

# W Booth School of Engineering Practice and Technology

## ANNUAL REPORT 2023



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## A message from Director, Brian Baetz

The Walter G. Booth School of Engineering Practice and Technology in the Faculty of Engineering, or “W Booth” as it’s known amongst our collegial, creative and collaborative academic community, is interdisciplinary and collaborative by design. This approach has allowed us to build and deliver some of the most progressive and engaging programs among Canadian universities.

W Booth focuses on a balanced approach between the venerable traditions of academic excellence with emerging needs of industrial, societal and natural ecosystems. I expect this will become clear as you read the impactful stories in this report.

In 2023, graduate George Fares (Automotive & Vehicle Engineering Technology) became our School’s first valedictorian from the Bachelor of Technology (BTech) program. He proudly represented the entire Faculty of Engineering graduating class at Convocation.

Some might see this as a relatively modest achievement in comparison to multi-million-dollar research announcements or a faculty member receiving a prestigious award, but I see it as a highly significant milestone in W Booth’s history. Delivering transformative learning experiences to our leaders of tomorrow is central to our mission. You’ll learn more about George and other remarkable graduates.

You’ll also learn of faculty and staff members of W Booth who have received peer recognition and substantial funding to continue ground-breaking applied research. Many have been recognized with academic distinctions and others are demonstrating exceptional leadership by hosting international events or engaging in community or partnership initiatives.

The true strength of W Booth is the way in which we strive to integrate our diverse backgrounds and perspectives to energize a much greater and impactful whole.

I hope you enjoy reading about our past year.

# Engineering with a social conscience



## BTech makes history at Convocation

Throughout McMaster University's history, the honour of being Valedictorian has remained elusive to Bachelor of Technology students until this year. In a milestone moment, **George Fares**, an Automotive & Vehicle Engineering student emerged as the first-ever valedictorian from a BTech program, chosen to represent the broader Faculty of Engineering's 2023 graduating class.

"It felt incredibly surreal. Representing the entire engineering class was an experience I never anticipated in my wildest dreams," George said.

George attributes his transformative growth from first to final year to the support of three W Booth faculty members – Timber Yuen, Ahmed Fakhr and Moein Mehrtash – who he credits with helping him navigate his academic years with confidence.

Today, George is a PhD student in Mechanical Engineering at McMaster, and he serves as a Systems Design and Integration Tech Specialist for the EcoCAR Team. His journey to valedictorian and beyond is not only an embodiment of W Booth's spirit of perseverance and excellence but a testament to our commitment to advancing teaching and learning.

## Rebirth of the M-Factor Competition

This year, we saw the resurgence of the M-Factor Competition, a multi-challenge contest designed to test students' management skills through experiential learning. This year's competition spearheaded by GENTECH professors Hoda Kamel, Allan Mackenzie and Mike Justason opened its doors to the entire Faculty of Engineering undergraduate student body, a departure from its original direction when launched in 2015.

Eighteen students participated, standing before distinguished judges and making their way through multiple challenges and elimination rounds.

Second-year Automotive & Engineering Technology Student **Gopal Uppalapati** came in first place, receiving a \$2500 cash prize.

"I think my biggest takeaway was to not underestimate myself and to use time very wisely in a pressure situation," said Gopal.

Fourth-year Automation Engineering Systems Technology student **Haider Khan** came in second place and received \$1500, followed by second-year Automation Engineering Systems Technology student **Yara Idris** who received third place and a cash prize of \$750.

M-Factor 2023 reaffirmed W Booth's commitment to experiential learning.





## Empowering innovation in the Learning Factory

Four students embarked on real-world research projects in the Learning Factory – a cutting-edge simulated factory environment located in the lower level of the Engineering Technology Building. Their projects included designing a smart walking cane and a 3D-printed race car. These innovations will have ongoing impact through the clubs they inspired and outreach in the community.

**Onyinye Ugwueme**, third-year Automation Engineering Systems, Technology student, leads the Smart Systems Club focused on integrating smart features into everyday products. The club's first product, a walking cane, aims to enhance user support by incorporating features like a pressure sensor to monitor user conditions.

The Remote Controlled (RC) Car Club initiated by second-year Mechanical Engineering student **Tyler Lounsbury** promotes teamwork and design customization. Students assemble their own RC cars using DIY kits, fostering collaboration and learning opportunities.

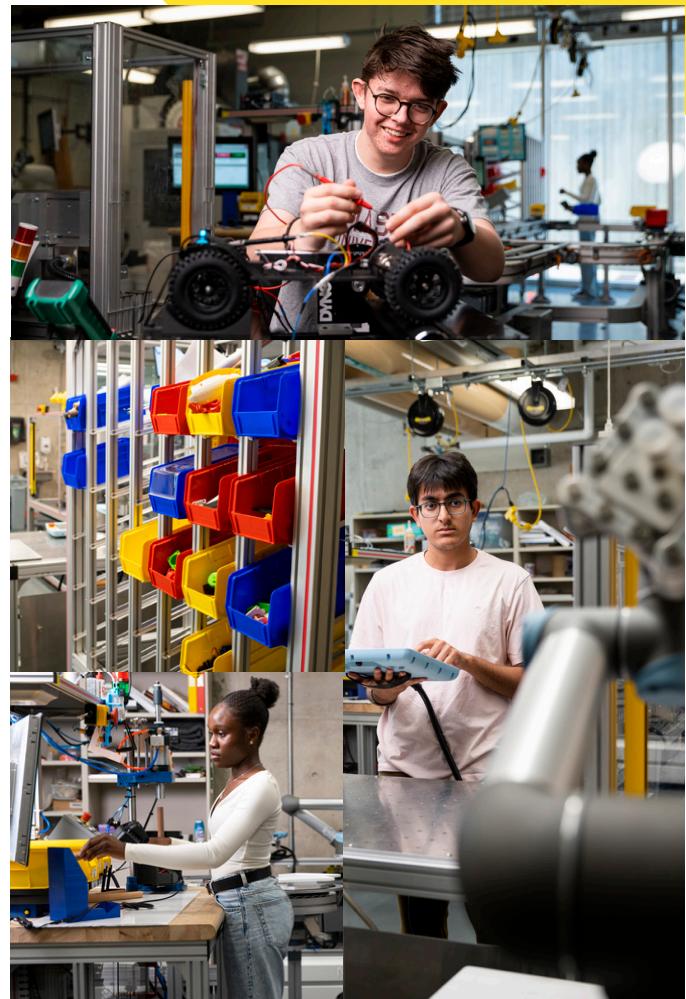
Both projects received support from second-year Automation Engineering Systems Technology students **Tomasz Mizera** and **Sahil Patel**.

