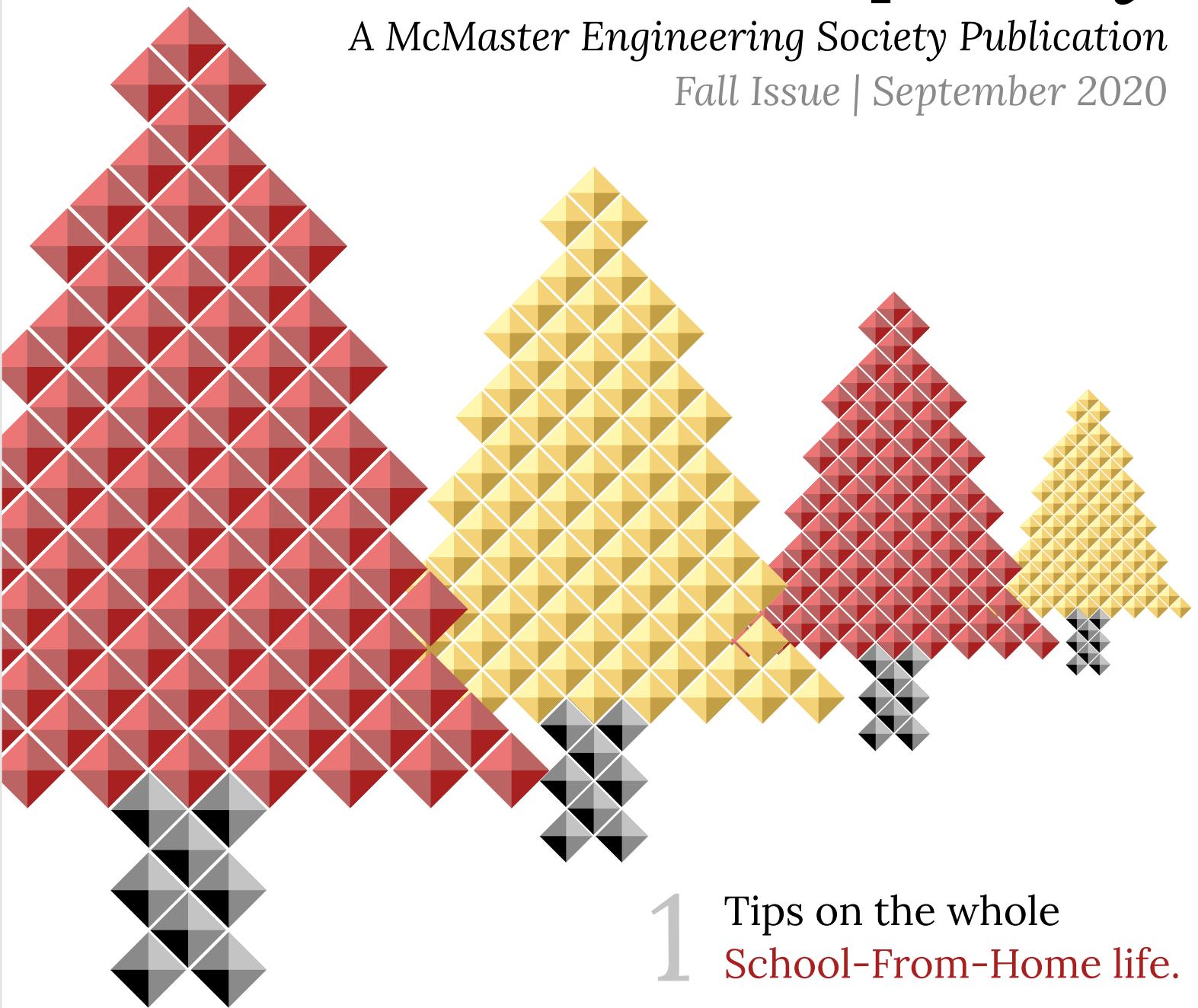


# The Frequency

A McMaster Engineering Society Publication  
Fall Issue | September 2020



- 1 Tips on the whole School-From-Home life.
- 2 Find out what support is available for students.
- 3 COOP Feature - The work-life of a Clinical Research Intern!





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# A Letter From the Editors

## Negar Goodarzynejad

Greetings Fireball Family!

Whether you are embarking your engineering journey as a first-year student or are thinking about upcoming plans as a graduating student, this school year might not be what you envisioned. While practicing physical distancing, our goal is to keep our engineering family connected and informed, making the transition to online learning easier for everyone. We hope you will enjoy reading as much as we did while organizing this publication for you. Make sure to check out your McMaster email and "Frequency" Tab in the MES website for future issues and feel free to provide us with any feedback. I wish you a great term and happy reading!

**Negar Goodarzynejad (She/Her)**

Materials and Biomedical Engineering (iBioMed) II

Frequency Editor

McMaster Engineering Society



## Isabelle Ragany

Hey readers!

I want to start off by welcoming everyone back to another great school year and a special shout-out to the incoming first year students! I am excited to be a Frequency Editor this year and I am looking forward to working with an incredible team of execs, designers, writers and my outstanding Co-Editor to continue sharing what matters to our Fireball community! Finally, I want to thank you, the reader, for taking the time to check out the amazing work of our peers. Stay tuned for more engaging content about competitions, conferences, survival hacks and much more!

