OntarioTech UNIVERSITY

BOARD OF GOVERNORS' 136th REGULAR MEETING

_ AGENDA

February 20, 2025
12:00 p.m. to 3:00 p.m.
Meeting Link

PUBLIC SESSION

No.		Topic	Lead	Allocated Time	Suggested Start Time
1		**Call to Order**	Chair	5	12:00 p.m.
2		***Agenda* (M)**			
3		**Conflict of Interest Declaration**			
4		**Chair's Remarks and Introductions**	Chair	10	12:05 p.m.
5		**President's Report**	Steven Murphy	10	12:15 p.m.
6		***Presentation by Dr. Pierre Côté: WHO Collaborating Centre for Rehabilitation and Musculoskeletal Health** (D)**	Pierre Côté	15	12:25 p.m.
7		***Academic Council Report****	Tega Ubor	5	12:40 p.m.
	7.1	*New Research Institute: Mindful AI Research Institute** (M)	Chair	10	12:45 p.m.
	7.2	*New Research Centre: Advanced Manufacturing Research Centre (AMRC)** (M)			
	7.3	*New Research Centre: Interdisciplinary Centre for Preventative Nutrition & Technology (ICPNT)** (M)			
Committee Reports					
8		**Audit and Finance Committee (A&F) Report**	Carla Carmichael	15	12:55 p.m. .
	8.1	*Third Quarter Financial Reports** (U)			
	8.2	*2025-2026 Tuition & Ancillary Fees** (M)			
	8.3	*Interim Risk Management Update** (U)			

D – Discussion M – Motion P – Presentation U – Update I - Information * Documents attached

9		**Governance, Nominations and Human Resources (GNHR) Report**	Guarav Singh	10	1:10 p.m.
	9.1	*23-24 Annual Consolidated Human Rights Office Report** (U)			
10		**Strategy and Planning (S&P) Report**	Eric Agius	10	1:20 p.m.
	10.1	*Student Recruitment and Success** (U)			
11		**Consent Agenda: (M)**	Chair	5	1:30 p.m.
	11.1	*Minutes of Public Session of Board Meeting of November 28, 2024** (M)			
	11.2	*Minutes of Public Session of A&F Meeting of November 21, 2024** (I)			
	11.3	*Minutes of Public Session of GNHR Meeting of October 24, 2024** (I)			
	11.4	*Minutes of Public Session of S&P Meeting of November 14, 2024** (I)			
	11.5	*2025 Election Timelines/Process** (I)			
	11.6	*Board of Governors Meeting Dates: 2024-2025 Revisions** (I)			
	11.7	*Campus Master Plan Update** (I)			
12		**Adjournment (M)**	Chair		1:35 p.m.
BREAK – 5 Minutes					
NON-PUBLIC SESSION (material not publicly available)					
13		**Call to Order**	Chair	5	1:40 p.m.
14		**Conflict of Interest Declaration**			
15		**Chair's Remarks**	Chair	5	1:45 p.m.
16		**President's Report**	Steven Murphy	5	1:50 p.m.
17		**Professional Development/Strategic Conversation Session:** Looking Ahead – The Path Forward* (D)	Steven Murphy	30	1:55 p.m.
Committee Reports (Confidential Items Only)					
18		**Audit and Finance (A&F) Report**	Carla Carmichael	10	2:25 p.m.
	18.1	Risk Management - Non-Public Risk Questions (U)			
19		**Governance, Nominations and Human Resources (GNHR) Report**	Gaurav Singh	10	2:35 p.m.

	19.1	Audit and Finance Terms of Reference Revisions* (M)			
20		**Strategy and Planning (S&P) Report**	Eric Agius	5	2:45 p.m.
	20.1	Advancement & Alumni Update* (U)			
21		**Consent Agenda (M):**	Chair	5	2:50 p.m.
	21.1	Minutes of Non-Public Session of Board Meeting of November 28, 2024* (M)			
	21.2	Minutes of Non-Public Session of A&F Meeting of November 21, 2024* (I)			
	21.3	Minutes of Non-Public Session of GNHR Meeting of October 24, 2024* (I)			
	21.4	Minutes of Non-Public Session of GNHR Meeting of December 5, 2024* (I)			
	21.5	Minutes of Non-Public Session of S&P Meeting of November 14, 2024 (I)			
	21.6	Governance Update: ONCA Compliance* (I)			
	21.7	Governor Re-Appointment* (M)			
	21.8	MCU Directives Update* (I)			
22		***In Camera* Session**	Chair	15	2:55 p.m.
23		**Termination (M)**	Chair		3:10 p.m.

Nicola Crow, University Secretary

World Health Organization (WHO) Collaborating Center for Rehabilitation and Musculoskeletal Health

Pierre Côté DC, PhD
Professor, Faculty of Health Sciences, Ontario Tech University
Director, Institute for Disability and Rehabilitation Research (IDRR)
Director, WHO Collaborating Center for Rehabilitation and Musculoskeletal Health
Hann-Kelly Family Chair in Disability and Rehabilitation Research
Ontario Tech University Research Excellence Chair in Musculoskeletal Rehabilitation

Ontario Tech Board of Governors - February 20, 2025


OntarioTech
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What I aim to achieve today…

INTRODUCE YOU TO THE ROLE AND PURPOSE OF WHO COLLABORATING CENTERS

EXPLAIN WHY A WHO CC IN REHABILITATION AND MSK HEALTH IS NEEDED

DESCRIBE THE SPECIFIC OBJECTIVES OF THE WHO COLLABORATING CENTRE FOR REHABILITATION AND MSK HEALTH

TRAINING THE NEXT GENERATION OF REHABILITATION SCHOLARS AND CHIROPRACTIC INFLUENCERS

UPDATE: CURRENT RESEARCH PROJECTS WITH THE WHO

What are collaborating centers?

World Health Organization

An institution designated by the Director-General of WHO to form part of an international collaborative network to support the WHO in support of its programme at the national, regional, and global levels."

There are over 800 WHO collaborating centres in over 80 Member States working with WHO on areas such as mental health, communicable and chronic diseases, and new technologies in health care.

World Health Organization

IDRR
INSTITUTE FOR DISABILITY AND REHABILITATION RESEARCH

WHO CC in Canada (n=26)

- University of Toronto (n=5)
- McMaster University (n=2)
- Health Canada (n=2)
- Public Health Agency of Canada (1)
- McGill University (n=1)
- UBC (n=1)
- Ontario Tech (n=1)
-…

WHO CC – Rehabilitation (n=11)

-China (n=1)
- Japan (n=1)
- Korea (n=1)
- Switzerland (n=1)
- Australia (n=1)
- USA (n=1)
- Brazil (n=1)
- Scotland (n=1)
- Canada (n=1)

Health and Society in 2025…

Focus on Functioning

What is rehabilitation?

A set of interventions designed to optimize functioning and reduce disability in individuals with health conditions in interaction with their environment

World Health Organization

Only one in the world with a focus on MSK Health!

WHO Collaborating Centre for Rehabilitation and Musculoskeletal Health

Why?

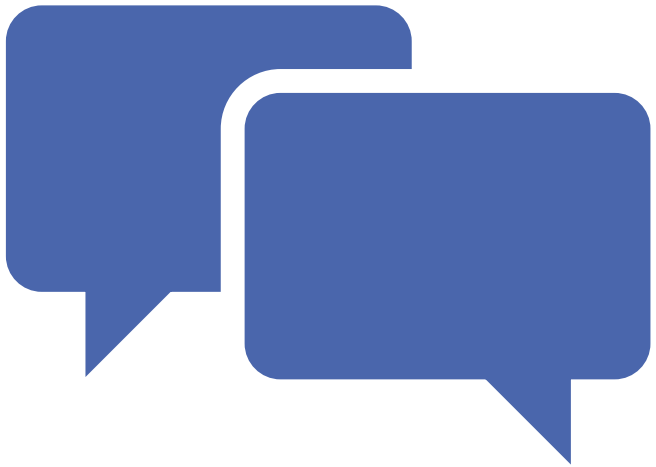
WHO Collaborating Centre for Rehabilitation and Musculoskeletal Health

2.6 billion could benefit from rehabilitation globally

1.71 billion people are affected by MSK conditions globally

LBP is the single leading cause of disability in 160 countries

https://www.who.int/news-room/fact-sheets/detail/musculoskeletal-conditions



Rehabilitation :
The Next Big Conversation!