The Learning Factory's role in students' development is evident, helping them apply classroom knowledge to real-world projects. The clubs, guided by Learning Factory Director Tom Wanyama and BTech Business and Management Program Chair Hoda Kamel, benefit the community and help develop core business skills.

The Learning Factory will continue supporting these student clubs, ensuring ongoing product development and improvement, as students pass on their skills to the incoming class.

## Digital Twin for the Learning Factory

During his compelling presentation in August, Assistant Professor **Mostafa Soliman** outlined his ongoing efforts to create a digital twin of the Learning Factory. A digital twin is a virtual version of a physical system. The purpose of this exercise is to exponentially increase student access to state-of-the-art automation equipment and industry 4.0 technologies. Courses, such as PLC programming, will heavily benefit from having a complex digital system that students can program without any implications to the physical system environment.



# Engineering with a social conscience

## Engineering students from across the world gather at McMaster for design challenge

In July, The Booth School hosted the 2023 International Design Engineering Education Association (IDEEA) Forum. The event brought together more than 80 students from countries across the world including Korea, Mexico and Germany, united by a common purpose: to leverage engineering and design to create innovative solutions to global challenges.

Specifically, students were asked to address the shipment of goods in a more sustainable manner.

W Booth professor, Dan Centea, who was instrumental in bringing the Forum to McMaster emphasized its role in preparing students to address real-world challenges using creativity.

"The purpose of the IDEEA competition is to teach students from universities located in three major geographical zones (Americas, Europe, Asia) to address challenges and prepare them for successful employment in today's constantly evolving economy," he said.

Participants shared their experiences, highlighting the impact of the event on their global perspectives and their pursuit of engineering that has meaningful, global impact.

"In times of globalization and, at the same time, greater individualization, overcoming the comfort zone and challenging yourself with different perspectives, opinions and cultural standards is essential," said an IDEEA Forum participant.



## BTech students present at Faculty of Engineering Capstone Showcase

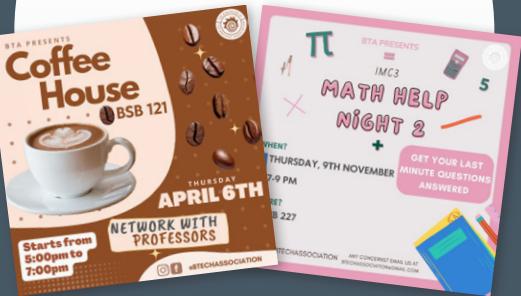
In April, BTech students presented their Capstone projects at the Faculty of Engineering Capstone Showcase. These projects covered multiple research topics, ranging from power protection, power quality and power electronics. Notably, one project was transformed into a conference paper and featured in the 2023 CIGRE Canada Conference and Expo held in Vancouver.

# The BTA continue to make great strides in 2023

The BTech Association (BTA) comprised of students from our Bachelor of Technology program continued to support the student body with social, academic and professional development events.

## THEIR MILESTONES THIS YEAR INCLUDED:

### 11 COURSE NIGHT EVENTS



### 4 PROFESSIONAL DEVELOPMENT EVENTS

including a Mechanical + Automotive Industry Night event raising \$2000 in sponsorship with 100+ students in attendance

### 2 MENTORSHIP EVENTS

including an Alumni night featuring 30 BTech alumni, 90 students & 25 faculty members



### \$300 RAISED

during Valentine's Day bake sale



### 1 BTA CAR SHOW

showcasing 10 to 15 cars with 40+ students in attendance



### 1000+ PIECES OF SWAG DISTRIBUTED

to incoming students during welcome week

### \$200 RAISED

during Halloween bake sale



### LAUNCHED FIRST-EVER BONFIRE NIGHT EVENT

with 40+ students in attendance



### 5 NEW POSITIONS

added to council leadership structure



# Innovations in teaching & learning

## Canada's first Biomanufacturing Master's Program poised for impact

In its first year, the Master of Engineering in Manufacturing – Biomanufacturing Program has quickly become a contributor to W Booth. It's well positioned to meet Canada's growing demand for biomanufacturing expertise. With the backing of McMaster's robust engineering infrastructure and a meticulously designed 15-month curriculum, the program stands out for its cutting-edge biosafety Level Two facilities.

*"Our new biomanufacturing program is poised to make a profound impact on the future by equipping graduates with the skills and knowledge needed to excel in the dynamic field of biotechnology. In an era of growing demand for sustainable solutions and innovative medical advancements, this program will empower our graduates to drive change, ushering in a new era of biomanufacturing that will revolutionize industries, improve healthcare, and contribute to a more environmentally responsible world."*

– Fei Geng, Program Chair, BTech Biotechnology.

One of the program's standout features is its strong industry collaboration, including an industry-focused curriculum. Graduates gain a highly sought-after skill set, blending technical proficiency, business acumen and regulatory knowledge. The faculty, known for their extensive research backgrounds and industry insights, prepares students for the job market.

A noteworthy achievement in the program's first year includes a significant partnership with The Cultivated B, a global industry leader. This collaboration, formalized through an MOU, emphasizes a commitment to ongoing work in cellular agriculture projects and talent development.

The Cultivated B will also collaborate with students and faculty from our BTech program. This partnership provides students with real-world experience, research opportunities and access to cutting-edge laboratory space, enhancing their readiness for careers in biomanufacturing and cellular agriculture.



## **Three W Booth Master's Programs receive \$20,000 PLT Grant**

The research project, "Co-Designing Interdisciplinary Program Streams in Health and Sustainability with Students project" funded by a \$20K Partnered in Teaching & Learning Strategy Grant (PTL Grant) in collaboration with the Faculty of Health Sciences, aims to improve and enhance collaboration and integration of experiential learning opportunities in the fields of Health and Sustainability. The project aims to develop interdisciplinary areas of specialization within W Booth's program curricula, focusing on streams like Virtual Care and Sustainability. The project will also consider adding program streams in the future such as Social Systems and Global Development. The initial phase will focus on three engineering Master's programs including Master of Engineering Design (MED), Master of Engineering and Public Policy (MEPP) and Master of Engineering in Manufacturing Engineering (MEME) where students and faculty have a history of collaborating on student-community engagement projects.

