

Opt!ons

Engineering Science... engineers for the world

OPEN FOR DISCUSSION... A MESSAGE FROM THE CHAIR



Beginning in the fall of 1934, a new course called 'Engineering Physics' was offered at the Faculty of Applied Science and Engineering. The first graduating class from 1938 is

pictured at right and contained six students, all seated in the first row.

This coming school year, we will be welcoming over 300 first year students and our graduating class size this past spring was close to 200. Engineering Science is now the biggest undergraduate program in the Faculty accounting for approximately 20% of the undergraduate student population.

2009-2010 marks the 75th anniversary of Engineering Physics/Engineering Science at the University of Toronto and our plan is to mark this important milestone in several ways (more details are found on pages 2 and 3 of this newsletter). We will celebrate with music on December 17th at Hart House Theatre featuring two of our alumni, Isabel Bayrakdarian and Julian Kuerti, and our Skule™ Orchestra. In conjunction with the concert, we will also be holding our Annual Alumni Dinner in the Great Hall at Hart House.

In the new year, we will be hosting a 75th Anniversary Lectures series featuring prominent alumni and faculty with the theme of "Engineers for the World".

I sincerely hope you will take the opportunity to participate in our 75th celebrations and encourage your friends and classmates to do so as well.

ENGINEERING PHYSICS – 1938



FIRST ROW (LEFT TO RIGHT): W.H. McPherson, R. D. Hiscocks, J.R.A. Leslie, C.R Campbell, T.D Northwood, G.K. More

SECOND ROW (LEFT TO RIGHT): E.F. Burton, V.G. Smith, C.R. Young, J. Satterly, L. Gilchrist, T.R. Loudon



Engineering Science 75th Anniversary Celebration

Where engineers, community, and creativity converge

Featuring:

World-Renowned Soprano Isabel Bayrakdarian (EngSci 9T7)

Acclaimed Conductor Julian Kuerti (EngSci 9T9)

the Beloved Skule™ Orchestra and the Winner of Skule™ Idol



Thursday December 17, 2009

Concert: 6:30pm, Hart House Theatre

Dinner: 7:45pm, Hart House Great Hall

Concert and dinner: \$75 (\$50 separately)

Seating is limited in the theatre and the concert is open to the public, so do not delay in purchasing your tickets.

Please purchase tickets through
U of T Hart House box office:



Division of Engineering Science
UNIVERSITY OF TORONTO

FACULTY
OF APPLIED
SCIENCE &
ENGINEERING

Skule™ Idol

Win the chance to perform onstage with world-renowned soprano Isabel Bayrakdarian (EngSci 9T7).

On Friday, October 9 auditions will be held in The Conservatory Theatre at the Royal Conservatory located on 273 Bloor Street West. Auditions will begin at 2pm on a first come, first serve basis. The winner will sing a duet with Isabel onstage during EngSci's 75th Anniversary Celebration.

This competition is open to the entire UofT Engineering community, including all alumni, faculty, staff and students.

Apply online at www.alumni.utoronto.ca/skuleidol



Division of Engineering Science
UNIVERSITY OF TORONTO

FACULTY
OF APPLIED
SCIENCE &
ENGINEERING

Engineering Science 75th Anniversary Lecture Series

Alumni and students alike are invited to attend this lecture series that will feature some of our outstanding graduates and faculty.

The theme of the speakers series will be “Engineers for the World”. Lectures will take place over the course of the Winter semester (January-April, 2010).

Watch for announcements and updates on our website.



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ENGINEERING

From Monica Chaumont (1T1), 1 of 4 EngSci students on summer research internships at the National University of Singapore:

At NUS, I took part in the Energy Spectrometers project with Professor Anjam Khursheed. Energy spectrometers represent an extremely useful tool for Scanning Electron Microscopes (SEMs). Research, I discovered, is a truly worthwhile experience as it is a different type of learning. When solving problems at Skule™, there are usually known strategies and procedures to follow. When creating a design, there are references by which to be guided. In research, the above strategies can direct the trial and error process in a promising direction but there are no known solutions.

Travelling and residing in Southeast Asia with three fellow EngSci students has been a roller coaster experience. We ordered unknown food and hopped on random buses to discover Singapore. Sometimes we had bad surprises but ultimately we had amazing adventures together and are coming home with a ton.

