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THE IRON WARRIOR

THE NEWSPAPER OF THE UNIVERSITY OF WATERLOO ENGINEERING SOCIETY | VOLUME 28 FROSH ISSUE | TUESDAY, SEPTEMBER 4, 2007

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http://iwarrior.uwaterloo.ca

HEADCOM Speaks

HEADCOM

Listen up, Frosh!

You have a lot to learn and a short time to do it in, so pay attention. Take notes if you have to (there will be a test later). I am HEADCOM and I am in charge. Make no mistake about it – you have one job this week: **IMPRESS EDCOM**. I cannot stress this enough to you.

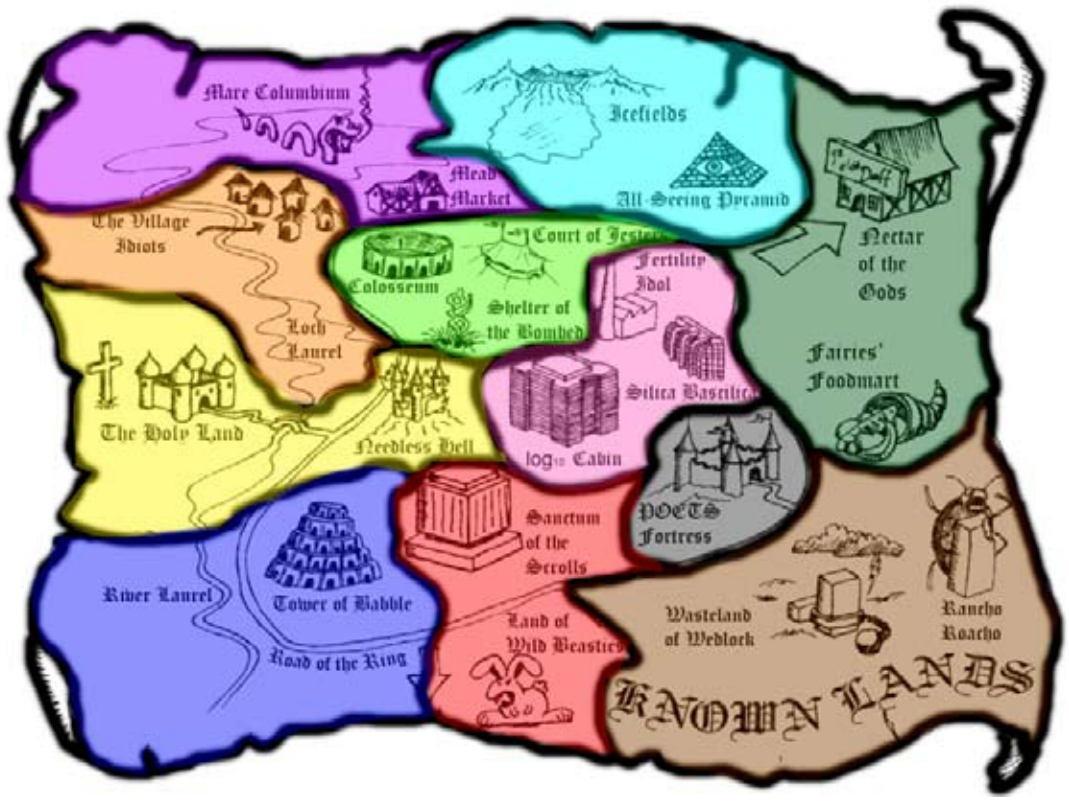
EDCOM is the Engineering Education Committee. We are your lifeline – your only path in. We are a special group of senior students hand-picked by the Dean of Engineering from the top 5% of each discipline. We are the best and the brightest Waterloo has to offer, meaning we are the best and the brightest, period. We also participate actively in the Engineering Society, *The Iron Warrior*, and the many student teams you will learn about on Wednesday. We are everywhere. We do everything. We are the authority on everything in Waterloo Engineering. We will also be your TAs when classes start. We are not impressed easily.

You need to earn your hardhats, show your ENGinuity at Junk Yard Wars, and go all out at the events of the SCAVENGER HUNT. At the end of the week, we'll decide whether you are worthy of calling yourself a Plummer, a true Waterloo Engineer.

Good luck, Frosh. You're gonna need it.

Welcome to The Game of ERTW

GREG FITZGERALD
SUPERHUGE



Right off the bat, I'd like to make something clear. This isn't your mom's Frosh Week introduction, man. You won't find any "Welcome to the first week of the rest of your lives" in this article. This week is about RISK! We're talking campus domination: The Game of ERTW – Engineers Rule the World. And what better place to start our conquest than the University of Waterloo campus?

You have been divided into ten teams that will compete in a range of events to determine the best of the best. Your teams are led by upper-year students – Bigs and Huges – who are there to guide you along and answer any questions you have about Engineering, or the week in general. Your first task will be to venture across the wild terrains of mud and water to Earn Your Hardhat. Beware – armies from the fortress of Math are watching, analyzing and calculating all of your next moves. The Arties will try to seduce you with their siren songs and transcendental pictures, and the Scientists will… Well, they'll do anything in the name of Science. Your hardhat is your protection against these opposing forces, and is a well-established tradition from all of the great Waterloo Engineers before you. After you have earned your hardhat, you will conglomerate in a show of Engineering unity as you pose for an aerial photo.

Having now earned your hardhat, you'll put it to use. An important element of any arsenal is the ballistic and an important element of any good general is their resourcefulness. Combine these two things into our Junkyard Wars competition, where you will turn limited resources into an Engineering masterpiece. Your work will be tested in a target competition, and then it's off to introduce you to our Special Ops Forces – our Engineering student teams and clubs lunch. Afterwards, it's time to meet The Tool. The Tool is the official mascot of the Waterloo Engineering Society and is impressed by spirit and loud noises.

Finally, having conquered the other forces, the time will come for the ultimate showdown – the hunt of scavengers. Compete in events to gain tokens and strategically conquer your territory with the help of our giant game board of campus. Only one team can win the week. Will it be yours?

Think You're an Engineer? Not So Fast.

MANOJ CHOUDHARY, P.ENG.
SPECIAL TO *THE IRON WARRIOR*

When it comes to helping people lead better lives, engineers make a big difference. Professional Engineers, who number 70,000 in Ontario and more than 160,000 across Canada, are committed to enhancing the quality of life, safety, and well-being of Canadians. Today, engineers not only build bridges, roads, sewage systems and buildings, they also design computer chips, medical diagnostic equipment, food supplements, aerospace components, subway trains, and hearing aids. Engineers develop new ways to make our lives at home and at work easier. Engineers develop ways to protect the earth's air and water from pollution.

As you begin your engineering education, it is important to remember that while getting your degree will be an achievement, it does not make you an engineer. No matter how dedicated you are to upholding the principles that the Iron Ring represents, you cannot legally practice engineering, call yourself an engineer, or take responsibility for engineering work without first becoming a licensed engineer.

In Ontario, engineering is a self-regulated profession, like law and medicine. Professional Engineers Ontario (PEO) licenses professional engineers, and sets the standards for and regulates the practice of engineering in Ontario so that the public interest is served and protected. PEO also upholds the mandate of protecting the public by disciplining licence holders who do not maintain the profession's high technical and ethical standards, and by ensuring that only those who are properly qualified practise engineering.

Professional engineers licensed by PEO have a responsibility to safeguard public health, safety, and welfare. They are identified by the title "P.Eng." after their names. This means they are licensed to practise engineering, subscribe to a code of ethics, have met the highest standards and are qualified through rigorous training and experience.

So – "Why become licensed?"

Licensure is the mark of a professional. While not all engineers find licensure mandatory for their chosen career paths, the "P.Eng." after their names provides many advantages. In today's increasingly competitive job market, P.Eng. sets you apart from the crowd. It tells employers that you have the education, proper experience and the skills and is a true professional in your chosen field. Since the P.Eng. licence is known in many parts of the world, by qualifying you ensure that all available engineering career paths are open to you in the future.

To become a licensed professional engineer in Ontario, an applicant must first graduate from a university engineering program accredited by the Canadian Engineering Accreditation Board or recognized equivalent. All applicants must be at least 18 years of age, a Canadian citizen or landed immigrant, and of good character.