## **Management curriculum reaffirmed its ACBSP Business- Related Global Accreditation**

Our compulsory five-year Quality Assurance Status Report was submitted to the Accreditation Council for Business Schools and Programs (ACBSP) accreditation board concerning the progress and changes to our business-related program global accreditation awarded in 2019. The board approved our accreditation status without notes or conditions, reinforcing our undergraduate engineering-management curriculum's educational quality and rigour.

The ACBSP's accreditation process utilizes the Baldridge Education Criteria for Performance Excellence to evaluate a program's leadership, strategic planning, stakeholder relationships, quality of academic programs, faculty credentials and educational support. W Booth was the first institution in Ontario to achieve ACBSP global accreditation and the only engineering school in North America with business-accredited baccalaureate programs.

## **Exciting news for BTech graduates: Accelerated MBA program starting Fall 2024**

We are thrilled to announce an exciting, new opportunity for graduates of the Bachelor of Technology programs in Automotive, Automation Systems and Biotechnology. Starting in the Fall of 2024, our graduates will be eligible to apply to the Accelerated MBA at McMaster's DeGroote School of Business. This accelerated pathway offers a streamlined route to a DeGroote MBA in eight months.

This new pathway recognizes the strength of our business and management curriculum and builds upon our recent ACBSP Accreditation as an Undergraduate Business Program. This new pathway also recognizes the success of our past students who have completed the standard and co-op versions of the DeGroote MBA.

# Innovations in teaching & learning

## Master of Engineering in Systems Technology (MEST) continues to reach new heights

The Master of Engineering in Systems & Technology program launched in September 2020 remains a distinctive educational offering in Canada. It stands as the only program specialized in Industrial 4.0 and cyber-physical systems. Notably, its adaptability to the changing technology landscape has been a hallmark this year.

The program's commitment to staying current and relevant is evident through regular curriculum updates to align with emerging technologies, ensuring that students possess highly

sought-after skills. This adaptability renders the program highly competitive and industry responsive.

Enrollment in 2023, with over 400 applicants for a capacity of around 100 students, illustrates improved education quality and encourages healthy competition.

The program's faculty excels in bridging the gap between theory and practical skills. Their dedication to hands-on experience in various courses and projects equips graduates with technical proficiency, leadership and workplace skills.

### Empathy in design

To help students truly engage with users and stakeholders in a design project, Robert Fleisig's SEP 760 / Design Thinking course has established a partnership with St. Joseph's Healthcare Hamilton's (SJHH) Patient and Family Advisors (PFAs). PFAs - volunteers with backgrounds as patients, caregivers, and at times, clinicians – share their experiences to enhance patient care at SJHH.

*"We invite PFAs, who serve as the course's 'experience experts,' to facilitate students' skill development in uncovering profound insights about individuals. This collaboration has thrived for four years, proving to be an enriching experience for both students and PFAs who wholeheartedly enjoy their engagement in this rewarding partnership."*

– Robert Fleisig



# A transformative year for Gail Krantzberg



In February, over nine-hundred participants attended the 2023 Virtual Invasive Species Forum to hear W Booth professor **Gail Krantzberg** deliver the keynote presentation discussing the link between climate change and invasive species threats.

Events such as this are common for Gail.

You can catch her comments often on the CBC, TVO, and in the Globe and Mail, where she has emerged as a perennial voice of science, society and public policy when it comes to some of the most pressing and challenging environmental issues of our time.

And 2023 was a particularly notable year for Gail. She was announced as a co-lead for The Global Center for Understanding Climate Change Impacts on Transboundary Waters. Along with Drew Gronewold of the University of Michigan, she will direct groundbreaking research on the effective stewardship of our Great Lakes and other shared bodies of water around the world. This new Center received \$3.75 million in funding from a collaboration of funding agencies and research bodies in Canada, US, UK and Australia.

An additional \$5-million USD toward the project was awarded to the University of Michigan.

Gail is excited about the collaborative nature of this project, emphasizing that it is a genuine partnership involving various national governments but also First Nations and researchers from different institutions, all united in their commitment to enhance the health of precious global water resources.

"This is not about reducing greenhouse gases in order to stop climate change" says Gail, considering the future impact of the centre. "Sure, mitigation of climate change is going to be important.... But more importantly, the climate has changed. People are being flooded out of their homes; farmers' fields are being flooded to the extent where they can't even plant crops properly. The importance of this center is to be a repository of information, where municipalities can go and find tools that will help them over time, reduce the risk of loss to health, people, property and nature, due to the changing climate."

As important as the research mandate is for the new centre, Gail reflects on another very important dimension of her scholarly work - the impact of her teaching.

*"I'm extremely proud of what's happening... it's breaking new ground."* She adds. *"But to me, the biggest reward that I've had consistently, year after year after year at McMaster, is seeing our students understand how to develop fact-based policy for a sustainable future. When I see them go out in the world, and land meaningful jobs in important places, that is just as rewarding as anything else."*

Gail has been a professor at McMaster for over 18 years and has developed an impressive track record of research, teaching and service excellence. Uniquely, she blends a significant past career in public service as well as scholarship, making her an effective facilitator of highly complex conversations and solutions involving communities, industries, governments and academia. She is the recipient of the 2007 American Biographical Woman of the Year Award and in 2022, she was inducted as a Fellow of the Canadian Academy of Engineering.



# Advancements in applied research and scholarship



## Power & Energy Engineering Technology students publish 5 papers

This year, Power & Energy Engineering Technology (ENRTECH) has continued to promote applied research in power system engineering. Throughout the year, and under the guidance of **Chi Tang**, Program Chair, ENRTECH faculty and students successfully published five Institute of Electrical and Electronics Engineers – International Conference on Large High Voltage Electric Systems ( IEEE/CIGRE) papers in collaboration with the Civil Engineering Department at McMaster, BIT Sindri in India, as well as industry partners around the world.

Chi has also presented several papers this year including one at the 2023 IEEE Power & Energy Society Meeting in Orlando, Florida.



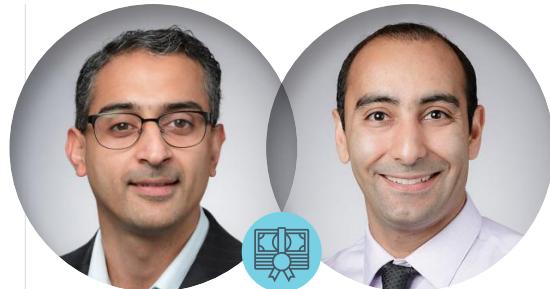
## Postdoctoral Fellow, Poushali Das, receives \$100,000 to advance smart self-healing technologies

If you had asked **Poushali Das** as a young girl growing up in India what she wanted to be in the future, without hesitation, Das would have answered 'a scientist'.