**Isabelle Ragany (She/Her)**

Electrical and Biomedical Engineering (iBioMed) II

Frequency Editor

McMaster Engineering Society



# A Letter From the Publications Editor

## Hunter Ceranic



Hello dearest Frequency readers!

My name is Hunter Ceranic, and many of you may know me as the MES Engineering & Society Representative for this year. What you might not know is that when I'm not repping the society that we live in, I moonlight as the MES Publications Editor. Jokes aside, every single word in this marvelous article has been meticulously read through by myself and my editorial committee, a rag-tag team of super-human spellers with an eye for grammar and a pension for sentence structure. I have given this document my seal of approval so if you ever find any discrepancy with the articles, or have any qualms or concerns please feel free to contact me at [publications@macengsociety.ca](mailto:publications@macengsociety.ca). I hope you find the words the Frequency Editors and writers put so much effort into to be a great way to spend your time during a study break! Happy reading!

All the best,

**Hunter Ceranic (He/Him)**

Mechatronics Engineering & Society IV

Publications Editor

McMaster Engineering Society



# A Letter From the MES President

**Alex Moica**



Hi,

I'm Alex Moica, the president of the McMaster Engineering Society (MES) for the 2020-2021 school year. The mission statement of the MES is to foster the development of well rounded engineering students through accessible support of academics, athletics, and recreational and professional activities, while maintaining the integrity and unique traditions of our faculty society. In order to stay true to our mission and values, we have had to implement changes this year due to the COVID-19 pandemic affecting many of the functions of the MES, particularly with the closure of campus buildings and the prevention of any in-person events. However, the most pressing concern we have is maintaining the community within McMaster Engineering and ensuring that all of our current and incoming students feel connected and supported throughout these times. Our main areas of interest were outfitting previously physical systems with online capabilities (EOHSS, reimbursements, etc.), transitioning as many events & services as we could to online platforms, and constantly engaging in dialogue with other faculties and schools regarding their approaches to the pandemic. In addition to the changes made in response to COVID-19, the MES has been working on creating a virtual Welcome Week, improving student spaces, developing its internet presence and social media platforms, adding more academic supports for students of all years, and constantly ensuring transparent budget allocations. More information on our plans for the year can be found on the MES website under governing documents. I look forward to the upcoming year and am confident in our ability to persevere as a community throughout this time.



# Meet the Dedicated Writers

---



**Name:** Rija Asif

**Program and Year:** Computer Engineering Level II

**Role:** Dedicated writer

**Fun Fact:** I've lived in 4 different countries!

**More:** I love reading thrillers, going on long walks and experimenting with cooking



**Name:** Taylan Dalkan

**Program and Year:** Chemical and Biomedical Engineering Level II

**Role:** Dedicated Writer

**Fun Fact:** I have played the alto, tenor, and baritone saxophone.

**More:** I love jazz music, video games, reading books, and I enjoy learning about philosophy and psychology as a hobby.



**Name:** Elsa Bassi

**Program and Year:** Mechatronics Engineering Level III with Minor in Sustainability

**Role:** Dedicated Writer

**Fun Fact:** I can cook a mean risotto!

**More:** I'm a big fan of meditation, skiing, houseplants and playing the guitar!



# Meet the Graphic Designers

---



**Name:** Neel Gokhale

**Program and Year:** Engineering Physics Level IV

**Role:** Graphic Designer

**Fun Fact:** I have been playing the drums for 7 years! I love jazz or blues depending on the day of the week.



**Name:** Ola Shamsaldin

**Program and Year:** Electrical and Biomedical Engineering Level II

**Role:** Graphic Designer

**Fun Fact:** I really enjoy solving Sudoku puzzles and playing games that require lots of problem-solving. I love baking, rollerblading, and solving sudoku puzzles.



**Name:** Manan Kharwar

**Program and Year:** Engineering Physics Level II

**Role:** Graphic Designer

**Fun Fact:** I have travelled to more than 30 countries, but still haven't been to the United States. Also, I can do a backflip!

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# A Letter to Incoming First Years

by Elsa Bassi



First year is a rite of passage. It marks the physical transition into post-secondary as well as, for many, a vital mental shift in perspective from teenager to adult. It is a scintillating time of new experiences, expanding horizons and getting to know oneself. It also usually contains some of people's steepest learning curves in life. It involves plenty of uncertainty, novel methods of social interaction and above all else a complete shift in lifestyle. On top of all that, this year's cohort is tasked with navigating all these new experiences from a distance!

Nonetheless, as it always does in the face of adversity, society perseveres. Within these uncharted territories, some truly unprecedented and special opportunities will present themselves.

First year was tricky for me. My boyfriend of two years dumped me two weeks prior, and I was feeling a lot of pain and resentment. Residence move-in saw me draw inwards and become quite introverted. I was not in a mental state to put myself out there and expand my social circle beyond my roommates.

Although my situation can in no way be compared to beginning university virtually from home, I can share my findings on how to navigate a less-than-ideal transition gracefully and perhaps something can be taken from it.

One thing I wish I knew in first year: university, like any experience, is what you make of it. In the risk of being cliché, you get out what you put in. I, despite my depression, did not take advantage of the mental health resources available to me and did not seek support from anyone I knew. I thought I could solve my problems by trying harder and forcing myself into uncomfortable situations. I cannot stress how wrong this was.

I eventually realized, once the proverbial lightbulb turned on in my head and I started to look into it, that I had options to help me get out of my spiral. In my experience, McMaster is one of the most supportive and inclusive universities for its students.