Like other professions, engineers must complete a period of internship. PEO's experience requirement is 48 months of engineering experience under the supervision of a P.Eng., at least 12 months being obtained in a Canadian jurisdiction. The experience gained during the internship must include applying engineering theory, gaining practical experience, improving communications skills, and building an understanding of professional ethics and how the work of professional engineers has an impact on society.

There is also the requirement to write and pass the professional practice examination about engineering laws, professional liability, and the code of ethics. Successful completion of this exam signifies that the applicant understands and accepts a professional engineer's responsibility to hold public safety paramount and protect the environment.

When all requirements are met, newly licensed professional engineers are invited to attend a ceremony and have their licence certificates officially presented by their local PEO chapter. A professional engineer's licence to practise enables engineers to take responsibility for their own professional engineering work, including designs and drawings, and the work of other members of the engineering team they supervise, by stamping it with their professional engineer's seal.

So there you have just a few reasons to consider applying for your P.Eng. licence as soon as you graduate from your engineering program. In the meantime, I encourage you to join PEO's Student Membership Program (SMP) to establish a link to the profession and begin your career-long engineering identity. The SMP is open to all undergraduate engineering students free of cost. Register on-line at www.engineeringstudents.peo.on.ca and become an active member at the Waterloo campus.

For more information on how to become a professional engineer, visit the Licensing and Registration section of the PEO website, www.peo.on.ca.

Manoj Choudhary, P.Eng., is the Student Liaison Coordinator with PEO. He can be reached at mchoudhary@peo.on.ca.

Letter from the Outgoing Editor

A Special Welcome to a Special Engineering Class

BAHMAN HADJI
EDITOR-IN-CHIEF

Throughout the pages of this newspaper, you will find articles that welcome you to the University of Waterloo and the Faculty of Engineering. You may not know it yet, but you are part of a very special group: the Engineering Class of 2012. You are among the 1470 incoming Engineering students this year, the 50th Class to enter studies at what has become one of the premier Engineering schools in Canada and the innovator of the Co-operative Education program, the first of its kind and the best in the world.

To show you how far the school has come, we have to look back. The idea for the school was called the Waterloo Plan: a new type of education that had a *co-operative* partnership with industry where students would alternate their academic studies with engineering work every quarter-year. This would also allow the school to accommodate twice as many students and use teaching resources year-round.

On July 1, 1957, 74 students entered studies at the Waterloo College Associate Faculties (which would officially become UW a couple of years later), with another 90 or so entering that Fall as the first group went off to work in the industry. The terms were changed from three to four months shortly after, with the first class of students being given the option to graduate a year later to compensate for the adjustment. The first Engineering graduating class, in 1962, contained 71 students. By contrast, your class will easily contain more than 1000 graduates, the largest the Faculty has seen.

From the beginning, the co-operative nature of the Engineering curriculum split the students in the Faculty into two groups. When the Engineering Society was officially formed in 1958 by members of the original Class, it contained two halves with two sets of elected Executives functioning under a single mandate. This has remained true to this day, as you can find out on page 4.

Because of this disjoint, we now have different ways of denoting how far along in our studies we are, which will probably be confusing at first (you may find it humorous that you won't be a "fourth-year" until your fifth year in school). Each academic year contains two terms, denoted by the number of the year and the letter for the term (A for the first, B for the second). We also have six co-op terms, and the off-stream students denote their term as the academic year of their previous term and the letter N or T – N if it's their first work term since the A term and T if it's their second.

I just finished my 4A term in the Spring and consequently my term as Editor-in-Chief of *The Iron Warrior*. This special issue was put together solely for you, and contains many articles which you'll find informative and useful. If you're considering getting involved, I can tell you that writing for *The Iron Warrior*, which is nearing its 30th year of existence, is an extremely rewarding experience – for me, all the work I put into each issue was made worthwhile when I saw people picking up copies off the racks as soon as it was distributed.

With that said, have a great Frosh Week, and good luck with your first year of studies!

Letter from the Incoming Editor

The Iron Warrior: Your Newest Friend

FARAZ SYED
INCOMING
EDITOR-IN-CHIEF

So, you've signed up for five years of ~~assignments, endless work, and self-pity~~ adventure, excitement, and self-fulfillment! Well, welcome. I'm Faraz Syed, your Editor-in-Chief for the Fall term. Welcome to Waterloo Engineering, but most importantly, welcome to *The Iron Warrior*, one of Canada's finest Engineering newspapers.

The Iron Warrior rocks. This is your paper, published five times each term, with your news and your faces plastered awkwardly on its sheets. What do I mean by "your news"? I mean that the paper talks about the events you want to go to, the ideas you're interested in, and things on campus that affect you. For example, we've had in-depth coverage of the new programs added to Engineering lately (such as Management) and the planned buildings (such as the Quantum Nano-Centre). We also regularly feature the unique student culture at Waterloo, which is expressed in the form of concerts, debates, drama, parties, government, special events, and competitions, just to name a few examples. It's your one-stop source for Engineering zen (even when you're on co-op – we're online at http://iwarrior.uwaterloo.ca with archives).

I want you to write for *The Iron Warrior*. We encourage submissions from Frosh, and we like everything from slightly funny to stinging satire (everything is subject to editing, always). Meetings are held every Monday, from 5:30 pm to 6:20 pm, at our office. It's in Carl Pollock Hall (CPH-1323B), right across from the Orifice (the EngSoc Office). You should come, especially if you like free donuts or the excitement that comes with being around highly creative people.

Now I'm going to assume you've just about had it with all these creepy people with impossibly wide smiles welcoming you – whether it's to Engineering, to residence, to Waterloo, or even to Canada. That's good. You can listen to me – I'm your typical society-shunning, lives-at-the-office editor, and I'm not going to smile at you.

No, I'm just kidding. I really hope you could tell. I do like to smile – on occasion.

The real reason why everyone is so friendly is because we've been through all of this before. You remind us of what it was like when we were young (well, hey I'm still young) and carefree, and not jaded and bitter like we are now. It's intoxicating for us to talk to Frosh because it's like a mirror into the past. We've asked the same questions before: "Will I get a co-op job? How hard is school work? What are tutorials? What if nobody likes me?" The list goes on and on. So go ahead – ask us for advice, talk to us about your concerns or just make friends with us (*please*)! We'll gladly tell you what sights to look out for on the long road that is Waterloo Engineering. In the end, like many of us, you may not even recognize yourself anymore. You will like the end result. I know I do.

Remember: *The Iron Warrior* is your friend, and I wish you many happy years of reading it.

THE IRON WARRIOR

The Newspaper of the University of Waterloo Engineering Society

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ESSCO Welcomes You

RUTH-ANNE VANDERWATER
ESSCO PRESIDENT

First we'd like to give a big warm welcome to all the incoming first-year Engineering students across Ontario. A big thing you'll learn quickly is that there are plenty of opportunities for you get involved with clubs, teams and organizations. The Engineering Student Societies' Council of Ontario (ESSCO) is one such organization. Your school is a member of ESSCO. We are a communication link between each of the accredited Engineering schools in Ontario and Professional Engineers Ontario (PEO) and the Ontario Society of Professional Engineers (OSPE). ESSCO also has several services to its member schools such as running outreach programs, which include Engineering and Physics Day at Canada's Wonderland, promoting National Engineering Week (NEW), and working to improve Engineering Education in Ontario.

ESSCO is also a link between each of the member schools. It is used to facilitate information- and idea-sharing between the various Engineering schools in Ontario. Each school has a representative on their Engineering Society who is the main link between your school and ESSCO. This person is your EngSoc's Vice-President External. This person is the one who sits on ESSCO's Council and voices the opinion of your school. It is always a good idea to know of this person so as to keep informed of ESSCO business [Ed: To do so, read the VPX Executive Report in every issue of *The Iron Warrior*].

Anyone who is interested can get involved with ESSCO. From first year right up to your final year, ESSCO has something to offer you. We even offer a conference solely for first-year students! The annual First Year Integration Conference is held in February and in 2008 it will be hosted by the University of Windsor. ESSCO also offers various directorship and committee positions for people who are interested in getting involved with ESSCO. And since university is all about learning new things, what is a better way to learn about your chosen profession than being involved with the organization that helps link you with other Engineering students from across the province?