The postdoctoral fellow with Professors Seshasai Srinivasan and Amin's Rajabzadeh's BIOx Research group, is fulfilling that dream. This year, Das was named the 2023 recipient of McMaster's H.G. Thode Postdoctoral Fellowship.

This highly competitive Fellowship is awarded every two years to outstanding candidates for an endowed Postdoctoral fellowship in the areas of Nuclear Medicine, Radiation Sciences or Nuclear Engineering.

Poushali will receive \$100,000 spread across two years to carry out research in smart self-healing technologies to address cases of traumatic spinal cord injury.



## BIOx Research Group awarded \$90,000 in research funding

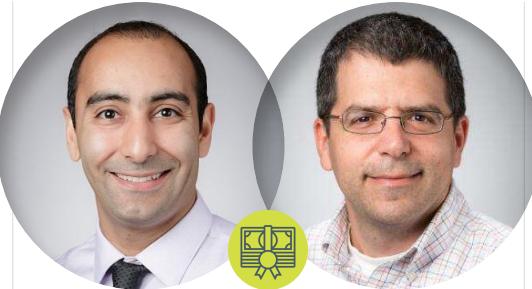
The BIOx Research group, led by **Seshasai Srinivasan** and **Amin Rajabzadeh**, received \$90,000 in research funding from MITACS, a non-profit, national research organization that helps to fund cutting-edge innovation. The funding is to advance the sensitivity of electrochemical sensors to detect small values of prohibited substances.



## \$4.9M grant awarded to Hamidreza Mahyar and MARC

**Hamidreza Mahyar** and the McMaster Research Automotive Centre (MARC) team were awarded \$4.9M by the Natural Sciences and Engineering Research Council of Canada (NSERC) for their project titled "Smart Devices and Systems for Next-Generation Transportation Systems".

In partnership with Cubic Transportation Systems – a California-based company advancing safe mobility in transportation, the project aims to enhance the performance capabilities of existing camera-based systems for transportation applications. By developing multi-modal smart devices that integrate sensors and machine learning techniques, the project strives to combat issues surrounding poor weather and low-visibility conditions.



## W Booth represents the Faculty of Engineering in selections for OER Grant

A project spearheaded by **Amin Reza Rajabzadeh** and **Kostas Apostolou** was selected as one of the nine recipients of the McMaster Open Educational Resources (OER) Grant Program for 2023-2024.

The pair will lead the development of OER content focused on the topic of Energy Balances in Chemical and Biochemical Processing Systems.



## Allan Mackenzie bridging pedagogical innovation, global influence and student engagement

GENTECH professor **Allan Mackenzie** has made significant contributions to both pedagogical research and student-led projects with a focus on enhancing student learning and engagement. In 2022, Allan was awarded a \$4000 SEPT Pedagogical Research Grant aimed at amplifying students' metacognition and character virtues. This year, Allan presented his research outcomes at four international conferences.

Allan is the only McMaster University faculty member who has published research on the benefits of incorporating LinkedIn Learning to enhance academic course and student learning outcomes. His research was chosen and highlighted in the recent LinkedIn Learning Action Committee report to McMaster University's Office of the Provost.

Allan also led and supervised the first-ever MEEI/MTEI student project involving a community partner, FuturU. This project involved an in-depth commercialization study of an innovative Enterprise AI-based 3D Body Scanner, assessing its market potential in North America and globally for the fitness industry.

# Engaging vibrant communities

## Improving user experience in patient care

The Faculty of Engineering continues to advance the Healthcare and Engineering Collaborative through W Booth in partnership with St. Joseph's Healthcare Hamilton (SJHH), a nationally recognized research and teaching hospital with strengths in nephrology, mental health, respiratory care and robotic surgery, to name a few.

Formed in 2018, the collaboration offers a platform for W Booth's faculty, students and staff to work on healthcare challenges recommended by SJHH team members.

A leading example is a multi-year project aimed at reimagining hospital rounds using digital technologies to enhance communication between patients and their care teams. This has inspired an early prototype for a confidential online "Personal Care Journal" that a new student team will test at SJHH during the 2023-2024 academic year under the co-supervision of **Robert Fleisig** and **Zobia Jawed**.

## Helping to push a pathway to net zero

Under the supervision of **Gail Krantzberg** and **Greig Mordue**, Master of Engineering and Public Policy students have been collaborating with the City of Hamilton's Public Works Department to develop an online tool to help calculate the potential carbon footprint of road construction and maintenance projects under consideration. The tool uses a variety of inputs including financial data and materials related information to estimate GHG emissions by project category. The goal is to enable municipal staff to apply a carbon reduction lens to key investment decisions being made by the City as it pursues a pathway to net zero.

## BTech students continue to support EcoCar program

**Dan Centea** and **George Apostol** are heavily involved with the Faculty's EcoCar program, which is developing auto technology with a much lighter carbon footprint. **McMaster's EcoCAR team** includes several students from the BTech Automotive and Automation programs.



## Building relationships through Opportunity Marketplace

Representatives from City of Hamilton, Hamilton Chamber of Commerce, St. Joseph's Healthcare Hamilton, and more, attended the newly launched Opportunity Marketplace this year, an in-person, interactive forum designed to facilitate the exchange of community-based learning opportunities among faculty from W Booth, representatives from industry, government and the NGO sector. The forum, organized and facilitated by Community Engagement Coordinators **Salman Bawa** and **Richard Allen**, provided the opportunity to build relationships, share ideas and identify potential projects for the 2023-2024 academic year.



# Staff and faculty distinctions



## Fifteen years with Michele Vaz

W Booth owes a debt of gratitude to our invaluable Business Manager, **Michele Vaz**, whose dedication has left an indelible mark on our institution. In recognition of her 15-year journey with McMaster University, we celebrate her role as the cohesive force behind our exceptional staff team, a cornerstone of our academic excellence within the Faculty of Engineering. As Director Brian Baetz acknowledges, "Michele is the glue that binds our successes together." W Booth extends its heartfelt congratulations to Michele on this significant milestone and expresses gratitude for her visionary leadership and commitment.



## Twenty-five years with Dulcie Amaral

**Dulcie Amaral** has been an integral part of W Booth's graduate programs from their inception. Her role in admissions and program delivery, particularly during the significant curriculum changes between 2016 and 2019, has been instrumental. Dulcie meticulously prepared an array of documents for GCPC submissions, managed our website, and diligently processed hundreds of applications annually.

