



ENGINEERING
GRADUATE COMMUNITY COUNCIL

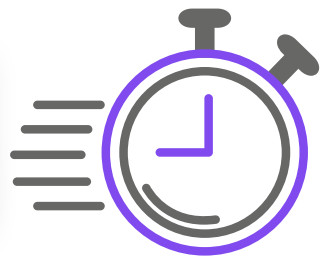
5TH

Engineering Three-Minute Thesis

MARCH 1, 2024

E 3 M T

COMPETITION



Get prepared for the competition, prizes, and gifts!



BE WHAT THE WORLD NEEDS

Engineering Library
11 AM - 4 PM



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Dedicated alumni have built a tradition of giving back so that USask engineering students of today have the very best education and university experiences.

Graduates from across decades give to the Engineering Advancement Trust (EAT) to ensure that USask engineering remains on the leading edge of the changing professional landscape. With technology advancing at a lightning pace, the EAT funding keeps our college at the forefront of engineering education, funding transformative projects and valuable laboratory and shop equipment.

EAT



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WELCOME MESSAGE DEAN CAREY SIMONSON AND ASSOCIATE DEAN RAMA GOKARAJU

Welcome to the 2024 Engineering Three Minute Thesis Competition, hosted by the Engineering Graduate Community Council in the College of Engineering.

The Three Minute Thesis format challenges you to present your research in a way that's accessible to a general audience, making it a valuable experience to develop your communication skills as Engineers The World Needs. Students all over the globe have found 3MT competitions to be both challenging and rewarding, and the College of Engineering is proud to support this competition organized especially for engineering students.

Thank you to the EGCC for organizing this important event. We would also like to extend a special thank you to the Engineering Advancement Trust (EAT) for their generous support that allowed the EGCC to elevate this event for students, alumni, and the community.

We hope that your E3MT experience will be challenging, enjoyable and rewarding. Past participants of E3MT have gone on to excellent performances in the university and regional 3MT competitions, so dream big and keep thinking about where your research can take you next.



Carey Simonson
Interim Dean

Ramakrishna Gokaraju
Acting Associate Dean
of Graduate Studies
and Strategic Projects



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WELCOME MESSAGE

ASSOCIATE DEAN RESEARCH AND PARTNERSHIPS, ENGINEERING

DR. JAFAR SOLTAN



I am pleased to welcome you to the fifth annual Engineering Three Minute Thesis Competition (E3MT), organized by the Engineering Graduate Community Council (EGCC). Students all over the globe have found 3MT competitions to be both challenging and rewarding. The College of Engineering is proud to support this competition organized especially for engineering students. I look forward to watching the presentations and I wish you the best of luck.

I would like to thank the EGCC for organizing this important event. I would also like to extend a special thank you to the Engineering Advancement Trust (EAT) for their generous support that allowed the EGCC to elevate this event for students, alumni, and the community.

I hope that your E3MT experience will be challenging, enjoyable and rewarding. Past participants of E3MT have gone on to excellent performances in the university and regional 3MT competitions, so dream big and keep thinking about where your research can take you next.

Jafar Soltan
Associate Dean Research and Partnerships
Professor of Chemical and Biological Engineering
College of Engineering



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WELCOME MESSAGE

EGCC PRESIDENT

PABITRA CHANDRA DAS



Welcome, all graduate students, judges, and faculties!

On behalf of the Engineering Graduate Community Council (EGCC), I would like to share my warm welcome to all participants in the 5th Engineering Three-Minute Thesis Competition on Mar. 01, 2024!

WE ARE PROUD OF YOU!

I hope you all enjoy the E3MT competition, and I believe you all will do an excellent job for our Canadian Society and Engineering the World Needs!

Pabitra Chandra Das
EGCC President
Chemical and Biological Engineering
College of Engineering



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EGCC EXECUTIVES MESSAGE

2023-2024



**EHSAN SAMIMI
SOHRFOROZANI**

VP FINANCE



KATHRYN AVERY

VP OPERATIONS



MALIHEH HERVI

VP ACADEMIC



HANIEH VARASTEH

VP STUDENT

Welcome all participants to the 5th annual Engineering 3-Minute Thesis Competition (E3MT). We would like to congratulate all participants on taking advantage of this opportunity to present your research to us! You have all worked so hard, so take a moment to reflect on what you have accomplished.

