, the CSCE has restructured and revitalized to refocus programs and services on life-long learning and leadership. The CSCE's mission is to advance professional knowledge and the practice of civil engineering and as such, provides students and practicing engineers the opportunity to exchange ideas, to interact with peers, and to participate in professional development.

I have enjoyed my many years of service to the CSCE. It has been an enriching experience and I would encourage all students and alumni to become involved with the CSCE and contribute to our profession. I am very proud to be part of an organization that represents the premiere voice for civil engineering in Canada, and I feel extremely privileged to have been given the opportunity to help guide the CSCE to where it is today.





2004 President's Award for Outstanding Research – Dr. Brian Veitch



Dr. Brian Veitch

Associate professor Dr. Brian Veitch does not have a traditional view of research. He tells his graduate students when they come in that there's nothing wrong with failing. He says he doesn't want them to come to Memorial and do something they know they can do because he considers it a waste of time. "They have to accept that there is a risk of a negative outcome. But negative outcomes in science and engineering are perfectly legitimate as long as you learn from it. Sometimes it's the most valuable thing that can happen. When a student calls me because there's something strange about their results, that's when I get the most excited." Dr. Veitch also encourages his students to take their research a step further. His theme: Innovation is a route to impact. Many of his students have taken his advice and started their own companies to promote their research.

Dr. Veitch, a graduate of Memorial's undergraduate co-op engineering program (1988) and the Master of Engineering program (1990), is the third recipient in the faculty to receive the President's Award for Outstanding Research. Dr. Neil Bose (1992) and Dr. Ray Gosine (1997) have also been granted this award since its inception in 1984. Dr. Veitch, who teaches in Ocean and Naval Architectural Engineering, credits Memorial University with fostering this open-minded attitude towards research. "We work in a university and it's an anarchist system. We're able to experiment. We're able to organize ourselves as we see fit. And we're allowed to make mistakes so if you try something that doesn't work, it's okay. It's a very forgiving system. Then we have to try something new. To be able to work in an environment like that is extremely liberating."

But Dr. Veitch, who is also the Petro-Canada/Terra Nova Project Junior Research Chair in Ocean Environmental Risk Engineering, almost didn't join the faculty when he was interviewed in 1998. "I was already working at a job I loved at the National Research Council, with all kinds of experimental facilities. But on the second day of interviewing, part of my interview was with Greg Lever and when I asked him what his expectations were of the Chair, he said 'It's really important for you to do what you really like doing and what you're good at. And if you do that, I'm sure something good will come out of it'. When he said that,

I decided to take the job. With that as your mandate, how can you go wrong? What a job!"

Dr. Veitch says he's glad he decided to come to Memorial and says he's worked with some amazing teams. That's why, he claims, this is a group award. "I don't work by myself. I work with other faculties, with graduate students and with other organizations. Some of my colleagues have been extremely important to me in getting things going and contributing to so many projects. A portion of this definitely goes to the teams I work with," he says. "I feel humbled by this award. The work we've done has been personally rewarding both for the things we've created and for the opportunities we've generated."

Dr. Veitch obtained a Licentiate of Science in Technology degree and a doctorate of Science in Technology degree, both from the Helsinki University of Technology. He returned to Canada in 1996 to work at NRC's Institute for Ocean Technology. Dr. Veitch is involved in a broad range of research from offshore safety to ocean environmental risk engineering and the ecological effects of discharge to marine propellers and propulsion.

Turning ideas into innovation

Dr. Brian Veitch has been awarded an Idea to Innovation research grant by the Natural Sciences and Engineering Research Council of Canada to work on a training simulator for marine evacuation systems. This one year grant is worth approximately \$125,000 and involves working with the National Research Council's Institute for Ocean Technology and the Marine Institute's Centre for Marine Simulation. The objective of the Idea to Innovation program is to accelerate the pre-competitive development of promising technology and promote its transfer to Canadian companies. Dr. Veitch is an associate professor at Memorial and the Terra Nova Project Junior Research Chair in Ocean Environmental Risk Engineering and is currently the Director of the Ocean Engineering Research Centre.



Dr. Yuri Muzychka – the new Petro-Canada Young Innovator



Dr. Yuri Muzychka

Dr. Yuri Muzychka has been chosen as an outstanding, promising, young researcher worthy of the Petro-Canada Young Innovator Award. With less than 100 of these awards given out to faculty across Canada, Dr. Muzychka says this is a great boost for his research. "Getting this award at this point in my career is great. It allows me to pursue some of my ideas sooner rather than later. It also

allows me to enhance a small single and two phase flow loop I have been working on and to acquire some new equipment to complement what I already have."

Dr. Muzychka says he was a little surprised when he found out he'd been chosen for the Young Innovator Awards Program, but even more surprised by what he learned next. "I thought I had written a good proposal, but with so many other applicants you just never know what to expect. I was more surprised to find out the decision was unanimous by all selection committee members."

