Good luck with exams and happy holidays!

TUBES AND WIRES

Grab your free food!

Every semester, the ESS hands out free food to all engineering students on the last day of classes. On Dec. 4th, we will have a barbeque set up outside the ELW where we will be serving hamburgers, hot dogs, and soft drinks to everyone who stops by.

Also, during the exam period, we will be giving away free food from the office to fuel your studying. So if you’re studying and suddenly get the hunger pangs, stop on by and we’ll help you out!

Also, on Nov. 30 we will be in the ELW serving pancakes throughout the morning. So if you’re reading this on Nov. 30 without a mouth full of pancakes, stop on by the ELW and grab some!

Thanks for reading!

Haakon Sullivan
Chief Newsletter Editor

Over the last two terms, writing both the Fishwrap and Tubes and Wires was a lot of fun. From the goofy Co-op postings and reports to the fascinating discussions about the kind of projects the students and clubs are doing, I am thankful that you have given me the opportunity to be your Director of Communications for Stream A and Chief Newsletter Editor for Stream B.

Next semester, the ESS will need a new Chief Newsletter Editor to create the Fishwrap. If you enjoy writing stories about what is going on in the engineering community, enjoy writing jokes in the attempt to entertain people, or want to become more involved with your ESS, then this position would be great for you. If you want to see improvements or changes in your biweekly newsletter, running for the position of editor would also be a good choice. For more information about this position, email me at essbnws@uvic.ca.

If you want to run for a different position, there are other opportunities available. For more information, email Sarah at essaprz@uvic.ca.

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Good luck with exams and happy holidays!

**TUBES AND WIRES**

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**AUVic**

A team that designs and builds autonomous submersible robots.

**Meetings:** Tuesdays, 7:00 pm
**Location:** EOW 148
**Contact:** auvic@engr.uvic.ca

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**FORMULA MOTORSPORT**

**Formula SAE**

This team designs, builds, and races formula style cars for the Formula SAE competition which is the world's largest engineering competition.

**Meetings:** Tuesdays, 8:00 pm
**Location:** ECS 116
**Contact:** fsaeadmin@uvic.ca

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**Leadership Through Diversity**

Leadership Through Diversity (LTD) is a group providing leadership opportunities, and inclusive events for engineering students to network, meet other students, and get involved with their faculty.

**Meetings:** Thursdays, 6 pm
**Location:** ECS 108
**Contact:** ltd@uvic.ca

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**UVic Hybrid**

They design and build hybrid vehicles for competition.

**Meetings:** Mondays, 5:00 pm
**Location:** ELW B250
**Contact:** ecosat@uvic.ca

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**UVic Rocketry**

The UVic Rocketry (UVR) Team is a group of driven students who wish to develop their skills and knowledge in the area of rocketry.

**Meetings:** Mondays, 6:30 pm
**Location:** ECS 116
**Contact:** rocketry@uvic.ca

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**UVic Biodev**

They design and prototype commercially applicable medical grade devices.

**Meetings:** TBD
**Location:** ECS 108
**Contact:** uvicbiodev@gmail.com

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**MPG**

A microprocessor club that offers hands-on embedded systems training from an industry perspective.

**Meetings:** Wednesdays, 5:30 pm
**Location:** ECS 116
**Contact:** martin.j.kellinghusen@ieee.org

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**Engineers Without Borders**

Engineers Without Borders is a growing charitable organization dedicated to international development.

**Meetings:** Wednesdays, 7 pm
**Location:** ECS 128
**Contact:** communication@uvic.ewb.ca

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**ESS Weekly Meetings**

Mondays, 5:00 PM
ELW 206 (the place with the stapler)

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Good luck with exams and happy holidays!

**TUBES AND WIRES**

Get involved with your IEEE student chapter

![IEEE Student Branch Logo](image)

**Martin Kellinghusen**
**Vice President Academic**

The IEEE UVic Student branch is a student-run organization that connects students with the opportunities that are presented by the IEEE. It also hosts various events for students throughout the year and provides a lab space for all members to use freely for any school or personal projects.