Landmark resolution on strengthening rehabilitation in health systems

Terms of reference

WHO Collaborating Centre for Rehabilitation and Musculoskeletal Health

Support WHO in its global response to the burden of musculoskeletal (MSK) conditions by building capacity and strengthening data

Support WHO to strengthen research in rehabilitation science

At WHO's request, promote WHO's rehabilitation 2030 initiatives

We will provide direct assistance to the WHO via research, technical advice, and training / education across five areas:

- Rehabilitation
- Musculoskeletal health
- Ageing
- Health information; statistics; measurement
- Evidence synthesis

WHO Collaborating Centre for Rehabilitation and Musculoskeletal Health

What's in it for the WHO and Ontario Tech University?

WHO gains access to top centers worldwide and their institutional capacity to ensure the scientific validity of global health work

Ontario Tech gains enhanced international visibility and recognition by national authorities and funding agencies. Recognized as an international center of excellence in rehabilitation.

Meet the Team

Graduate Students & Post-doctoral Fellows

Aleisha Adeboyejo

Master's Student - Ontario Tech University

Research

Nora Bakaa

Post-Doctoral Fellow - Ontario Tech University

Research

Melissa Corso

PhD Student - Ontario Tech University

Research

Theo Konstantinidis

PhD Student - Ontario Tech University

Research

Joshua Plener

PhD Student - University of Toronto

Research

Kiana Ragagnin

Clinical Sciences Resident - CMCC

Research

Simran Walia

Master's Student - Ontario Tech University

Research

Joel Weisberg

Master's Student - Ontario Tech University

Research

Hainan Yu

PhD Student - Ontario Tech University

Research

Pegah Rahbar

Master's Student - University of Toronto

Research

Hailey Saxton

Clinical Sciences Resident - CMCC

Research

Delphine Sorondo

PhD Student - University of Toulouse

Research

Connie D'Astolfo

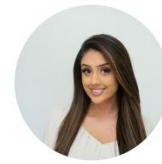
PhD Student - Ontario Tech University

Research

Astrid DeSouza

PhD Student - Ontario Tech University

Research



Navreen Jahwar

Master's Student - Ontario Tech University

Research

Jhalok Ronjan Talukdar

Post-Doctoral Fellow - Ontario Tech University

Research

Current WHO collaborating center projects

1. Synthesize the evidence on the economic impact of low back pain and osteoarthritis on society
2. Technical/methodological expertise on the development of a screening tool for rehabilitation needs in the population
3. Train primary care providers in the delivery of a Basic Package of Rehabilitation Interventions in the Caribbean region
4. AI and rehabilitation

Acknowledgement

Hann-Kelly Family Foundation

Association chiropratique canadienne
Canadian Chiropractic Association

Canadian Chiropractic Research Foundation

Chaires de recherche du Canada
Canada Research Chairs
Canada

OntarioTech UNIVERSITY

BOARD REPORT

SESSION:		**ACTION REQUESTED:**	
Public	☒	**Decision**	☐
Non-Public	☐	**Discussion/Direction**	☐
		Information	☒

TO: **Board of Governors**

DATE: **February 20, 2025**

FROM: **Oghenetega (Tega) Ubor, Academic Council Liaison**

SUBJECT: **Academic Council Report – February 2024**

Academic Council (AC) is the academic governing body for Ontario Tech University ("the University") and it plays a significant role in the University's governance. It is the role of AC to oversee the academic work of the University, and to advise and make recommendations to the Board on important matters. As the AC liaison for the academic year 2024-2025, I'm pleased to deliver the following report of AC activities for November 2024 and January 2025. AC did not meet in December 2024.

Academic Council Meeting Materials
November 26, 2024
January 28, 2025

If Board members are interested in reviewing any of the materials referenced below, please see links in meeting materials above.

Recommendations to Board of Governors
AC recommended the following new program proposals for approval by the Board of Governors:

- New Program Proposal: Faculty of Business and IT (FBIT); Doctor of Philosophy – Cybersecurity (to note: the Board of Governors approved this new program proposal at the November 28, 2024 Board Meeting as it was on an expedited approval pathway)

There are no new program proposals being brought forward for approval to the Board of Governors in this Report.

AC recommended the following Research Institute(s)/Centre(s) for approval by the Board of Governors (pending Board approval at February 20, 2025 Board Meeting):

- New Research Institute: Mindful AI Research Institute
- New Research Centre: Advanced Manufacturing Research Centre (AMRC)
- New Research Centre: Interdisciplinary Centre for Preventative Nutrition & Technology (ICPNT) - formerly titled: Centre for Interdisciplinary Nutrition Research & Innovation (CINRI)

Conferral of Degrees

AC approved the following conferral of degrees:

- Fall 2024 academic term

Governance Initiatives

- The Governance and Nominations Committee (GNC), advised AC of GNC's approval of the 2025 Academic Council Election Timelines/Process
- AC was also informed by GNC of the vacancies to be filled for the 2025-2026 Academic Year on Academic Council and its standing committees.

Curriculum & Program Changes

AC approved the following Major Program Modifications:

- Faculty of Health Sciences, Health Studies Minor
- Faculty of Social Science and Humanities, Communications and Digital Media Studies; New Minor – AI and Content Creation

AC received as information the following Minor Program Adjustments:

- Faculty of Social Science and Humanities: Bachelor of Arts - Liberal Studies; Science, Technology and Society Specialization
- Faculty of Science: Bachelor of Science in Computer Science, Data Science and Digital Media Specializations
- Faculty of Science: Bachelor of Science in Integrated Mathematics and Computer Science
- Faculty of Social Science and Humanities: Diploma in Public Policy
- MSc and PhD in Modelling and Computational Science - Program Learning Outcomes

Institutional Quality Assurance Reports

<u>Final Assessment Report (FAR):</u>

The University's Institutional Quality Assurance Process requires that Final Assessment Report Executive Summaries and Implementation Plans be provided to AC and the Board of Governors for information. As such, these materials are being presented to the Board within the AC report

AC received the following Executive Summary and Implementation Plan from the Graduate Studies Committee:

- MSc and PhD in Modelling and Computational Science – Final Assessment Report

Cyclical Program Review (CPR) Follow-Up Reports:
AC received as information the following follow-up reports resulting from a CPR:

From the Undergraduate Studies Committee:
- Bachelor of Science; Physics 18 Month Follow-Up Report

Policy
AC received the following policy instruments for information/approval:
- Undergraduate Advanced Standing and Transfer Credit Procedures (information)

AC received the following policy instruments for consultation:

Face-to-Face Consultation:
- Procurement of Goods & Services Procedure
- Signing Authority and Approval of Expenditures Procedure

Written Consultation:
- Anti-Indigenous Racism, Anti-Black Racism Guidelines
- Student Mental Health Policy Incl. Supportive Leave Procedure
- Student Housing Policy

Reports Received
- COU Academic Colleague Report (verbal)
- 2025-2026 Budget Approach
- Strategic Research Plan Update (verbal)
- 2025-2026 Tuition Framework

BOARD REPORT

SESSION:		**ACTION REQUESTED:**	
Public	☒	**Decision**	☒
		Discussion/Direction	☐
		Information	☐
Financial Impact	☒ **Yes** ☐ **No**	**Included in Budget**	☐ **Yes** ☒ **No**
TO:	**Board of Governors**		
DATE:	**February 20, 2025**		
FROM:	**Academic Council**		
PRESENTED BY:	**Les Jacobs, Vice-President, Research and Innovation**		
SUBJECT:	**Establishment of Mindful Artificial Intelligence Research Institute (MAIRI) Centre**		

BOARD MANDATE:
In accordance with Article 1.4(b) of By-law No. 2 and the Procedures for the Creation of Research Entities, Academic Council makes recommendations to the Board on matters including the establishment of research centres.

Academic Council is seeking the Board's approval of the establishment of the Mindful Artificial Intelligence Research Institute (MAIRI) Centre.

BACKGROUND/CONTEXT & RATIONALE:
Ontario Tech University encourages and provides a mechanism for the formal establishment of research entities such as research institutes. Research institutes should be cross faculty, and proposals are sponsored by the leading Faculty's Dean. The process for the establishment of research entities is outlined in the Procedures for the Establishment of Research Groups, Units, Centres and Institutes.