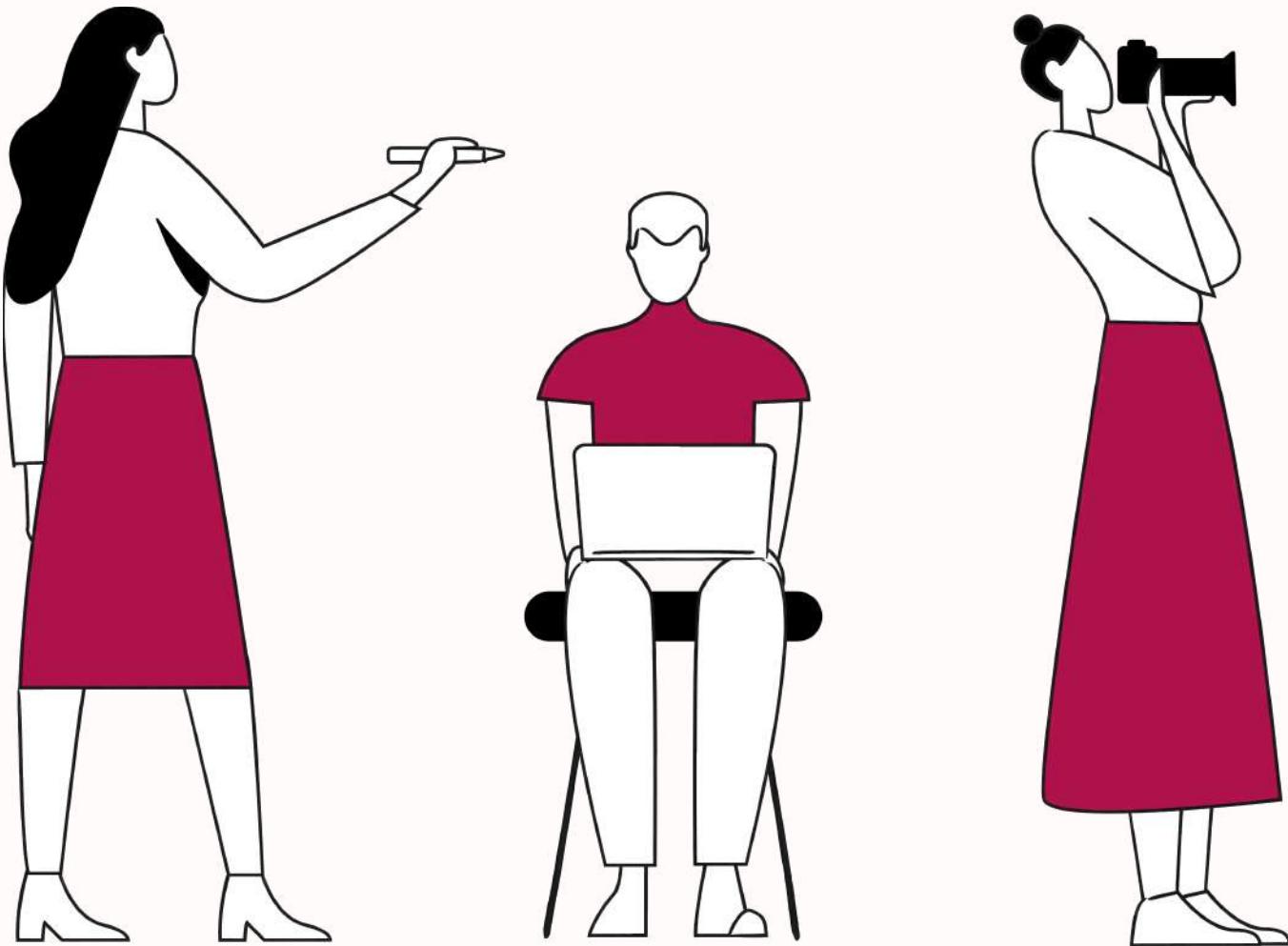
There are countless life-changing mental health and student support systems in place for members of the Mac community, whether you're looking for career or academic advice, mentorship, counselling or even just guidance. You are NOT supposed to have it all figured out or go it alone. In the face of the challenges this pandemic is posing on its incoming students, the university has doubled down on student support services, such as Horizons, Archway, the Youth Wellness Center, etc.!



Not to mention a great number of student-run initiatives such as the McMaster Student Union's Women and Gender Equity Network, PRIDE Community Center, Student Assistance Plan, and Ombuds. Note: All of these resources are available by phone and their links are below.

Nobody is too cool to get involved, and when you find a way to do so that suits your interests, you will find wonderful people that you will connect with just as I did, whether you meet them in person or online.