For more information, please see the ESSCO website at www.essco.ca. Also, please feel free to e-mail the ESSCO Executive at exec@essco.ca. Best wishes on your studies and we look forward to hearing from you!

Ruth-Anne Vanderwater is a fourth-year Computer Engineering student at the University of Waterloo.

Staying Musically Involved at Waterloo

MARK HAZLETT
2T CHEMICAL

Do you play an instrument? Do you enjoy playing said instrument with groups of other people? If so, read on.

When I decided to go into Engineering, I became concerned that the musical portion of my life was coming to an end. With a little bit of research, though, I found many ensembles to play in – some affiliated with the University, some community-based.

Orchestra @ Waterloo:

The Orchestra @ UWaterloo is open to students, as well as staff, faculty, and alumni. At the beginning of every term, they hold an open rehearsal (this term's is on Thursday September 13th at 7pm in the Ron Eydt Village Great Hall) for those interested in joining. Auditions are required for membership in this group, and it can be very competitive for some instruments (like flute and clarinet). The rehearsals are held Thursday nights in the REV Great Hall.

Engineering Jazz Band:

The Engineering Jazz Band ("With Respect to Time" on B-Soc and "Speed of Sound" on A-Soc) is comprised (mostly) of Engineering students who miss all those wonderful hours spent in stage band back in high school, and want to relive the glory. No auditions are required for this group, and they rehearse every Sunday evening in the SLC multi-purpose room.

Warriors Band:

While not necessarily the most musically proficient group out there, the Warriors Band is a good time had by all. Playing at our University's various sporting events, as well as at other school functions, the Band is a great way to play music and have fun without the stress of an audition. Rehearsals take place Thursdays at 5:30 pm in PAC 2012.

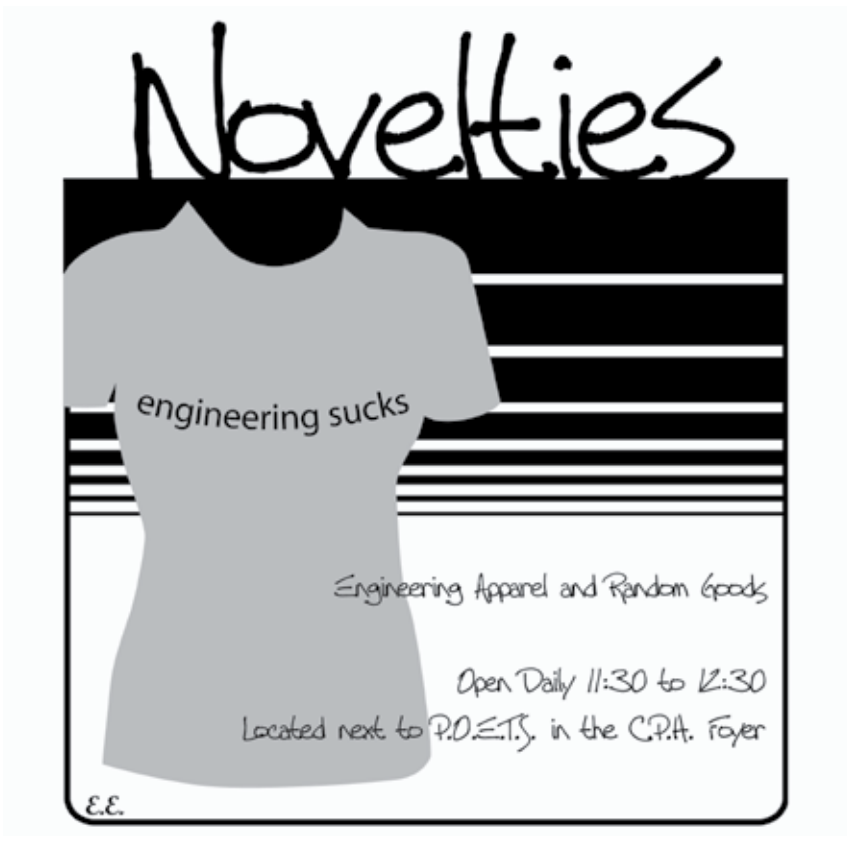
Kitchener-Waterloo Symphony Youth Orchestra:

The KWS Youth Orchestra runs 8-month seasons every year from September to May; therefore this group is only recommended to those in town for that time period, such as an 8-stream first-year, or if you have a Fall or Winter work term in Waterloo someday. Auditions are required, and the calibre of playing in this group is about 8th grade RCM or possibly a bit higher. The Youth Orchestra rehearses every Sunday from 1:00pm to 3:30pm from September 9, 2007 until May at The Music Department of Wilfrid Laurier University.

Waterloo Concert Band:

The Waterloo Concert Band is a community band that has players from all over the community. There are no auditions for this group, and all are welcome to join, making the skill level of the group somewhat variable with time. Practices are held most Monday nights throughout the year, from 8 p.m. until approximately 10 p.m., at the Waterloo Adult Recreation Centre.

These are but some of the options presented to you, the enterprising young musician beginning their engineering studies here at Waterloo, I'm sure there are more, which I have yet to discover. Also, don't forget when you're on a work term that most cities and towns have a community band or orchestra of some sort, and usually with a little Googleing you can find out all about them.



UW Robotics

JAY SHAH
1T MECHATRONICS

Firstly, on behalf of the UW Robotics Team, I would like to welcome you to the University of Waterloo, and hope that you are thoroughly enjoying Frosh Week. As you embark on the beginning of what can best be described as an adventure, I offer a token of advice. Try your best to keep your activities diverse, don't get sucked into classes, homework, and assignments to the point where that is all you are doing, and find something you really enjoy outside of classes and pursue that to your heart's content. The remainder of this article will be dedicated to describing one of the many opportunities to get involved outside of class: the UW Robotics Team.

If you're looking for an opportunity to get involved, learn a lot, and meet a whole truckload of people ranging from first to fourth year, the UW Robotics Team is the place to be. At any given time the team is working on a variety of projects each with different goals and challenges. Some of these projects include the Robo-Magellan (an outdoor autonomous path finding robot), Robo-Racer (an autonomous racing vehicle), Mini Sumo (small robots that compete in a ring, the goal being to push all other robotics out of the ring), ROV (an underwater remotely operated vehicle), and a variety of other projects that can crop up from term to term.

Perhaps the best aspect about the UW Robotics Team is that there is a strong focus on ensuring that the team has lower year involvement. Those members with more experience and knowledge are always eager to teach and help the newer members of the team. The team hosts tutorials and training sessions, explicitly designed to pass along information from older to younger team members. In addition, the team participates on campus wide events, with displays at Student Life 101, Canada Day, and even hosting sessions for summer camps. No matter what your current level of expertise or your interests are, chances are the UW Robotics Team has something to offer you!

This term the Robo-Magellan vehicle is preparing to compete in the Seattle Robotics Competition where a delegation from the team will travel to Seattle. We will also be hosting our third Mini-Sumo competition where small teams of 4 or 5 students design and build small autonomous vehicles (with the assistance of senior members) capable of pushing opponents out of the ring. Last year over 25 first-year students competed and a team of first-years won the competition.

If you are interested in joining or learning more about the team, you can check our website at uwrobotics.uwaterloo.ca, and also look out for recruitment posters in the Engineering buildings. Best of luck to you in your first year – we hope to see you around!

What Play?

MARISSA BALE
2A NANOTECHNOLOGY

What is this EngPlay business? Do engineers really put on a play? Why yes, we do, and with darn good results.

EngPlay is put on by the Engineering Society every term. Everyone involved with the play is a student: actors, directors, producers, set designers – everyone! Auditions are at the beginning of term, and the performances are usually a few weekends before classes end. The play itself is often a comedy, as it will be this term, but it can be anything from a collection of comedic sketches to a Shakespearean tragedy.

So, how can you get involved? Well, for starters, you can audition. Students from all years, programs, and even faculties are welcome and encouraged to audition. Auditions will be September 13th and 14th, from 5 to 7pm in CPH 3385. Tell all your friends, and keep an eye out for posters with any changes to the time, date, or place of the audition, and information on where to sign up for an audition once classes start.