There is a desire among faculty to create a new interdisciplinary, cross-faculty research entity in the broad area of Artificial Intelligence. Thorough consultation and concept development by faculty from across the University has led to the creation of a proposal for the **Mindful AI Research Institute (MAIRI)**, as described in the accompanying documentation.

Vision
By nature of our vision, existing expertise, partnerships, and agility, Ontario Tech University is uniquely positioned to rise to this research challenge. Existing research strengths around trustworthy and responsible AI, software quality, data science, smart devices, critical study of technology and society, and the development of human-centred technology in business, civil

society, healthcare, and education, can combine to provide a platform for a new research agenda for Ontario Tech into the 2030s and beyond.

RESOURCES REQUIRED:
There are already several existing research labs across all the faculties that are carrying out excellent research in this area and are well supported, e.g., through CFI and ORF funding. As a connector, MAIRI's value lies in supporting, connecting, and enhancing the capacity in these existing labs, as well as supporting the growth of new ones. We therefore propose that MAIRI be used to provide a consistent identity that complements but does not diminish the strong visibility and reputation these labs already enjoy. Where appropriate, these spaces be enhanced with visible branding, for example on corridor walls and doors.

The Institute is proposed as a new, highly visible 'shop front' location, primarily aimed at visitors, partners, and students, that can also serve as a collision space for researchers from different labs and faculties. This physical space is at the concept stage, and a separate request to this proposal will be made at a later date, through the normal space planning procedures.

In terms of equipment, the University already enjoys substantial resources in this area, including high performance computing, maker spaces, labs, and collaboration spaces, thanks to several external grants. It is envisaged that future CFI bids (including those associated with future CRCs) can be used to enhance this. Members of the Institute Leadership Team and other parts of the University's administration are in parallel exploring options for future equipment purchases (such as high-performance computing / data centre facilities), and these will continue in parallel to the establishment of MAIRI. However, MAIRI's establishment is not dependent on these efforts, rather complementary.

Initial resources for Institute launch include computing equipment for the Institute Manager, a marketing and events budget for a visible launch, and annual conferences, some pump-priming funds to support the development of novel internal collaborations, likely through match funding, will unlock and incentivize new interdisciplinary funding opportunities. These resources do not rely on any new support from the university's operating funds.

8.1. Staffing Requirements and Governance Structure
Reflecting the socio-technical nature of AI, **the institute will be interdisciplinary and cross-faculty by design**. It will be led by an Institute Leadership Team (ILT) comprised of a Director and two theme co-leads for each research theme, from different faculties. The Director role may also overlap with a theme co-lead. In the event that a Faculty is not represented, a representative from that Faculty will also be appointed to the ILT. It is envisaged that the Institute is supported by an Research Project Manager who will report to the Director. The Director will be responsible for chairing the ILT, and for overall strategic direction and financial accountability for the Institute. The theme co-leads will be responsible for advancing and connecting research and related activity in their respective thematic areas. The Institute Manager will be responsible for day-to-day management and coordination, media and publicity, event management, partnerships, and supporting the ILT.

The Institute will draw on the whole Ontario Tech research community to form its membership; any faculty members with an interest in AI research will be invited to join, along with graduate student and postdoctoral researchers, and undergraduate students directly working as part of faculty research projects. In addition, the broader MAIRI community will comprise a diversity of industrial and academic partners, various facets of the public sector and levels of government, the broader student and alumni community at Ontario Tech University, plus civic society and our local community in Durham region. This is sketched in the following diagram.

8.2. Budget and Financial Requirements
MAIRI's budget proposal is based on the ILT being formed from extant faculty, plus a new full-time Research Project Manager. The budget also supports activities to ensure an effective and visible launch, capacity-building events including an annual conference, and pump-priming funds to seed and support new interdisciplinary collaborative projects that can unlock new external funds. The proposed budget does not rely on any new support from the university's operating funds.

The budget will initially be supported by externally-sourced start-up funds from the Office of the VPRI, Deans, and Advancement. Over a three-year time horizon, we plan for MAIRI to be self-sufficient through grants, grant overheads, service contracts, and Advancement-led fund-raising activities. It is anticipated that with the critical mass of the Institute, our capacity to win larger grants will increase to support this. The initial Director will be able to commit time thanks to course releases associated with their current CRC, and this represents a strategic use of CRC resources within the University. At this time, it should be noted that Advancement are already actively pursuing funding opportunities to support and grow the Institute.

The planned initial budget is attached. Years 1 and 2 include start-up funds from the University as mentioned above, Year 3 and beyond assume operation based on research grant overheads and fund-raising.

IMPLICATIONS:

Ontario Tech University has unique expertise at the intersection of AI and society and this is also growing into new areas as AI permeates different disciplines and domains. Nevertheless, to date there has been a lack of coordination that has hindered the synergy among research activities conducted in these areas and led to new research programs being disconnected from more established groups. MAIRI will serve as a connector and promoter for these areas, facilitating collaboration, knowledge sharing, joint projects, and as a means to demonstrate critical mass at the university. MAIRI's unique framing, both in Canada and internationally, will establish Ontario Tech University as a leader in interdisciplinary human- and planet-centred AI research.

ALIGNMENT WITH MISSION, VISION, VALUES & STRATEGIC PLAN:
Ontario Tech University's Strategic Research Plan, 2020-2025 aims to foster interdisciplinary research collaborations that address complex global challenges. One of the strategic priority areas is Data science, artificial intelligence and new technologies. The MAIRI initiative clearly aligns with this priority area.

ALTERNATIVES CONSIDERED:

Alternative 1: Establish more focused centres within interested faculties. This would support faculty and researchers in specific ways such as external visibility and within-discipline collaboration, but would fail to take advantage of the diversity of AI-related research at the university and would miss the opportunity to grow interdisciplinary research and to establish and demonstrate critical mass in this important priority area.

Alternative 2: Status quo. Ontario Tech University already has significant AI-related research in all faculties. Doing nothing would fail to take the opportunity to connect these, leading to research being siloed and isolated. It would fail to demonstrate the critical mass needed for larger funding opportunities and to influence public discourse, and would miss an important opportunity to enrich this research with interdisciplinarity.

CONSULTATION:
Consultation and feedback on the establishment of the Mindful Artificial Intelligence Research Institute (MAIRI) Centre were carried out at different levels among all Faculties starting from March 2024 to October 2023. The proposal of the MAIRI Centre was presented in the FBIT Faculty Council in June 2024. Then, the proposal was discussed with the University Research Committee on October 7, 2024, where it was agreed upon, in principle, with the request for a full proposal at the November 19, 2024.

COMPLIANCE WITH POLICY/LEGISLATION:

The establishment of the MAIRI proposal aligns with Ontario Tech University's Procedure for the Creation of Research Units, Centres, and Institutes.

NEXT STEPS:

Board of Governors for approval.

MOTION FOR CONSIDERATION:

That pursuant to the recommendation of the Academic Council, the Board of Governors hereby approves the establishment of the Mindful Artificial Intelligence Research Institute (MAIRI) Centre, as presented.

SUPPORTING REFERENCE MATERIALS:

- MAIRI proposal documentation, including two appendices.

Research Entity Proposal: The Mindful Artificial Intelligence Research Institute (MAIRI)

1. Name of the Entity

The Mindful Artificial Intelligence Research Institute (MAIRI)

2. Proposers – including name, title, and contact information

Sponsoring Dean:
Dr. Carolyn McGregor, Dean, FBIT
carolyn.mcgregor@ontariotechu.ca

Lead Proposer:
Dr. Peter Lewis, Associate Professor & Canada Research Chair, FBIT
peter.lewis@ontariotechu.ca

Other Faculty Proposers:
Dr. Steven Livingstone, Associate Professor, Faculty of Science
steven.livingstone@ontariotechu.ca

Dr. Isabel Pedersen, Professor & Former Canada Research Chair, FSSH
Isabel.pedersen@ontariotechu.ca

Dr. David Rudoler, Associate Professor, FHS and Research Chair, Ontario Shores
David.rudoler@ontariotechu.ca

Dr. Janette Hughes, Professor & Canada Research Chair, Faculty of Education
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Dr. Qusay Mahmoud, Professor, Faculty of Engineering and Applied Science
qusay.mahmoud@ontariotechu.ca