We look forward to hearing what everyone has been working on. We come together as a community through events such as these, encouraging our graduate students to be confident about their achievements and providing them with a platform to present their work. Whether you have one year left at this university or four, keep persevering and aim high. Your hard work and enthusiasm will take you far beyond the walls of this university.



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MEET THE EGCC DEPARTMENTAL REPRESENTATIVES 2023-2024



Maliheh Heravi



**Ehsan Samimi
Sohrforozani**

Chemical Engineering



Siddhartha Gollamudi



Kathryn Avery

Mechanical Engineering



Pabitra Chandra Das

Biological Engineering



Blessing Ekwueme Faith

Biomedical Engineering



Mohammad Salimi



Hossein Nezhadian

**Electrical and Computer
Engineering**



**Ehsan Samimi
Sohrforozani**



**Corwyn
Schomachuk**

**Civil, geological and
Environmental Engineering**



MEET THE JUDGES



Duncan Cree, Ph.D.

Associate Professor

Dr. Duncan Cree obtained his B.Eng., MEng and Ph.D. degrees in Mechanical Engineering from Concordia University, in Montreal. During the summer he worked at various aerospace companies such as Pratt & Whitney Canada, Bombardier Aerospace and the National Research Council of Canada (NRC). He later went on to pursue a two-year NSERC Postdoctoral Fellowship at Queen's University in Kingston, Ontario in the Civil Engineering department. He was then hired on a three-year contract (non-renewable) as an Assistant Professor at Queen's University. In November 2014 he joined the Department of Mechanical Engineering at the University of Saskatchewan as an Assistant Professor. He is currently a tenured Associate Professor. His research interests are in the area of materials science, specifically understanding the mechanical behavior of engineering materials. Addressing the challenges of sustainability using waste as resources is a major area of research.

Mohsen Shakouri, Ph.D.

Scientist - Beamline Responsible, Canadian Light Source



Dr. Mohsen Shakouri is a scientist overseeing the Soft X-ray Microcharacterization beamline (SXRMB) at CLS. He also serves as an adjunct professor in the Chemical and Biological Engineering Department at the University of Saskatchewan. With over a decade of expertise, he specializes in the development and synthesis of structured nanomaterial catalysts. His proficiency extends to designing lab-scale test setups for catalyst evaluation and proficiently operating diverse analytical instruments. Profoundly skilled in X-ray spectroscopy, microscopy, and crystallography, he delves into unraveling materials' chemical structures. Driven by a passion for hands-on experimentation, he enjoys every aspect, from conceptualization to data interpretation. He holds a BSc in Chemical and Petroleum Engineering from the Sharif University of Technology and earned MSc and PhD degrees from the University of Saskatchewan. In his free time, he enjoys cooking, music, and sports.



Jordan F. Humeny, P.Eng., PMP., LSSGB

Engineer, Distribution Engineering Program Work, SaskPower

Jordan attended the University of Regina where he received a bachelor's degree in Industrial Systems Engineering, graduating with Great Distinction, and the Gold Medal from the Canadian Association of Mechanical Engineers. Immediately upon completion of his studies he began working in the industrial construction industry as a Field Engineer, then Quality Control Manager in the potash and hydropower sectors. After developing key skills in construction and project management Jordan moved into the crown sector and undertook a role which better applied the technical and theoretical skills learned from his education. The technical skills developed through the application of Engineering design, coupled with the Project Management skills honed from his time spent working in the field lead him down the path to where he has spent the last four years; program and portfolio management – first with SaskEnergy and now with SaskPower in Saskatoon. Both on and off the job Jordan has a passion for program and portfolio management as planning, budgeting, and building a brighter future are his constants. When fiscal responsibility is not in focus, Jordan can be found running, weightlifting, or working on the restoration of his 1986 Boston Whaler.



MEET THE JUDGES



Venu Babu Borugadda, Ph.D.