*"Dulcie's unwavering commitment to The Booth School has not only been a cornerstone of our success but also remains an ongoing source of strength. We wholeheartedly extend our profound gratitude for her invaluable contributions to our community."*

– Professor Vladimir Mahalec



## Salman Bawa and Richard Allen take home MSU Community Engagement Teaching Award

45 community engagement projects. 40,000 student work hours. 100 students and over \$50K in project funding.

These metrics were implemented by none other than Community Engagement Coordinators **Salman Bawa** and **Richard Allen** in 2021.

For more than 10 years, the pair have worked tirelessly to infuse community-based project learning into W Booth.

This year, their hard work over the years has been recognized with the receipt of the MSU Community Engagement Teaching Award on behalf of W Booth. This prestigious award is presented annually to faculty and staff who have shown dedication to the integration and inclusion of community engagement education at McMaster.

# Staff and faculty distinctions



## Salman Bawa awarded the Veronika Czerneda Award for Outstanding Service

The Faculty of Engineering honored Community Engagement Coordinator **Salman Bawa** with the 2023 Veronika Czerneda Staff Award. This award acknowledges staff members who make outstanding contributions beyond normal expectations and recognizes them for their exceptional quality of service and improvements to daily operations through their contributions.

Salman consistently drives an array of collaborative teaching and learning activities involving community partners from key sectors including industry, government and NGOs.

Through these high value, intentional efforts, Salman performs a crucial staff leadership role in developing a new generation of employment ready graduates equipped with practical skills and real-world knowledge gained through community-based, hands-on learning.

Salman's commitment and contributions continually elevate the standards of excellence within W Booth making him an invaluable asset.



## Omar Danta receives the President's Award for Outstanding Service

Over several years, **Omar Danta** has demonstrated excellence in numerous areas, such as transforming labs, setting up facilities for the new biomanufacturing graduate program and implementing enhancements for students with hearing impairments.

Throughout the pandemic, Omar played a crucial role in establishing a production centre for online teaching materials, facilitating equipment pickup and creating innovative solutions for remote instruction. He also led the team responsible for preparing reopening guidelines for a seamless return to campus.

This year, Omar's list of accolades grew - receiving the President's Award for Outstanding Service- the highest honour a staff member can receive at the University.

Omar was also the recipient of the 2022 Veronika Czerneda Award for Outstanding Service.



## Tom Lee honoured with honorary degree from York University

In June, **Tom Lee**, the recently retired Associate Director for our Graduate programs and distinguished holder of the Walter Booth Chair for Engineering Entrepreneurship and Innovation was presented with an honorary degree from York University during the Lassonde School of Engineering's Spring Convocation ceremony.

*"This honour recognizes an amazing career of pursuing what I believed were interesting and important challenges in modern engineering education. I'm so grateful for this recognition and the fact that I can continue my life's work as a contributing member of McMaster's W Booth School."*

– Tom Lee

Tom has been a trailblazer in the implementation of advanced digital technologies in engineering education, and his efforts have left a lasting impact on universities not only in North America but also in Europe, the Middle East, India and Japan.



## Robert Felisig elected as Fellow of the Canadian Engineering Education Association

**Robert Fleisig** was elected as a Fellow of the Canadian Engineering Education Association (CEEA-ACEG). The designation of Fellow honours 30 individuals who have demonstrated noteworthy service to engineering education, engineering leadership, or engineering design education through their work with CEEA-ACÉG. Robert has been a member for over 10 years and has contributed scholarly papers, provided leadership on the board, and contributed to conference organization and operation. Robert has also served as a Secretary/Treasurer since July 2020.



## Greig Mordue makes headlines

The Vancouver Sun, the National Post and the Toronto Sun are just a few newspapers where W Booth professor **Greig Mordue** has made appearances this year.

The former Toyota executive and now a renowned name and key spokesperson in the auto industry has been discussing the future impact of electric vehicles on Canada's auto industry.

Greig's expertise is not only valuable to our school, but his media presence upholds our reputation and brings increased visibility.



## Marjan Alavi featured in TV series

**Marjan Alavi**, Program Lead for the Master of Engineering in Manufacturing Engineering was one of four McMaster University professors featured in *Engineering Evolved* a six-episode TV series discussing the evolution of transportation which aired December 4.

Marjan was invited as an expert in the series and explained the history of transportation, and different technologies used in modern transportation systems from maglev to autonomous driving and hydrogen-powered submarines.