Dr. Muzychka graduated from Memorial University in 1993 with a bachelor of engineering (mechanical) and from

the University of Waterloo in 1995 and 1999 with a master's and doctorate in mechanical engineering, respectively. Dr. Muzychka's research focuses on thermo-fluid analysis and the development of models for complex fluid dynamics and heat transfer issues in internal flows, such as two-phase flow in oil and gas pipelines, heat exchangers, and process flows. These models also apply to the heat transfer systems in the cars we drive and the computers we use. The results of Dr. Muzychka's research also benefit other applications such as medical equipment, microsystems and electronics cooling.

Dr. Muzychka is the second faculty member to receive this award. In 1998, Dr. Ray Gosine who is now the dean of engineering, also accepted this honour. Created in 1995, the Petro-Canada Young Innovator Awards Program is designed to recognize and help support the work of outstanding young faculty researchers at Canadian universities, colleges and major research institutes. The program has been established at more than 20 centres across Canada. Administered by the respective institute, the award offers financial support and public acknowledgment to help our most promising researchers continue their careers here in Canada. Since its inception, nearly \$5 million has been contributed to the Young Innovator Awards Program. To date there have been 87 recipients from 24 institutes, including six from Memorial University.

Engineering research professor chosen from experts across continent: Helping to decide the fate of B.C.'s oil and gas industry

Dr. Ian Jordaan, university research professor with the faculty, recently had the unique opportunity to be part of an independent science review panel for the Royal Society of Canada. He was one of the few experts chosen from across North America to be part of a panel looking at the feasibility of lifting a federal moratorium on oil and gas activities offshore British Columbia; a moratorium that has been in place for more than 30 years

In 2003, the Government of Canada established a review process to examine the moratorium on oil and gas activities in the Queen Charlotte area offshore British Columbia. The findings from the review process will form the basis of a decision on how the government will move forward. In phase one of the review, the Royal Society of Canada set out to identify science gaps which may need to be filled before exploration goes forward. The expert panel of scientists, chaired by Dr. Jeremy Hall, university research professor with the Department of Earth Sciences, made several

recommendations and concluded that provided an adequate regulatory regime is in place, there are no science gaps that need to be filled before lifting the moratoria on oil and gas development in the area. The report describes the basin as potentially rich in oil and gas and recommends lifting the moratorium on British Columbia offshore energy exploration, opening the door to an estimated \$110 billion in wealth.

Dr. Jordaan says he was amazed at how much we need to know before we're fully aware of what the consequences of human actions will be. He says it was an experience he wouldn't have missed. "It was very challenging but it was also a great learning experience for me. I was particularly grateful to learn so much about a different area where oil and gas development is happening. It was a very talented team and Jeremy was an excellent chair." Dr. Jordaan is very familiar with the offshore oil and gas industry. For 10 years

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Dr. Neil Bose

Engineering professor announced as new NSERC representative

Dr. Neil Bose, professor of Ocean and Naval Architectural engineering, has been appointed the new university representative for the Natural Sciences and Engineering Research Council of Canada (NSERC). Dr. Bose was chosen by the university to replace the previous

representative, Mark Whitmore from the Faculty of Science.

One NSERC representative is appointed by each university across the country. Chosen for their outstanding communications abilities and skills in interdisciplinary outreach, they work with the vice-president of research in arranging NSERC's presence in local initiatives and consultations both within the university and within the community. They also stimulate communication between the agency and the community it serves, and actively support NSERC in its mandate to promote discoveries, innovation and the development of new Canadian scientists and engineers.

Dr. Neil Bose has been appointed as a member of the Defence Science Advisory Board with the Department of National Defence for a three year term. Dr. Bose is a Canada Research Chair in Offshore and Underwater Vehicles Design and professor in Ocean and Naval Architectural Engineering.

Dr. Bose says he's looking forward to promoting the role of NSERC and its importance to Memorial and to the community at large. "There are certainly ways in which NSERC can act directly with the local community, especially industry, that are not well known by this community, for example in supporting personnel working in their organizations and in collaboratively supporting research initiatives. I am hoping that I have the time to be able to provide NSERC and MUN with the support that they are

looking for. Taken too seriously this could be an overwhelming task for one person!"

Dr. Bose is a professor, Canada Research Chair in Offshore and Underwater Vehicles Design and winner of the President's Award for Outstanding Research (1992-1993). He joined Memorial University in 1987 and was director of the Ocean Engineering Research Centre from 1994 to 2000, and chair of Ocean and Naval Architectural Engineering at Memorial from 1998 to 2003.

Research professor second Canadian in history to win international award

Professor M. Azizur Rahman has been awarded the 2004 William E. Newell Power Electronics Award for outstanding achievement. Dr. Rahman, a university research professor (awarded 1993), has been teaching for more than 42 years and 28 of those have been at the Faculty of Engineering and Applied Science.

