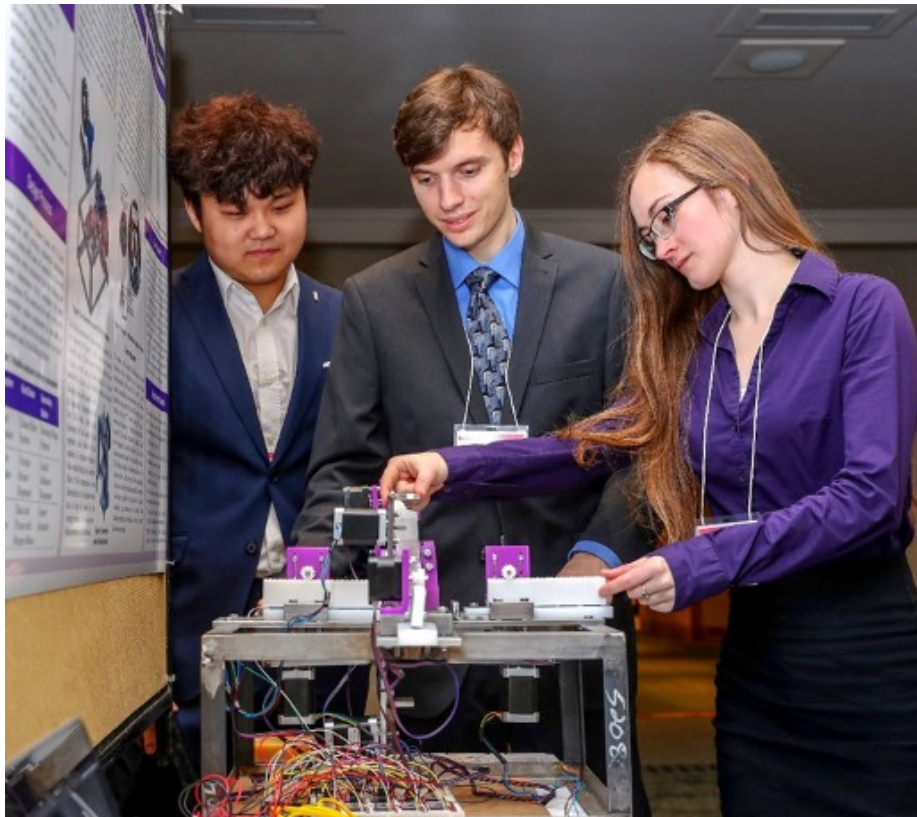




**DALHOUSIE
UNIVERSITY**

FACULTY OF ENGINEERING



2023 Engineering Capstone Conference April 11, 2023



Welcome to the 2023 Dalhousie Engineering Capstone Conference

We are excited to be hosting the seventh annual senior design engineering conference today and thank you for your participation.

The capstone program in the Faculty of Engineering at Dal gives students the opportunity to draw together all of their previous years' studies and apply their knowledge to solve a design problem. All engineering students participate in an eight-month capstone project in their final year of studies.

Most of our capstone projects are sponsored by clients from industry who have presented a current problem of theirs which requires a technical solution. Capstone is a meaningful program to both students and industry because it integrates students' course work and engineering design skills, while providing innovative solution for many local industrial partners.

The Dalhousie Engineering Capstone Conference (DECC) celebrates the hard work of our graduating engineering students, and we are excited to be hosting this event on Sexton Campus this year. Each team has prepared a project poster summarizing their work and these are on display in the Emera IDEA Building and the Richard Murray Design Building. During the event, judges representing the engineering profession will visit teams at their poster booths, evaluating students' visual and verbal communication skills. A winning team from each discipline will be announced at 4:00 pm.

The DECC would not be possible without the support of capstone instructors, faculty advisors, technical and administrative staff, industry project sponsors and advisors, event sponsors and the organizing committee. The time and energy that has been dedicated to this event is highly appreciated.

Schedule:

1:00 pm – 3:30 pm	Poster Exposition
1:00 pm – 3:00 pm	Judging
4:00 pm	Closing Remarks, Poster Winners Announced

We hope that you enjoy the DECC and wish the best of luck to all our senior year engineering students today, and in the future.

Organizing Committee:

Paul Casey, Engineer in Residence (Electrical & Computer)
Sandra MacAulay Thompson, Engineer in Residence (Industrial)
Colleen Rollings, Engineer in Residence (Chemical)
Corey Smith, Engineer in Residence (Mechanical)

Thank you to our judges from industry!

Name	Employer	Name	Employer
Alicia Doiron, P.Eng.	NS Dept. of Labour	Kaitlin Miles, P.Eng.	Government of NS
Allan Boddy, P.Eng.	NovaTech Mining Solutions	Kelly Brown, P.Eng.	Verterra Group
Andrew Oleniuk, P.Eng.	WSP	Kris Dove, P.Eng.	Engineers Nova Scotia
Annamarie Burgess, P.Eng.	NS Dept. of Env. & Climate Adaption	Krista Hogan, P.Eng.	HRM Planning & Design
Aswin Rajendran	Pomerleau	Leslie Ann Bateman, P.Eng.	NS Depart. Of Labour
Barry Hurndall, P.Eng.	BJH Management Ltd.	Mackenzie Connolly, P.Eng.	J.W. Lindsay
Billy Grace, P.Eng.	Aureus Gold Inc.	Marcos Casimirri, M.Eng, P.Eng.	CBCL
Breanne Lewis, EIT	H3R Inc.	Michelle MacAulay, P.Eng.	DavisPier
Bruce McCulloch, P.Eng., MBA, LEED	MCC Energy Strategies	Mike Morris, P.Eng	Ultra-MS
Bryan Darrell, P.Eng.	NS Provincial Housing Agency	Mila MacLean, P.Eng.	IMP Areospace
Chris Davis, P.Eng.	HRM	Pal Mann, P.Eng.	Engineers NS
Chris MacAulay, P.Eng.	Heritage Gas	Pattie Reynolds, P.Eng.	Storey Collaborative Inc
Chris Snyder, P.Eng.	Peraso	Peter Jones, P.Eng.	Dalhousie University - Mechanical
Clyde Cooper, P.Eng.	NS Dept. of Labour	Peter Lewis, P.Eng., CMT	IDS Consulting
Colin Jim, P.Eng.	CBCL	Phil Nash, P.Eng.	CNSOPB
Dan Khan, P.Eng.	Build Nova Scotia	Richard Hattin, M.A.Sc., P.Eng.	
Darrell Thompson, P.Eng.	NS Dept. of Labour	Rob Hudson, P.Eng.	Nova Scotia Health Authority
David Swan, Ph.D., P.Eng.	DHS Engineering Inc.	Robert Boone, P.Eng.	NS Power
Denise King, P.Eng.		Rory MacNeill, P.Eng.	Emera NF
Geoff Jamieson, P.Eng.	J.W. Lindsay	Tertius Baard, P.Eng.	CBCL
George Dickey, P.Eng.		Tom Brennan, P.Eng.	
George MacPherson, P.Eng.	NS Dept. of Natural Resources	Tony Gilman, P.Eng.	Terrane Geoscience Inc.
Gilles Comeau, P.Eng.	Campbell Comeau Engineering	Vicki McKenna, P.Eng.	Atlantica Mechanical Contractors
James Ross	Dalhousie	Vivek Tomar, P.Eng., FEC	Pomerleau
		Janice Zinck, P.Eng.	NS Dept. of Natural Resources