From Raphael Sammut (1T0+PEY) about to head out on his PEY in Spain:

The prospect of learning a new language, being immersed in another culture, and having the freedom to travel to many fascinating places has always excited me. It was two summers ago when visiting my family in Europe that I first got the travel bug. When it came time to decide if I was going to do a Professional Experience Year (PEY), I decided to use the opportunity to find a rewarding international experience. As a student majoring in Infrastructure Engineering, I found great opportunities to work in different countries.

In September, I will begin a 12-month work term in Alicante, Spain working with a local Spanish engineering firm called CYPE Ingenieros. My main focus will be on the expansion of CAD software that can automatically verify



In Bintan, an Indonesian island near Singapore, I read on the sun shade of our taxi : “In the end what matters most is: how well did you live, how well did you love, how well did you learn to let go.” I took this with me during the summer, particularly that last phrase. To me, it meant letting go of misconceptions and accepting that some things we can change, others we cannot.

I am very fortunate to have taken part in this research opportunity and for this I thank Professor Cluett, Erika Loney from the U of T exchange office and many people at NUS, namely Professors Wang and Khursheed, Mr Karrupiah, Miss Ang and Mr Tay.

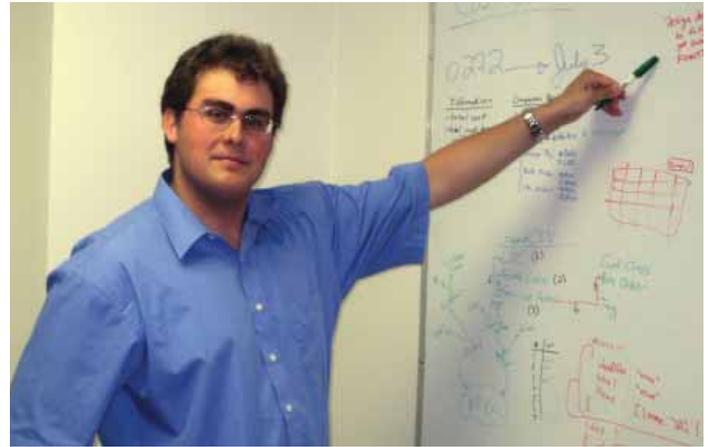


if the designs for a structure meet the building code in the country where it will be constructed. I will be following in the footsteps of another EngSci, Geoff Frost (oT9+PEY), who has worked at CYPE since September 2008. While I have no PEY experiences to share at the time of writing this article, you can follow me on my journey by visiting my blog at <http://raphsammut.ca/>.

Paul Pellegrini (1T1) on his E4TW fellowship at AITIA:

The purpose of my research at AITIA Analytics Inc. is to help develop an accurate and flexible computer model of the Ontario electricity market. This model will result in software tools that can translate real-time electricity usage information into real-time financial information, allowing homeowners and businesses alike to know exactly what drives their electricity bill and therefore how to save money by managing their energy consumption.

This has been an absolutely fascinating summer experience. AITIA's research is focused on modelling the structural foundations of energy markets to enable a better understanding of the forces and factors affecting power costs to consumers. Being fully in control of the technical aspects of one of their projects has been very exciting for me. Since I have never before had the opportunity to build a system at this level of complexity, I really feel as if I am



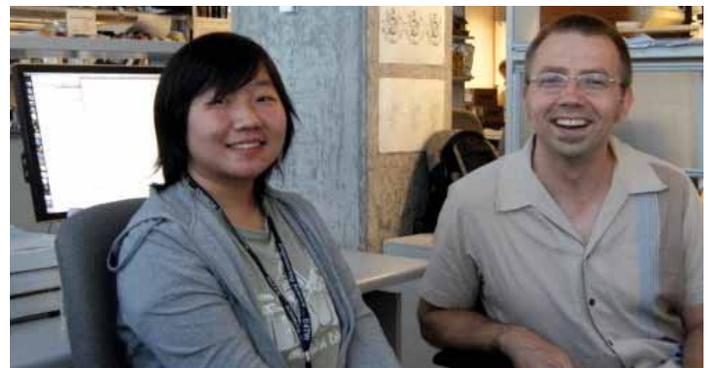
navigating uncharted territory – to some this may sound scary but for me it has been fulfilling and worthwhile.

I have had the good fortune of being able to draw on the knowledge and skill of a variety of professionals active in this industry and have learned a tremendous amount. I would like to thank Lisa Romkey in the Division of Engineering Science and Adam White at AITIA for making this unique summer placement possible.