To join the student branch:
**Step #1** Navigate to the Join IEEE International page and complete the membership form. You will need a credit card to complete the registration.
**Step #2** Next you need to register as a UVic IEEE member this website. To do is navigate to the Join UVic IEEE Student Branch page and complete the membership form. Make sure to enter your IEEE membership number when prompted as this is how the system checks if you are an approved member.

http://ieeesb.uvic.ca/join ieee.org/index.html

The McNaughton Center is an open laboratory space that any Student Branch member is welcome to use at any time. (24/7 access is provided via a CardKey, which also gives you access to other rooms in the ELW building)

Located in ELW B350 the McNaughton Center gives students space to work on personal and academic projects.

**Equipment Highlights**
- Oscilloscopes
- Function Generator
- Soldering Equipment
- Dremel
- Desktop Computers
- Free Printing
- Microprocessors
- Books and Publications
- Wires, Resistors, etc.

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**Special thanks to this week’s Tubes and Wires contributors!**

Martin Kellinghusen
Sarah Shepherd
Tal Fleerackers
Brandon Hart
Everyone who submitted quotes and Snapchats

Abstruse Goose

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Good luck with exams and happy holidays!

**TUBES AND WIRES**

It’s time to end this STEM versus arts tradition

Brandon Hart  
Vice President Finance

I’m sure all of you have heard (or maybe even perpetuated) the stereotype that engineering (or other STEM fields) is better than all else, often towards fine arts and other arts departments. If you have no idea what I’m on about, good! However, stereotypically, we (engineers) trash talk the fine arts about how the degree is worthless. (“Would you like fries with that?” is a common joke) On the other hand, I’ve heard fine arts students continuing it as well.

Recently, I’ve become fed up with this mentality. Last year, I was asked to debate the thought “Is engineering art?” I wouldn’t doubt that many of you are shaking your head almost in disgust at this thought. At first, my thought process was similar. Then I thought about it some more. Some of the elegant solutions that I’ve seen come up with for problems were almost artistic in their execution. And I realized, no, engineering is not art, but there is art in engineering. Engineering must conform to physics and project requirements, whereas art is no bound by these requirements. If I’m honest, I really enjoyed this debate, and it really opened my eyes and shifted my thinking.

The dictionary defines art as “the expression or application of human creative skill and imagination, typically in a visual form such as painting or sculpture, producing works to be appreciated primarily for their beauty or emotional power.” It’s... different than just solving a problem, although problem solving is a large part of the process. I bet you (or your parents or some family member) have at least one piece of art on the walls of your (their) house. Imagine if these were bare, that’d be pretty depressing, plain walls, would it not?

In art there is problem solving, it’s not entirely emotional. For starters, artists often work with toxic chemicals, heavy machinery, and actually many engineering challenges in order to carry out, what in the end, becomes expressed emotionally/thoughtfully/politically, and so forth.

“Now, if a fine arts student is studying what they enjoy, how does that make us better than them? It doesn’t.”

Now, you may ask, what’s my point? My point is that the majority of us are probably here because we enjoy what we’re doing. We enjoy what we’re learning overall. The challenges we face, be it in our homework or extra-curriculars, entertain us to some degree. Now, if a fine arts student is studying what they enjoy, how does that make us better than them? It doesn’t.

“Ah, what about monetary gain? At the end of my degree, I’m much more employable!” You may be mistaken. An example, our current prime minister, Justin Trudeau, graduated with an arts degree from McGill, and an education degree from UBC. “Ah, but this is just one result, the stats are behind us!” What if a student is not here to learn something that will make them employable? This entire argument has just been thrown out the window.

To put this in a perspective that might be easier to understand, there’s a Cost-Benefit argument that all post-secondary students need to consider. This analysis comes up with a different result for everyone.

On the other hand, engineers often work towards building incredible structures, such as high rises, cars, even the machinery that artists use. If they were built just for the structure and functionality, no one would want to even look at them. There is art in all things made and expressed.

I like to think of it like this: STEM and arts are almost two sides of the same coin. One side is the analytical – here’s a problem, solve it. The other side is the exact opposite – Here’s some emotion, thought or feeling. There’s no problem I’m solving or facing – it’s just a message I wanted to convey. Like realism vs impressionism – realism brings you to the moment, exactly as it was, impressionism brings the mood of the moment, as the artist felt it.