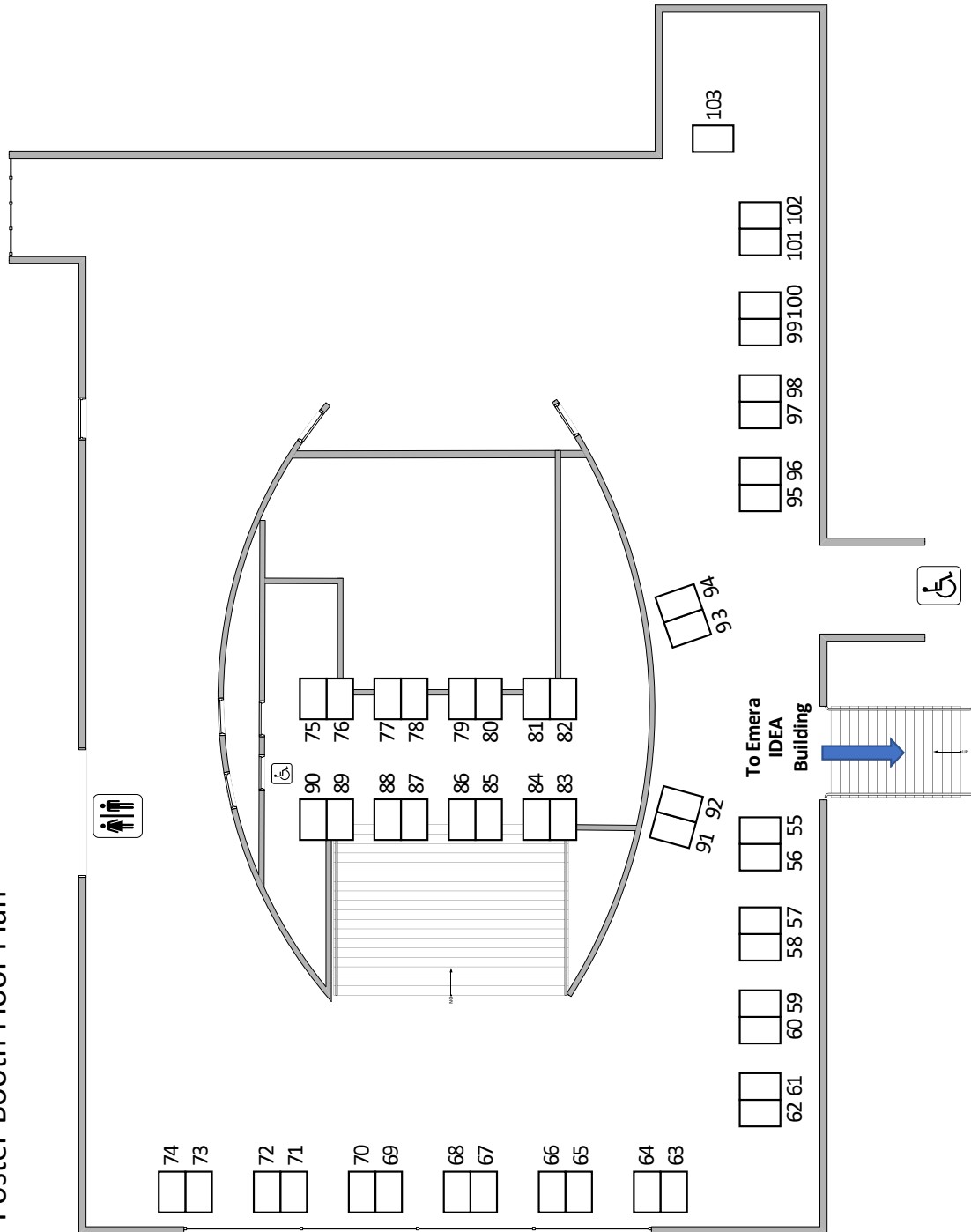


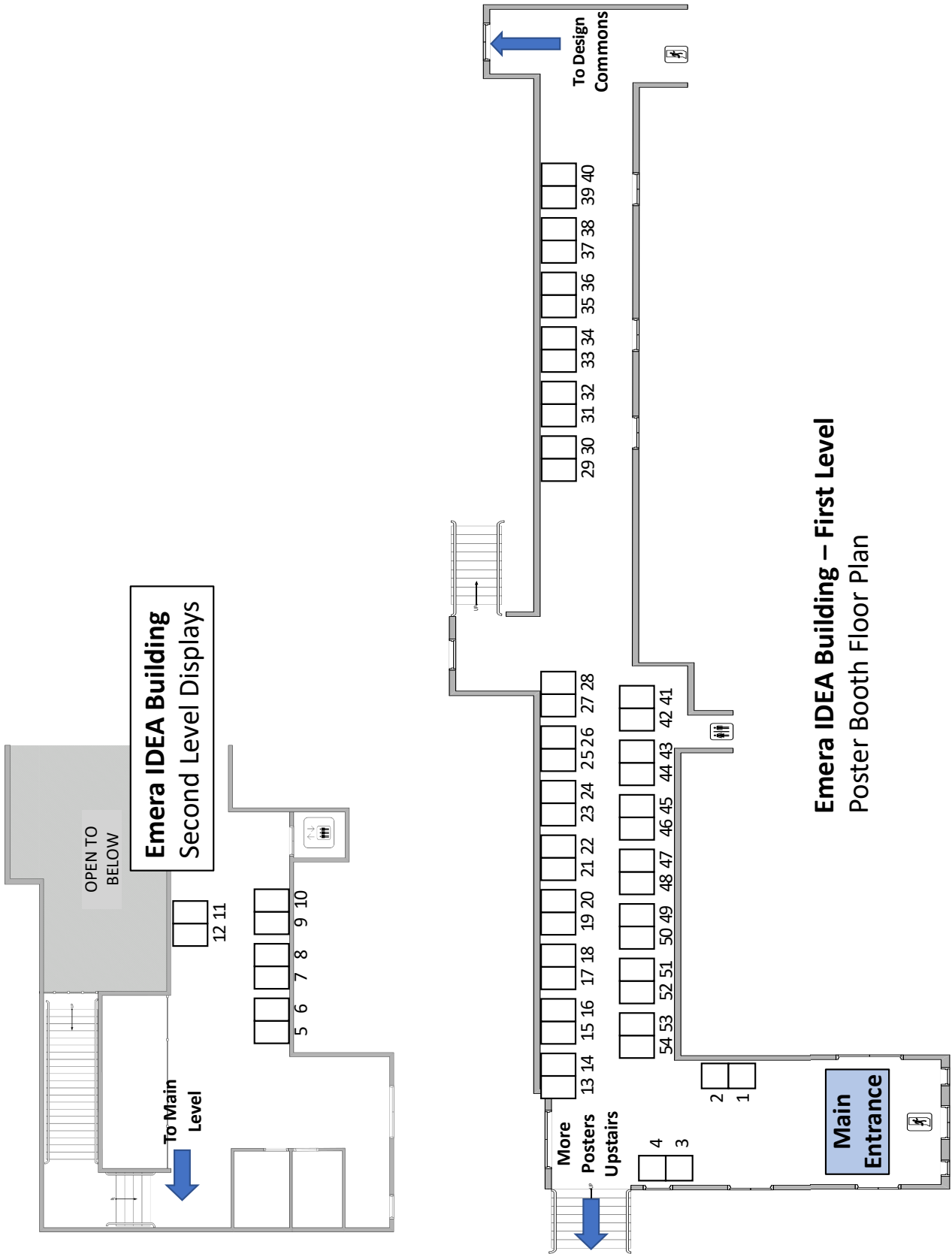
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Sexton Campus Floor Plans

Richard Murray Design Building – Design Commons
Poster Booth Floor Plan





**Emera IDEA Building – First Level
Poster Booth Floor Plan**

Booth	Team ID	Project Name	Industry Sponsor
1	MECH 9	Automated Washing and Sterilization for Growing rooms and Racking	Maritime Gourmet Mushrooms
2	ECED4901 1	Light Source Characterization System	META
3	219	Wastewater Treatment Plant Design for Seafood Processing Facility	Dillon
4	MECH 23	Snow Cart modification for deeper snow	Budd Lewis - personal
5	MECH 10	Design and Development of a Nanosatellite Spacecraft 6U Chassis with Deployable Solar Wings	GALAXIA
6	CIVL 1	Waverley Road Active Transportation Corridor	HRM
7	ECED4900 4	Single Use Water Quality Testing Device	Drinkable Water Solutions
8	ENVE 4	Design of Wastewater Treatment Plant Upgrade for Enhanced Nutrient Removal	Dillon Consulting
9	CHEE A1	Design of a Scaled-Up Nanoparticle Synthesis Process	Coloursmith Labs
10	ECED4901 7	A Passive Kinematics Pre-Operative Clinical Tool for Robotic Joint Replacement Surgery	Orthopaedic Robotics Team
11	MRE 3	Roger's Lake Gold Prospect	
12	IENG 5	Wheelchair Provision Process Improvement	NS Health: Wheelchair Research Team, NS Rehabilitation & Arthritis Centre