From Ang Cui (1T2), one of our ESROP fellowship holders:

This summer, I have been doing bioinformatics research with Professor Quaid Morris and his graduate student, Gerald Quon, in the Banting and Best Department of Medical Research. They have been developing a statistical model, ISOLATE, that uses gene expression profiles to identify the origins of metastatic (secondary) cancerous tumors for which the primary site is unknown – a key step in treating cancer. The objective of my summer research is to help them develop their prototype software into a product that is accessible to clinicians, as well as applying it to a breast cancer dataset to help identify biomarkers, that is signature genes that can help predict patient outcome.

This project has involved me in a wide range of activities like translating the ISOLATE code into another programming language, creating graphical user interfaces, and applying machine learning tools to cancer datasets. I am very glad that my work will make the ISOLATE



Ang Cui with Professor Morris

model more accessible to clinicians when they need it to determine the primary cancer site of origin of their patients.

Over the course of the project, I have found research to be time-consuming and frustrating, but at the same time rewarding. What I truly admire is the spirit of discovery and dedication demonstrated by many people in our lab, including Professor Morris and Gerald. This research experience has really inspired me to explore more carefully both the Electrical and Computer Option and the Biomedical Option.

David Taylor (1T1) in The Gambia:

For the month of May I traveled to West Africa to volunteer with Christian Volunteer Movement (CVM) in The Gambia. CVM specializes in matching up professionals (or in my case students) with ways they can help in the country of The Gambia. I was asked to help provide more clean water to a village of 1000 people called Jiddah. They had one hand pump which can supply about 300 people with clean water. People needed to walk an average of 800m, while the UN's guideline is to have clean water within 50m. People could get 24L of water each if the pump was used 24/7, while the UN states people need at least 50L each per day.

Using some of the research I had done for Praxis on the sustainability of pump systems in Africa, I spent some time framing the village's problem into an RFP. I found three potential solutions and presented the best two of them to the village's own development committee. Over the course



of the project I found that no NGO or charity in The Gambia had ever tried to share the capital cost of a water system with a village. After much discussion, CVM decided that the village should pay 10% of the chosen system's cost and all of the maintenance costs. After a Praxis-style presentation, complete with posters and a handout, the committee resoundingly opted for a solar system that would allow for 15 taps distributed throughout the village. I presented a payment and installation schedule and if things continue to stay on track the system should be in place by May 2011.

Sean Yamana (1T1) in Ghana:

I'm in Kumasi, Ghana for the third International Development Design Summit (July 8-August 12, 2009). The summit focuses on the development of appropriate technology for the world's poor. There are people here with a wide range of backgrounds and experiences, from Indian electrical engineers to Brazilian artists to Sierra Leonian nurses. It is part of the philosophy of the summit that good designs often come out of meetings between people from very different backgrounds.

This is an exciting opportunity, because never before have teams been able to engage the communities they are designing for on such a direct level. The projects are very diverse, from small-scale energy storage to shea oil extraction.

I first found out about the summit last summer when I was working in the Boston area and staying with students from MIT and Olin College. I went along to a couple of the summit's public events, and it was inspiring to see so



much creativity and passion in design for the world's poor. When the applications opened in February, I applied, citing my Praxis project on renewable energy for developing countries as experience.

The summit was Amy Smith's idea. Amy is a senior lecturer in Mechanical Engineering at MIT where she teaches the D-Lab, a series of courses and field trips that focus on international development.

The summit is part of the revolution in design that seeks to shift the focus away from the world's richest few and onto the poor majority. It is a great way of developing and applying the design principles that courses like Praxis emphasize.

A day with Mike Klassen (OT9+PEY), Engineers Without Borders Junior Fellow in Zambia:



