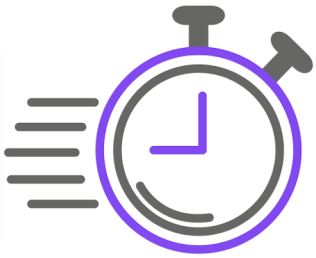
ENGINEERING GRADUATE COMMUNITY COUNCIL

4TH

Engineering Three-Minute Thesis

MARCH 03, 2023

E3MT COMPETITION



University of Saskatchewan

THE ENGINEERING ADVANCEMENT TRUST
COLLEGE OF ENGINEERING | USASK

Get prepared for the competition, prizes, and gifts!

SaskPower
Powering our future®

opus
Incubating USask Startups

SES
Saskatoon Engineering Society

TIDEWATER RENEWABLES

Red Leaf
Alternative Fiber & Renewable Energy

Graduate Students' Association GSA U of S

www.egcc.usask.ca

BE WHAT THE WORLD NEEDS

Engineering Library
11 AM - 3 PM

ENGINEERING ADVANCEMENT TRUST

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

THE ENGINEERING ADVANCEMENT TRUST

COLLEGE OF ENGINEERING | USASK

PROUD TO BE ONE OF SASKATCHEWAN'S

TOP EMPLOYERS FOR YOUNG PEOPLE

Visit **SaskPower.com/Careers** to learn more.

SaskPower
Powering our future®

CANADA'S TOP EMPLOYERS FOR YOUNG PEOPLE
2022

WELCOME MESSAGE DEAN SUZANNE KRESTA AND ASSOCIATE DEAN CAREY SIMONSON

Welcome to the 2023 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.

Suzanne Kresta
Dean

Carey Simonson
Associate Dean Graduate Studies and Strategic Projects

UNIVERSITY OF SASKATCHEWAN
College of Engineering
ENGINEERING.USASK.CA

WELCOME MESSAGE

ASSOCIATE DEAN RESEARCH AND PARTNERSHIPS, ENGINEERING

DR. JAFAR SOLTAN

I am pleased to welcome you to the third 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
Acting Associate Dean Graduate Studies and Strategic Projects
Professor of Chemical and Biological Engineering
College of Engineering

COMPETITION time

UNIVERSITY OF SASKATCHEWAN
College of Engineering
ENGINEERING.USASK.CA

WELCOME MESSAGE

EGCC PRESIDENT

AMIN BABAEIGHAZVINI

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 4th Engineering Three-Minute Thesis Competition on Mar. 03, 2023!

WE ARE PROUD OF YOU!

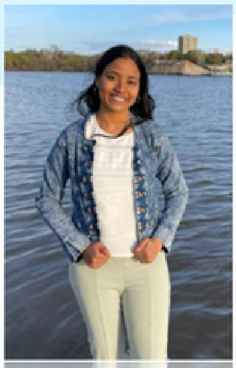
I hope you all enjoy the E3MT competition, and I believe you all will do an excellent job for our Canadian Society and Engineering the World Needs!

Amin Babaeighazvini, Ph.D.
EGCC President
Chemical Engineering
College of Engineering

UNIVERSITY OF SASKATCHEWAN
College of Engineering
ENGINEERING.USASK.CA

Image Credit: Stobbephoto
College of Engineering

EGCC EXECUTIVES MESSAGE 2022-2023



Priyanka Tirumareddy

VP FINANCE

Toan Truong

VP OPERATIONS

Sarah Allahmoradi

VP ACADEMIC

Shahabodin Afrasiabi

VP STUDENTS

Welcome all participants to the 4th 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.