Manager, Research & Development, Tidewater Renewables

Dr. Venu Babu Borugadda is currently serving as the Manager for Research and Development at Tidewater Renewables Ltd. in Calgary, he plays a pivotal role in advancing the company's focus on producing low-carbon liquid (Renewable Diesel) and gaseous (Renewable Natural Gas - RNG) fuels. In addition to his role at Tidewater Renewables Ltd., Dr. Borugadda also works as a part-time research associate at the University of Saskatchewan's Department of Chemical and Biological Engineering, working in Professor Ajay K Dalai's research lab. His responsibilities include spearheading R&D efforts aimed at developing economically viable commercial biocrude production technology through a thermo-chemical approach, leveraging promising agroforestry residues. Besides, he is working on the development of novel technologies to enhance the efficiency of bio-digesters for RNG production via anaerobic digestion and co-digestion techniques. Dr. Borugadda's multifaceted background in advancing renewable energy technologies makes him a valuable asset to both academia and industry, driving forward the transition to a more sustainable energy future. Dr. Borugadda's expertise encompasses various facets of renewable energy and biofuel production, including the synthesis of bio-lubricants, catalyst development, and the production of carbon-neutral gaseous and liquid fuels through thermo-chemical conversion technologies. He received a Ph.D. degree from the prestigious Indian Institute of Technology, Guwahati, India, in 2016.

Christopher Bowman, Ph.D.

Technology Transfer Manager, University of Saskatchewan

Chris holds a Ph.D. in applied mathematics from the University of Arizona and has extensive experience in supporting research commercialization and collaboration in academic, government, and private sectors. He has been a technology transfer manager at U of S for seven years, he focuses on finding, or developing partners that can take university IP and advance it to market-ready products or services. He is responsible for an expanding portfolio including Engineering, Physical Sciences, Information and Communications Technologies and Agriculture.



Tate N. Cao, P.Eng, MBA

Assistant Professor

Tate N. Cao is an Assistant Professor in the Ron and Jane Graham School of Professional Development at the University of Saskatchewan. He is the La Borde Chair in Engineering Entrepreneurship and teaches courses on engineering technology management, product design, and entrepreneurship. His research interests include 3D printing in tissue engineering and healthcare, smart farming technologies, and entrepreneurial practices. He has founded and directed the SIGMA Educational Skill Accelerator program and serves on several boards, including the Asian American Innovation Alliance, Co. Learn, Tech Innovation and Engineering Entrepreneurship group at CEEA, and the Pan Canadian Smart Farm Network. Prior to joining USask, he practiced intellectual property law and built and managed startup companies. Prof. Cao received his bachelor's degree in Biomedical Engineering from the Beijing Institute of Technology and his Master's in Biomedical Engineering and MBA from the University of Saskatchewan. He is one of the six USask Sustainability Faculty Fellow and leads the Smart Farming Initiative at the College of Engineering.



MEET THE JUDGES

Bishnu Acharya, Ph.D.

Saskatchewan Ministry of Agriculture Chair in Bioprocess Engineering
Associate Professor



Dr. Bishnu Acharya is an Associate Professor in the Department of Chemical and Biological Engineering at the University of Saskatchewan and the Saskatchewan Ministry of Agriculture Research Chair in Bioprocess Engineering. His research expertise lies in the area of bioprocessing and conversion, particularly in the emerging area of conversion of biomass to bioproducts for chemical, material, and energy applications by adopting a circular bioeconomy approach. Dr. Acharya's research investigates biomass characterization, thermochemical (torrefaction, hydrothermal, pyrolysis, gasification, combustion), biological (fermentation and anaerobic digestion) and chemical synthesis processes for the conversion of low value biomass to high value bioproducts. He is also developing research capacity to analyze the biopolymer and biobased materials at the University of Saskatchewan. Before joining University of Saskatchewan, he worked at the University of Prince Edward Island. Prior to that he worked for Greenfield Research Incorporated in Halifax, Canada as General Manager - Projects where he led several design and training projects for the development of clean technology.

Dr. Acharya is awarded with Engineers PEI - Engineering Excellence Award (2019) for his professional contribution towards the development of innovative bioproducts from nuisance biomass. His scholarly achievements are recognized with UPEI Faculty Association - Scholarly Achievement Award (2019), and Graduate Faculty Appreciation Award (2018). Dr. Acharya research work has been published in 5 book chapters, 70 journal articles and several conferences. He has 1 US provisional patent filed (with another under consideration). In last 7 years, he has supervised/co-supervised more than 40 HQP and has received around 3 million dollars of funding to support his research activities. Dr. Acharya is also a founding member and scientific advisor of a spin off company that focuses on the commercialization of tunicate-based cellulose nanomaterials.