13	MECH 18	Dal FSAE Braking System Design and Modeling	Dalhousie FSAE
14	ECED4900 8	Implementation and Documentation of a Controller Area Network for Dal FSAE	Dalhousie FSAE Team
15	CIVL 6	Sustainable Groundwater Supply Design for Point Aconi Generating Station	EXP limited
16	IENG 3	Improving HRM's Paving Operations using Data Management and Analytics	HRM – Project Planning & Transportation Asset Management / Public Works
17	MECH 1	Gripper End Effector Design and Simulation	Enginuity
18	ECED4901 3	Battery Storage	Merivale Clean Energy
19	CHEE B1	Design and Analysis of an Electrospinning Process	Dr. Locke Davenport Huyer and Dr. John Frampton, Dalhousie School of Biomedical Engineering
20	CIVL 7	Design of Dalhousie Events Centre	CBCL
21	ECED4901 2	Distributed Sensor Network	Ultra Electronics Maritime Systems, Inc.
22	MECH 2	HVAC Design For a Net Zero Long Term Care Facility	CBCL
23	ECED4900 12	pH optode sensor design	Dartmouth Ocean Technologies Inc
24	IENG 4	NSP Hidden Outage Prediction Model	Nova Scotia Power, Inc.
25	ECED4901 5	Hardware Encryption Key Project	CyberClan
26	CIVL 8	Design of a Small Craft Harbour Wharf Replacement	CBCL
27	ECED4900 2	Ambulance Drone	Merivale Software & Robotics
28	ECED4901 12	Cruise control, battery charging, and regenerative braking on an e-bicycle	Dalhousie University