UNIVERSITY OF SASKATCHEWAN
College of Engineering
ENGINEERING.USASK.CA

MEET THE EGCC DEPARTMENTAL REPRESENTATIVES 2022-2023

Chemical Engineering

Zahra Teymouri

Shahab Minaei

Mechanical Engineering

Amirreza Mahmoudi

Vahid Hosseini

Biological Engineering

Amin Babaeighazvini

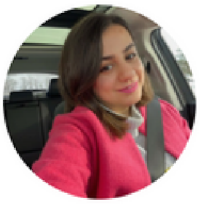
Divyapratim Das

Biomedical Engineering

Akinola Ogbeyemi

Abbas Fazel

Electrical and Computer Engineering



Sarah Allahmoradi

Shahabodin Afrasiabi

Civil, geological and Environmental Engineering

Emily Cline

MEET THE JUDGES

Margaret Kuzyk, P.Eng., FEC, FGC (Hon.), FCSSE

Margaret Kuzyk is a retired professional engineer from Saskatoon. She holds a diploma in architectural technology from SAIT in Calgary and a degree in civil engineering from USask. She worked primarily for municipal, provincial and federal governments, in the areas of building codes and regulation, project management, and facility planning, and served as the Chief Building Official for the Province of Saskatchewan. Margaret's involvement in APEGS includes being a life member, past president, former USask Senate representative and award winner. She is a Fellow of Engineers Canada, a Fellow of Geoscientists Canada (Hon.), a life member of the Saskatchewan Building Officials Association, and winner of a codes-related award from the National Research Council of Canada. Margaret has served the community as a public representative on the Council of the College of Physicians and Surgeons, and a patient-family partner for the Saskatchewan Health Authority. Margaret has served as chair of the USask Engineering Advancement Trust and a warden for the Engineers' Iron Ring Camps in Regina and Saskatoon, and is currently an alternate warden for the Camps' national corporation.

Sumith Kahanda, Ph.D., P.Eng., PMP, CSSGB

Project Manager, SaskWater

Dr. Sumith is a Professional Engineer, Project Manager, a Leader and Community Volunteer from Saskatoon with a great passion and dedication to give back to the engineering community. He is self-driven, motivated and results driven leader who can bring more values and inspire many engineering members. Currently, he works as the Project Manager with SaskWater.

Dr. Sumith has obtained his B.Sc. in Agriculture (Major: Agriculture Engineering), from University of Peradeniya, Sri Lanka; M.Sc. in Water Resources Engineering from Katholieke University, Belgium; and PhD in Agriculture and Bioresources Engineering, from the University of Saskatchewan. He has obtained leadership training from Harvard Business School Online, SaskWater and University of Saskatchewan.

Dr. Sumith has been a volunteer for APEGS, SES, PMP North Saskatchewan Chapter, and ASQ Saskatchewan Section for a number of years. Currently, he is the vice-chair, APEGS Professional Development Committee, past president of SES, and member leader of ASQ Saskatchewan Section. Sumith was the SES president for 2021/22 and led SES to bring more values to SES members and enhance their experience with SES. In 2021, Sumith was the chair of ASQ Saskatchewan Section and led the organization to receive gold medal for performance excellence that year. Smith has been a mentor for co-op and graduate students from the College of Engineering, U of S. He is a mentor for International Graduate Engineers in the province and across Canada. Sumith has training and experience at Board Level. He has hold director positions with various Boards including SaskTel, Open Door Society, Saskatoon Food Bank, and a couple of other non-profit organizations. Sumith has been awarded Queen Elizabeth II Platinum Jubilee Award in 2023 and the Top 25 Immigrant Award in 2010 for his exemplary service and contribution to the Community.

Jeanie Wills, Ph.D.

DK Seaman Chair, Associate Professor

Jeanie Wills (she, her) is the DK Seaman Chair in Technical and Professional Communication in the Ron and Jane Graham School of Professional Development, College of Engineering. She currently teaches interpersonal communication, negotiation, and a foundational communication class. Wills' research has focussed on women and professional work in historical contexts. Wills' current research project is a piece of a larger project that intends to discover how historical public language practices surrounding the disciplines of Canadian engineering have excluded women and other underrepresented groups.

MEET THE JUDGES

Seokbum Ko, Ph.D.