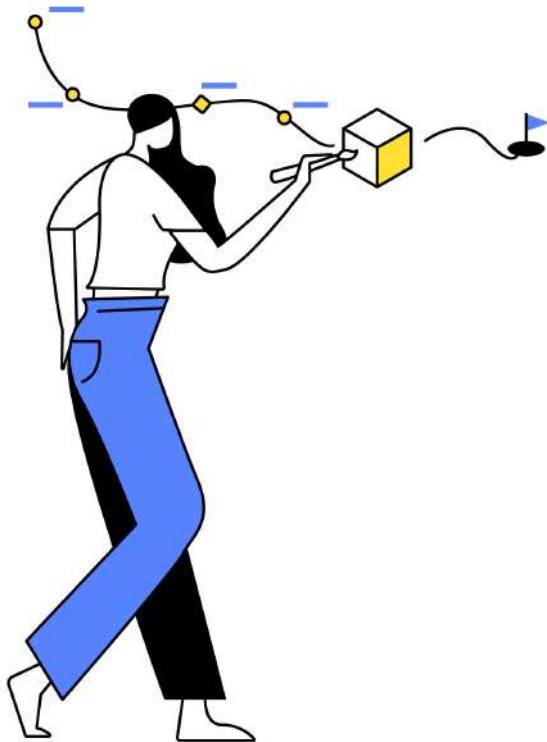
If I could go back, I would tell myself not to judge anyone immediately; first impressions aren't always spot on, and people are always more nuanced than they let on. Everyone has a story to tell, as long as you have the courage to ask them about it. The world is your oyster; you're starting university, anything can happen!



# Academic Assistance at McMaster University

by Taylan Dalkan

The transition from high school to university studies can be a daunting task. In this edition of The Frequency, details will be provided about various tutoring programs, upper-year review sessions, and tips for success in University for upcoming first-years students.



## Tutoring Programs

There are many tutoring options that are easily accessible to students at McMaster. One example of an extremely useful tutoring service is TutorOcean, which allows students to search for tutors and filter their search results by institution, subject, course code, and tutor name. The cost of a tutor using this service is 18 dollars per hour.

TutorOcean also allows students to participate in online tutoring sessions which is especially useful given the current social distancing guidelines. This service is very useful for students struggling in a particular subject and need one-on-one assistance learning the material. Many of the tutors that teach these courses are past students, so they have first-hand experience with the material which enables them to share useful tips about studying for the course most effectively. On McMaster's website, there is a section called Peer Tutoring which has a link to McMaster's TutorOcean page, where only certified McMaster tutors are posted. The Peer Tutoring section also provides instructions for students who want to become tutors. A student must achieve a minimum grade of A- or 10 on McMaster's scale to be eligible. This service can be an excellent way for experienced upper-year students to help out their fellow Marauders and also earn money in the process. Another very popular tutoring service is Prep101; however, Prep101 is not a McMaster service. Prep101 sessions typically occur before a test or exam. These sessions typically feature live instructional review from an instructor along with a package consisting of past tests and additional practice problems.



## Upper-year Review Sessions

If you are a student who needs help before a test but would rather not spend any money for a service, there are many upper-year review and tutoring services that are free. An example of one of these services is the McMaster Undergraduate Physics Society. This sub-society helps students in first-year physics courses with questions related to key concepts, homework problems, assignments, and practice test problems. This includes Physics 1D03 and Physics 1E03. Another useful tool for students is McMaster's Engineering Society. The society frequently offers preparation sessions or fun events that allow students to take a break from their studies. In order to keep up to date with these events, students can search for McMaster Engineering Society's website and select "Events" to see a calendar of upcoming sessions.

## General Tips and Advice for First-year Students

University can be a daunting experience, however it is also one that can be very fun and interactive. Students coming from high school quickly realize that University is a different experience that allows them to explore their interests. Students adjust to the new environment at different paces so it's very important for students to consider their mental health throughout this process. Eating healthy, getting lots of sleep, and exercising seem like cliché recipes for success, however those three things alone can greatly improve a student's ability to learn. Being proactive and making schedules that catalog dates for assignments and tests can also help students stay on top of their workload.

*"The only mistake you can make is not asking for help"*

- Sandeep Jauhar



# Support Programs for McMaster Students

by Rija Asif

The community at McMaster is exemplary welcoming, that there are various people and organizations that are always willing to help out other students. Whether you need advice from an upper year about which stream to go into after first year, the best places on campus to eat, or help with a job application, here are some of the mentorship programs you can sign up for at McMaster:

## Archway Program

Archway is a novel program designed to support incoming first-year students in their transition to university academically, socially, and mentally in these challenging circumstances due to COVID-19. First years are connected with Archway mentors who are upper year students that will aid them in navigating the McMaster resources, provide support where necessary and help develop a sense of community by offering a variety of engagement opportunities. Support will be personalized for each student depending on their goals, interests and needs, and they will be connected to the right people on campus. In addition to personalized support, students will be part of a 35-student community based on their interests. The communities will be guided by Archway mentors and aligned with the university's values, where social connections and larger group support will be facilitated.



## MES Mentorship Program

The MES recognizes that getting used to university can be quite challenging in first year and runs its own mentorship program. Through this program, students will be matched with a current upper-year student who has similar interests and can offer advice and support throughout the school year. Mentors send monthly newsletters updating the students about upcoming events and one-on-one meetups can also be arranged. Moreover, mentors and mentees can meet during socials that include free pizza, drinks and board games!





## **Big Sister/Little Sister**

The McMaster Women in Engineering Society also runs a mentorship program catered towards female-identifying students and they offer separate events and activities. This mentorship program joins upper-year and first-year engineers in mentor-mentee pairings based on their interests and engineering stream. Furthermore, they run events throughout the year for pairs to meet up and socialize with other mentors of this society. For first years, this mentorship program is a great way to network with upper years, ask questions about their future, and get advice about the upcoming school year. For upper years, mentorship is a way to pass on the legacy! All the tips and tricks you learned to stay alive in first year can go towards helping a bright, new student.