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Booth	Team ID	Project Name	Industry Sponsor
29	CHEE B2	Design and Implementation of a Feedback Controlled Pumping System for a Lung-on-a-Chip Device	Dr. Brendan Leung, Dalhousie School of Biomedical Engineering
30	ECED4901 8	Machine Learning applications in Cancer Prognosis and detection	Merivale Software & Robotics
31	MECH 22	Prosthetic modular components including paw	K-9 Orthotics and Prosthetics
32	CIVL 9	Design of Sydney Harbour Wastewater Treatment Facility	CBCL
33	ECED4900 1	FPGA implementation of the XMX CPU	ECED, Dalhousie Univ
34	MECH 16	Design and Build of a Tethered Robot for Internal Pipe Inspection of Submerged Pipes	Dalhousie Aquatron Laboratory
35	MRE 1	Nevada Tungsten Project	
36	MECH 20	Eye Movement Detection Mask (EMDM)	Dreamland XP
37	CIVL 10	Design of Steel Office/Warehouse Building	ADEL Ltd
38	IENG 14	NSH Geriatric Nurse Practitioner Project	NS Health: Geriatric Nurse Practitioner
39	CHEE A2	Optimization of a Decentralized Plastic Recycling Process	Recircle Waste Management Solutions
40	MECH 17	Unmanned Underwater Vehicle: Propulsion and Guidance System Design and Integration	Ultra Maritime
41	ECED4900 11	ACOM Receiver FPGA Development	Ultra Sonar Systems
42	ECED4901 4	Ultrasound Transducer Build Tracker	Daxsonics Ultrasound Inc
43	ENVE 1	Floodline Mapping and Flood Mitigation Approaches for the River John	
44	CIVL 2	Payzant Drive Intersection Upgrades	Municipality of West Hants
45	ECED4900 6	Marine Tech Prototype	Safe Harbour Research & Technologies Corp
46	IENG 2	IWK Clinical Engineering Space Utilization and Inventory Management Improvement	IWK: Clinical Engineering
47	CIVL 16	Design of the Market Hall Building	Blackwell Eng
48	ECED4901 6	Using Deep Learning for Real Estate Appraisal	Dalhousie University
49	CHEE A3	Salty Hair Process Optimization	Salty Hair
50	CIVL 3	Design of Wetland Crossing, Seven Lakes	CBCL
51	ECED4900 7	ACOM Transmitter FPGA Development	Ultra Sonar Systems
52	IENG 1	Halifax Water Data Visualization Project	Halifax Water
53	ENVE 2	Design of a Disinfection By-product Treatment and Management Strategy for New Service Area	Halifax Water
54	MECH 12	Adaption of Lifting Walker to be a Transport Wheelchair	Axtion Mobility Independence
55	IENG 8	Constructing Data Pipelines for Automated Production Reporting at Michelin Bridgewater	Michelin Bridgewater
56	CIVL 17	Community Building Design - Yukon First Nation	ISL Eng.
57	ECED4901 9	3GHz Horn Antenna	NCS Managed Services Inc
58	IENG 10	Power BI Dashboard for Demtroys Technologies	Demtroys Technologies



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Booth	Team ID	Project Name	Industry Sponsor
59	MECH 7	Gamification of Safety for Training	Dalhousie Safety Office
60	CHEE A4	Treatment and Valorization of an Apple Cider and Brandy Production Process	Wild Wines & Spirits
61	ECED4900 5	Sensor-integrated Mask for Data-driven CPAP Therapy	NovaResp Technologies Inc
62	MECH 8	Cement Kiln Dust (CKD) Conditioning System Upgrade	Lafarge
63	ECED4900 3	Battery Pack and BMS of Solar-powered Vehicle	Dalhousie Solar Car Team
64	CIVL 13	Design of Approach Embankments for a PEI Bridge	Harbourside Eng
65	ECED4901 10	Modular Smart Gasification Power Generation System	Merivale Software & Robotics
66	MECH 3	Environmental Chamber Control Modernization	Dr. Farid Taheri
67	CIVL 14	Design of Tailings Storage Facility	BGC
68	MECH 5	Bone Adhesive Dispensing System	Covina Biomedical Inc.*
69	CHEE A5	Design of Aeration Equipment for Seaweed Cultivation	Acadian Seaplants Limited
70	ECED4900 9	Clear Solar Panel	Merivale Software & Robotics
71	MECH 4	Peggy's Cove Life Saving Assistance	NS Life Saving Society
72	IENG 9	Optimization of Maintenance and Renovation Project Selection via Risk-Based Analysis at the IWK	IWK: Redevelopment, Space, and Leasing Services
73	CIVL 15	Design of 77 Wade	Blackwell Eng
74	MECH 6	Herb Processor – For Hydroponics Operations	Harvest
75	MECH 15	Blue Nose II Accessible Ramp	NS Depart. of Tourism
76	CIVL 18	Overpass Bridge Design	CBCL
77	ECED4901 11	Developing a new microfabrication technique	Dalhousie Ultrasound Lab
78	IENG 13	Sufficiency Rating Refinement & Detour Routing Automation at NSDPW	NS Dept. of Public Works
79	CHEE A6	Design of an Enhanced Anaerobic Digestion Process Through Carbon Dioxide Valorization	ACCESS-RNG
80	ECED4900 10	LMC KSA mining	Lockheed Martin Canada
81	IENG 6	Improving the sorting station at Shaw Brick Ltd.	Shaw Group Ltd., Brick Division
82	MECH 13	The Original Canadian Wheelchair swing – Bill Munro (Founder/CEO)	Halifax Biomedical
83	CIVL 4	CBRM Source Water Protection	Cape Breton Regional Municipality Wate Utility
84	ECED4900 13	eDNA extractor for onsite analysis	Dartmouth Ocean Technologies Inc
85	MECH 19	Automated Decellularization Production System	DeCell
86	CIVL 5	Herring Cove Small Craft Harbour	CBCL
87	IENG 12	Sufficiency Rating Refinement & Detour Routing Automation at NSDPW	HRM – Design and Construction / Public Works
88	ENVE 5	Passive Subsurface Wastewater Treatment System for an Arctic Community	