Professor

Seokbum Ko is currently a Professor at the Department of Electrical and Computer Engineering and the Division of Biomedical Engineering, University of Saskatchewan, Canada. He got his Ph.D. degree from the University of Rhode Island, USA in 2002.
His research interests include computer architecture/arithmetic, efficient hardware implementation of compute-intensive applications, deep learning processor architecture, and biomedical engineering.
He is a senior member of the IEEE circuits and systems society and associate editors of IEEE TVLSI and IEEE Access. He was an associate editor of IEEE TCASI (2020-2021)

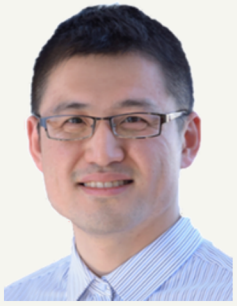
Alex Babij, P.Eng

Manager of Distribution Engineering O&M Support at SaskPower

Alex Babij is the Manager of Distribution Engineering Operations and Maintenance support at SaskPower. He graduated from the University of Saskatchewan with a B.Sc. in Electrical Engineering in 2007. After receiving his degree, Alex immediately began working with a telecom company before joining SaskPower in 2010. During his time at SaskPower, Alex has worked in multiple departments including region engineering support, asset management and field services and distribution engineering. In his current role he is leading the team providing the technical expertise for distributed generation interconnections, distribution system protection, distribution transformation pilot projects, distribution system reliability and power quality. In addition to his managerial role, he also is the committee chair of SaskPower's Engineer in Training development program. The program provides new engineering graduates with an opportunity to work in various positions within SaskPower before settling into a permanent role as well as provide SaskPower with a pool of engineers to fill vacancies.

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

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.

Venu Babu Borugadda, Ph.D.

Manager, Tidewater Renewables Ltd.

Currently, Dr. Venu Babu Borugadda is a Manager for Research and Development for a renewable fuel company Tidewater Renewables Ltd. located in Calgary. At the U of S, he is working as a research associate (RA) in the Department of Chemical and Biological Engineering in Professor Dalai's lab. Before joining the University of Saskatchewan, he was an assistant professor (Ad hoc) in the Department of Chemical Engineering at the National Institute of Technology (NIT) Calicut, Kerala. He received his Ph.D. in Chemical Engineering (2016) from the Indian Institute of Technology (IIT) Guwahati and a Master of Technology from the same institute with a Petroleum Refinery Engineering specialization in 2011. He earned his bachelor's degree (2009) in Chemical Engineering from Jawaharlal Nehru Technological University (JNTU), Anantapur. He has over ten years of research experience in biomaterials processing, Bio-lubricants, Catalyst preparation and development, and Production of carbon-neutral fuels and chemicals via thermo-chemical conversion technologies. Currently, the focus of his research interests is the production of advanced biofuels through hydrothermal liquefaction, Catalysis and Chemical Reaction Engineering, and Techno-economic and life cycle analysis. He has published 50 research articles in peer-reviewing journals, 10 book chapters, and more than 50 conference proceedings. He has been serving as a reviewer for many international journals like Fuel, Journal of Cleaner Production, International Journal of Hydrogen Energy, Chemical Engineering Communications, Industrial Crops and Products, and International Journal of Industrial Chemistry.