## **Work From Home Tips and Tricks**

by Elsa Bassi



So here's the deal. You're at home for what may well be the entire school year. Kind of like high school but now you don't come home at the end of the day; you're there all day every day. For some of you that may be a dream come true, and for others it might be a nightmare. Thankfully plenty of people have been working from home (WFH) for quite a while, and have learned a thing or two about what to do and what not to do – and I've compiled a list of the best of that advice, including my own.

Unsurprisingly, studies have shown that home workers tend to work longer hours and experience a blurring of the boundaries between work and home; i.e. being in the same environment all the time, whether you're studying or relaxing. This can cause issues such as trouble sleeping due to associating your bed or room with working. It might also make curbing unwanted thoughts about work or school related responsibilities difficult.



At this time, it is extremely important for students to separate school from home practices, such as sleeping and relaxing. We can do this by creating spaces in our homes, if possible, that are designated only for each of these activities.

Another obstacle faced by people working from home is self-control. Researchers have found that while self-control is normally a very beneficial skill, in work from home situations it is like a muscle that can become fatigued. Like any other muscle, it requires energy to be used, and when over-stimulated, can function sub-optimally. This worsens mental health and overall wellbeing. Ordinarily, when you are on campus in a library or study area, distractions like your bed, TV and kitchen cupboard are out of sight and mind. At home however, they're front and center. With more things to restrain ourselves from, we tend to experience overstimulation.

To avoid self-control fatigue, students should set up study schedules in order to break up their days. Try allocating time to work out or go for a walk, forcing you to exit your study environment. It also helps to find a space within your home for work that is as distraction-free as possible.

Interestingly, there are some benefits to working from home. A study in 2012 found that structured environments, like offices and libraries, tend to kill creativity. People working from home reported higher productivity in innovation and ingenuity related tasks. On the flip side, the study found that people performed dull tasks better in a "work" environment than they did in a less-structured remote setting. This is because when you're tasked with a boring assignment in a relaxed environment, ordinary distractions seem more interesting. You find you'd rather watch TV or walk your dog.



## Work From Home Tips and Tricks | Elsa Bassi

Work strategically. If you know that you have a mundane assignment to do, put yourself in a structured environment without distractions. If you're trying to channel creativity, consider going outside or to a comfier setting.

Perhaps the most important thing to note about WFH is that it's going to be weird. Maybe you've been doing it for a while, or maybe you have no idea what it's going to be like. It takes some time to get used to online lectures and the majority of social interactions taking place over Facetime or Zoom. It is vital that we give ourselves the space to have (any) feelings about the ongoing pandemic and the situations it has put us in. Bottling up frustrations never works. Self-compassion is key.

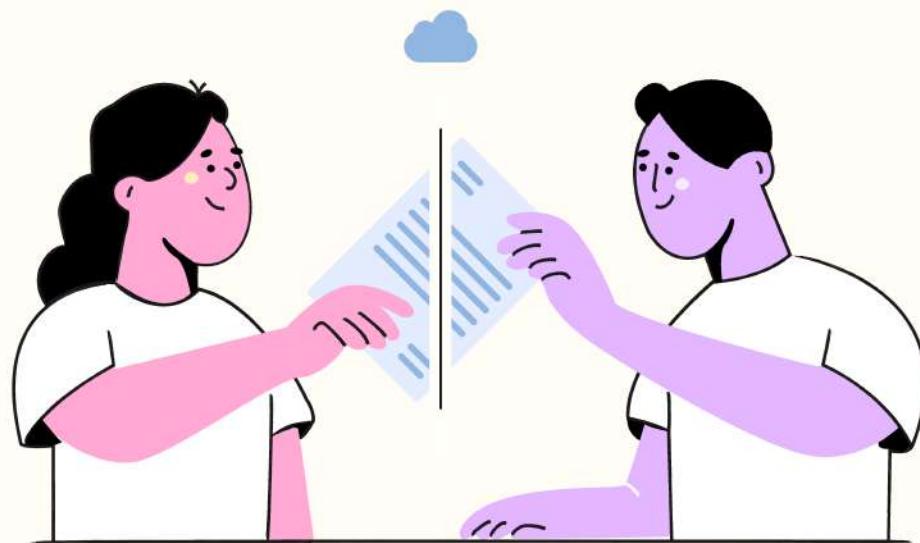
Know that you'll have feelings about WFH and let yourself feel them fully. Oftentimes the only way to get over negative emotions is to 'sit in them' and let them run their course without internal resistance, as counterintuitive as that sounds! I'd also encourage you to seek out social connection in whatever way is available to you. Spending time with loved ones is essential in this difficult time.

Below are the sources I used that also have additional tips for working from home.

[apa.org](https://www.apa.org) - advice for newly remote workers

[theconversation.com](https://theconversation.com) - mental health during Covid

[cnbc.com](https://www.cnbc.com) - improving productivity and creativity



# The McMaster Energy Conference

by Elsa Bassi



The McMaster Energy Conference is the culminating event of Energy Week, an annual exploration into Canada's energy systems hosted by students from the McMaster Energy Association. The event combines perspectives from industry, academia, government, communities and students to help shape Canada's sustainable energy future. It aims to focus on discussions about climate change while touching upon the social, economic and technical aspects of energy.