It is a beautiful silent serenity. The half-full moon's light floods the yard around my hut, and the packed-down red dirt paints a mural with the shadow of the mango trees. At night is when my mind can slow down, my heart can expand, my lungs can breathe deeply in the presence of my Zambian family. One of my favourite phrases in Tonga is "Ndilaswilila maningi, ndavwla ashonto" meaning I'm listening very much and I'm understanding a bit. Which pretty much sums it up – I spend a lot of time listening. To words, to sounds, to gestures, to posture. I wish I could

articulate so much more to everyone I live with – but to my host mother Florence in particular. I honestly do not know too much about her, but in terms of shared time, space, meals and eye contact, we know each other so well. I have two weeks left in my placement which is way too short – but at least I have managed to separate myself from that ever-moving clock. My friend Tony had a beautiful way of putting it –we are here until the end of a time period, not the end of a task or a project. It is not necessarily easy to accept, but that is reality. I feel like I am short-changing so many relationships, opportunities and experiences by packing up and leaving Mazabuka just when I've started getting comfortable. I am definitely excited for Canada – the people, the potential – to see my home through a different lens. And without a doubt my time this summer has solidified and grown my commitment to Africa, to Zambia – more specifically to Zambia's people.

Marina Freire-Gormaly (1T0+PEY), one of our AUW cybermentors:

The Asian University for Women / University of Toronto (AUW/UT) cybermentorship program enables global citizenship and leadership development through the pairing of female students from U of T's Engineering Science, VicOne and Law programs with student participants from the Access Academy – a pre-university transition program for AUW students in Chittagong, Bangladesh. The AUW students are women from across South and South East Asia, and the Middle East, with particular emphasis on those from poor, rural or refugee populations. In March 2008, the Access Academy welcomed 130 young women from Sri Lanka, Pakistan, India, Cambodia, Bangladesh and Nepal that demonstrated leadership potential and financial need.

Professor Yu-Ling Cheng initiated the UofT relationship with the AUW and came up with the idea of a cybermentorship program. I first began working on the program last summer with Lisa Romkey in the EngSci office, who coordinated the mentor submissions of the UofT EngSci women.



My cybermentee is Mowmita Basak Mow from Bangladesh. Early in our conversations back in the fall of 2008, Mowmita suggested a film project to compare

and raise awareness about child poverty in both Canada and Bangladesh. During her vacations she has begun filming and working in rural communities with a group of her friends, visiting slums and filming interviews with residents. Meanwhile, I have been volunteering in Parkdale (in Toronto) with an after school program and Visions of Science, a community based organization bringing science and engineering to under-privileged students.

Mowmita and I finally met in person in August and attended the International Partnership Foundation conference that was held near Algonquin Park where we had the opportunity to present our poverty awareness initiatives and the AUW/UT program.

Serendipity

Mario was considering computer science, Mary was keeping her doors open, David was planning to study architecture and Daniella was thinking of medicine.

The reputation of the Faculty, the breadth of Options available in Engineering Science and a few chance encounters with faculty members in high school and the summer before starting university all led Mario, Mary and David to select Engineering Science, while Daniella has chosen to study mechanical engineering.

Sitting down with EngSci 7T7 graduates, Mario and Mary Ruggiero have a warmth and energy that quickly transforms the cramped meeting room in the Galbraith Building into a comfortable living room. They reminisced about days at Skule™, sharing stories of late nights and weekends in the lab and the sense of relief after completing each year. Each story they told highlighted the pride they have in each other's achievements and their children's successes.

Meeting in their first year of EngSci, Mario and Mary had the opportunity to get to know each other in a 2nd year course on statistics. Mario recalls, "It was more fun getting to know Mary than doing statistics".

After successfully completing their undergraduate degrees in EngSci, Mario went on to receive his M.A.Sc. in Electrical and Computer Engineering in 1980, while Mary achieved success in Materials Engineering receiving here M.A.Sc. in 1979 and a Ph.D. in 1983.

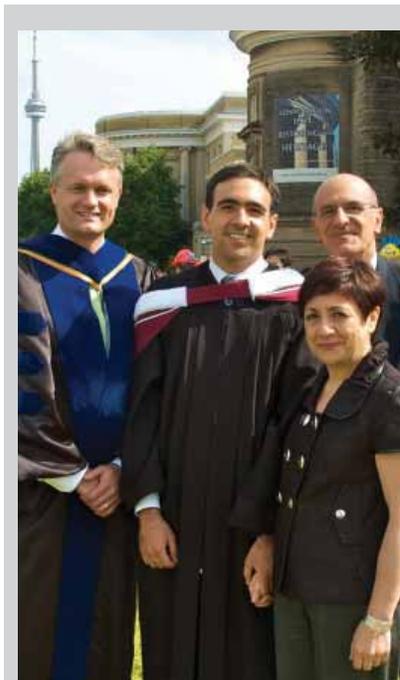
Mario and Mary have enjoyed many accomplishments in their professional careers, successes they relate back to their days in EngSci. "The discipline you learn in EngSci carries you through life. You become fearless of challenges. It is a very difficult program and the things you have to tackle quickly give you confidence to know there isn't a single thing you can't learn after EngSci."