SPONSORS

GOLD

THE ENGINEERING ADVANCEMENT TRUST
COLLEGE OF ENGINEERING | USASK

SaskPower
Powering our future®

SILVER

opus
Incubating USask Startups

SES
Saskatoon Engineering Society

BRONZE

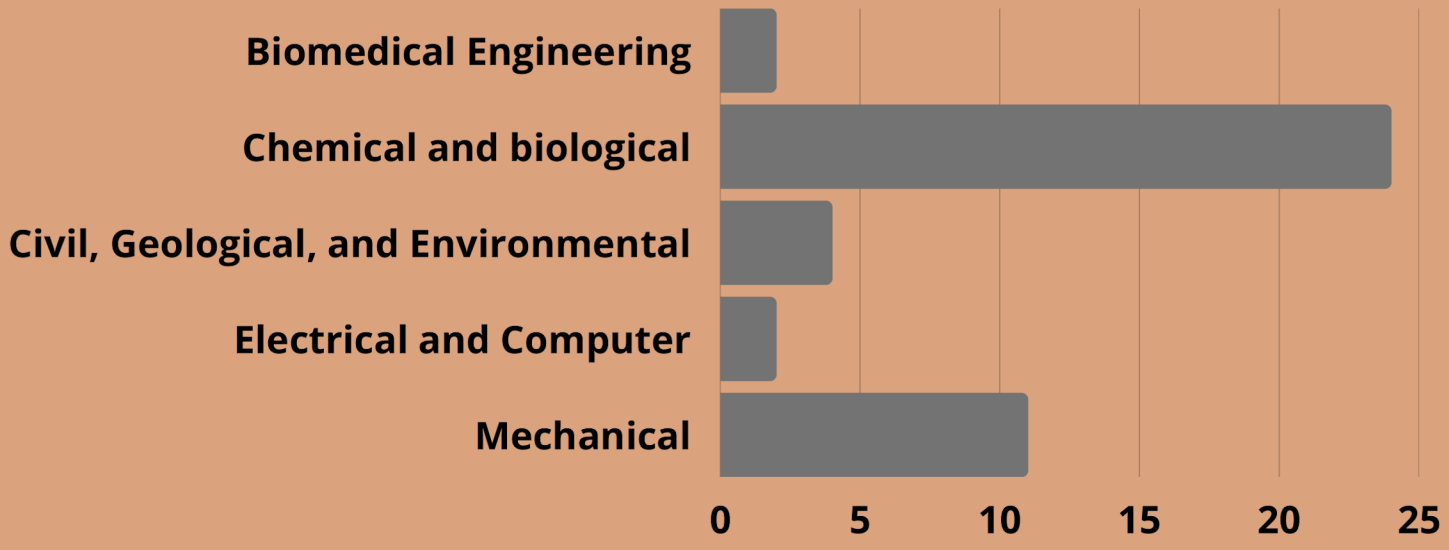
GRADUATE STUDENTS' ASSOCIATION
GSA
U of S

TIDEWATER RENEWABLES

Red Leaf
Alternative Fiber & Renewable Energy

STATISTICS

Department



PH.D. 56%

MASTER 44%

AGENDA

10:30 – 11:00		**Guest arrival & Swag Bag pick up**	
11:05		**Welcoming and Introduction on Engineering 3-Minute Thesis competition**	
11:15		**EGCC President Welcome Message**	
#	**TIME**	Name, **Surname**	**Title**
1	11:20	**Alex** Sacher	Regional depth-specific subchondral bone density measures in osteoarthritic and normal distalfemora
2	11:25	**Abbas** Fazel	Stop killing animals for science! Use Organ-On-Chip
3	11:30	**Arash** Mollahosseini	Separation
4	11:35	**Rahman** Zeynali	Enhancing Biogas Generation in a Municipal Wastewater Treatment Anaerobic DigestionProcess
5	11:40	**Ravichandra** Patil	Novel biofuel generation technologies.
6	11:45	**Divyapratim** Das	Triboelectrostatic Separator for Dry Fractionation of Pulse Flour
7	11:50	**Mohamed** Aboughaly	Development of Biochar for Enhancement of properties in Polymer Composites
8	11:55	**Kaitlyn** Baron	An Experimental Study of the Near-Wake Region of Low-Aspect-Ratio Surface-MountedRectangular Flat Plates
9	12:00	**Edgar** Martinez-Soberanes	A New Method for Dehulling Canola
10	12:05	**Ahmad** Firouzian Nejad	Designing morphing structures using bi-stable composite laminates
11	12:10	**Maliheh** Heravi	Supercritical water gasification of waste plastics to produce hydrogen
12	12:15	**Micah** Heide	Influence of Web Geometry on Concrete Masonry Walls Subject to Out-of-Plane Loading
13	12:20	**Tolen** Moirangthem	Radio frequency treatment vs changes in structural and anti-nutritional components of pulsesavailable in Canada
14	12:25	**Shabnam** Ghanbarzadeh	Synthesis and characterization of various shapes of modified NiMo/γ-Al2O3 catalyst forhydrotreating of heavy gas oil
15	12:30	**Farzan** Hayati	Ethylene oxide production through the catalytic reaction of ethylene and ozone
16	12:35	**Amir** Payan	Removal of inddor air pollutants
17	12:40	**Kapil** Khandelwal	Supercritical water gasification
18	12:45	**Farid** Jafarihaghighi	The effect of crystals of MnO2 on VOCs removal via catalyst ozonation
19	12:50	**Brooke** Petreny	Bluff Body Aerodynamics
20	12:55	**Ashwin** Joseph Mathews	Contaminant and aerosol transfer in membrane-based air-to-air energy exchangers
21	13:00	**Shahab** Minaei	Emerging Pollutants; A Growing Concern?