Unfortunately, due to the ongoing COVID-19 pandemic, this year's event was cancelled. However, last year's conference, which took place in March 2019, was a massive success. Activities included discussions and lectures about the role that climate change will play in progressing energy system technology and the move towards carbon neutrality, the financial advantages of renewable energy solutions and nuclear innovation and the road to small modular reactors. The event also included a tour of the McMaster Institute of Energy Studies' thermal grid and two case competitions organized by Ernst & Young and Nexus. Evidently, a very wide range of topics were explored!

A particularly noteworthy subject that was discussed was the application of blockchain technology in energy systems. Blockchain is a decentralized and distributed ledger or 'cheque book' that records data and makes it available to all users. As was explored in the workshop hosted by Alectra, the energy sector is a topical area of application for blockchain right now because it adds transparency to transactions. One of the largest issues with the energy sector globally is that it is controlled by a relatively small number of corporations. This leads to raised prices and distrustful consumers. Society's response has been prosumers, or the combination of consumer and producer, i.e. people who generate and consume their own electricity through renewables and sell any excess. Blockchain allows prosumers to be matched with other consumers looking to buy energy and facilitates transactions 'publicly' and therefore accountably.

Another interesting application of blockchain is that if it were used by utilities, it could show consumers previous usage reports across any geography or time scale. This way, citizens wouldn't have to trust a company's estimates, increasing transparency and trust. During this workshop, Alectra showed students their version of the blockchain-based transactive energy model and how it works.



## The McMaster Energy Conference | Elsa Bassi

A unique and compelling aspect of this conference is how well its organizers bring together a very broad range of perspectives. The speakers hosting each talk in 2019, and the ones that were poised for 2020, varied significantly in background, providing diverse opinions and expertise. The caliber of presenters is also significant and impressive. Some presenters are university professors or foundation researchers. Others are industry leaders working for consulting firms or energy companies. This conference is an amazing opportunity to hear from experts of numerous fields. And there's another big plus: the networking event at the end of the conference, where students can mingle with these industry professionals, CEO's and academics.

Whether you are interested in power generation as a future career or want to voice your opinion about energy sustainability, there's something for every engineering student at the McMaster Energy Conference. Another cool and relevant activity that

was planned for this year's event was the tour of the ideal futuristic sustainable city model developed by Sidewalk Labs, a subsidiary of Google, in Toronto. This would have been a great opportunity to learn about how cities will be designed and built with sustainability in mind in the future.

Overall, the purpose of the conference is to educate students and citizens about how energy is generated, saved, stored and distributed to the public. If we as consumers know more about the process that energy undergoes to reach us, we will have more of an incentive to conserve it and to think about the role it plays in sustainability for future generations. Ultimately, even as students, we have the power to voice our opinions and influence industry and government policy. Regarding the conference this upcoming school year, McMaster Energy Week is not slowing down. The organization is preparing for either a virtual or in-person event in spring 2021.





# Co-op Feature: Om Bhatt

by Taylan Dalkan

In this edition of The Frequency's co-op feature, we focus on another unique co-op opportunity. Om Bhatt is currently in his second year in the iBioMed program, pursuing a degree in Health, Engineering Science and Entrepreneurship. In this article he shares with us some experiences he has had during his co-op, how it has changed his approach to learning, and some tips he has for other students planning to enter the workforce.

## How did you get this opportunity/position?

Networking, networking, and more networking! I met the CEO of Profound Medical in the unlikeliest of places: my sister's dance class. We initially struck up a conversation to pass the time and it flowed naturally. We discussed some of my academic endeavours and I began to explain to him a bit about the innovative projects I worked on in the iBioMed program. Following our discussion, he gave me his business card and told me to keep in touch. I followed up with him via email and to my delight, he set me up with an interview! During this interview, we discussed some

of my prior experiences, assisting in clinical research with Dr. Michelle Ghert, Professor in the Division of Orthopaedic Surgery at McMaster University and my collaborative projects in the iBioMed program. The moral of the story is that you never know when or where you will run into someone that can help you in your career.

## What kind of projects does the company you are working for specialize in?

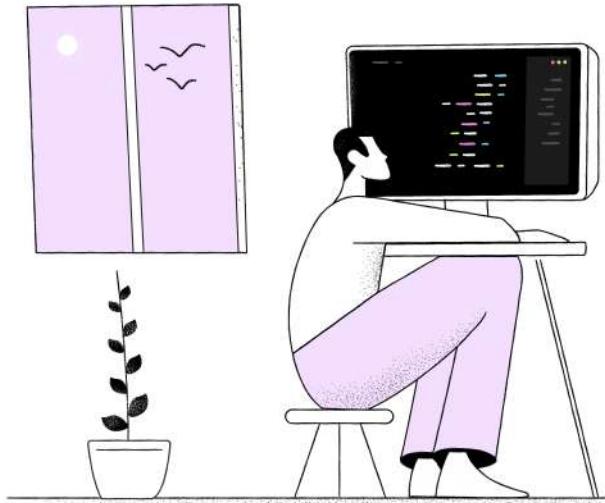
The company is called Profound Medical Inc. Profound Medical is an innovative health technology company that develops customizable, incision-free therapies, combining real-time magnetic resonance imaging, thermal ultrasound and closed-loop temperature feedback control for the radiation-free ablation of diseased tissue. We aim to improve lives for patients all over the world, treating conditions such as intermediate stage prostate cancer, localized radio-recurrent prostate cancer, retention and hematuria palliation in locally advanced prostate cancer, and the transition zone in large volume benign prostatic

hyperplasia (BPH) with our TULSA-PRO® technology. We are also commercializing Sonalieve®, an innovative therapeutic platform that is CE marked (approved in Europe) for the treatment of uterine fibroids and palliative pain treatment of bone metastases. We are also exploring further clinical applications of Sonalieve®, such as non-invasive ablation of abdominal cancers and hyperthermia for cancer therapy.