In recognition of the doors that the Faculty and EngSci opened for them, Mario and Mary are regular donors to the Faculty, "It is a cause we know and understand. We received a lot from the University, and it is a way to ensure others continue to benefit from scholarships and opportunities that were available to us when we were at Skule™".

Recently returning to celebrate son David's (EngSci oT8 + PEY) convocation and presentation of the 2009 Governor General's Silver Medal, the advice Mario shares for new grads, "Most people don't get their dream job right out of university, learn what you can and always keep your eye out for new opportunities".

Mario and Mary will be back again this September to send daughter Daniella off to Skule™ as she starts as a Freshman in the Department of Mechanical and Industrial Engineering. Mary's advice to new students, "Engineering is challenging, the courses move fast, get your bearings and don't fall behind and you'll succeed".

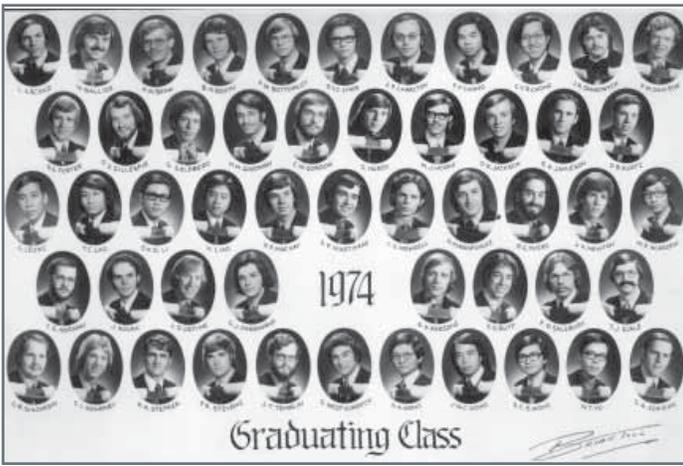
The Faculty of Applied Science and Engineering would like to welcome Daniella and congratulate Mario, Mary and David on all their successes.



David, Mary and Mario Ruggiero with Professor Cluett at Convocation 2009

Daniella's high school graduation photo, 2009





75 years of Skule™ Pictures and Memories



We have a continuous set of class composites in the Division starting from 1972 up to present time. However, prior to 1972, we only have composites for the 1938, 1944, 1946 and 1947 classes.

We would like to invite EngPhys and EngSci alumni to help us collect a full set of class composites to hang in our renovated student space in the Bahen Centre.

Please mail or scan and email your class composite to:
Ms Sarah Steed, External Relations Officer
engsci@ecf.utoronto.ca
(please use the mailing address on the back page)

If you mail in your class composite, we will scan it and return it to you promptly.

In addition to old composites, we would like to invite all alumni to submit their favourite photos and related stories from Skule™ for us to publish in future issues of Opt!ons.

CONVOCAATION 2009

NEW DEGREE IS LAUNCHED

Convocation for EngSci students was held this year in the afternoon of June 19, 2009. The sun was shining as it always seems to do at convocation but something was different at this year's ceremony.



Convocation 2009 marked the first time that the University of Toronto awarded the degree of “Bachelor of Applied Science in Engineering Science” to graduates of Engineering Science to distinguish their degree from the “Bachelor of Applied Science” degree that is awarded to graduates of the Faculty’s other Engineering programs.

It is important to recognize that Engineering Science is not a discipline, but is distinct at the program level from the Faculty’s other Engineering programs in the following ways:

- It is designed and delivered at a level that is more academically demanding than the other Engineering programs;
- It contains more mathematics, science and engineering science than the other Engineering Programs, with greater focus on deriving results using a first principles approach;
- It has a distinct “2+2” curriculum structure, namely a 2-year foundation curriculum delivered exclusively to EngSci students by faculty from both Science and Engineering, followed by a 2-year specialized curriculum in a diverse range of fields or Majors that are unique to the Engineering Science program;
- It requires that all students complete an independent research-based thesis project.

The Faculty, by way of the new degree name, makes it more clear now to prospective students and their parents, graduate schools and employers, and the public in general that it in fact offers two undergraduate degree programs.