3. Background Description and Justification

One of the great stories of the 2020s will undoubtedly be the accelerating development and pervasive use of Artificial intelligence (AI) technology, along with its profound impact on humanity. AI systems, intended to reproduce human intelligent behaviour, are transforming businesses, many professions, and society at large. In doing so, new questions are raised almost daily around this technology's capabilities, potential uses, and possibilities, as well as its limitations, potential for harm, and trustworthiness. At the same time, intelligent machines based on principles from living systems and ecosystems are inspiring a new wave of intelligent socio-cyber-physical systems embedded in the digital platforms, cities, agriculture, and infrastructure of the 21st century. Furthermore, new research is giving rise to novel forms of intelligence in machines that go beyond human capabilities in many ways. Yet such 'superhuman' capabilities in specific domains are usually accompanied by an absence of many features of human minds, such as social intelligence, reflection, and common sense, that we are used to taking for granted. **This leads to a number of complex challenges that must be viewed from an interdisciplinary, socio-technical perspective.**

Taken together, these emerging technologies require us to understand the current and possible forms of intelligent machines we can create, how to develop them purposefully, collaboratively, and well, and how to harness them for benefit of humanity and the planet. **By nature of our vision, existing expertise, partnerships, and agility, Ontario Tech University is uniquely positioned to rise to this research challenge.** Existing research strengths around trustworthy and responsible AI, software quality, data science, smart devices, critical study of technology and society, and the development of human-centred technology in business, civil society, healthcare, and education, can combine to provide a platform for a new research agenda for Ontario Tech into the 2030s and beyond.

Within the next decade, the pervasiveness of intelligent machines in society will only grow. This will bring challenges, both technical and social, that we are only beginning to understand. *How* we integrate these new technologies within organizations and society, what we expect of them, and how we build them to meet these new challenges and expectations are all still unclear. **This is a major area of opportunity and differentiated growth in research for Ontario Tech University, both within Canada and globally. By establishing a new cross-faculty and interdisciplinary research institute in this emerging area, we will position the University to be competitive for larger opportunities and enjoy a national and international presence that firmly establishes the University as a leader in this space, further attracting leading researchers.**

4. Research Mandate

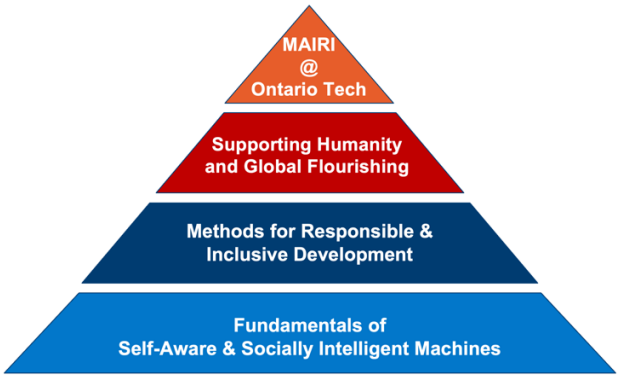
Fundamentally, the mandate of the new **Mindful Artificial Intelligence Research Institute (MAIRI)** will be to ask: what *could* and what *should* intelligent machines be in 10-20 years' time, *when* and *how* should they be used, and *how* will we get there?

As a vision unique to the institute and university, we propose a future where Intelligent Machines…
have **rich and balanced cognitive abilities**,
are developed in **participatory and responsible** ways,
are used **intentionally, carefully, and opportunistically,**
in ways that **empower people** and tackle **global challenges**.

Thus, '*mindful'* intentionally carries simultaneous meanings. On the one hand, mindful means being *careful* and *thoughtful*, before acting. In this sense, being mindful in this space evokes the university's mission of **"tech with a conscience"**, representing the antithesis of the "move fast and break things" culture that is no longer appropriate when considering technology sensitively across society at large. On the other hand, mindful means being *conscious* or *aware* of something, especially context, self, and consequences. At a fundamental level, these are the cognitive abilities that future intelligent machines will need to possess to enhance their trustworthiness and act with social intelligence. Many of the pathologies of today's AI systems can be attributed to imbalanced forms of intelligence that lack broader social context and self-awareness. The term *mindful* originates from the notion of "having a good mind".

There is already substantial excellent research in AI, ML, and intelligent systems across the university. Nevertheless, this research is often fractured into silos. **We envisage MAIRI to be a connector** that brings this together, adding value, community, capacity, and critical mass. It will be structured in three research themes:

Theme 1: Fundamentals of Self-Aware & Socially Intelligent Machines. This draws on insights and understanding from social science as well as technical research in computer science, IT, cognitive science, and artificial life, and includes contributions to architectures & algorithms for reflective self-awareness, mechanisms for social & emotional intelligence, and new capabilities for machines to cooperate and act collectively.

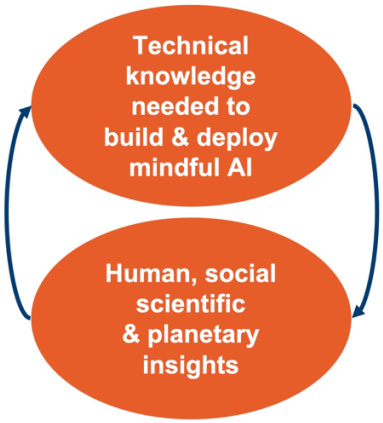


Theme 2: Methods for Responsible & Inclusive Development. This draws on software engineering, human-computer interaction, socio-technical systems, participatory co-design, business (including HR, leadership, organizational ecosystems), and sustainability, and includes contributions to responsible design practices, rigorous & repeatable development, democratizing co-design processes, privacy by design, and sustainable and low-energy AI systems and models.

Theme 3: Supporting Humanity & Global Flourishing. This draws on expertise in the application of intelligent machines in a diverse and open-ended set of domains, initially envisaged to include health and wellbeing, accessibility, education, sustainability, robotics, virtual agents and avatars, business, and community action. Targeted contributions include new technologies for social good that are by-design socially & culturally sensitive, safe, ethical, privacy-preserving, that support the empowerment of individuals & communities, new opportunities for social & planetary benefit, and education and AI literacy for all.

In summary, our research creates the technical contributions needed to realize the vision of intelligent machines that empower humanity, built on a deep understanding of personal, social, organizational, and planetary context.

The **Mindful Artificial Intelligence Research Institute** represents an opportunity to build on Ontario Tech's strengths, commitments, purpose, and strategic objectives:



- Centering the idea of AI *'with a conscience',*
- Advancing the University's research and societal mission,
- Furthering strategic industry, academic, and civic society partnerships.
- Empowering people and organizations with and through technology.

By:

- Leading with a creative, ambitious, and distinctive research vision, in line with the University's objective of *differentiated growth*.
- Taking a holistic perspective on intelligent machines and their ecosystems.
- Taking a People, Society, and Planet-first approach to AI and smart technologies, embedding the University's commitments to furthering social good and sustainability.

As is hopefully clear from the mandate outlined above, MAIRI does not represent a single research project or group of related projects, but a vision of a multi-faceted interdisciplinary program of research, that will emerge based on a sustainable platform connecting AI research across Ontario Tech University and with its partners, and in doing so, unlocking a potential that is already present.

Please see the attached slide deck for more detail on the research themes, vision, and success criteria.

5. Student Involvement and Training

Graduate students, postdoctoral fellows, and undergraduate students engaged in research projects under the supervision of a professor who is a member of MAIRI, will also be invited to be members of MAIRI. As a connecting institute, it is envisaged that students' home lab and program will remain their primary disciplinary community and source of training. It is expected that students from many programs across the University will be members.

MAIRI presents an opportunity to go beyond this, complementing students' 'home' training with new interdisciplinary and community opportunities. It is envisaged that the institute will run a number of events to foster development and collegiality among the student AI research community. These include:

- Dedicated student and postdoc sessions as part of MAIRI events, especially the annual conference.
- An online Discord community to enable networking, sharing of information and advice, collaboration, and socializing, amongst MAIRI student members.
- Regular networking events to support students to find further research positions and jobs, such as the successful *'AI Networking Barbecue'* hosted as a pilot at 2200 North in Summer 2024, which featured a round of lightning talks from students and faculty.
- As MAIRI's research portfolio and expertise develops, the ILT will consider the desire and appropriateness of additional or shared courses, to support interdisciplinary working across labs and faculties, for students at MAIRI.
- A potential MAIRI summer school for students both at Ontario Tech and perhaps externally.
- Open invitation to the broader student community (including undergraduates not currently involved, but with an interest in AI) to campus events, including the annual conference.
- Support and encouragement to attend conferences, and identification of opportunities for cohort-level attendance. This also has the added benefit of increasing the University's visibility at key relevant conferences.
- Students will be able to avail themselves of unique opportunities arising from the increasingly interconnected nature of faculty research.
- The ILT and relevant Deans and Associate Deans may wish to consider new interdisciplinary programs at the graduate level to support MAIRI's growth.