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Booth	Team ID	Project Name	Industry Sponsor
89	ECED4900 14	Wireless Soldering Iron	ECED, Dalhousie Univ
90	MRE 2	Sisyphian Gold Mines	
91	ENVE 3	Design of a SVE and Pump-and-Treat Remediation System for a Petroleum-Condensate-Contaminated Site	
92	ECED4900 15	Control Moment Gyroscope for the ISL Robotic Spacecraft Simulator	Intelligent Systems Lab, Dalhousie Univ
93	CHEE A7	Design of a Separation Process for Recovery of Omega-3 Fatty Acids from Microalgae	Giffin Technologies
94	IENG 7	Tool and Equipment Management at IMP Aerospace	IMP
95	MECH 21	Automated Paper Gluer	Greenli
96	CIVL 11	Design of Pirate Harbour Bridge Replacement	COWI
97	MECH 11	Temporary HVAC during construction- waiting for refined scope	Pomerleau
98	ECED4900 16	A C compiler, linker, and monitor for the XMX machine	ECED, Dalhousie Univ
99	IENG 11	Allocation and Distribution of Collection Equipment for CBS	Canadian Blood Service
100	CIVL 12	Design of a Proposed Telecommunications Tower, Fox Point Nova Scotia	TEP
101	MECH 14	Light Source Characterization System	MetaMaterial
102	ECED4900 17	UAV-Based Corona Discharge Detection	Detect Atlantic Inspection Services
103	CHEE A8	Design and Construction of a Household Anaerobic Digestion System	Dr. Azadeh Kermanshahi, Department of Process Engineering and Applied Science



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Chemical Engineering Capstone Teams

BOOTH 9
CHEE A1

Design of a Scaled-Up Nanoparticle Synthesis Process

Michael Hilborn, Lindsay Sanderson, Garrett Windsor
Sponsored by Coloursmith Labs

BOOTH 39
CHEE A2

Optimization of a Decentralized Plastic Recycling Process

Meral Dalipaj, Sean Murray, Nour Obeid, Omar Wahba
Sponsored by Recircle Waste Management Solutions

BOOTH 49
CHEE A3

Salty Hair Process Optimization

Alanna Brathwaite, Anthony Douchant, Hailey Taylor, Meredith Tulloch
Sponsored by Salty Hair

BOOTH 60
CHEE A4

Treatment and Valorization of an Apple Cider and Brandy Production

Louise Bao, Owen Pollock, David Luong, Jarod Mannette
Sponsored by Wild Wines & Spirits

BOOTH 69
CHEE A5

Design of Aeration Equipment for Seaweed Cultivation

Amelia Crocker, Tessa Crocker, Katie Robinson, Faris Nasser Said Al-Farsi
Sponsored by Acadian Seaplants Limited

BOOTH 79
CHEE A6

Design of an Enhanced Anaerobic Digestion Process Through Carbon Dioxide Valorization

Nicholas Whalen, Jiayi Zhao, Rawan Shatta, Zoe Smith
Sponsored by ACCESS-RNG

BOOTH 93
CHEE A7

Design of a Separation Process for Recovery of Omega-3 Fatty Acids from Microalgae

Ryan Chittle, Kathy Isaac, Zeynep Ozturk, Rui Miao
Sponsored by Giffin Technologies

BOOTH 103
CHEE A8

Design and Construction of a Household Anaerobic Digestion System

Luke Pinsent, Fionica Guan, Danielle Kinyanjui
Sponsored by Dr. Azadeh Kermanshahi, Department of Process Engineering and Applied Science

BOOTH 19
CHEE B1

Design and Analysis of an Electrospinning Process

Tay Barnabe, Courtney Chiasson, Kamar Clarke
Sponsored by Dr. Locke Davenport Huyer and Dr. John Frampton, Dalhousie School of Biomedical Engineering

BOOTH 29
CHEE B2

Design and Implementation of a Feedback Controlled Pumping System for a Lung-on-a-Chip Device

Emily Murphy, Sara Murrin, Maya Urquhart
Sponsored by Dr. Brendan Leung, Dalhousie School of Biomedical Engineering



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Civil Engineering Capstone Teams

BOOTH 6 CIVIL 1	Waverley Road Active Transportation Corridor Mohamed Abdulfattah, Zichen Jin, Marijke Stoll, Maddie Whitehouse <i>Sponsored by HRM</i>
BOOTH 44 CIVIL 2	Payzant Drive Intersection Upgrades Jiangong Chen, Yasmine Layachi, Ryan Millen, Elias Ramia <i>Sponsored by Municipality of West Hants</i>
BOOTH 50 CIVIL 3	Design of Wetland Crossing, Seven Lakes Jabes Benedict, Max Reigate, Ryan Kennedy, Laura-Hélène Wort <i>Sponsored by CBCL</i>
BOOTH 83 CIVIL 4	CBRM Source Water Protection Adam Blair, Keshini Rangasamy, Stuart Cowper, Maria Shaw <i>Sponsored by Cape Breton Regional Municipality Waste Utility</i>
BOOTH 86 CIVIL 5	Herring Cove Small Craft Harbour Alex Cormier, Mac Thyrvaal Girard, Amelia LeBlanc, Grace MacKenzie <i>Sponsored by CBCL</i>
BOOTH 15 CIVIL 6	Sustainable Groundwater Supply Design for Point Aconi Generating Station Alan Antony, Sam Brown, Amber MacNeil, Jeremy Scallion <i>Sponsored by EXP limited</i>
BOOTH 20 CIVIL 7	Design of Dalhousie Events Centre Rachael Connors, Samuel Wade, Bader Abou El Aun, Sami Abdallah <i>Sponsored by CBCL</i>
BOOTH 26 CIVIL 8	Design of a Small Craft Harbour Wharf Replacement Dana Alfouzan, Noah Hopkins, Luka Nizetic, Ian Watt <i>Sponsored by CBCL</i>
BOOTH 32 CIVIL 9	Design of Sydney Harbour Wastewater Treatment Facility Adam Aucoin, Jaire Lawrence-Salaam, Katie Trimm, Reena Zebian <i>Sponsored by CBCL</i>
BOOTH 37 CIVIL 10	Design of Steel Office/Warehouse Building Yiteng Li, Josh Bradley, Riley Giffin, Craig Sutherland - <i>Sponsored by ADEL Ltd</i>
BOOTH 96 CIVIL 11	Design of Pirate Harbour Bridge Replacement Deng Mabil Khot, Hannah Longmire, Stewart MacDonald, Brian Latimer <i>Sponsored by COWI</i>
BOOTH 100 CIVIL 12	Design of a Proposed Telecommunications Tower, Fox Point Nova Scotia Abdullah Alsaad, Jack O'Keefe, Boris Schneider, Denis Power <i>Sponsored by TEP</i>