If you don't want to act, there are a plethora of other ways you can get involved in EngPlay. Positions of assistant director, stage manager, lighting/sound tech, hair/makeup, and backstage hand are also available.

Keep an eye out the first week of classes for information on auditions. The performances will run in November, so keep an eye out at the end of October for information on them.

If you want more information on auditions, the performances, or are interested in filling any of the above roles, e-mail mbale@engmail.uwaterloo.ca.

ENGINEERING SOCIETY EXECUTIVE

Presidential Welcome

TYLER GALE AND AMANDA HOFF
PRESIDENTS

Welcome, Waterloo Engineering Class of 2012!

The Engineering Society exists to support and help you through your time at Waterloo. We provide academic services such as resume critiques, frosh mentoring and an online exam bank, as well as a wide variety of events ranging from trivia competitions to extreme sports like white water rafting in the summer.

As the Presidents, it is our duty to oversee all of the operations of the Engineering Society, and to manage the direction of the Society with reference to our Constitution and mandate. The Engineering Society is a registered non-profit organization with two businesses (The Coffee and Doughnut shop and the Novelties Store), two full-time employees, and a wide array of volunteer positions to manage the corresponding wide array of services and events we run. All of the volunteer positions are held by UW Engineering students like you.

You may be wondering why there are two Presidents (and two of each VP position) – allow us to explain. The Engineering Society is split into two separate entities: the Society "A" (A-Soc) and Society "B" (B-Soc). Each term the on-stream society switches between the two, to allow us to maintain a consistent set of Executive, directors, and members for a particular co-op stream. Half of you will spend most of your time here on A-Soc (the 8-stream students), and the other half will spend most of your time on BSoc (the 4-stream students).

This fall, B-Soc is on campus. We will be holding the first of our biweekly meetings on Wednesday, September 19th at 5:30pm in CPH 3385, so be sure to check that out to find out what's happening around campus (including events, academic updates, and volunteer opportunities) and learn how you can get involved! Feel free to stop by the EngSoc Office located in CPH 1327. You can also drop by POETS (CPH 1337) and relax and watch a movie or two after class!

In your Frosh Week bags you also received a little handbook called The Book. It is full of useful information about Engineering student life. We recommend that you take a few minutes to flip through The Book before the academic term picks up, and if you have any questions feel free to ask the upper-year students you will meet during Frosh Week.

We look forward to meeting you and getting to know you better over the coming terms!

VPX Welcome

DAVE HALFORD AND ERICA WAUGH
VICE-PRESIDENTS EXTERNAL

Hello first-years and welcome to the University of Waterloo. We hope that you're having an awesome Orientation Week and starting to settle into life on campus!

As Vice-President External, our job is to represent you, the Engineering undergraduate students, to organizations outside of the school. Throughout the year we will be attending many student conferences at both the provincial and the national level in order to meet with students from other schools, exchange ideas, discuss issues affecting undergraduate Engineering students, and take action through lobbying initiatives. These conferences are held all over the province and country, and for many of them there is an opportunity for you to apply to come along with us as a delegate. The most notable of these conferences that you should consider applying to be a delegate for is the First Year Integration Conference which will be held in Windsor early on in the Winter 2008 term. This is a great opportunity to meet other first-year students from other schools around Ontario and learn about the Engineering Student Societies' Council of Ontario (ESSCO) of which all Waterloo Engineering students are members. Waterloo hosted this conference in 2007 and it was an awesome time.

It is also our job to liaise with professional organizations such as the PEO (Professional Engineers Ontario), the body which licenses all professional engineers within this province. We will also be your student representatives to industry and will be trying to get companies interested in coming to the University of Waterloo to meet and speak to students and hopefully also recruit them for employment.

The last major part of our job is outreach. This includes charity initiatives, Women in Engineering Committee initiatives, National Engineering Week initiatives, as well as holding events for the community such as Canada Day celebrations. In order to do this we rely on students to volunteer to take on directorships and run these events with our support. Taking on a directorship is a great way for you to get involved with EngSoc.

That's all from us. Feel free to e-mail either one of us about everything you've read or anything else you can think of. You can reach us at Asoc_vpext@engmail.uwaterloo.ca and Bsoc_vpext@engmail.uwaterloo.ca.

Enjoy the rest of your Orientation Week, good luck with classes and we hope to see you at the first EngSoc Council meeting in September!

VPEd Welcome

JEFFREY LIPNICKY AND PATT GILLIS
VICE-PRESIDENTS EDUCATION

Welcome to the finest Engineering school in Canada! I am sure that you have heard that many times, but as part of the Engineering Society Executive, we hope to make your first and subsequent years at UW ones that will prepare you for your future in and out of the workforce.

As VP Education, we will provide a number of services that will help you with your studies here. For example, we keep an online "exam bank" of previous midterms and finals to help you study for your classes. Also, we keep a database of outstanding Work Term Reports to help you when the time comes to complete your own. Finally, we run services under the title of "Frosh Mentoring." There are events, an online forum, and mentorship available to you from upper-year students who have been through many of the same situations and can help you overcome problems you may face.

We want to invite every one of you to log on and sign up for the Frosh Mentoring Forum at http://engfrosh.uwaterloo.ca. We've put it together to help answer any questions you might have about Engineering and life in general here at UW so please feel free to use it at your leisure. There are upper-year students (including us) monitoring it so you can get answers straight from the source about anything you're curious about.

Finally, we work closely with the Faculty to represent students on academic issues, such as curriculum changes, the Professional Development for Engineering Students program (PDEng), Course Critiques, and many others. There are many other services available to you, so stop by the Orifice or our website (http://engsoc.uwaterloo.ca) to find out more.

If you have any questions about your first year here at UW, please do not hesitate to contact either of us. Patt will be on term for the Fall (B-Soc), and Jeff will be around for the 8-stream students in the Winter (A-Soc), but either of us will be more than willing to help with any issues or questions you might have. You can contact us by e-mailing us at Asoc_vpedu@engmail.uwaterloo.ca and Bsoc_vpedu@engmail.uwaterloo.ca.

So come out to EngSoc meetings and get involved. Waterloo Engineering is the best Engineering school in Canada – not only because of the academics, but also because of the spirit of the Engineering students. Come out and find out what we are all about!

WEEF Welcome

BRANDON DEHART AND ALEX JAMES
WEEF DIRECTORS

Hello to all of the newcomers to the University of Waterloo. I hope you are all enjoying Frosh Week so far and getting a good introduction to the University. Most of you have probably heard of the great reputation of the Engineering program here at the University of Waterloo. This reputation has been built by bright, enthusiastic, and hard-working students and we are proud of it. You are encouraged to add to this reputation and help it reach new heights.

One very important part of the engineering faculty here is WEEF. WEEF is the Waterloo Engineering Endowment Foundation. It has been collecting student donations for the past seventeen years. The interest collected from these donations is used to buy equipment and materials for both student labs and student teams. WEEF's principle has now nearly reached $10 million allowing WEEF to give out over $240,000 a year. This makes our endowment fund the largest student-run endowment in the world!

And you decide where the money goes. Every class within Engineering appoints a WEEF rep to sit on the WEEF Funding Council. The reps meet once a term to view spending proposals and then vote on how the money will be spent. This gives students real power and choice in which labs need to be upgraded the most. If you take a quick peek into any lab you will most likely see WEEF stickers on some equipment.

You are very lucky to have arrived at the University now, because it is a very exciting time for WEEF. WEEF is planning to donate one million dollars towards the new Student Design Centre in the new Engineering building, the construction for which begins next March. There will be allocated space for fourth-years and all student teams, built with an open concept to encourage sharing of knowledge and equipment between teams. This decision still needs to go through the Funding Council so it is important that all students support this idea, or we might miss a perfect opportunity to make a huge difference.

So keep an eye out for WEEF stickers in your labs and promote WEEF as much as you can. I would encourage all of you to get involved and volunteer to become your class's WEEF rep. Being a WEEF rep is a great way to get to know what's going on around campus. If you have any questions please send an e-mail to weef@engmail.uwaterloo.ca.