Enough with the trope that we’re better than everyone else. We’re really, not. If the entire world were STEM people, life wouldn’t be enjoyable.

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Meet Canada’s future leaders

Sarah Shepherd
President, Stream “A”

Recently, I had the opportunity to attend the Catalyst Canada Honours Conference and Dinner in Toronto during reading break. While I was there, I, along with 29 other millennial women studying business and engineering in Canada, held the first meeting for the inaugural Millennial Leaders Advisory Council. There we met with the Executive Director of Catalyst Canada, Alex Johnston, and the CEO of BMO, Bill Downe, to discuss issues women faced in the business world and other related topics.

The first evening was a casual stand-up dinner where we got to meet the other conference attendees and organizers. The event was sponsored by BMO, and some BMO representatives plus some of the organizers gave some welcome speeches.

The conference started bright and early the next morning, kicking off with a speech from Alex Johnston about the powerful, proven behaviours of inclusive leaders. Following that, there was a panel of the Catalyst Canada Honours Champions, which included Bill Thomas, Cynthia Hansen, and Colleen Moorehead. After that there was a research report delivered by Jennifer Thorpe-Moscon about the power of E.A.C.H.

After lunch, a joint speech was delivered by Janet Kestin and Nancy Vank about making your excellence visible. We then received the keynote address from Ken Dryden about advancing Canada’s talent for the 21st century.

The night ended with a formal dinner recognizing this year’s Champions.

The next morning, the Millennial Leaders Advisory Council met with Bill Downe and Alex Johnston to have a roundtable discussion. Here we discussed topics that addressed questions such as “what do you look for in a career?” and “how can we be more effective leaders?” The list below includes the highlights of this discussion.

Run an organization that provides opportunities for your executive to perform different functions.

Many, if not all of us agreed that we would like to work for a company that provides us with opportunities to try our hands at different roles within the organization. This could be anything from holding a management position, to design, to number crunching, or whatever else.

Study something you don’t excel at.

One girl commented that she was able to speak six languages, but when it came to math and physics, she struggled a lot more. But instead of pursuing a degree in languages, she decided to challenge herself and went into engineering instead. She is now an extraordinarily well-rounded person as a result.

Ensure your organization has a balance of sustainability and creativity/innovation.

One girl noted that our generation seemed to be full of big ideas and dreams. She commented on how we were able to make progress and push our limits to create new and innovative things for the world. A different girl noted that, while this creativity is important, it’s also important to ensure that the organization is stable and doesn’t pre-emptively leap at high-risk opportunities.

The university structure may be set up so that “A-Type” personalities thrive, and “B-Type” personalities do not.

The person who made the comment expanded upon it by saying the people who are competitive and aggressively pursue opportunities (such as leadership roles in extracurriculars) are generally viewed favourably by their superiors in most situations. It was suggested that, at a local level, student groups talk to companies about common diversity issues that arise in the workplace, and how these issues can be mitigated. By ensuring an inclusive environment, the companies have a wider pool of potential employees to draw from, which really benefits everyone.

Following this roundtable discussion, we had a quick workshop about driving change, and then got to tour the trade floor at BMO headquarters. The day ended with a lunch at BMO, and then we all started our treks home.

To find out more about Catalyst or the Millennial Leaders Advisory Council, feel free to email me at essaprz@uvic.ca, or check out Catalyst’s website (http://www.catalyst.org/).
Tubes and Wires

UVic Engineering students represent at national diversity conference

Tal Fleerackers
Director of Corporate Relations

On November 13th, four UVic engineering students trekked out to Waterloo for CDE, a three day long conference on diversity in engineering held by the Canadian Federation of Engineering Students. Over one hundred and fifty engineering students from schools across Canada gathered for the intensive national forum to learn about and discuss the role that students play in creating a more inclusive industry.

The conference was kick-started by a casual bowling night hosted by Bingemans and Boston Pizza. A light dinner, paired with the fluorescent bowling alleys of Bingemans, gave delegates the perfect opportunity to have some fun while networking with other engineering students.