The award is named after Dr. William E. Newell who was a noted authority on power electronics at the Westinghouse Electric Corporation Research and Development Center, Pittsburgh, Pennsylvania. The award recipient is judged to be exceptional in the multidisciplinary field of power electronics with extraordinary contributions in a broad range of activities including teaching, innovative research, consulting endeavours, professional seminars, major projects or program management and the general advocacy of power electronics technology to the technical community.

Dr. Rahman is the second Canadian recipient of the Newell award; the first Canadian winner was from University

of Toronto in 1979. In addition to his teaching, Dr. Rahman is a consultant to many companies, has published over 500 papers and is a registered professional engineer in Ontario and Newfoundland and Labrador, a member of IEE Japan, a fellow of IEEE, a fellow of IEE (UK), a life fellow of the Institution of Engineers, Bangladesh and a fellow of the Engineering Institute of Canada. In 1993, Dr. Rahman was the first Canadian to receive the IEEE Power Engineering Society's Cyril Veinott Electromechanical Conversion Award. Dr. Rahman also received the IEEE Industry Applications Society Outstanding Achievement award in 1992 and is one of the few Canadian scholars, who received the highest achievement awards from the three IEEE Societies. IEEE is one of the world's largest professional organizations with 360,000 members including around 16,000 Canadians.



Faculty and staff NOTES

The IEEE Regional Activities Board presented an award to Yvonne Raymond, long time employee with Continuing Engineering Education, Faculty of Engineering and Applied Science in recognition of substantial organizational contributions to the IEEE Newfoundland-Labrador Section Conferences (NECEC Conferences for 14 years service).

The Faculty has offered a second seat on Faculty Council to the Professional Engineers and Geoscientists of Newfoundland and Labrador (PEG-NL). The motion followed a request from PEG-NL to provide increased effectiveness and continuity through staggered terms for each of the PEG-NL representatives. PEG-NL recently extended an offer for the Dean of Engineering to fully participate in their council activities in an effort to increase the level of cooperation between the two organizations.

Honorary engineering professor Dr. Mary Williams received a special award along side former Prime Minister Jean Chrétien. Dr. Williams accepted a Doctorate of Science from Queen's University this past summer at the same convocation as Mr. Chrétien. Dr. Williams is director general of the National Research Council's Institute for Ocean Technology (IOT). A professor in the faculty and formerly a professor of physics and physical oceanography, she also held the NSERC/Petro-Canada Chair for Women in Science and Engineering. As a professor and as a research officer at IOT earlier in her career and even today, her research explores the effects of ice on ships and offshore structures, and the material properties of ice in cold oceans. She was chosen for the honor because of her leadership in the transfer of ocean technology to industrial partners.

New faculty:

Dr. Wei Qui – assistant professor (ocean and naval), July 2004

Andy Fisher – associate professor (mechanical), November 2004

New staff:

Darren Pitcher – manager of Finance and Administration, September 2004

Debbie Whalen – intermediate clerk stenographer, March 2004

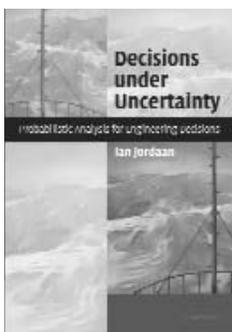
Ryan McCarthy – engineering technologist, December 2004

Margaret Butler – intermediate clerk stenographer, January 2005

Retirements:

Don Guy – engineering technologist, July 2004

Austin Bursey – engineering technologist, October 2003



The faculty's Dr. Ian Jordaan, university research professor, is getting ready to release his new book *Decisions under Uncertainty, Probabilistic Analysis for Engineering Decisions*, published by Cambridge University Press. Risk assessment is a critical part of every engineer's role, whether it is simply to determine the likelihood of failure of a new product

within the warranty period, or the potential cost, human and financial, of the catastrophic failure of a bridge. This book helps the reader to understand the trade-offs between time, costs and risk in an engineering setting, and includes a wide range of case studies and worked examples. It introduces the basic theory and covers all of the most widely used mathematical techniques likely to be encountered in real engineering projects. Publication is planned for March 2005.

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he was NSERC-MOBIL Industrial Research Professor of Ocean Engineering here at Memorial. He has also served as chair of a committee forming part of the code for the design, construction, and installation of Fixed Offshore Structures, and continues to contribute to this effort by serving on several committees. In addition, Dr. Jordaan has acted as a consultant in many studies, including the design loads for the Confederation Bridge, and studies for the Terra Nova design, the West Bonne Bay prospect, the Hebron development, and the White Rose development.

The Royal Society report was the first of three commissioned by the federal government in response to the B.C. government's push to create a booming offshore energy sector similar to what exists in the Canadian north and here on the Atlantic coast.

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