## What type of work are you doing and what have you learned from this experience?

I am currently working as a Clinical Research Intern. This role allows me to improve and apply my divergent thinking skills towards solving real-world problems. One project I'm working on is the automation of timing collection on behalf of the hospitals where our technologies are implemented, in order for our company's client-side support team to help the hospitals improve their efficiency. For example, if our clinical team notices that a particular hospital is taking a large amount of time to set up the instrumentation prior to patient treatment, we would then be able





to advise the hospital of how to improve this workflow situation, to improve the number of patients they can treat daily. Here, I'm working with a team implementing R scripts along with our proprietary software to collect and analyze this information automatically, rather than recording it by hand. Although I didn't have any prior experience in R, I was able to learn it to the level required using online certification courses and tutorials; it's important to be adaptable! I'm also leading a large project where I am responsible for programming an electronic data capture database using a third-party software to electronically record information that will be collected for an upcoming clinical trial our company is planning. Although we

don't predict that there will be much programming required aside from basic JavaScript, the project will require an in-depth analysis of trial protocols in order to make the database as structurally sound as possible. I hope that I am able to further strengthen my skills in areas such as critical thinking, data science and project management, and apply them to my future endeavours!

**How do you recommend others reach out for co-op/research opportunities?**

As I mentioned before, networking is one of the most important things when it comes to looking for opportunities. While you may not get as lucky as I did, take full advantage of various networking opportunities, such as

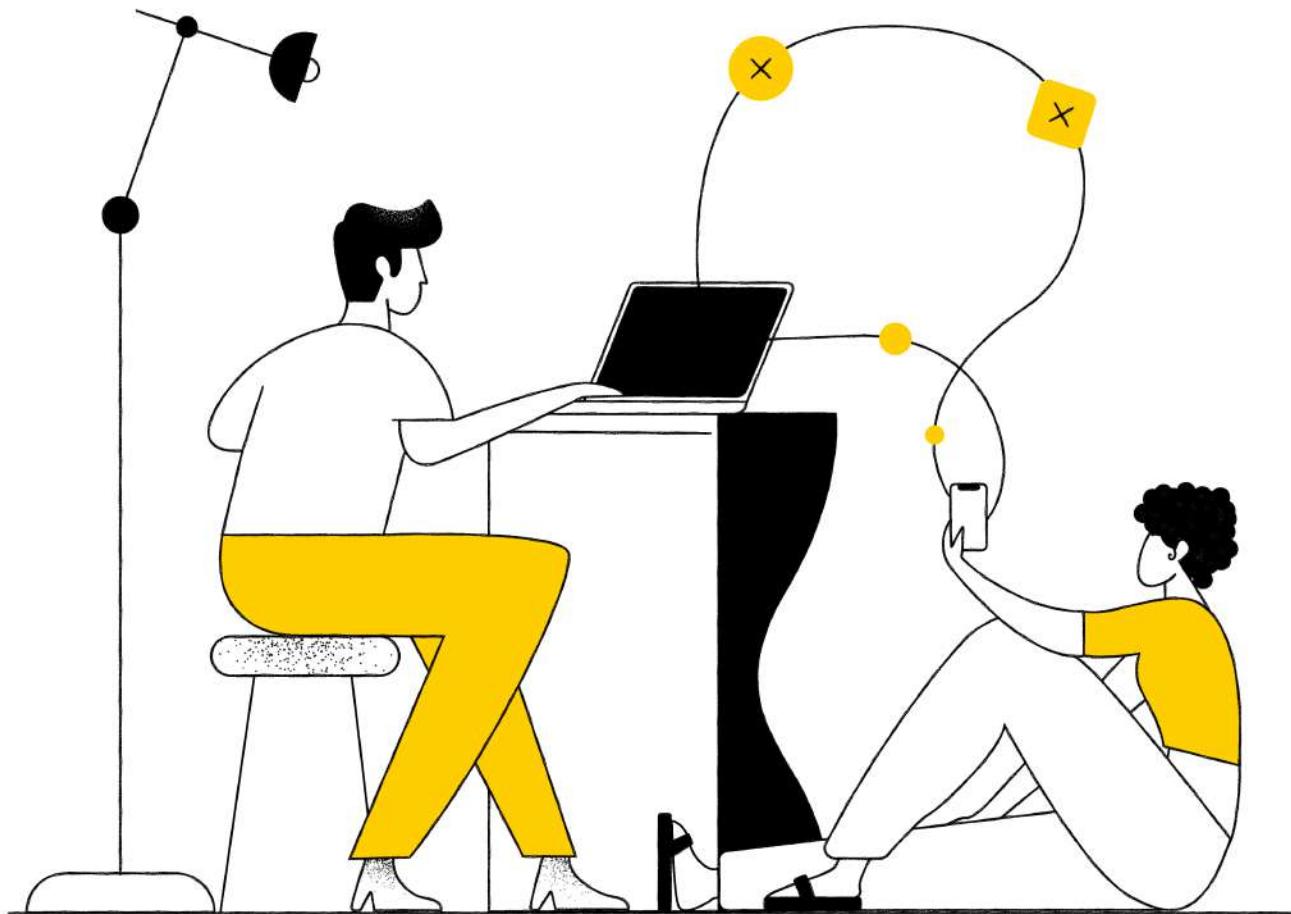
the events hosted by the ECCS department at McMaster University. Having experience in both academic and industry research, I believe what helped me stand out is doing my due diligence in terms of learning about the research conducted by the researcher or innovation at the company respectively. When reaching out for either co-op or research opportunities, I'd highly advise anyone to educate themselves in the areas in which they're interested; something that I think not many people do. This will show the potential employer that you really do care about what they're doing, and give you an edge over other applicants. Another piece of advice is to apply broadly; I must have emailed over 15 professors and applied to tens