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BOOTH 64
CIVIL 13

Design of Approach Embankments for a PEI Bridge
Fauziah Hoque , Jared Kublek, Kieran O'Grady, Siew Ming Yip
Sponsored by Harbourside Eng

BOOTH 67
CIVIL 14

Design of Tailings Storage Facility
Moriom Akhter, Colton Graham, Mundhir Nasor
Sponsored by BGC

BOOTH 73
CIVIL 15

Design of 77 Wade
Andrew Arseneau, Jarod Derrick, Lauren Mouser, Hamza Sajid
Sponsored by Blackwell Eng

BOOTH 47
CIVIL 16

Design of the Market Hall Building
Carson MacKay, Luke Macmillan, Yasmine Salem, Abdul Wahdan
Sponsored by Blackwell Eng

BOOTH 56
CIVIL 17

Community Building Design - Yukon First Nation
Hanna Korn, Ryan Sousa, Nick Varela, Sheng Yang
Sponsored by ISL Eng.

BOOTH 76
CIVIL 18

Overpass Bridge Design
Simon Burns, Aidan McFarland, Essex Richardson, Devin Sceles
Sponsored by CBCL

BOOTH 3
CIVIL 19

Wastewater Treatment Plant Design for Seafood Processing Facility
William Campbell, Becca Morris, Braden Groff, Uqba Manzoor, Jacob Splinter
Sponsored by Dillon

Electrical Engineering Capstone Teams

BOOTH 33
ECED4900 1

FPGA implementation of the XMX CPU
Jacques Bosse, Tori Ebanks, Mark McCoy
Sponsored by ECED, Dalhousie Univ

BOOTH 27
ECED4900 2

Ambulance Drone
Almahanad Al Farsi, Emmanuel Bannerman, Koushalram Kumaran
Sponsored by Merivale Software & Robotics

BOOTH 63
ECED4900 3

Battery Pack and BMS of Solar-powered Vehicle
Ansh Arora, Gina Park, Mark Wentworth
Sponsored by Dalhousie Solar Car Team



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BOOTH 7 ECED4900 4	Single Use Water Quality Testing Device Sichen Qiu, Cinar Reis, Yajing Song, Boyi Wan <i>Sponsored by Drinkable Water Solutions</i>
BOOTH 61 ECED4900 5	Sensor-integrated Mask for Data-driven CPAP Therapy Keira Ellefsen, Jacob Horne, Conner Jensen, Brad Whynot <i>Sponsored by NovaResp Technologies Inc</i>
BOOTH 45 ECED4900 6	Marine Tech Prototype Rayyan Islam, Henry Zou <i>Sponsored by Safe Harbour Research & Technologies Corp</i>
BOOTH 51 ECED4900 7	ACOM Transmitter FPGA Development Christopher Anderson, Jack Davie, Curtis Raymond, Michelle Yee <i>Sponsored by Ultra Sonar Systems</i>
BOOTH 14 ECED4900 8	Implementation and Documentation of a Controller Area Network for Dal FSAE Denise Adisenu-Doe, Duncan Cameron, Allison Fudge, Patrick MacKay <i>Sponsored by Dalhousie FSAE Team</i>
BOOTH 70 ECED4900 9	Clear Solar Panel Abdullahi Aden Muse, Marawn Refaey, Ogulcan Sahin <i>Sponsored by Merivale Software & Robotics</i>
BOOTH 80 ECED4900 10	LMC KSA mining Ryan Sawler, James Vaughan, Braeden Williamson <i>Sponsored by Lockheed Martin Canada</i>
BOOTH 41 ECED4900 11	ACOM Receiver FPGA Development Yuang Maduk, Faith Mauka <i>Sponsored by Ultra Sonar Systems</i>
BOOTH 23 ECED4900 12	pH Optode Sensor Design Mickey Jackson, Rehan Khalid, Teo Milos, Chidinma Onumadu <i>Sponsored by Dartmouth Ocean Technologies Inc</i>
BOOTH 84 ECED4900 13	eDNA Extractor for Onsite Analysis Dante Coulter, Samantha Hodge, Matthew Jenkins, Robert Kuhne <i>Sponsored by Dartmouth Ocean Technologies Inc</i>
BOOTH 89 ECED4900 14	Wireless Soldering Iron Zachary Henderson, Ethan Johnston, Brian Peters, Owen Stuttard <i>Sponsored by ECED, Dalhousie University</i>
BOOTH 92 ECED4900 15	Control Moment Gyroscope for the ISL Robotic Spacecraft Simulator Andrew Doucet, Spencer Dugas, Jasper Grant, Benjamin Seaman



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Sponsored by Intelligent Systems Lab, Dalhousie Univ

BOOTH 98
ECED4900 16

A C compiler, linker, and monitor for the XMX machine

Jacob MacDonald, Aidan Nearing, Manav Sohi

Sponsored by ECED, Dalhousie Univ

BOOTH 102
ECED4900 17

UAV-Based Corona Discharge Detection

Benjamin Dewey, Karsten Economou, Abraham El-Jakl, Colin Silver

Sponsored by Detect Atlantic Inspection Services

BOOTH 2
ECED4901 1

Light Source Characterization System

Lachlan Greechan, Nikola Doelle, Tanaka Akiyama, Brayden Barnes

Sponsored by META

BOOTH 21
ECED4901 2

Distributed Sensor Network

Duncan Linsdell, Matthew Cockburn, Shail Paliwal, Andrew Harding

Sponsored by Ultra Electronics Maritime Systems, Inc.