# Staff and faculty distinctions

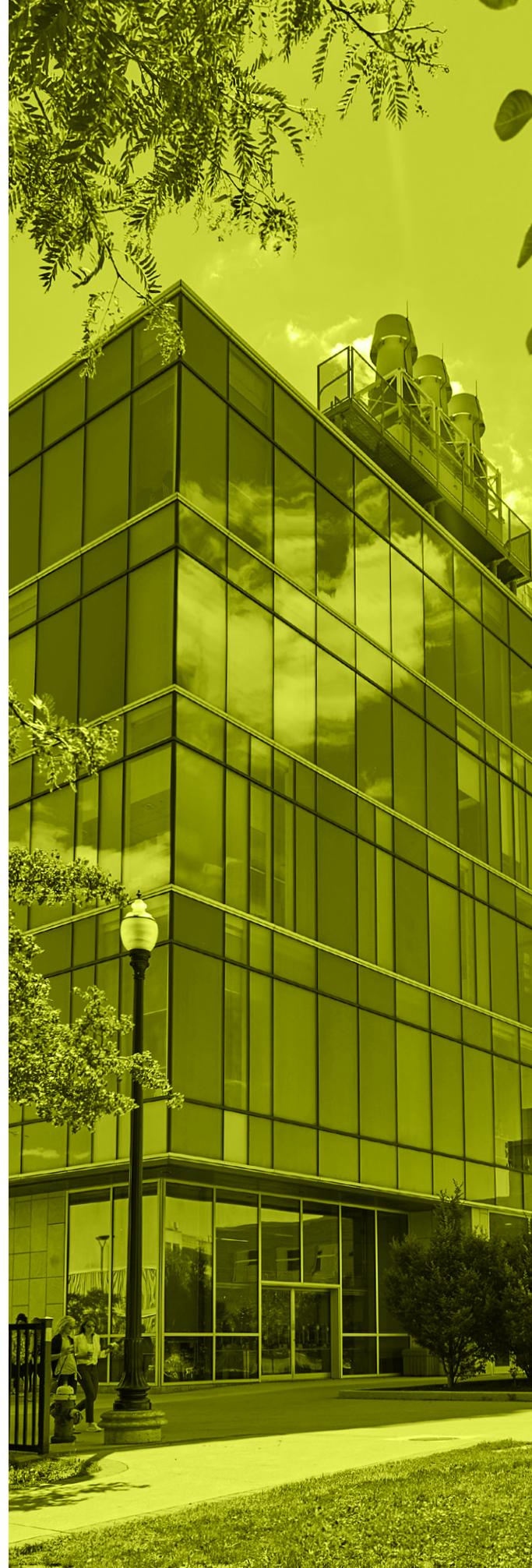


## Zhen Gao honoured with the 2023 President's Award for outstanding contributions to Teaching and Learning

W Booth has a long and enviable history of teaching excellence. Among W Booth faculty are no less than eight past recipients of McMaster's prestigious President's Award for Outstanding Contributions to Teaching and Learning. This year, the School celebrated the achievements of faculty member **Zhen Gao** by bestowing him with the honour.

Zhen is an accomplished teacher and researcher and is currently W Booth's Associate Director of Graduate Programs and the Program Lead for the Master of Engineering Systems and Technology (MEST). Zhen is well known for his passion, compassion and commitment to teaching excellence. He engages learners through experiential learning, community collaboration and engineering practice in an equitable, diverse and inclusive environment. He has transformed highly technical and often dry course content to dynamic learning experiences that motivate and enlighten.

Under his leadership, the MEST program has grown to be the largest graduate program within W Booth and one that is rapidly gaining a world-wide reputation for its unique integration of academic and industry perspectives. The net result of his teaching activities has been the design of nine new courses, the redesign of six pre-existing courses often in some of the highest priority technology themes in contemporary engineering such as AI and cyberphysical systems.



# Sessional instructor spotlight

## Andrea Hemmerich helps to advance cancer research in Kenya

In Kenya, where cancer ranks as the third leading cause of death, change is brewing. **Andrea Hemmerich**, a sessional instructor at W Booth, is joining the transformation.

Collaborating with Academics without Borders, an organization dedicated to enhancing education in underdeveloped countries, Andrea spent her summer in Kenya. Her mission: to aid Meru University of Science and Technology faculty in crafting a Master of Science curriculum in medical physics.

The Kenyan Government's plan to address cancer includes establishing 12 new cancer centres nationwide. A crucial aspect in ensuring the success of this initiative is training medical physicists to effectively operate complex radiation therapy equipment for treating patients.

"As a designer I used a human-centred approach to understand both the needs of patients in the Kenyan healthcare system and the challenges faced by students and educators in

implementing the MSc program," says Andrea, reflecting on design thinking in the curriculum.

The project is ongoing, and the curriculum is being finalized. All collaborators will work together to ensure the program can be delivered successfully. Andrea hopes to return to Meru to meet the initial cohort of students at some point along their learning journey.

Andrea's contribution to global knowledge and the betterment of global health exemplifies McMaster University's dedication to fostering a brighter world.



# New staff, promotions and goodbyes

## 2023 New hires

### **Krystal Flemming**

*Administrative Assistant, Graduate Programs, March*

### **Nick Furlano**

*Administrative Assistant, Undergraduate, August*

### **Mona Mathbout**

*Financial Coordinator, October*

## 2023 Staff promotions

### **Heather McLaren**

*promoted to HR/TPP Admin Assistant, February 2023*

## 2023 Faculty promotions

### EFFECTIVE JULY

### **Dan Centea**

*Promoted to Full Professor*

### **Rashid Abu-Ghazalah**

*Granted Permanence and Promoted to Associate Professor*

### **Kostas Apostolou**

*Promoted to Associate Professor*

### **Chi Tang**

*Promoted to Associate Professor*

### **Moein Mehrtash**

*Promoted to Associate Professor*

### **Tom Wanyama**

*Promoted to Associate Professor*

### **Jeff Fortuna**

*Granted Permanence*

### **Mike Justason**

*Granted Renewal*

### **Zhen Gao**

*Granted Renewal*

### **Silvie Tanu-Halim**

*Granted Renewal*

## Dan Centea promoted to full Professor

In July 2023, **Dan Centea** was promoted to the rank of full professor.

*“Dan Centea was in the delivery room for the then-fledgling BTech program, and over the many years has excelled as an instructor, researcher, and administrator. His recent appointment to the rank of full Professor as a teaching Professor is a first for the Faculty of Engineering, and has set a tremendous example for his colleagues in the W Booth to emulate.”*

– Director, Brian Baetz



## Goodbye to Josie Marchese

After 23 years of dedicated service to McMaster University, **Josie Marchese** leaves for new pastures.

*"We thank Josie for her dedicated, professional and friendly service, over her last 23 years at McMaster University, her last 9 being with W Booth. Her smile and good nature will be missed, but we congratulate her on reaching this exciting milestone and wish her every happiness as she embarks on this new and exciting chapter. Congratulations, Josie!"*

– Melissa Furtney, Assistant Manager.

## Farewell but not goodbye to Tom Lee

For just shy of three years, **Tom Lee** served as the distinguished holder of the Walter Booth Chair for Engineering Entrepreneurship and Innovation. For six months. Tom served as the Associate Director for our graduate programs. Lee's impact has been profound.

*"Tom Lee is an amazing colleague and an even more amazing human being. Tom is a real Renaissance engineer, and truly sees the big picture from his solid grounding in Systems Engineering methodologies. Not only is he technically savvy, but he has the business development chops to know when a good idea will get off the ground in a commercial setting. We are absolutely delighted that Tom will continue his strong connection with W Booth as an adjunct faculty member, and the beneficiaries of his ongoing innovation and innate charm will indeed be numerous."*

– Director, Brian Baetz

# About the W Booth School of Engineering Practice and Technology

**McMaster University's Walter G. Booth School of Engineering Practice and Technology** offers the Canadian and global academic community the most modern, integrated and relevant programs and applied research. We offer a blend of advanced thinking, harmonized with effective application in industry, commerce, and community. We are a high-appeal, creative, and dynamic hub within a globally ranked research institution.

Our school's graduates receive the benefits of high-value employment opportunities, the prestige of the McMaster brand, and a thoroughly engaging and rewarding education experience that only practice-based education can provide. Over the years, we have introduced outstanding programs at both the graduate and undergraduate level and we continue to respond to the rapidly changing demands of an ever-more complex global industrial and technological context. We are committed to the innovative integration of these progressive values into the ongoing refinement and improvement of our programs.