6. Research Dissemination and Service Plan

Dissemination of MAIRI research will occur at multiple levels. First, existing dissemination activity through discipline-specific conferences, journals, and outreach will continue. This will continue to be the primary method of publishing research outputs for MAIRI members, and as MAIRI grows, we hope to be in a position to be able to support this activity to broaden accessibility of these opportunities (especially conferences) to our researchers.

As an institute, MAIRI will seek to amplify this output, through web and social media channels, public media appearances, and a newsletter. The content for these channels will be designed such that research from MAIRI members can be understood by other researchers and the public, in a way that is accessible to non-experts. We will leverage the expertise and resources of the Communications and Marketing team to do this.

The MAIRI website and social channels should at all times represent a vibrant and diverse set of research projects and strengths, and sourcing and maintaining this will be a core task of the Research Project Manager, to avoid overloading professors with more service.

A core part of MAIRI's dissemination will be through events, and these will take two forms. First, internal events aimed at capacity building and experience sharing across the University. These are an important form of dissemination that operates cross-university and with existing partners and is instrumental in unlocking the untapped interdisciplinary capacity we believe to exist. Second, external conferences (for which we may charge a fee) will be targeted externally, and will provide a showcase of MAIRI research, with the aim of both building our reputation and establishing new partnerships. These partnerships will take the form of new external research projects, and also new opportunities to connect with government and civic society, in order to inform and shape the debate concerning AI in Canada and the world, in the years and decades beyond 2025. As outlined in the budget, we plan for a capacity-building conference in Y1, a more open conference aimed at partnership building in Y2, and a highly visible public conference in Y3 and beyond.

Finally, dissemination will be a core part of MAIRI projects that collaborate with industry and civic society. For example, we already enjoy strong relationships with large firms (Meta, Microsoft, OPG, GM) as well as smaller firms (particularly in Durham Region), with public bodies (DDSB, DRDC, etc.), and the non-profit sector (e.g., CNIB, The Pamoja Institute). As we seek to continue to partner with these organizations through future research projects, these partners become key dissemination and knowledge mobilization channels, and spheres of influence.

7. Membership List, CVs and Affiliations

In addition to the members of the proposal team, at launch MAIRI already comprises a proposed membership base from across the University. **At this stage, over 50 faculty members from across all six Ontario Tech Faculties will be members at launch. This initial membership comprises faculty at all career stages and includes five current and two former Canada Research Chairs, as well as three other currently active Research Chairs.**

Further, MAIRI will operate an open membership model, where any Faculty with an interest in AI, broadly speaking, may join the institute, and graduate students and postdocs may also become members and so benefit from networking, collaborative, and potential funding opportunities. Additionally, research labs may also affiliate to the institute, forming a collective that preserves the uniqueness and reputation of individual labs, while also forming part of a critical mass to support larger opportunities and sense of community.

A full list of all proposed initial members, with abbreviated CVs for each, is in the appendix.

8. Resource Requirements

There are already several existing research labs across all the faculties that are carrying out excellent research in this area and are well supported, e.g., through CFI and ORF funding. As a connector, MAIRI's value lies in supporting, connecting, and enhancing the capacity in these existing labs, as well as supporting the growth of new ones. We therefore propose that MAIRI be used to provide a consistent identity that complements but does not diminish the strong visibility and reputation these labs already enjoy. Where appropriate, these spaces be enhanced with visible branding, for example on corridor walls and doors.

We propose that the Institute has a new, highly visible 'shop front' location, primarily aimed at visitors, partners, and students, that can also serve as a collision space for researchers from different labs and faculties. This physical space is at the concept stage, and a separate request to this proposal will be made at a later date, through the normal space planning procedures.

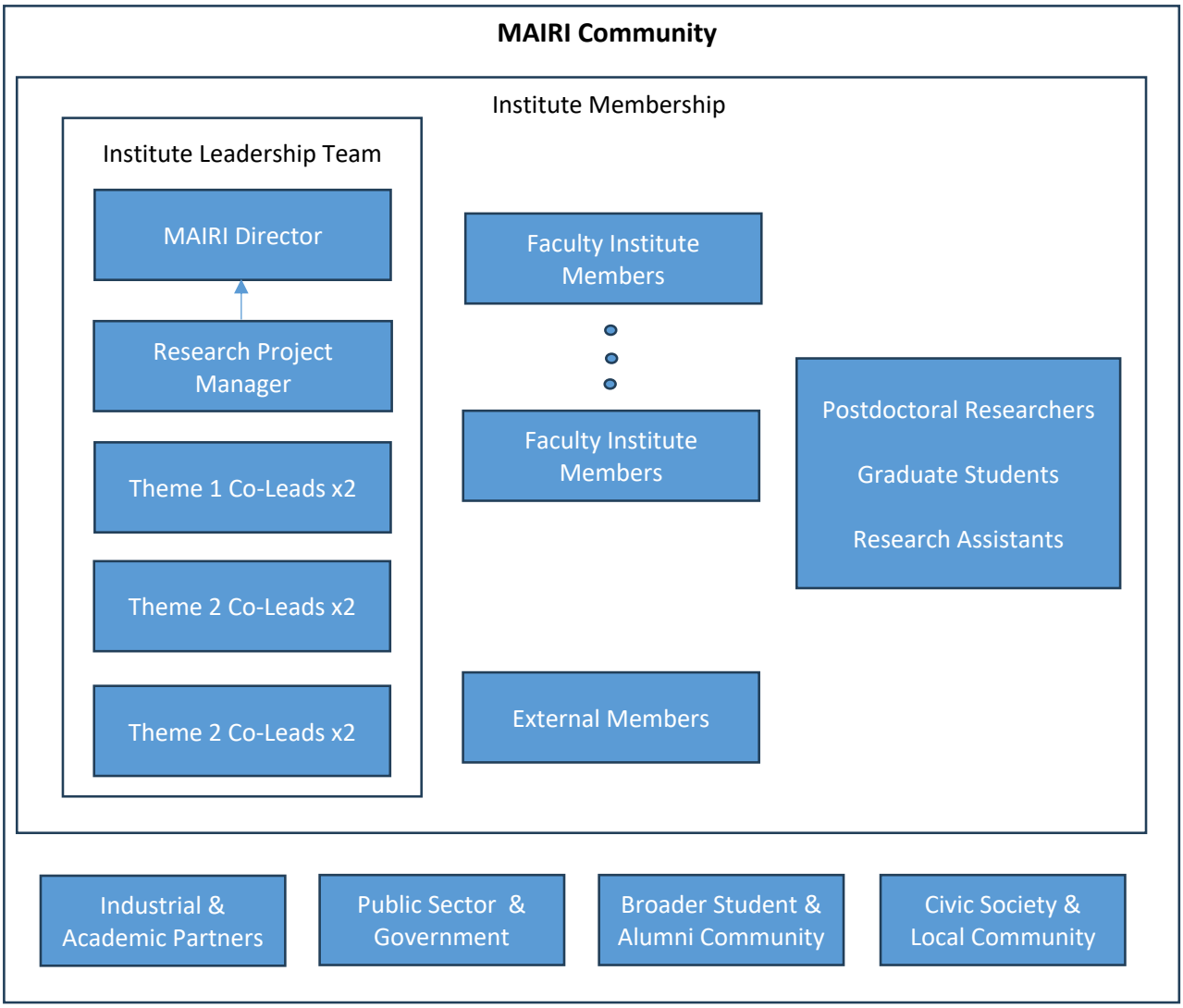
In terms of equipment, the University already enjoys substantial resources in this area, including high performance computing, maker spaces, labs, and collaboration spaces, thanks to several external grants. It is envisaged that future CFI bids (including those associated with future CRCs) can be used to enhance this. Members of the Institute Leadership Team and other parts of the University's administration are in parallel exploring options for future equipment purchases (such as high-performance computing / data centre facilities), and these will continue in parallel to the establishment of MAIRI. However, MAIRI's establishment is not dependent on these efforts, rather complementary.