EAT
THE ENGINEERING ADVANCEMENT TRUST
COLLEGE OF ENGINEERING | USASK

AGENDA

Lunch Break (20 Minutes)			
22	13:20	**Zachary** Lang	Diamond Response to X-Rays
23	13:25	**Pezhman** Zolfaghari Didani	Ozone-based disinfection platform for the indoor air conditioning systems
24	13:30	**Aishwarya** Gurung	Electrocoagulation Treatment of Black Liquor Produced from Wheat Straw Pulping Process
25	13:35	**Siddhartha** Gollamudi	Feasibility of Heat Pumps in Cold Climates
26	13:40	**Ali** Jamali	A Domain-Free Self-Supervised Learning Approach for Classification of Anomalies in WirelessCapsule Endoscopy Images
27	13:45	**Runrong** Yin	Development of a more efficient approach to industrial scale dehull canola seeds
28	13:50	**Asma** Ghorbani	Catalytic Conversion of Glycerol to 1,3-Propanediol
29	13:55	**Nirpesh** Dhakal	Bioconversion of syngas to polyhydroxyacetate (PHA): Assessment of mixed and multi-stageculture
30	14:00	**Shaheli** Senanayake	Identifying critical success factors influencing road safety at urban signalized intersections inSaskatchewan-Transportation Engineering
31	14:05	**Seyed** Ali Hashemi Kouchaksaraei	Use of pulse starch for PLA and ethanol through microbial fermentation route
32	14:10	**Amirsaeed** Hosseini Jey	Assessing the Impact of Traffic Volume Changes in Observational Before–After SafetyStudies: a “No Treatment” Evaluation during COVID-19 Pandemic in Canada
33	14:15	**Alireza** Asadi	Multi-input dc-dc converter using in PV applications
34	14:20	**Parvaneh** Koranian	Catalytic conversion of glycerol to value-added product
35	14:25	**Shivangi** Jha	Transforming Waste into Biochar for Carbon Capture and Wastewater Treatment
36	14:30	**Imanma** Tiffany Egeonu	Bone Microstructure and Bone Strength related to the Pubertal Growth Spurt in Children andAdolescents
37	14:35	**Minoo** Soltani	Bioaerosol disinfection using cold plasma
38	14:40	**Anamol** Pokharel	Development of hemp and flax based bioplastics
39	14:45	**Zahra** Teimouri	Clean and sustainable fuels with Fischer-Tropsch synthesis
40	14:50	**Tejvir** Binepal	Transfer of bio-aerosols in membrane energy exchangers
41	14:55	**Amirreza** Mahmoudi	Frosting in Membrane Energy Exchangers
42	15:00	**Malihe** Afrooz	Water treatment

AGENDA

Closing ceremony	
15:05	Break out session for judging and Audience choice election
15:10	College Associate Dean / Dr. Soltan Speech
15:15	SaskPower Keynote Speech / Rosanah (Rose) Santos
15:30	OPUS Keynote Speech / Tandukar Anuradha
15:40	Winners announcement
16:00	End of the event

AND...!!

www.egcc.usask.ca

THE ENGINEERING ADVANCEMENT TRUST
COLLEGE OF ENGINEERING | USASK

EGCC VALUES DIVERSITY OF THE TEAM PARTICIPANTS AND SPONSORS!

THE ENGINEERING ADVANCEMENT TRUST
COLLEGE OF ENGINEERING | USASK

SaskPower
Powering our future®

GRADUATE STUDENTS' ASSOCIATION GSA U of S

opus
Incubating USask Startups

SES

TIDEWATER RENEWABLES

Red Leaf
Alternative Fiber & Renewable Energy

E 3 M T COMPETITION

MARCH 03, 2023

UNIVERSITY OF SASKATCHEWAN

College of Engineering

ENGINEERING.USASK.CA