27  
Full-Time  
Faculty



150  
Sessional  
Faculty



17  
Full-Time  
Staff



440  
Graduate  
Students



2469  
Undergraduate  
Students

## Program Overview

### Graduate Programs

- MEPP Engineering & Public Policy
- MEng Engineering Design
- MEng Manufacturing Engineering
- MEng Systems & Technology

### McMaster Mohwak Combined Degree/Diploma Programs

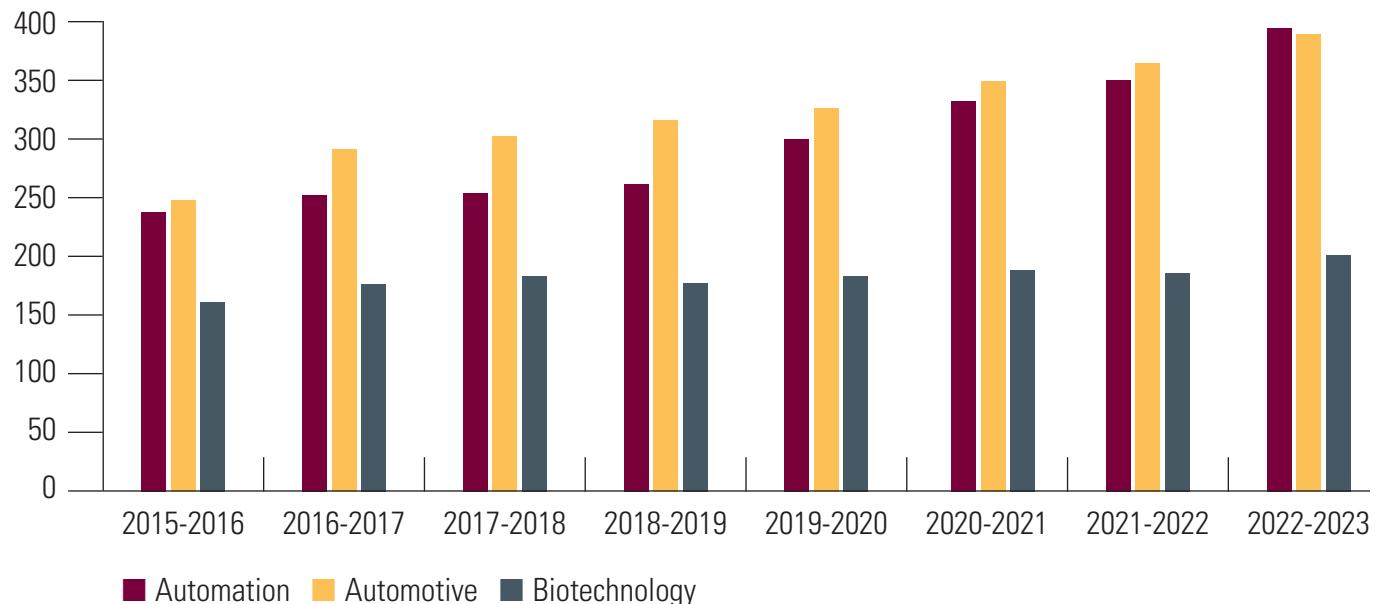
- Undergraduate Programs
- BTech Automotive & Vehicle Engineering Technology
- BTech Automation Engineering Systems Technology
- BTech Biotechnology

### Degree Completion Programs

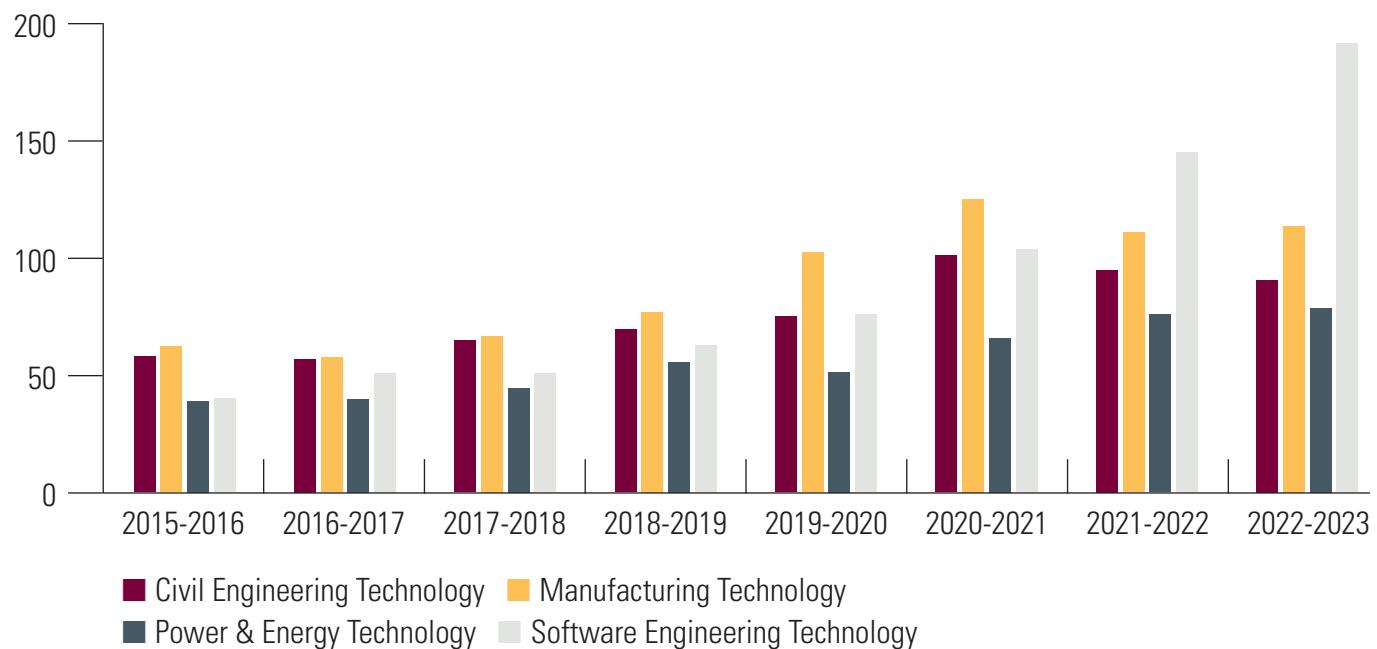
- BTech Civil Engineering Infrastructure Technology
- BTech Power & Energy Engineering Technology
- BTech Manufacturing Engineering Technology
- BTech Software Engineering Technology