BOOTH 18
ECED4901 3

Battery Storage

Burak Saricicek, Berkay Onur, Waleed Seleman, Moe Ibrahim

Sponsored by Merivale Clean Energy

BOOTH 42
ECED4901 4

Ultrasound Transducer Build Tracker

Jiahao Chen, Shaonan Hu, Yilun Peng, Jiawei Yang

Sponsored by Daxsonics Ultrasound Inc

BOOTH 25
ECED4901 5

Hardware Encryption Key Project

Xinyue Chen, Lefu Xie, Yizhe Zhong, Zhenze Zhao

Sponsored by CyberClan

BOOTH 48
ECED4901 6

Using Deep Learning for Real Estate Appraisal

Marco Kaniecki, Erin Chiasson, Neelam Uppal, Johannes Koechling

Sponsored by Dalhousie University

BOOTH 10
ECED4901 7

A Passive Kinematics Pre-Operative Clinical Tool for Robotic Joint Replacement Surgery

Julian Oxner, Nashita Jalal, Kyle Ross, Douah Shakshuki

Sponsored by Orthopaedic Robotics Team

BOOTH 30
ECED4901 8

Machine Learning applications in Cancer Prognosis and detection

Shadman Mahmood, John Michael Wall, Matthew Murphy

Sponsored by Merivale Software & Robotics

BOOTH 57
ECED4901 9

3GHz Horn Antenna

Earl Kristian Concepcion , Bu Qin, Freya Zou, Fatemah Alkhayat

Sponsored by NCS Managed Services Inc



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BOOTH 57
ECED4901 10

Modular Smart Gasification Power Generation System

Haiduo Wang, Boxuan Liu, Shengyuan Wang, Yichen Zhang

Sponsored by Merivale Software & Robotics

BOOTH 77
ECED4901 11

Developing a new microfabrication technique

Thomas Hillis, Tristan French, Kerolos Mousa Abdrabbo

Sponsored by Dalhousie Ultrasound Lab

BOOTH 28
ECED4901 12

Cruise control, battery charging, and regenerative braking on an e-bicycle

Daraab Saeed , Ryan Murphy, Yikai Wang, Josef Connolly

Sponsored by Dalhousie University

Environmental Engineering
Capstone Teams

BOOTH 43
ENVE 1

Floodline Mapping and Flood Mitigation Approaches for the River John

Abi Bonnington, Binta E. Goodridge, Thomas Tzagarakis

BOOTH 53
ENVE 2

**Design of a Disinfection By-product Treatment and Management Strategy for
New Service Area**

Taylor G. Prest, Cameron S. Pytel, Julia Morrison, Canyu Feng

Sponsored by Halifax Water

BOOTH 91
ENVE 3

**Design of a SVE and Pump-and-Treat Remediation System for a Petroleum-
Condensate-Contaminated Site**

Daphne A. Finlay, Hannah Morris, Zaid Allala, Ryan DeGrunchy

BOOTH 8
ENVE 4

**Design of Wastewater Treatment Plant Upgrade for Enhanced Nutrient
Removal**

Heather MacDonald, Carena Binder, Luis Rendon

Sponsored by Dillon Consulting

BOOTH 88
ENVE 5

Passive Subsurface Wastewater Treatment System for an Arctic Community

Paul Yoon, Jazmin Wamboldt, Hadon D Jones, Fengchong Zhao



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Industrial Engineering Capstone Teams

BOOTH 52
IENG 1

Halifax Water Data Visualization Project
Rowan Darlison, Malak Riad, Paige Wotherspoon, Katya Iatrou
Sponsored by Halifax Water

BOOTH 46
IENG 2

IWK Clinical Engineering Space Utilization and Inventory Management Improvement
Jared Hudder, Amir Amiri, Austin Risser, Alex Hemenway
Sponsored by IWK: Clinical Engineering

BOOTH 16
IENG 3

Improving HRM's Paving Operations using Data Management and Analytics
Mustafa Al-Hachim, Youssef Imam, Islam Hamdy, Hosny Mohamed
Sponsored by HRM – Project Planning & Transportation Asset Management / Public Works

BOOTH 24
IENG 4

NSP Hidden Outage Prediction Model
Matthew Gabriel, Jason Attavar, Jacob Daniels, Angbazo, Mark A., Fraterne Niyomugabo
Sponsored by Nova Scotia Power, Inc.

BOOTH 12
IENG 5

Wheelchair Provision Process Improvement
Malcolm Dort, Karl Arsenault, Alistair Maksym, Jorge Plaza Santana
Sponsored by NS Health: Wheelchair Research Team, NS Rehabilitation & Arthritis Centre

BOOTH 81
IENG 6

Improving the Sorting Station at Shaw Brick Ltd.
Asad Masood, Emmanuel Amos, Nicholas Burke, Isaac Hazel
Sponsored by Shaw Brick Ltd.

BOOTH 94
IENG 7

Tool and Equipment Management at IMP Aerospace
Katrina Bagnell, Olivia Murray, Emma Holle
Sponsored by IMP

BOOTH 55
IENG 8

Constructing Data Pipelines for Automated Production Reporting at Michelin Bridgewater
Chayan De Silva, Mazen El-Ashkar, Jad Yammine, Jean-Paul Kaadou
Sponsored by Michelin Bridgewater

BOOTH 72
IENG 9

Optimization of Maintenance and Renovation Project Selection via Risk-Based Analysis at the IWK
Tristin Inkpen, Amber Butler, Shae Porter, Alex Noussis
Sponsored by IWK: Redevelopment, Space, and Leasing Services

BOOTH 58
IENG 10

Power BI Dashboard for Demtroys Technologies
Christopher David Waite Wood , Mingxin Wang, Roshan Sivakumar, Owen Anderson
Sponsored by Demtroys Technologies



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BOOTH 96
IENG 11

Allocation and Distribution of Collection Equipment for CBS
Ahmad M. Hadi, Hazem Ibrahim, Youssef Khattab, Pradeep Raj Nagaraj
Sponsored by Canadian Blood Service

BOOTH 87
IENG 12

Improving HRM's Project Management Process
Yuchen Ding, Yuhui Bai, Jiahui Li, Hitarth Chaniara
Sponsored by HRM – Design and Construction / Public Works

BOOTH 78
IENG 13

Sufficiency Rating Refinement & Detour Routing Automation at NSDPW
Anthony Sarto Morrison, Ethan Scothorn, Shane Stoodley, Glodin Mulali
Sponsored by NS Dept. of Public Works

BOOTH 38
IENG 14

NSH Geriatric Nurse Practitioner Project
Shane Moon, Steven Heo, Kang Yoon
Sponsored by NS Health: Geriatric Nurse Practitioner