Engineering Society "A" Executive (Winter 2008)


Tyler Gale
President


Jeffrey Lipnicky
VP Education


Dave Halford
VP External

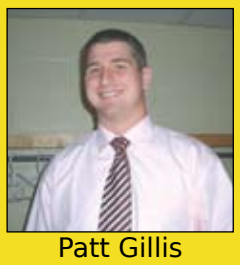

Adam Melnik
VP Finance


Lee Anne Belcourt
VP Internal


Brandon DeHart
WEEF Director

Engineering Society "B" Executive (Fall 2007)


Amanda Hoff
President


Patt Gillis
VP Education


Erica Waugh
VP External


Chris Jamieson
VP Finance


Cat Hay
VP Internal


Alex James
WEEF Director

ENGINEERING SOCIETY EXECUTIVE

VPI Welcome

LEE ANNE BELCOURT AND CAT HAY
VICE-PRESIDENTS INTERNAL

Welcome to all the new Frosh! We're really excited to have you here at Waterloo! We will be your Vice-Presidents Internal for the Engineering Society. It's our job to make sure you feel welcome at UW and don't get too stressed out with the academic side of school. We do this with the help of our fantastic directors by putting on tons of activities for you throughout the term. Some of the bigger events you can look forward to this term are Halloween, the SCAVENGER HUNT, Semi Formal, and TalEng.

If you were a keener in high school (student council, clubs, teams – you name it) then getting involved with EngSoc will definitely be for you! Even if you weren't that involved in high school, we're sure to have something that you'll get into. One way to get involved is to become an EngSoc rep for your class. All you have to do is come out to our meetings once every two weeks, be a voice for your class, and report back to them on EngSoc happenings. Our first meeting will be September 19 (CPH-3385 at 5:30). Did we mention you get free food? Other great ways to get involved are through EngPlay, Engineering Jazz Band, or by joining the Task Team.

Some cool new initiatives we're starting up this term include live music in POETS, Tuesday lunch workshops, and environmental awareness. We've also got some old favourites like Enginuity and Genius Bowl! We hold "Of-Term" pub nights (all ages, but beer is served) in POETS at the beginning (BOT), middle (MOT), and end (EOT) of each term, giving you a chance to relax and have fun. To find out about all of our upcoming events, read *The Iron Warrior*, look at the calendar outside the EngSoc Office (the Orifice), and keep an eye out for our posters.

Finally we'd like to point out that as registered Engineering students, you're already all members of EngSoc! Beyond our crazy events, we also offer tons of services that can really help you out during your time here (C&D, darkroom, exam bank, and POETS, just to name a few). Check out our website at engsoc.uwaterloo.ca or drop by the Orifice to find out more! If you've got any questions related to internal activities, drop us a line at asoc_vpint@engmail.uwaterloo.ca or bsoc_vpint@engmail.uwaterloo.ca.

VPF Welcome

ADAM MELNIK AND CHRIS JAMIESON
VICE-PRESIDENTS FINANCE

We have your money and we are running away with it.

Welcome to Waterloo.

OK, so we aren't actually running away with it. We are making this school a better place everyday.

We are the Vice-Presidents Finance of the Engineering Society. That means that we handle the funds you pay to the Engineering Society each term and make sure that they are handled appropriately and we stay on budget. The Engineering Society offers tons of events and services and to make this possible each student pays a refundable $14 fee, which appears on your tuition statement each term. A refund can be acquired by going to the EngSoc Office (CPH-1327) during the beginning of term and requesting it. However, getting your refund means that you miss out on all that the Engineering Society can do for you, be it through the exam bank (online and off), photo copiers, (cheap) report binding, countless events, POETS lounge and pub, the C&D, Novelties, donations to student teams, or any other service we offer. Rest assured, we have something to offer you which makes it all worth while.

The Engineering Society operates two businesses which you should know about.

The first one is the Engineering C&D (Coffee and Donut Shop). The C&D serves to make sure that the blood level in the caffeine and sugar systems of the Faculty is kept low. The C&D has a wide selection of coffee including fair trade for the cheapest prices on campus. We also carry bagels, pastries, muffins, cookies, sandwiches, soup, ice cream, juice, pop, milk, tea, and hundreds of other items. The C&D is open Mondays to Thursdays from 7:30am to 7pm and Fridays from 7:30am to 5 pm. It is located in the CPH Foyer right near POETS. Mmm, donuts...

In addition to the C&D, the Engineering Novelties Store sells Engineering apparel and other random goods. We have everything from Engineering T-Shirts and sweatshirts to coffee mugs and beer steins at exceptional prices. Novelties is open daily at lunch time (11:30am to 12:30pm) and is once again located in the CPH Foyer between POETS and the C&D.

Lastly, we want to wish you the best of times here at Waterloo and encourage you to get involved wherever you can.

Stay Informed, Eat for Free at EngSoc Council Meetings

PETER MOTTOLA
3B CIVIL

Hello Frosh and welcome to what could be the best years of your life! I hope you are all as excited to be starting your career here as I am to be back in Waterloo. There is so much going on within the Engineering Society (EngSoc) that sometimes it can be difficult to keep track of everything. Luckily, long ago our EngSoc forefathers concocted a way to ensure that every student could be completely up-to-date on all the goings-on of the Society: the meetings of the EngSoc Council. As the Speaker this term, I'm going to tell you all about them.

EngSoc meetings are the best way to get involved. If there is one thing I have learned over my past three years here it's that the best way to survive is to become involved. EngSoc meetings are the easiest way to find out exactly what there is for an Engineering student to do. The meetings will keep you completely in the loop for everything there is to know about. You can also listen to what the Society has to offer you and then decide what interests you most and what services you can benefit from. However, even though EngSoc puts on meetings, they include more than just Engineering-related activities. We discuss community events as well as university-wide events. Meetings are also a great way to meet people from different classes and from different years. And if all of that isn't enough, there is also free candy and dinner. Candy is given out for participation and good questions.

EngSoc meetings loosely follow "Robert's Rules of Order". This is a parliamentary procedure first written by an engineer in 1876. Since there are actual rules involved in running the meetings, there are certain formats and procedures followed. In order to give you a "heads up" so you don't feel completely out of place or get too lost I will explain a typical meeting agenda.

There is a Call to Order, when attendance is taken to ensure that at least 2/3 of the onstream classes are represented, after which the agenda distributed by the Speaker is approved and amended if necessary. The EngSoc Exec then give reports to Council, and this is followed by discussion of old matters (Old Business) and then new matters (New Business). After this is Announcements, which is when people inform you of events, fundraisers, achievements, deadlines, and anything else worthy of announcing. Finally, there is Class Rep Feedback, which is when each class's rep informs Council of new happenings within their class, the best one of which is awarded a prize. The meeting is then adjourned, and dinner is provided – for free!

So make sure to come out to the first meeting of the term – absolutely everyone is welcome! It will be held on Wednesday, September 19 from 5:30pm to about 7pm in CPH 3385 (take the stairs next to POETS and go 2 floors up).

Meetings will be held approximately every other Wednesday for the duration of the term. Don't worry if you forget, as there will be plenty of reminders throughout the term.

Waterloo Aerial Robotics Group

SERGIO SUAREZ
1T MECHANICAL

As introduced previously in the July 25, 2007 issue of *The Iron Warrior*, WARG is an undergraduate student team that competes annually in the International Aerial Robotics Competition (IARC), one of the most challenging competitions in the its field. With its fascinating history already written, WARG's present and future is perhaps more exciting and challenging.

The IARC has set a virtually impossible mission to complete that has been in place since 2001. This mission consists of flying a fully autonomous aircraft in a 3-kilometre course, having it recognize a target marked in the window of a building, and sending a small ground robot to take a picture of the target. The entire process is supposed to take only 15 minutes. WARG's strategy to complete the mission includes flying an airplane with a high payload capacity above the area. A camera will be mounted onto this airplane to locate the target. Then it will command the main computer to deploy the parachute system and the ground robot involved. Once deployed, the parachute system will be guided through the window and the ground robot will be released from it. The robot will search for the given target, take pictures of it, and eventually, send them back to the mainframe. This strategy has been awarded the best technical approach and the most innovative approach in the competition.