Initial resources for Institute launch include computing equipment for the Institute Manager, a marketing and events budget for a visible launch, and annual conferences, Some pump-priming funds to support the development of novel internal collaborations, likely through match funding, will unlock and incentivize new interdisciplinary funding opportunities.

8.1. Staffing Requirements and Governance Structure

Reflecting the socio-technical nature of AI, **the institute will be interdisciplinary and cross-faculty by design**. It will be led by an Institute Leadership Team (ILT) comprised of a Director and two theme co-leads for each research theme, from different faculties. The Director role may also overlap with a theme co-lead. In the event that a Faculty is not represented, a representative from that Faculty will also be appointed to the ILT. It is envisaged that the Institute is supported by an Research Project Manager who will report to the Director. The Director will be responsible for chairing the ILT, and for overall strategic direction and financial accountability for the Institute. The theme co-leads will be responsible for advancing and connecting research and related activity in their respective thematic areas. The Institute Manager will be responsible for day-to-day management and coordination, media and publicity, event management, partnerships, and supporting the ILT.

The Institute will draw on the whole Ontario Tech research community to form its membership; any faculty members with an interest in AI research will be invited to join, along with graduate student and postdoctoral researchers, and undergraduate students directly working as part of faculty research projects. In addition, the broader MAIRI community will comprise a diversity of industrial and academic partners, various facets of the public sector and levels of government, the broader student and alumni community at Ontario Tech University, plus civic society and our local community in Durham region. This is sketched in the following diagram.



At launch, MAIRI membership will be comprised only of Ontario Tech employees and students. Following an initial launch campaign, the ILT will identify existing and new collaborators from the broader MAIRI community who may be invited to join the institute as External Members. For example, Ontario Tech already enjoys many productive partnerships with outside organizations in this area, including Microsoft, Meta, the Government of Ontario, CNIB, Ontario Power Generation, The Pamoja Institute, Ontario Shores, and Lakeridge Health.

Decision making at the Institute-level will be normally made by Committee decision at the ILT. The Director will have responsibility for executive action on behalf of the ILT, for sound financial management of the Institute, and will line manage the Research Project Manager. More broadly, MAIRI will operate in a federated model, where labs that are affiliated to the Institute will operate independently in line with normal University practice, able to draw on the strength and network of the Institute, as appropriate and as it is advantageous to do so. Further, theme leads will coordinate

activity within their respective themes, and will report to the ILT on their strategy, activity, and outcomes.

8.2. Budget and Financial Requirements

MAIRI's operational budget proposal is based on the ILT being formed from extant faculty, plus a new full-time Research Project Manager. The budget also supports activities to ensure an effective and visible launch, capacity-building events including an annual conference, and pump-priming funds to seed and support new interdisciplinary collaborative projects that can unlock new external funds.

Additional operating funds will initially be supported by seed funds from the Office of the VPRI, Deans, and Advancement. Over a three-year time horizon, we plan for MAIRI to be self-sufficient through grants, grant overheads, service contracts, and Advancement-led fund-raising activities. It is anticipated that with the critical mass of the Institute, our capacity to win larger grants will increase to support this. The initial Director will be able to commit time thanks to course releases associated with their current CRC, and this represents a strategic use of CRC resources within the University. At this time, it should be noted that Advancement are already actively pursuing funding opportunities to support and grow the Institute.

The planned initial budget is attached. Years 1 and 2 include start-up funds from the University as mentioned above, Year 3 and beyond assume operation based on research grant overheads and fund-raising.

9. Intellectual Property and Commercialization

As a broad research institute capturing many different disciplinary norms and pathways to impact, MAIRI will not take a specific position on intellectual property and commercialization beyond that already captured in policy and practice at the University level. It is expected that specific projects and professors will engage in the IP and commercialization processes as before. However, MAIRI may provide opportunities to share best practice on doing this, and new opportunities for partnership to achieve commercialization or other forms of impact (for example, through commercialization workshops). MAIRI members may engage in contract work as they currently do, but it is not foreseen at this stage that MAIRI will, as an entity in itself, engage in contract work.

Appendix A: Faculty Membership of MAIRI at the time of proposal.
Presented in alphabetical order by first name.

Aaron Yurkewich

Assistant Professor, Faculty of Engineering and Applied Science

I am an Assistant Professor in Mechatronics Engineering with a focus on assistive and rehabilitation technology development and evaluation. I have 10 years of experience developing and evaluating stroke rehabilitation technology, such as a lower limb robot for foot drop exercise and gait training (University of Western Ontario), a hand exoskeleton for hand and upper limb motion assistance and home and clinic rehabilitation (University of Toronto, Toronto Rehabilitation Institute), and a hybrid electrical stimulation and exoskeleton system for accelerated strengthening and motor learning (Imperial College London). I have conducted clinical rehabilitation trials in clinic and home settings in Canada and globally utilizing exoskeletons and soft robots and human robot interaction, haptics, neuroscience and neurorehabilitation principles. I work with international partners in transdisciplinary teams to create accessible and affordable evidence-based rehabilitation solutions for in-clinic and at-home settings.

Key Publications:

- Yixing Lei, Zhiqun Ding, Aaron Yurkewich. (2023). Computer Vision-based Automated Functional Electrical Stimulation Calibration System for Inducing Functional Hand Postures. International Functional Electrical Stimulation Society (IFESS). RehabWeek 2023, Singapore
- Aaron Yurkewich, Illya Kozak, Andrei Ivanovic, Daniel Rossos, Debbie Hebert, Rosalie Wang, Alex Mihailidis. (2020). Myoelectric Untethered Robotic Glove Enhances Hand Function and Performance on Daily Living Tasks after Stroke. Journal of Rehabilitation and Assistive Technologies Engineering (RATE). 7: 1-14.

Alyson King

Professor, Political Science; Associate Dean, Faculty of Social Science and Humanities

My research focuses on the success strategies and experiences of university students and adult learners. I am a co-investigator for an on-going Partnership Grant called Partnership on University Plagiarism Prevention (PUPP) that aims to develop an international strategy to prevent plagiarism. As Principal Investigator for a completed Social Sciences and Humanities Research Council (SSHRC) Partnership Development grant, I worked with a team of researchers from across Canada to better understand how underrepresented university students are successful in their university studies. As a co-investigator on a completed SSHRC

Insight Grant, I conducted research with Dr. Shanti Fernando, Dr. Allyson Eamer and Dr. Tyler Frederick on supported education for adults living with mental illness.
Other research has included an oral history project collecting the stories of the founding members of Ontario Tech University (with Dr. Shirley Van Nuland) and a project on multiliteracies and graphic novels (with Dr. Janette Hughes). Currently, I am exploring the intersections with emerging GenAI technology and education, in particular around critical thinking, writing and learning.

Key Publications (forthcoming):

- King, A. & Garramone, P. (accepted). Teaching writing in the time of ChatGPT: Rethinking what counts as learning. In A. E. King (Ed.). Artificial Intelligence, Assessments and Academic Integrity. Switzerland: Springer Nature.

- King, A. E. (Ed.) (accepted) Artificial Intelligence, Assessments and Academic Integrity. Full manuscript submitted to and under review, Springer Nature, Sept. 2024. Symposium

Ana Duff

Associate Teaching Professor, Faculty of Business and IT

Dr. Ana Duff is an Associate Teaching Professor with the Faculty of Business and Information Technology at Ontario Tech University. Her research background is in mathematics in which she holds a Ph.D. from the University of Ottawa. She began her studies in mathematics at the University of Zagreb in Croatia, continuing at York University in Toronto, from which she received her B.Sc. (Honours), and followed by an M.Sc. from the University of Toronto. Her original research background is in Lie superalgebras, mathematical structures that hold an important role in quantum physics and the mathematics of supersymmetry.

She has been with Ontario Tech University since September 2017, where she teaches first year courses in mathematics and has been active in the practice of responsible management education in the context of people, planet and prosperity. Her efforts in teaching novices in advanced studies has refocused her research interests to that of problem-solving and, specifically, teaching problem-solving. Within the context of AI and its emergent role in the area of education, Dr. Duff is interested in the potential of using AI to support the growth of human, i.e., non-artificial intelligence. She is interested in the question of whether and how machine learning algorithms and AI can help individuals grow their capability in analytical, logical and holistic reasoning. Specifically, she is interested in how these systems and the underlying algorithms can mindfully yet rigorously challenge the user through questions rather than providing answers. At the same time, aware of the immense drain these systems put on natural environments and human systems, she is interested in the question of balance

and the need for critical introspective when choosing to develop and/or use an AI-based tool for a particular task when such a task can be potentially accomplished with a comparatively lower negative impact on nature and/or society.