He has bachelor's degree in Mechanical Engineering from Tribhuvan University - Nepal, Masters in Energy Technology from Asian Institute of Technology - Thailand and Doctoral Degree in Mechanical Engineering from Dalhousie University - Canada.

Homa Ghomi, MSc., PEng, PMP

Director of Engineering, KOVA Engineering (Saskatchewan) LTD.



Homa, the Director of Engineering at Kova Engineering (Saskatchewan) Ltd., is an innovative leader dedicated to excellence, bringing over a decade of experience across diverse industries. Her profound engineering background, coupled with a deep understanding of project management procedures and standards, has consistently empowered her to lead cross-functional teams and successfully deliver complex projects.

In her pursuit of client satisfaction, efficiency, and quality, Homa employs a strategic business growth approach. She seamlessly integrates technical expertise with proven project management frameworks to optimize workflows, ensuring the successful completion of projects. Homa's commitment is evident in her ability to transform ideas into reality, driving engineering projects toward resounding success.

A firm believer in fostering a culture of collaboration and continuous improvement, Homa empowers teams to navigate challenges with resilience and agility. Currently residing in Saskatoon, SK, she leads an active lifestyle by coaching group fitness classes. Homa is also an engaged member of the Toastmasters International community, advocating for public speaking and leadership skills. Her multifaceted skill set, and dedication make her an invaluable asset in steering engineering projects towards new heights of achievement.



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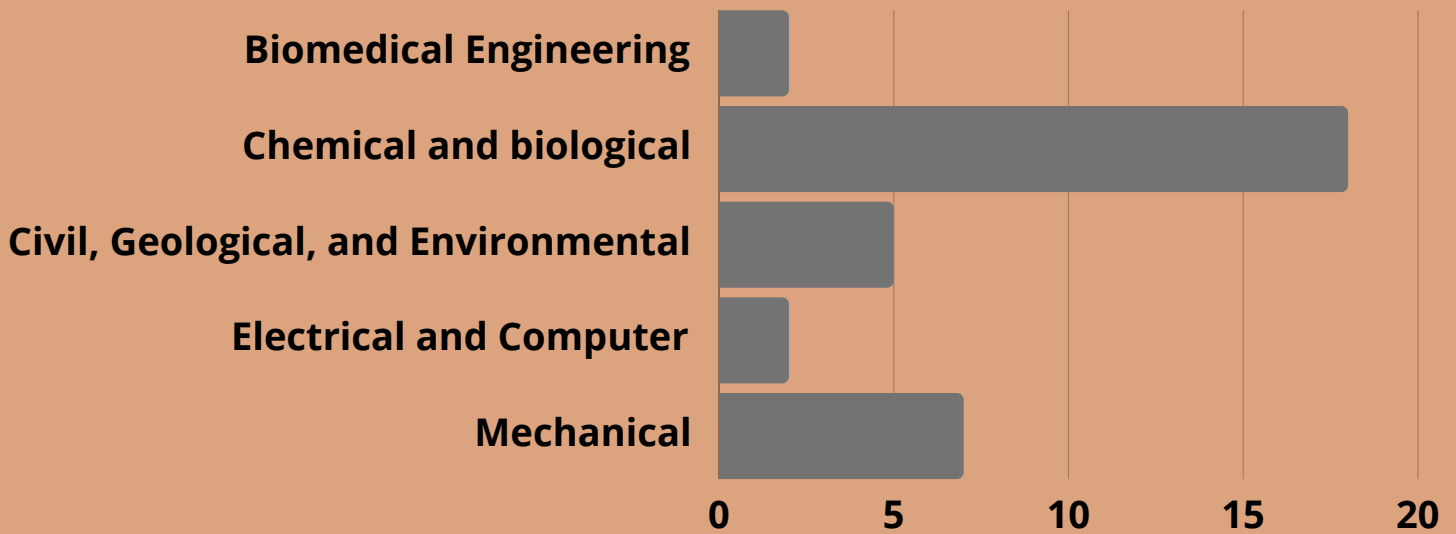




STATISTICS



Department



PH.D.