# By the numbers

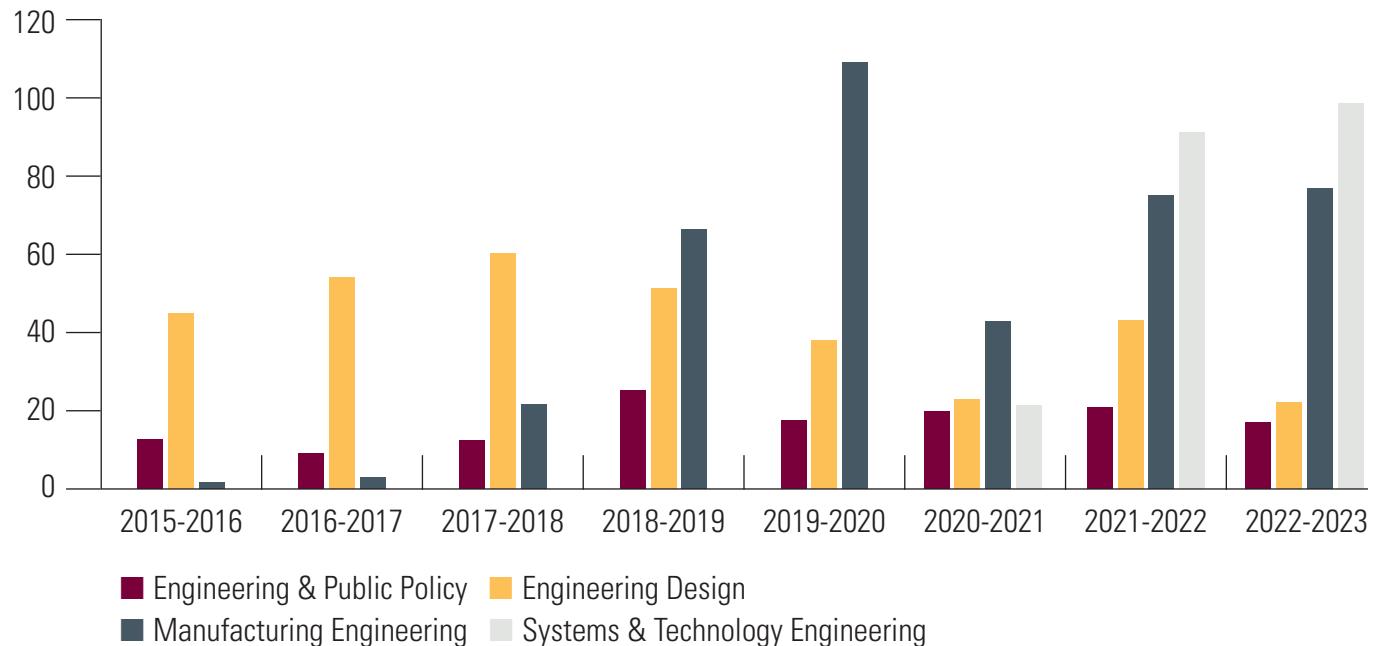
**Undergraduate FTE Enrolment by BTech Stream - 4 Year**



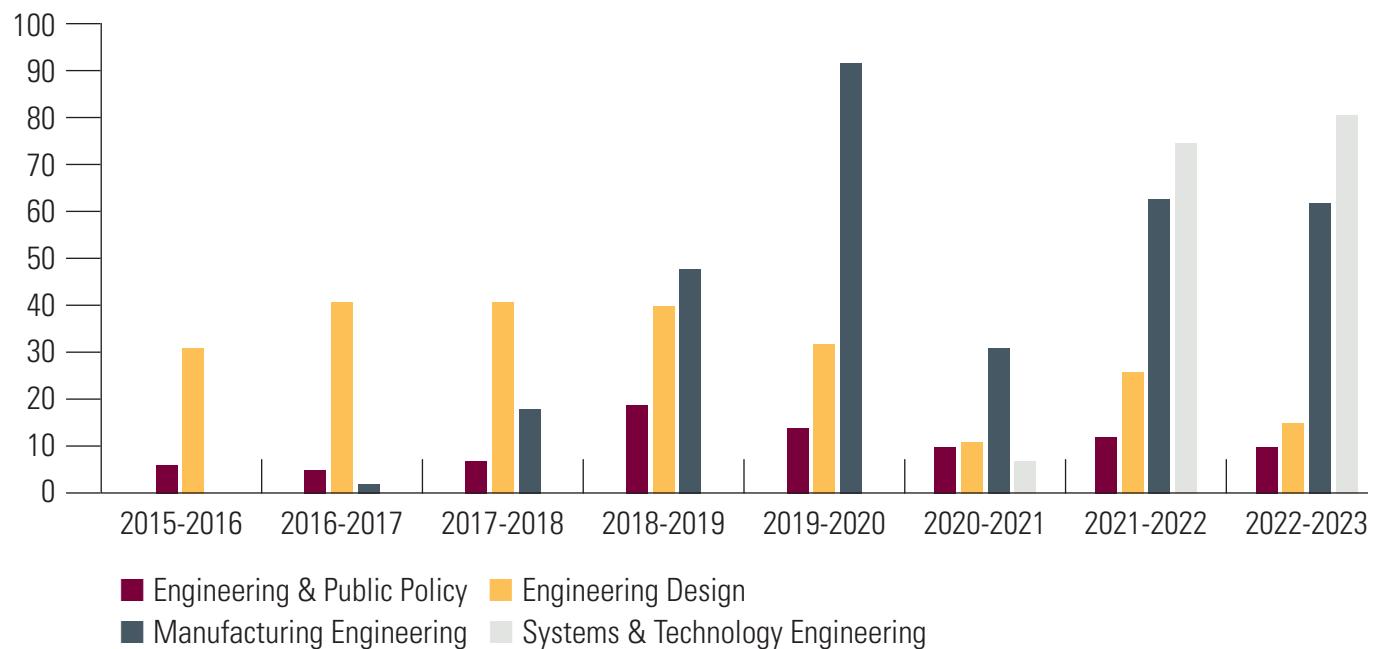
**Undergraduate FTE Enrolment by BTech Stream - DCP**



## Graduate FTE Enrolment by Program Area



## International Graduate FTE Enrolment by Program Area





**ENGINEERING**  
W Booth School of Engineering  
Practice and Technology

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