Prior to Ontario Tech University, Dr. Duff taught mathematics at the University of Ottawa, Royal Military College of Canada and the International School of Belgrade in Serbia. She also has extensive experience in developing and managing large-scale community mobilization and education programs in Canada and overseas within non-government and government sectors. She has received multiple recognitions, including teaching awards from the University of Ottawa and the Royal Military College of Canada, and was nominated and has received numerous awards for her teaching at Ontario Tech.

Andrea Slane

Professor, Legal Studies, Faculty of Social Science and Humanities

Dr. Andrea Slane J.D. PhD (she/her) is a Professor of Legal Studies in the Faculty of Social Science and Humanities, Ontario Tech University, Canada. Her research focuses on law's interface with digital communication and information technologies, including the nature of privacy interests and appropriate limits to privacy protection; legal approaches to addressing sexual exploitation and other wrongdoing online; and legal and ethical methods to protect and promote autonomy, dignity and identity in the face of rapidly evolving technological advancements in artificial intelligence. Dr. Slane is currently engaged in two projects - one aiming to promote informed public dialogue about the governance of police use of facial recognition technology, and another on the ways legal approaches to AI used for social support and companionship struggle to make principled distinctions between humans, companies/platforms, and autonomous AI entities. Her work and teaching centrally concern the social impacts of technologies and the legal and policy protections needed to ensure both redress for wrongs and means to build an environment able to support safe, equitable and principled use.

Key Publications:

- Andrea Slane and Isabel Pedersen, "Older People's Ethical Framing of Autonomy in Relation to Current and Future Consumer Technologies: The Case of Socially Assistive Robots" International Journal of Social Robotics (forthcoming 2025).

- Andrea Slane and Isabel Pedersen, "Bringing Older People's Perspectives on Consumer Socially Assistive Robots into Debates about the Future of Privacy Protection and AI Govern-ance" (2024) AI & Society: Journal of Knowledge, Culture and Communication, https://doi.org/10.1007/s00146-024-01894-3.

- Dallas Hill, Christopher O'Connor, and Andrea Slane, "Police Use of Facial Recognition Technology: The Potential for Engaging the Public through Co-Constructed Policy-Making" (2022) 24:3 International Journal of Police Science and Management, 325-335, https://doi.org/10.1177/14613557221089558.

- Andrea Slane, "Privacy Protective Roadblocks and Speedbumps Restraining Law Enforcement Use of Facial Recognition Software in Canada" (2021) 69:2 Criminal Law Quarterly 216-236. Available at SSRN: https://ssrn.com/abstract=4275241

Andrew Hogue

Associate Professor, Game Development and Interactive Media, Faculty of Business and IT

Dr. Andrew Hogue is an Associate Professor in the Game Development and Interactive Media program. Since joining Ontario Tech in 2007, Dr. Hogue has attracted over $7.6M in research and development funds, bolstering the study and application of new technologies in digital media. Dr. Hogue's main research interests currently revolve around the development of new technologies and experiences that utilize Volumetric Video and his team are currently exploring the implications of varying visual realism in XR and its effects on user experience, self-efficacy, and knowledge retention in interactive experiences. Dr. Hogue is currently co-authoring the forthcoming 4th edition of Rick Parent's acclaimed textbook, "Computer Animation: Algorithms and Techniques". He has supervised more than 120 undergraduate R&D projects, 15 graduate, and 1 post-doctoral fellow. Dr. Hogue was the Technical Program Committee Chair for IEEE GEM 2023 and Dr. Hogue's work has been widely recognized with over 60 peer-reviewed journal and conference articles, and has co-authored a patent on Telepresence Management for Remote Aid for Surgery while consulting with a tech startup.

Annie En-Shiun Lee

Assistant Professor, Computer Science, Faculty of Science

Professor Annie En-Shiun Lee is an assistant professor at OntarioTech University and the University of Toronto (status-only). Professor Lee's goal is to make language technology as inclusive and accessible to as many people as possible. She runs the Lee Langauge Lab (L^3) with research focusing on language diversity and multilingualism.

Professor Lee's research has been published in Nature Digital Medicine, ACM Computing Survey, ACL, SIGCSE, IEEE TKDE, and Bioinformatics. Professor Lee has contributed significant expertise to industry and government through a track record of successful technology

transfer over the past decade with 14 partners. She serves as the demo co-chair for NAACL and has extensive experience transferring technology to industry.

Key Publications:

- Surangika Ranathunga, En-Shiun Annie Lee, Marjana Prifti Skenduli, Ravi Shekhar, Mehreen Alam, and Rishemjit Kaur. 2023. Neural Machine Translation for Low-resource Languages: A Survey. ACM Comput. Surv. 55, 11, Article 229 (November 2023), 37 pages. https://doi-org.myaccess.library.utoronto.ca/10.1145/3567592

- En-Shiun Lee, Sarubi Thillainathan, Shravan Nayak, Surangika Ranathunga, David Adelani, Ruisi Su, and Arya McCarthy. 2022. Pre-Trained Multilingual Sequence-to-Sequence Models: A Hope for Low-Resource Language Translation?. In Findings of the Association for Computational Linguistics: ACL 2022, pages 58–67, Dublin, Ireland. Association for Computational Linguistics.

- David Adelani, Hannah Liu, Xiaoyu Shen, Nikita Vassilyev, Jesujoba Alabi, Yanke Mao, Haonan Gao, and En-Shiun Lee. 2024. SIB-200: A Simple, Inclusive, and Big Evaluation Dataset for Topic Classification in 200+ Languages and Dialects. In Proceedings of the 18th Conference of the European Chapter of the Association for Computational Linguistics (Volume 1: Long Papers), pages 226–245, St. Julian's, Malta. Association for Computational Linguistics.

- Wong, A.K.C., Zhou, PY. & Lee, A.ES. Theory and rationale of interpretable all-in-one pattern discovery and disentanglement system. npj Digit. Med. 6, 92 (2023). https://doi.org/10.1038/s41746-023-00816-9

- Franke, B., Plante, J.F., Roscher, R., Lee, E.S.A., Smyth, C., Hatefi, A., Chen, F., Gil, E., Schwing, A., Selvitella, A. and Hoffman, M.M., 2016. Statistical inference, learning and models in big data. International Statistical Review, 84(3), pp.371-389.

Asifa Aamir

Associate Teaching Professor, Faculty of Business and IT

I have master's degrees in Information Systems Engineering and Business administration (Tech. Management). I have been in academia for over 14 years. My teaching approach focuses on applied learning, where students gain hands-on experience in current IT/IS topics including artificial intelligence. My academic background and teaching experience provides me with a robust understanding of information technology applications within business contexts, helping me fuel my learning interests around the ethical and operational

implications of emerging technologies in business environments. I am also working with Continuous Learning at Ontario Tech. In this capacity, I have facilitated specialized workshops for industry professionals, focusing on foundational AI concepts with an emphasis on ethical and security considerations relevant to business contexts.

Bobby Stojanoski

Assistant Professor, Faculty of Social Science and Humanities

The overarching aim of my research program is to understand the links between social and cognitive development and the underlying changes in the structure and function of the brain in neurotypical and neurodiverse youth populations, in particular, autistic children. My research places the environment front and center by incorporating factors such as socioeconomic status, adverse life experiences, and elements of lifestyle, such as sleep habits in his work examining the developing mind and brain.

I use various neuroimaging methods, including functional magnetic resonance imaging but also electroencephalography and functional near-infrared spectroscopy, which he recently received two large operating grants to bring this equipment to Ontario Tech. My research incorporates in-lab and online cognitive tests, and movie watching paradigms and applies computational analytic approaches to examine social and cognitive functioning in neurotypical and autistic children and adolescents.