The following morning began with a delicious breakfast buffet and welcome speeches by the University of Waterloo Aboriginal Student Association, Mary Wells (the University of Waterloo Sponsor), and Melanie Stare from Potash Corp. Breakfast was followed by a day of breakout sessions discussing various aspects of engineering and diversity, as well as workshops on public speaking, inclusivity, intersectionality, mental health, and the language of sexuality. The day was tied together by a delicious dinner hosted by the German Schwaben Club in Kitchener, and a trivia night.

The last day was bittersweet. Sessions were held at the University of Waterloo with the first half filled with a keynote speaker as well as various interactive panels, while the other half was dedicated to student discussion and brainstorming. Time was set aside for a delegate presented set of “TED style” lightning talks, one of which was hosted by Engineering Student Darren Gervais-Harrison on “embracing change”. The day was finished off with a gala night in which all the delegates got dressed up, ate a wonderful meal, and danced their hearts out.

Overall the conference was a wonderful learning opportunity filled with positive connections, strong brainstorming and powerful discussions. I think all of us delegates will agree this conference was both motivational and inspiring.
The quest for a new gaming PC

Haakon Sullivan
Chief Newsletter Editor

Eight years ago, it was a fantastic PC. Wielding a mighty GeForce 8800 GTX and a robust AMD Athlon X2 Dual-Core processor, it ran the most challenging games of its time at max settings. I was definitely proud of it being able to run *Crysis* at max, even though I have never played the game.

Over the next few years, it played *Fallout 3*, *BioShock*, *Mass Effect*, and many other great games at max settings without much difficulty. These games looked stunning at the time. However, around 2010 there began a slow and steady drop in performance. Today, whenever I run *Payday 2*, my fans speed up so fast, my PC sounds like a small prop engine. *Total War: Shogun 2* is barely playable whenever it gets to the field battles, and the waterfalls in *Skyrim* only begin to move when I get close enough for it to render. Worst of all, I can’t enjoy the new titles such as *Witcher 3*, *Fallout 4*, or the upcoming *Warhammer: Total War*. It’s time for an upgrade.

Being out of the loop of the computer component market for so long, it took some time to figure out how much I needed to spend and what I really wanted. The first choice was to decide whether or not I wanted a prebuilt machine or build one of my own. Some research quickly uncovered the fact that good, gaming quality PCs or laptops are overpriced. Sure, there would be warranty backing for the whole PC or a portable laptop could come in handy, but if I want to drop a grand on a new PC, I can build a better quality one for just as much.

Browsing through PC Part Picker, there are a ridiculous number of components to choose from. Sifting through different kinds of processors, motherboards, graphics cards, and sticks of RAM quickly became a chore. Some research showed one clear fact: For the best bang for my buck, I should buy a NVIDIA graphics card and an Intel processor so I began to go from there.

For a good compromise between the quality of a custom build and the ease of buying a prebuilt machine, I located a bundle of PC components on Newegg containing:

- Intel Core i5-4690K Devil's Canyon Quad-Core 3.5 GHz (Heatsink and fan included!)
- ASRock Z97 Anniversary LGA 1150 Intel Z97
- Two sticks of 4GB RAM
- 120 GB solid state drive
- 1 TB hard drive
- A computer case
- EVGA GeForce GTX 960 (with whisper silent cooling!)
- 620 W power supply

Buying this bundle for $989.99 (Canadian) saves the time of buying parts from different places or worrying about if the components are compatible with each other. The bundle also comes with a bit of a discount. Here’s to 8 years more of good PC gaming!

The moral of the story is: If you want to build something from scratch but don’t have the will or time to research things, there’s always something there that will do some of the work for you.
Good luck with exams and happy holidays!

TUBES AND WIRES

Snapchats from engineering!

- When you're too short for the new table
- What a bitchin' circuit! ... I hope it works.
- Line styles because forgot my crayons
- When a SENG student does ELEC stuff
- Why study when you can make korma?

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Good luck with exams and happy holidays!