47%

MASTER

53%



AGENDA



10:30 - 11:00				Guest Arrival & Swag Bag Pick-up
11:05				Welcoming and Introduction to Engineering 3-Minute Thesis Competition - Dr. Ramakrishna Gokaraju
11:10				EGCC President Welcome Message
#	TIME	Name	Title	
1	11:20	Saeideh Razavi	Development of a Curling Rock Launcher to Improve Curling Research and Performance	
2	11:25	Ravi Patel	Bioadditives in Concrete	
3	11:30	Seyedali Hashemikouchaksaraei	Use of Pulse Starch for Lactic Acid and Ethanol Production through Microbial Fermentation Route	
4	11:35	Priyanka Tirumareddy	Production of Biofuels from Agricultural Wastes	
5	11:40	Corwyn Shomachuk	Hydrological Modelling	
6	11:45	Bashu Gautam	Aerobic Digestion of Agro-biomass	
7	11:50	Dinesha Thuvaragan	Pulse Starch-Based Bioplastic Production	
8	11:55	Ayowolemiwa Victor	Synthesis and Characterization of Antimicrobial Silver doped and Copper doped Diamond like Carbon (DLC)	
9	12:00	Lily Delamare	Bioremediation of Sodic Hydrocarbon Contaminated Environments	
10	12:05	Sumana Majumder	Cellulose Nanocrystal and Application in Pickering Emulsion	
11	12:10	Amirreza Mahmoudi	Frosting in Energy Exchangers	
12	12:15	Shaheli Sachintha Senanayake	Factors Influencing Road Safety at Urban Signalized Intersections in Saskatchewan	
13	12:20	Oluwadamilare Alege	Effects of Cold Plasma Application on Cannabis Seeds for Germinability Improvement and Pathogen Elimination	
14	12:25	Rahman Zeynali	Biogas Production - Environmental and Wastewater Treatment	
15	12:30	Bahman Mohammadkhani	Catalysts	
16	12:35	Asutosh Dalai	Utilization of Lignin for the Development of Biodegradable Adhesives	
17	12:40	Sara Nath	Transforming Waste into Fuel: A Sustainable Solution to Energy Demand and Environmental Challenges	
12:45-1:15				Lunch
18	1:20	Anahita Homavand	Sustainable Polymer Composites from Waste Eggshells for Practical Applications	
19	1:25	Ifeyomi Olobayotan	Bioproducts Development	
20	1:30	Jin Zhu	New Medium Formulation for 1,3 - Propanediol Production in Fermentation Process	
21	1:35	Lauryn Campbell	Understanding Shoulder Movement and Injury: A Model-Based Approach	
22	1:40	Md. Mamun	MLAFP-XN: Leveraging Neural Network Model for Development of Antifungal Peptide Identification Tool	
23	1:45	Siddhartha Gollamudi	Frost-free Air Source Heat Pumps	
24	1:50	Sona Kamali Miab	Microwave Assisting Heating in Catalytic Reaction	
25	1:55	Ganapathy Subramanian Meenakshi Sundaram	Application of Tribo-Electrostatic Separation in Dry Fractionation of Food Materials	



AGENDA



26	2:00	Farzan Hayati	Using Inexpensive Biochar Based Photocatalysis Material for Stormwater Decontamination
27	2:05	Hossein Nezhadian	Optimal Operation of Integrated Power and Gas Networks using GAMS
28	2:10	Shabnam Izadpanah	Pea Protein Off-Flavour Removal using Ultrasonic Cavitation
29	2:15	Daniel Hamilton	Mineral Processing
30	2:20	Yesu Ramya Kandregula	Synthesis of Bio-based Materials from Biomass
31	2:25	Alimul Haque Khan	Wireless Sensor Technology
32	2:30	Surbhi Takyar	Transforming Eggshell Waste: A Sustainable Solution
33	2:35	Ramesh Kalagnanam	Biocrude from Forest Product Residue
34	2:40	Tahmid Ibn Sayeed	Feasibility of an Absorption Heat Pump in Cold Climate Considering Effects of Frosting
Closing Ceremonies			
2:45	Breakout Session for Judging and Audience Choice Selection		
2:50	SaskPower Keynote Speech - Kathryn Pollack		
3:05	OPUS Keynote Speech - Natasha Werbicki		
3:20	Winner Announcement		
3:25	Closing Remarks - Dr. Soltan		
3:30	End of Event		



AND...!!



EGCC VALUES DIVERSITY OF THE TEAM PARTICIPANTS AND SPONSORS!



E 3 M T COMPETITION

MARCH 1, 2023



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