Mechanical Engineering Capstone Teams

BOOTH 17
MECH 1

Gripper End Effector Design and Simulation
Ahmad KAmmonah, Fady Ramsis, Jack Langille, Monica van den Hoogen
Sponsored by Eginuity

BOOTH 22
MECH 2

HVAC Design For a Net Zero Long Term Care Facility
Daniel Locke, Erin Mackinnon, Evan Burns, Junzhuo Wo
Sponsored by CBCL

BOOTH 66
MECH 3

Environmental Chamber Control Modernization
Nizar Zahran Sa, Reilly Pickard, Silas Needler
Sponsored by Dr. Farid Taheri

BOOTH 71
MECH 4

Peggy's Cove Life Saving Assistance
Liam Carson, Tanner Duplessis, Willem Glozanski, Zach Gould
Sponsored by NS Life Saving Society

BOOTH 68
MECH 5

Bone Adhesive Dispensing System
Hayley O'Neil, Laara Banks, Luis Valenzuela Medina, Stephen Batsa
Sponsored by Covina Biomedical Inc.

BOOTH 74
MECH 6

Herb Processor – For Hydroponics Operations
Ben Silver, Berk Karacaoglu, Dylan Heino, Ryan Tobin
Sponsored by Harvest



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BOOTH 59
MECH 7

Gamification of Safety for Training
Hiroki Nose, Oluwadamilare Bankole, Zhijie Li
Sponsored by Dalhousie Safety Office

BOOTH 62
MECH 8

Cement Kiln Dust (CKD) Conditioning System Upgrade
Eric Boudreau, Majd Al Zhrouri, Pinliang Chen, Pravesh Kumar Awotar
Sponsored by Lafarge

BOOTH 32
MECH 9

Automated Washing and Sterilization for Growing rooms and Racking
Freya Daigle, Jianru Shen, Lorena Heubach, Yuanming Hou
Sponsored by Maritime Gourmet Mushrooms

BOOTH 5
MECH 10

Design and Development of a Nanosatellite Spacecraft 6U Chassis with Deployable Solar Wings
Andrew Best, Ashley Meagher, Phillip Arab, Shawn Wagner
Sponsored by GALAXIA

BOOTH 97
MECH 11

Temporary HVAC during construction- waiting for refined scope
Caleb Gray, Innis Wheatly, Liam DuJohn, Logesh Barath Khanna
Sponsored by Pomerleau

BOOTH 54
MECH 12

Adaption of Lifting Walker to be a Transport Wheelchair
Kerilyn Kennedy, Lauren MacLeod, Risha Monga, Samantha Jesty
Sponsored by Axtion Mobility Independence

BOOTH 82
MECH 13

The Original Canadian Wheelchair swing – Bill Munro (Founder/CEO)
Gillem Raymond, Jesimiel Ugbebor, Noa Wilks, Tim Shea
Sponsored by Halifax Biomedical

BOOTH 101
MECH 14

Light Source Characterization System
Ali Abdi, Bradley Matchett, Dexter Happ, Lauren Ramey
Sponsored by MetaMaterial

BOOTH 75
MECH 15

Blue Nose II Accessible Ramp
Andrew Arseneau, Jarod Derrick, Lauren Mouser, Hamza Sajid
Sponsored by NS Depart. of Tourism

BOOTH 34
MECH 16

Design and Build of a Tethered Robot for Internal Pipe Inspection of Submerged Pipes
Deniz Yurtsever, Liam Grundy, Mackenzie Streb, Zeyad Ibrahim
Sponsored by Dalhousie Aquatron Laboratory

BOOTH 40
MECH 17

Unmanned Underwater Vehicle: Propulsion and Guidance System Design and Integration
Mohannad Abdelall, Austin Ellis, Jordan Burke, Matthew Hill
Sponsored by Ultra Maritime



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BOOTH 13
MECH 18

Dal FSAE Braking System Design and Modeling
Aaron Nunn, Andre Robichaud, Evan Marshall, Riley Roache
Sponsored by Dalhousie FSAE

BOOTH 85
MECH 19

Automated Decellularization Production System
Dylan Logan, Michael MacGillvray, Parker Hickey, Ziyad Sarhan
Sponsored by DeCell

BOOTH 36
MECH 20

Eye Movement Detection Mask (EMDM)
Evan Fleming, Jacob Roberts, Joshua Sampson, Timothy Thiesen
Sponsored by Dreamland XP

BOOTH 95
MECH 21

Automated Paper Gluer
Ammar Khan, Divesh Russick, Kunal Kumar, Samantha Stegmeier
Sponsored by Greenli

BOOTH 31
MECH 22

Prosthetic Modular Components Including Paw
Ezzat Nassef, Lauren Williams, Shevin Dharmaratne, Megan Levy
Sponsored by K-9 Orthotics and Prosthetics

BOOTH 4
MECH 23

Snow Cart Modification for Deeper Snow
Aaron MacIntosh, Adrian Ernst, Keenan Ladd, Zachary Cameron
Sponsored by Budd Lewis

Mineral Engineering Capstone Teams

BOOTH 35
MRE 1

Nevada Tungsten Project
Christian Hodder, Flavie Belanger-Jones, Can Boyacilar, Meenaxshee D. Sunassee,
Nicolas Wong

BOOTH 90
MRE 2

Sisyphean Gold Mines
Shady M. Aly, Miracle Chikezie, Jasiel Austin, Sitong Gao, Jordan J. Smith

BOOTH 11
MRE 3

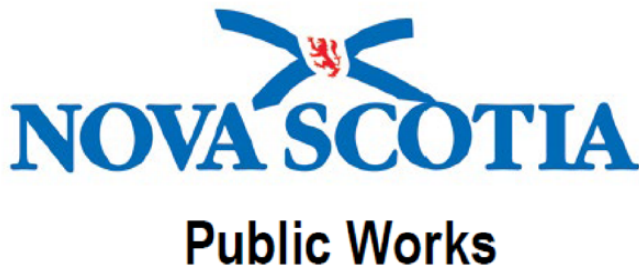
Roger's Lake Gold Prospect
Daniel P. Gajic, Erin Higgins, Brandon H. Phuong, Scott Smith



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