TUBES AND WIRES

Final exam schedule

1st year
Your first engineering final exam period is upon you. The stars predict that you will find much success, but only if you avoid drink, digital games, and concerts. Enjoy them afterwards for a great mark and many great memories.

Electrical and Computer
To avoid an embarrassing situation, avoid inserting squirrels into the squirrel cage to drive a load. That would be nuts.

Mechanical
What exactly is mechanical engineering? Not even the galaxy could encompass the breadth of the answer.

Civil
Build the bridge and the people will come... they kind of have to.

Software
The computer and electrical engineers will supply the canvas, brushes and paint but it’s up to the software engineers to create the real works of art.

Biomedical
It takes a special kind of engineer to dream of making a Robocop someday.
Good luck with exams and happy holidays!

TUBES AND WIRES

Co-op job opening!

Company name: Santa Claus Toys and Games
Job Title: Workshop Technomancer
Co-op Work Term: 2016 - Summer
Position Type: Regular Co-op, Full Time
Co-op Work Term Duration: 8 months full time (2 work terms)
Job Location: The North Pole
Region: National
Salary/Wage: 500 cookies or candy canes and 20 gallons of milk per month
Number of positions: 1
Hours per week: 40
Work abroad: No
Job Description:
For hundreds of years, Santa Claus has been distributing toys and games to children all over the world and has become a household name. However, our North Pole operation has not been upgraded since it was established and we need to upgrade our toy and game assembly line to reflect and aging elf population and booming growth in the 0 - 12 age demographic around the world.

We need someone (naughty or nice) experienced with engineering to assist in upgrading Santa's toy production line to this new century. At the moment, it relies heavily on elf labour, magic, and good cheer and we want to add a number of mechanical and electronic devices to interact with that to improve efficiency.

For example, the Wish and Dream toy maker relies on magic to funnel children's wishes, dreams, and hopes into physical toys. We need someone to design a circuit to improve the output of the machine and record statistics on what is being printed. If you are one of those people who believe that an interface between magic and technology cannot be done, just remember that Walt Disney does it on a regular basis.

We also need you to design a device to scan all the letters that people send to Santa, crosscheck the names with Santa's naughty and nice lists, and put the nice children's requests on the production queue. We also need a better program and computer to receive and store the data that the NSA sends us to determine who is naughty or nice (if you're reading this now in this publication, you're likely on the naughty list, you naughty engineer - except if you're in civil).

Qualifications:

- Knowledge of interfacing magic and technology. Bonus if you worked for the Ghostbusters in the past as they do this on a regular basis.

- Have an active imagination. Prior experience working in a very unique setting (even something ridiculous like a yellow submarine) would assist you in fitting into our work culture.

- We will allow naughty engineers to work for us, but there is a limit. If you are a supervillain or have assisted a super villain in creating a death ray, we will not hire you.

- Huge benefit if you have experience brewing moonshine from a rural community. Santa has got to keep warm somehow!
Good luck with exams and happy holidays!

TUBES AND WIRES

Hexadecimal Puzzle Sudoku

Crypto Movie Quote

Quotes from Engineering

And then I started drinking, and things got even better.
Eric Power

The couch that no one sits on, but everyone lays on
JP Bouchard

If you inhaled a magic mushroom, then you can see that the two are slightly equivalent if you blur.
Anonymous

I forgot this happens for a real fire too
Tal Fleerackers about the fire alarm

It's not fair to bash Java because it can't defend itself... Probably because it's so awful.
Bill Bird

Sarah, SPREAD
Funk

I wish I could drink all day... but not the alcoholic version
JP

Good thing today is not a job interview, if it was you're not going to make it
Zuomin Dong, MECH 459

I can't tell you what he does but he makes more than me
A. Baht talking about his son, ELEC 370

No free beer!
A Baht, ELEC 370

I don't like clothing.
Mike Funk

STEVE'S QUOTE CORNER
Sarah: Steve, you said you wouldn't drink on weekdays anymore
Steve: I'm not! ... But tomorrow is Friday

Professor Lyon's school of gifted drinkers

Fels?

Today I learnt stp means 'stand to pee'

Why?! It's not even due till Friday
(it's Wednesday afternoon)

I think moon prison should be a thing.

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