Alumni will appreciate that the distinctiveness of the EngSci Program has been there from the very beginning when the program began as Engineering Physics in 1934. Awarding a distinct degree now just puts it in writing!

Mark your Calendars for Spring Reunion 2010 (Saturday, May 29th)

Back in May, the Division hosted a lunch for EngSci alumni participating in Spring Reunion 2009. In addition, we were joined by several members of our graduating 0T9 class. This idea of a program-based lunch was new this year and it is expected to become a regular part of Spring Reunion. Therefore, to the classes of 4T0, 4T5, 5T0, 5T5, 6T0, 6T5, 7T0, 7T5, 8T0 and 8T5, please make note of this for Spring Reunion 2010.

From: Will Cluett

To: All EngPhys and EngSci alumni

Subject: We want your email address!

We are working towards having more electronic communications with our alumni to help keep mailing costs at a minimum.

Please send us your current email address so that we may include it in our alumni data base.

We also like to send regular mail from time to time as well, so please send us any changes to your mailing address as they arise.

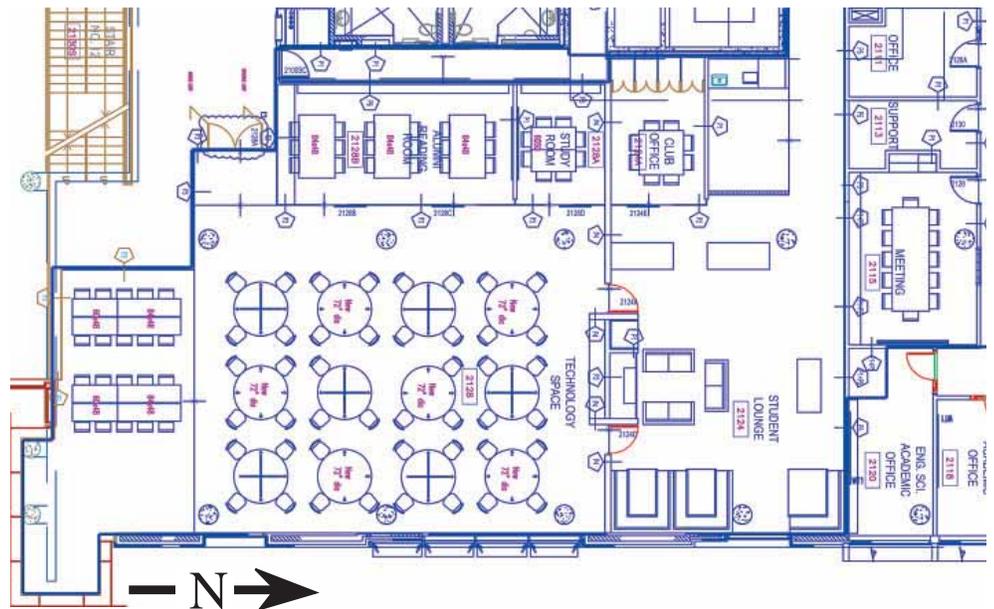
All information should be sent to Sarah Steed, External Relations Officer at engsci@ecf.utoronto.ca

UPDATE

EngSci students help design new space in Bahen

As mentioned in the last issue of Opt!ons (Fall 2008), the Faculty has decided to move Dean Cristina Amon and her staff into the Bahen Centre in order to bring everyone under one roof. Our student spaces in Bahen have been vacated to make this move possible and are being relocated on the second floor south of the EngSci administrative office.

In January of this year, Professor Cluett invited EngSci students interested in helping design the new student spaces to meet with the architect, Thom Pratt, and the Faculty's Director of Planning & Infrastructure, Steve Miszuk. Several meetings took place over the subsequent months with students bringing their ideas forward and Thom going away and coming back with various design proposals. The final design, pictured here, contains



many features that were originally suggested by the students. The new space contains two principle areas – the student lounge and what we refer to as the ‘technology space’. The student lounge will provide students with space to relax and socialize. The technology space will provide desktop computers as well as study tables and

enclosed study areas. The new space is expected to be ready for occupancy by the end of September.

The space exchange with the Dean has resulted in a 25% increase in the space for our students with better access from the main entrance of the Bahen Centre and a higher profile in the building.

OFFICE OF THE CHAIR

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Nicole Adoranti
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RETURN UNDELIVERABLE
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