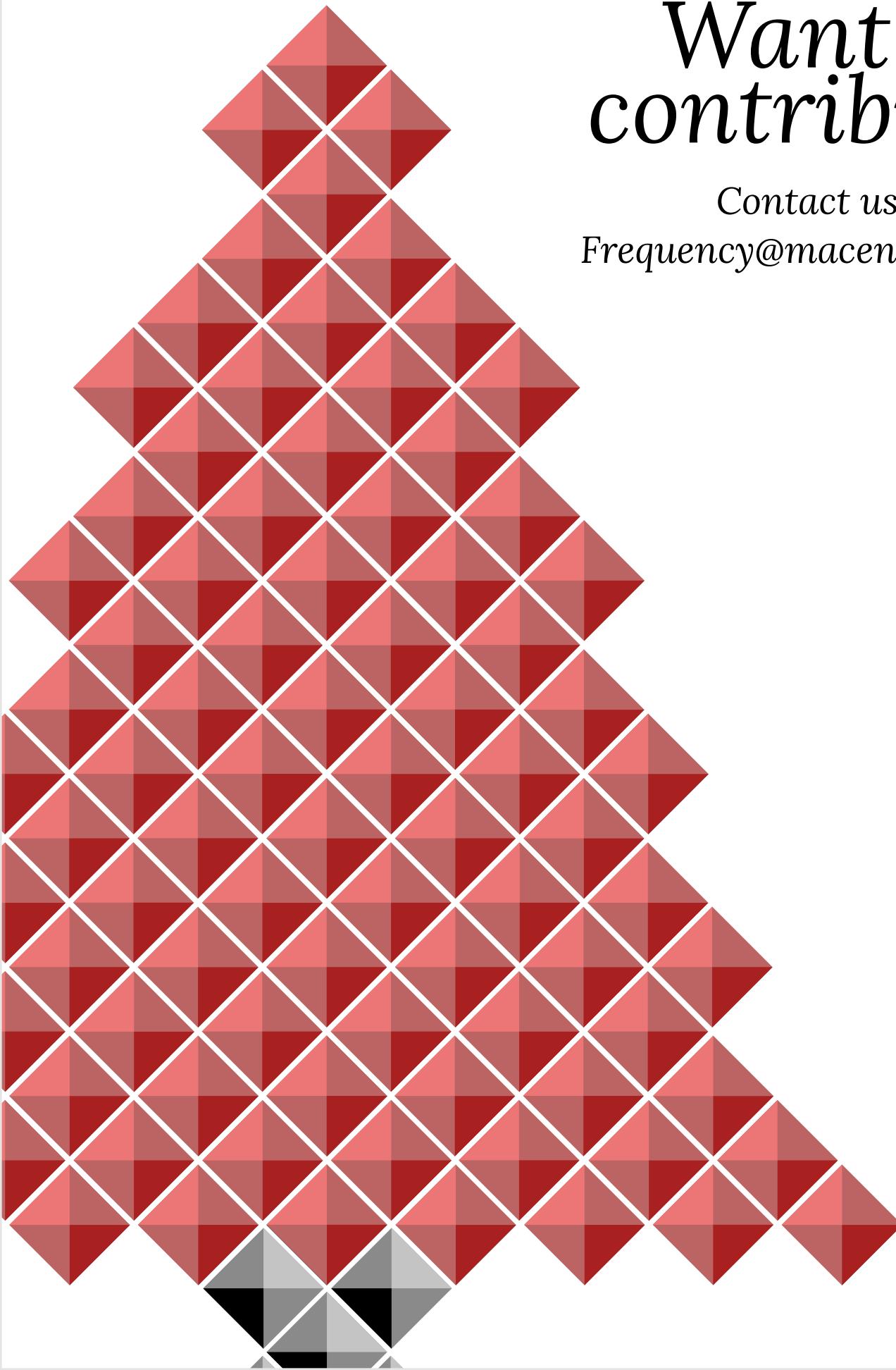


of jobs before I received my positions. It's very easy to get discouraged when you see rejection after rejection rolling in, but it's important to keep your chin up and to keep working to improve yourself, both academically and in the extra-curricular department to strengthen your portfolio.

**Do you have any final thoughts?**  
I'm thrilled that I'm able to spend my summer at Profound Medical working on innovative projects that will help improve the lives of patients suffering from various medical conditions. I hope I can continue to grow and contribute to society in the future, and I hope that my story and learnings are

able to help others in their search for jobs of their own.





# Want to contribute?

Contact us at  
[Frequency@macengsociety.ca](mailto:Frequency@macengsociety.ca)