However, as with most engineering designs, to make WARG's strategy into a reality is more challenging. Although it has been designed to be as practical as possible, an extensive amount of work and research is still required. After three years, the autopilot and the vision system are close to be finished. So is the mechanical construction of the airplane, but it lacks electrical development. The parachute system and the ground robot are still in paper and a tremendous amount of work is left in these two areas. WARG has been focusing on finishing the airplane for the past few years. Though it may seem that we are ready to fly the Hyperion, the group is actually facing challenging times ahead, due to the administrative difficulty in WARG.

In the past, WARG has experienced similar difficulties, but those passionate team members have managed to overcome them by dedicating themselves and making sac-

See RECRUITMENT on Page 8

WATERLOO ENGINEERING DISCIPLINES

Management Engineering

Management Engineering is Waterloo's newest, shiniest program. The program is designed to offer students a strong knowledge of how businesses operate and are managed, while having a solid grounding in engineering analytical and problem-solving skills. This program takes the extremely popular MSCI option (also offered by the Management Sciences Department) to the next level.

In first year, most of the program's courses are the common ones taken by most of the other disciplines, such as calculus and chemistry. In second year, the courses start becoming more tailored to the Management program, with a few courses sprinkled in from Mechanical Engineering. In fourth year, of the five technical electives taken, at least two must be from other Engineering disciplines.

Best of luck to the 98 students in the inaugural Class.

Systems Design Engineering

JEFF KAO
4A SYSTEMS DESIGN

"What is Systems Design Engineering?"

It was pretty nerve-wracking to be challenged with the question from my Frosh leader four years ago. After all, what was I supposed to know about Engineering in my first week at Waterloo? It was a relief that my answer wasn't shot down even though I had no idea what I was talking about – luckily the upper-year student asking me seemed to have just as little clue as I did!

We SYDE students have never had an easy time defining who we are. After all, in a group of people with such a wide variety of skills, knowledge, and interests, it's impossible to identify a typical systems design engineer's profile.

Take course work, for example. In the first two years, a student in SYDE learns about fundamental concepts of Mechanical, Civil, and Electrical and Computer Engineering. Also required are software courses and courses in user interaction design. In the final years of the program, a wide variety of technical electives are available in divergent fields, from management science to biomedical engineering.

The diversity also translates to the future careers that SYDE engineers decide to pursue. SYDE students have co-op jobs in traditional engineering fields, as well as energy, environmental engineering, and biomedical research. Some work at high-tech giants such as Google and Microsoft, and yet more end up in finance, consulting, academia, or further education in law or medicine. No wonder we seem to suffer from an identity crisis!

But despite the choices available, a common theme ties together our multi-disciplinary education. Courses in Systems emphasize the relationships between the different disciplines. There are group projects each term, and open-ended engineering design projects in five of our eight terms. The experiences all reinforce the idea of Systems as a problem-solving engineering and an analytical framework that isn't confined to a specific field.

Finally, a great part of being in SYDE is the friends you'll make over the next five years, both in your class and in the E2-1303 hallway (dubbed the Systems Hallway). I was always glad for the supportive atmosphere of the Department and the camaraderie among the students. Don't hesitate to come next door or across the hall, to say hi or ask us upper-years any questions that are on your mind. We'll be coming by in the first week of class to introduce ourselves too and welcome you to the Systems family.

Until then, have a super Frosh Week!

Chemical Engineering

FARAZ SYED
4A CHEMICAL

It's hard to define Chemical Engineering. It was created for "industrial chemists", but the modern chemical engineer no longer has specialized knowledge of chemistry – the focus has shifted from chemistry to industrial processes with the standards of an Engineering program. We learn the connections between the chemical, mechanical, computing, and other scientific bodies of knowledge so that we can provide solutions to modern problems. Like all the Engineering disciplines at Waterloo, we take many common courses but gain different specializations in our senior years.

So you're looking at five years of an eclectic set of courses. These include common courses such as calculus and statistics, heat transfer, thermodynamics, fluid dynamics, materials science, and programming and numerical methods. There are core courses to the program, such as organic and inorganic chemistry, mass transfer, unit operations and process control, electrochemistry and whichever specializations are chosen in fourth year. There are also five non-technical electives in the program (the compulsory course on engineering economics is the sixth one). There is a large selection of courses available for electives, providing that they meet the requirements of the Faculty.

You will be taking most of the common courses in first year, such as chemistry and calculus. Second year includes more core courses, but also some common courses such as statistics and fluid mechanics. Third year includes even more core courses, but also a few common courses such as numerical methods. This progression continues until you get to fourth year, where you take mostly core courses and get to choose your specialization.

The workload is definitely manageable. Your schedule will have five or six courses each term. Good time management skills will leave you with plenty of time for fun. However, some terms are especially busy; 1B and 2B are notorious for their workload because of the number of labs and assignments. Other terms, like 3A, can be quite relaxing.

There are a vast number of co-op opportunities for Chemical Engineering. A variety of different industries regularly hire ChemEng students from Waterloo, including consulting, oil and energy, and pharmaceutical firms.

Electrical & Computer Engineering

BAHMAN HADJI
4N COMPUTER

Electrical and Computer Engineering (ECE) are the two most similar of any of the Engineering programs. This article should give you a general idea of what to expect in your time as a Waterloo ECE student.

First year, especially 1A, may seem dry to you at first. But you have to build a solid foundation with courses like calculus and programming. 1B is the term that gets most students excited about the program, mostly due to ECE 100, the big double credit course that introduces you to electromagnetism and circuit analysis – the fundamental concepts of ECE.

Second year is when the courses start to get really interesting, and the labs become enjoyable to do. In 2A, for the digital design course, you design a one-dimensional pong game to play on a circuit board. Second year is filled with more in-depth courses on a variety of topics including semiconductor physics and analog circuits.

By third year, the courses get even more technical, with courses on communication systems, control systems, and microelectronic circuits. The two programs also slightly diverge from each other, as the Elecs follow up their 2B vector calculus course with an electromagnetism course and take thermo and power systems courses while the Comps design a real-time operating system to run on a microcontroller and take more digital hardware courses.

Fourth year is open season on electives, and you get to take your pick of courses from all the areas of specialization. Most of them have a big (and usually interesting) project component where you apply the concepts from the course. Also, after having proposed the idea in 3B, you complete your fourth-year design project in 4A and present it at the annual ECE Design Symposium the following January in 4B.

ECE co-op jobs are plentiful. While the first term is a struggle, it gets a lot easier as you get a couple of terms of experience under your belt. The major areas of ECE-related technical work are software (coding and IT), digital hardware (ASIC design), analog hardware (IC and board design), and power systems, but some students opt for business-oriented and project management jobs too.

Nanotechnology Engineering

YUSUF BISMILLA
2T NANOTECHNOLOGY

So first off, welcome to the Nanotechnology Engineering program – or more succinctly Nano. I was told to write something briefly describing the program through the four years, but then it hit me: I'm in the first graduating class and have just finished second year. The program by large has gone some changes since I went through it mainly in terms of where courses are and some content.

Your first year will be similar to the experience of all the other engineers except, well, different courses. 1A will be a lot of review, but don't let yourselves relax (too much). Exams can prove to be a surprise (especially in chemistry). 1B will come around and all of a sudden you start to get new content. This term has changed a lot since I took it, and I'm not familiar with all of them. However, in 1B you'll encounter your first labs, including organic chemistry which while fun is fairly hectic as the labs take the full time, and there are a lot of people in each room.

In second year, you'll start to see some more interesting stuff. Again curriculum changes have changed these terms a bit as well, but biochemistry with a lab is still taken, and I believe your 1B material science course will have its lab in this term. That's a change in Nano that's recent and not common in other engineering programs: Some of your courses will have labs disconnected from their course. As in, you'll complete the course one term, and take the accompanying lab the following term. This is mainly in labs where the instrumentation you use is somewhat complicated or disconnected from the course; as such, you take the course to gain all the theory, and do the lab in another term.

It's hard for me to really say what the program's going to be like for you Frosh. The program has gone some changes, all of which make sense and seem like good ideas. Talk to me in 8 months and I'll let you know how third year is going.

Mechatronics Engineering

RYAN GARIEPY
3N MECHATRONICS

For most of you, you've just spent the last month explaining to friends and family exactly what you're going to be taking in school in the Fall (*"Mecha-what?"*). Do the benefits of the program outweigh the annoyance of having to explain what "mechatronics" is? What are Mechatronics students taught? Why are we the only class that doesn't take Physics in 1A?

The key thing to keep in mind about the program is the approach it takes. Most other Engineering courses will go in-depth into their own set of studies. Mechatronics is a little different. The courses are more general, but there is a greater range of courses.

In 1A, you'll start by getting familiar with engineering design, through what is arguably the best first-year design course offered. If you're going to be staying up late working, "work" may as well be building things out of Lego.

While 1A is an introduction to UW life, 1B's more of an introduction to UW work. Physics, materials, algorithms, circuits – all of these courses are in 1B. You'll finally figure out what a "volt" is, you'll learn to think before you code, and you'll never look at a bridge the same way again.

Second year is where the program becomes different from the others. You're learning how beams bend, and what a Fourier transform is and why it's so useful. You're also writing an operating system, controlling gantry robots, and soldering sensor interfacing circuits. You go to work and realize that though you've still got a ways to go, you know more about electronics than the Mechs and know more about materials than the Elecs.

At this point, it's the 3A term. You've learned all the math you'll probably need and you consider C a second language. I can't say much beyond this point, since I'm still waiting on what 3B has in store for me. However, I will say one last thing:

The spectrum of the courses is huge. If you're really good at physics, the programming courses might get you. If you can think like a computer, it might take you hours to understand an analog circuit. Talk to (and trust) your classmates. You're all in the same boat, and you never know who can give you a hand when you need it.

Oh, and don't question the lack of 1A Physics. Once you get to midterms, it'll all make sense.

Environmental Engineering

DARCY COLLINS
4A ENVIRONMENTAL

Environmental Engineering (or EnviroEng) integrates the sustainable development philosophy into the principles of water management and treatment, solid waste management, remediation of surface water and groundwater systems, biotechnology, and contaminant transport. Major study areas are waste and water treatment, migration pathways of chemicals in the environment, and environmental assessment and modeling.

The first year of the program gives students a general background in the main concepts of engineering. You will be exposed to introductory environmental and civil engineering concepts. First year is similar to the Civil Engineering program which can allow students to switch between the two programs upon entering second year. However, the Enviros are 4-stream, unlike the Civils, making this switch somewhat complicated.

The remaining years of the program integrates the best of Engineering courses with the diversity of technical elective courses in Earth Sciences, Biology, Chemistry, Ecology, and Planning. You will also receive background in the principles of public and private enterprise, of responsible risk management, and of environmental impact assessment.

As an EnviroEng student you will participate in labs which involve surveying, lab analyses including chemical and biological analyses, field sampling techniques including water/wastewater sampling, and testing the principles of fluid mechanics and hydraulics.

On the job front, students in the EnviroEng program have participated in co-op jobs around the world giving students ideas of what types of jobs are available upon graduation. Students have worked in consulting firms, treatment, and manufacturing plants, regulatory agencies, and government offices. Jobs and projects range from research, to product development, design and modeling, infrastructure, remediation, risk and resource assessment and management and policy development just to name a few. Jobs disciplines can also include water, wastewater, groundwater, air, soil, and energy.

The Department of Civil and Environmental Engineering provides a tremendous support system through professors, technicians, teaching assistants, and staff. All are available and willing to provide help and advice on course work, as well as personal struggles. Work hard, rest and eat well, and don't be afraid to ask for help!

Architecture

ANDREA MURPHY
2T ARCHITECTURE

The following is a collection of the words of wisdom from upper-year students that all first-year Architecture students should hear before walking into their first lecture.

Let us begin with the basics: Sleep is important. Always ask questions. Don't be late for class or skip – the professor will know. Read your cultural history books – it makes the quizzes easier. Red Bull and/or coffee do not constitute a meal. Carry a sketchbook everywhere, it comes in handy.

Tips for Design Studio, the heaviest workload of them all: A design studio project is *always* a work in progress. A "crit" (critique) is never personal, so don't take it as a personal attack. Studio is a place, a course, and type of project, but never an excuse for failure to complete another course's work. To get out of Studio when the door is locked, hit the red button – it's *not* an alarm (you have to see it to understand). Put your name on everything you keep in studio – everyone's looks the same. Upper-years as well as your classmates are your friends, and great sources for advice. Use the library to look up buildings and architects – this knowledge will improve your studio mark.

And of course, the miscellaneous, but equally important tips which apply to nothing in particular, but simultaneously to everything you do: Don't burn bridges (figuratively and literally) – you never know when that certain connection will come in handy later on in your undergrad career. Make time for the things you love, because nobody will give you spare time. Befriend the security guards and custodians – you will spend a lot of time with them. Do things besides school work or you will go crazy. Keep an open mind – you are very different people from very different backgrounds. Enjoy the process – in your studio projects and in your undergraduate career. And finally, the comforting words which you will need to remember always: Be proud of your work – you wouldn't be here if we didn't think that you could do it.

So there you have it, twenty tips to get yourself through your first year of Architecture School. You had to have been a great student to get in, so keep your chin up and your pencil at the ready and you'll make it through.

Software Engineering

ALICIA GRUBB
4N SOFTWARE

Welcome, SoftEng Frosh: You are the newest adopted members of the biggest family you will ever have. You have your Math and Engineering cousins but you will of course be a part of the Software Engineering family. Our home is in the Davis Centre with our study room, labs, and of course our beloved program office. Over the next five years you will build friendships, and build complicated social networks that will ultimately help you achieve your degree.

Some of your classmates may feel more a part of Math and some more a part of Engineering, but it is the blend that makes this program unique. In first year, you get to know your classmates. Be kind to each other because you are stuck together. You will be taking two programming courses and lots of fundamental math and science courses. It doesn't matter whether you use a Mac or a PC, or whether you are a Linux guy or gal – what matters that you learn the fundamental concepts because if you don't, it will haunt you for the rest of your degree.

In second year, you will have access to some interesting hardware, learn more math, and even more computer science fundamentals – everything from design patterns to algorithms and even fundamentals of compilers. In 2B you get to pick your first electives. By third year you are a pro, ready to learn more concentrated topics, ready to start planning your design project and build an operating system. Finally in forth year you are picking your own electives and focusing your degree in your specific area of enjoyment. Getting to know your classmates will help you select better group member for your fourth-year design project.

Be proud of yourselves for making it this far, and make sure you take time you relax and enjoy your time at university. With all that work to do, don't forget to take time to relax, exercise, and sleep. Pick one activity that you enjoy and stick with it – it will help you from getting home sick and allow you to think about something else.

The key is balance: don't party too hard, and remember that Frosh Week ends when classes begin.

Good luck and best wishes.

Geological Engineering

TYLER GALE
3N GEOLOGICAL

The Geological Engineering program at UW is as unique as they come. Course-wise, the first year of the Geo program is identical to that of the Civil and Enviro programs. No one is lying when they say that upper-year courses build on the material that you learn in first year. In fact, the earth engineering course that you take in 1B is practically the 4-month summary of the Geological Engineering program.

A few of the courses you take in first year are geared towards preparing you for your early co-op jobs, and a few are geared towards building the fundamentals upon which all of the upper year courses are based. Whatever the case may be, if you are struggling with first year be patient and persevere – it takes all of us a while to learn the ropes and master the Engineering and Earth Science study skills.

Once you hit second year you will begin to spend more time in the labs. There will be many an hour spent in the EIT earth science lab, and many more spent sporadically down the hallways of E3. Labs are where you will learn the hands on skills that you will also often run in to in the workplace, so they are worth investing the time to learn properly.

Without a doubt co-op jobs have been the biggest highlight of my curricular experience to date. The resource industry is booming in Canada and around the world right now, and there are lots of co-op jobs out there for Geo students. Personally I have spent time in Ottawa, Vancouver, and Saharan Africa working in mining and petroleum exploration (geophysics). Many of my classmates have spent a lot of time working on mining projects in the Arctic and Alberta. That's not to say that all Geo jobs are necessarily in far-off places. There are as many jobs located here in Southern Ontario, typically involving geotechnical support for construction projects, and environmental assessment and design. Whatever kind of job you are looking for, remember that to get it, it is ultimately up to you to put the time and energy into finding a job, and refining your interview and resume-writing skills.

Mechanical Engineering

KEVIN CEDRONE
4N MECHANICAL

Now that you're here, you're wondering what exactly the next five years will be like. The aim of this article is to clarify what Mechanical Engineering will mean for you throughout your time at Waterloo.

You will usually have five to six classes a term, most of which are decided for you. You always have the option of taking more courses (up to seven in total) to enrich your university experience, but terms with five courses are usually tough ones – they probably have only five for a reason.

You will take courses in electricity and circuits, thermodynamics, fluid dynamics, heat transfer, solid mechanics and controls. Courses typically build on each other, so your second fluid dynamics course, taken in 3B, is based heavily on your 3A fluid mechanics course. All of the math you learn in first year will come back somewhere later in your Mechanical Engineering career – seriously. Some of the really obscure stuff in linear algebra is just designed to get blood flowing to your brain, but matrices, determinants, and all that will make cameos in later years. You will take no less than five terms of calculus, and use it in almost every other course. It is crucial that you build a solid foundation.

The curriculum as it is will give you a broad understanding of topics in Mechanical Engineering and the chance to specialize in fourth year. In your fourth year, you choose technical electives that focus on areas of interest to you. Even those courses will not make you an expert in industry. However, they will give you a very good idea of where to look for the right answer. This approach is more important since most companies have their own procedures and processes. Knowing the actual answer is almost always less important than knowing the correct procedures to obtain it and whether the answers obtained are reasonable.

In summary, your academic experience will help you develop mechanical analysis skills and equip you with the technical vocabulary that you will need to understand and be understood by your colleagues. You have an immense advantage if you are already mechanically inclined. If you're not, I have four simple half-words of advice: lefty-loosey, righty-tighty.

Civil Engineering

STEPHANIE ROBINSON
4N CIVIL

As Bob McKillop will inevitably explain to you with the help of his graphs, first year is the danger year for Civil students and 1B in particular can be rough. After eight months of school in a row and trying to juggle six courses in 1B, if you're not just about burnt out by the end of it, then you're doing better than I did. Hopefully that doesn't scare off all of you eager CivE frosh though, because life certainly gets better after the first eight months, and even those first two terms have their perks.

Have fun during the survey class in the Civil Concepts course (CivE 125) – it's one of the first opportunities you'll have to work in groups and get to know some of your classmates while you're out swinging that plumb-bob as the sun goes down. Enjoy the diversity of courses like Electrical Engineering (GenE 123) and use them to either confirm or deny your identity as a Civil (I personally swore off all topics electrical as soon as that final exam was over).

When choosing an elective for 1B, my suggestion would be to take something you think you'll enjoy, not just something you think will be easy. Also, consider taking a class completely unrelated to Engineering just to have a break. I think one of my biggest pieces of advice for first year is to get involved in some sort of extracurricular activity, whether it be Engineering Society directorships or social events, sports, or one of the Engineering student design teams (Concrete Toboggan is always a good Civil choice).

As Frosh you are probably most concerned about first year and will most likely forget anything I ramble about concerning upper years. As you go on, school seems easier due to the fact that classes move away from basic principles and become more interesting, especially in third and fourth year when you are able to choose technical electives in your field of choice. Civil Engineering has many facets, so pay attention to the introductory classes. Look forward to things like field trips and your fourth-year project. If nothing else works to perk you up and keep you going during the first year, just keep in mind the ultimate goal: the way that gorgeous ring will feel being slipped on your pinky for the first time on a February afternoon less than five years from now.

Engineers Without Borders: Help Make a Difference

MIKE SPENDLOVE
4A SYSTEMS DESIGN

Over the years, Engineering at UW has been a centre for innovative things, from world-famous product design to cutting-edge research. In 2000, Mech Eng Alumni Parker Mitchell and George Roter wanted to continue this tradition of innovation in engineering, except they wanted to see how it could benefit those living in poverty in developing countries. Thus, a new non-profit organization was born: Engineers Without Borders (EWB). In only seven years, EWB has grown to over 26 chapters at universities across Canada, a membership base of over 25,000 and a budget approaching $2 million.

"But what exactly does EWB do?"

EWB's mission statement is "promoting human development through access to technology," which means that EWB focuses on using technology as a tool to help those living in poverty overseas. This is achieved by sending short- and long-term overseas volunteers to work on projects in Africa, and also by running lots of programs, advocacy and outreach here to help teach Canadians how their everyday actions can impact those living abroad.

"What's happening this fall and how can I get involved?"

This term, the Waterloo chapter of EWB is planning lots of fun events. In the first two weeks alone, we'll be organizing:

• A BBQ on the evening of Thursday, Sept 13 on the Village Green featuring our newly returned overseas volunteers

• Our first big meeting of the term on Tuesday, Sept 18 where you can meet the EWB Executive and hear about our programs overseas

• A panel of students who have been on international development co-op placements on Thursday Sept 20

Throughout the term, we'll also be running discussions, workshops, guest speaker events and more, which are all open to anyone who is interested. We're also looking for volunteers to help with our High School Outreach program and our volunteer 'SWAT' team. For more information about any of these events or how to get involved, please check our website (uwaterloo.ewb.ca) or send us an e-mail (uwaterloo@ewb.ca).

The Waterloo chapter will also be interviewing candidates to go overseas to Africa next summer. The placements are four months long and include one of the best overseas preparation programs in the country. If you want to hear what it's like to go on a placement with EWB, come to one of the events listed above or contact us for more info. Applications will be open in late September on our website.

"What's that about Fair Trade?"

We will also be encouraging students to start purchasing Fair Trade products, so we'll be throwing a big Fair Trade Fair on campus, just in time for Christmas. In a nutshell, buying Fairly Traded products ensures that the original producer (e.g., the farmer) of a product like coffee, sugar, flowers, or sports equipment is paid a decent wage for their work. So keep an eye out for our events where you can learn more about Fair Trade and its importance.

Shadow Day

REBECCA QUAN
2A CIVIL

Still getting used to life as an Engineering student? No worries – by late October/early November you'll soon become a Waterloo Engineering aficionado. Conveniently, that is just in time for Shadow Day!

Shadow Day gives wannabe Engineering students a chance to see what the life of an Iron Ring candidate is like. High school students spend half a day going to real lectures and seeing the campus through the eyes of an Engineering student like you while getting one-on-one time with a student in their discipline of interest. It's a great chance to get involved with the Engineering Society early while giving a high school student a taste of Engineering.

Keep your eyes and ears peeled in early October for information on how to get your very own shadow!

Learn New Skills

RECRUITMENT

Continued from Page 5

rifices for the project. Now WARG is looking for people like you: first-years that are eager to learn new skills and work on robots, as well as second- and third-years that are starting to think about their fourth year design projects, and even fourth-years that are still not quite sure what career path to choose. Hence, if you want to learn new skills outside the classroom or simply have fun working on robots, or if you are just looking for something to polish you resume, WARG has something for you. WARG will be holding its Fall term recruitment meeting during the second week of classes, so come and join us. If you have questions, you can e-mail us at warg@engmail.uwaterloo.ca.

Editor's Note: You can find Sergio Suarez's previous article on WARG online at http://iwarrior.uwaterloo.ca (click Archives and select S07 Issue 5).

I am... an Archi!

ANDREA MURPHY
2T ARCHITECTURE

Hey, I'm not an Arts student, or a Planner...
I don't live in Waterloo, go to the Bomber, or own a UW parking pass...
And I don't know Jimmy, Sally, or Suzy from Cambridge,
Although I'm certain they're really really strange.

I have a Studio, not a lab.
I do Calculations and Design, not doodling.
And I pronounce it 'arc-y', not 'arch-y'.

I can proudly sew my university's crest on my backpack.
I believe in sustainability, not pollution,
Diversity, not cookie-cutter housing,
And that the sketchbook is a truly proud and useful tool.
A scale is a ruler, a lead gripper is a pencil,
And I am proud to be part of the Faculty of Engineering!

Architecture is the department with the highest female-to-male ratio,
The first satellite campus,
And the best part of Cambridge!

My name is Joe...
And I am a UW Architecture Student!