Key Publications:

- Pho, B., Stevenson, R., Mohsenzadeh, Y., & Stojanoski, B. (2024). Using Machine Learning To Identify Neural Mechanisms Underlying the Development of Cognition in Children and Adolescents With ADHD. Developmental Cognitive Neuroscience

- Deng, Z., Li, Z., Gao, J., Stojanoski, B., & Chen, J. (under review). Differential representation of “toolness” and the elongated shape of tools revealed by continuous flash suppression and backward masking. Scientific Advances

Carolyn McGregor

Professor and Dean,
Research Chair in Artificial Intelligence for Health and Wellness,
Director, Joint Research Centre in AI for Health and Wellness,
Two-time Canada Research Chair in Health Informatics,
Faculty of Business and IT

Professor Carolyn McGregor AM is a two-time Canada Research Chair. She is the Founding Director and Research Chair of the Joint Research Centre in AI for Health and Wellness between Ontario Tech University in Canada and the University of Technology Sydney in Australia. Dr McGregor has led pioneering research in artificial intelligence, big data analytics, stream computing, deep learning, internet of things, temporal data mining, edge computing and cloud computing. She progresses research within the context of critical care medicine, precision public health, mental health, astronaut health together with military and civilian tactical training. She is the inventor of two internationally leading big data/AI based platforms Artemis and Athena used to improve health, wellness, resilience and adaptation. She has been awarded over $15 million in research funding and has led multiple large research programs including a highly acclaimed multi-million dollar First-of-A-Kind (FOAK) research program with IBM and a $3M project within the FedDev Ontario Health Ecosphere Innovation Pipeline project. She has over 190 refereed publications, 3 patents in multiple jurisdictions and has established two startup companies resulting from her research. She has extensive research collaborations in Canada, USA, Australia and India. She serves on government committees in Australia, Canada, France and Germany. She has received many awards for her research. In 2014 she was awarded membership in the Order of Australia for her significant service to science and innovation through health care information systems. In 2017 she was featured in the 150 Stories series commissioned by the Lieutenant Governor of Ontario and the Government of Canada to commemorate the 150th year anniversary of Ontario. In 2018 she was named as a Women Leader in Digital Health by Digital Health Canada. In 2022 she led a research study performed on the AXIOM Ax-1 all private astronaut mission to the ISS.

Key Publications:

- McGregor, C, and Rastpour, A., Predicting Patient Wait Times by Using Highly Deidentified Data in Mental Health Care: Enhanced Machine Learning Approach, JMIR Mental Health 9 (8), e38428, 2022

- McGregor, C., 2018, “Using Constructive Research to Structure the Path to Transdisciplinary Innovation and Its Application for Precision Health with Big Data Analytics, Technology Innovation Management Review, 8(8): 7–15. http://doi.org/10.22215/timreview/1174

- Kamaleswaran R., McGregor, C., 2016, “A Review of Visual Representations of Physiologic Data”, JMIR Medical Informatics, 4(4), e31 , doi:10.2196/medinform.5186

- Khazaei, H., McGregor, C., Eklund, J.M., El-Khatib, K., 2015, “Real-time and Retrospective Health Analytics as a Service”, JMIR Medical Informatics, 3(4), e36

- Khazaei, H., Mench-Bressan, N., McGregor, C., Pugh, J.E., 2015, “Health Informatics for Neonatal Intensive Care Units: an Analytical Modeling Perspective”, IEEE Journal of Translational Engineering in Health and Medicine, 3, pp 1-9

David Rudoler

Associate Professor, Faculty of Health Sciences,
and
Research Chair, Population Health and Innovation in Mental Health,
Ontario Shores Centre for Mental Health Sciences

David Rudoler is an applied health services researcher with expertise in health policy, health economics, econometrics, health economic evaluation, administrative data analysis, and mixed methods. He holds a Research Chair in Population Health and Innovation in Mental Health at Ontario Shores Centre for Mental Health Sciences, and is also an Assistant Professor in the Faculty of Health Sciences at Ontario Tech University. David is also an Adjunct Scientist at ICES in the Mental Health & Addictions Research Program. His research interests include health human resources, including the supply of community-based primary and mental health services; the evaluation of policy interventions, including provider responses to payment models and incentives; the evaluation of community-based interventions for people with serious mental illness; and the application of methods in data science to issues in population health and mental health care services.

Key Publication:

- Jamieson et al. (2024). Stratified Care in Cognitive Behavioural Therapy: A Comparative Evaluation of Predictive Modeling Approaches for Individualized Treatment. Canadian Journal of Psychiatry. DOI: 10.1177/07067437241295635. [In Press].

Faisal Qureshi

Professor, Computer Science, Faculty of Science

Faisal Z. Qureshi is a Professor of Computer Science at University of Ontario Institute of Technology (OntarioTech), Oshawa, Canada, where he directs the visual computing lab. He also holds a Guest Professorship at Mid Sweden University, Sundsvall, Sweden. He holds a Ph.D. and an M.Sc. in Computer Science from the University of Toronto, Canada, an M.Sc. in Electronics from Quaid-e-Azam University, Pakistan, and a B.Sc. in Mathematics and Physics from Punjab University, Pakistan. He joined OntarioTechU in 2008 from Autodesk Canada Co., Toronto. Dr. Qureshi's research interests center around computer vision, camera networks, and video summarization. He is a recipient of Computer Robot Vision (CRV) 2017 Best Vision Paper award and ACM/IEEE International Conference on Distributed Smart Cameras 2007 Outstanding Paper award. Dr. Qureshi is also active in journal special issues and conference organizations, serving as the general co-chair for the Workshop on Camera Networks and Wide-Area Scene Analysis (co-located with CVPR) in 2011-13. In addition he served as the co-chair of CRV 2015/16. He is a senior member of the IEEE and a member of the ACM. He currently serves as the Secretary of the Canadian Image Processing and Pattern Recognition Society (CIPPRS). In the past he has also served as the program director for the CS undergraduate and graduate programs.

Key Publications:

- Attention Based Simple Primitives for Open-World Compositional Zero-Shot Learning. Munir, A.; Qureshi, F.; Khan, M.; and Ali, M. In Proc. 25th Conference on Digital Image Computing Techniques & Applications (DICTA24), pages 8pp, Perth, November 2024.

- Hyperspectral Pixel Unmixing with Latent Dirichlet Variational Autoencoder. Mantripragada, K.; and Qureshi, F. Z. IEEE Transactions on Geoscience and Remote Sensing, 13pp. 2024.

- Hyperspectral Image Compression Using Implicit Neural Representations. Rezasoltani, S.; and Qureshi, F. In Proc. 20th Conference on Robots and Vision (CRV23), pages 8pp, Montreal, Jun 2023.

- A Temporal Boosted YOLO-Based Model for Birds Detection around Wind Farms. Alqaysi, H.; Fedorov, I.; Qureshi, F. Z.; and O'Nils, M. Journal of Imaging, 7(11): 13pp. 2021.

- A Residual-Dyad Encoder Discriminator Network for Remote Sensing Image Matching. Khurshid, N.; Mohbat; Taj, M.; and Qureshi, F. IEEE Transactions on Geoscience and Remote Sensing, 58: 2001–2014. 2020.

Gabby Resch

Assistant Professor, Faculty of Business and IT

Dr. Gabby Resch is an Assistant Professor whose research explores new methods for making sense of data as it moves between physical and digital worlds. At the moment, he is engaged in research projects that explore geospatial visualization in the context of migration-related policy, the use of scrolling data interactives for medical knowledge translation, and immersive augmented and virtual reality simulation and training environments. He is developing new research on rehabilitation interfaces that combine machine learning and data-driven methods, as well as a project that explores AI content generation and data-driven communication in the context of startup pitch decks.

Hossam Gaber

Professor, Faculty of Engineering and Applied Science

Dr. Gaber is a Professor in the Department of Energy and Nuclear Engineering, the Faculty of Engineering and Applied Science, at Ontario Tech University (UOIT), where he has established the Energy Safety and Control Lab (ESCL), Smart Energy Systems Lab, and Advanced Plasma Engineering Lab. He is the recipient of the Senior Research Excellence Aware for 2016, UOIT. He is recognized among the top 2% of worldwide scientists with high citation in the area of smart energy. He Fellow IET (FIET) and Distinguished Lecturer – IEEE NPSS on Nuclear-Renewable Hybrid Energy Systems and Plasma-based Waste-to-Energy. He is leading national and international research in the areas of smart energy grids, with applied AI on resilient energy and interconnected infrastructures. Dr. Gabbar obtained his B.Sc. degree in 1988 with first class of honor from the Faculty of Engineering, Alexandria University (Egypt). In 2001, he obtained his Ph.D. degree from Okayama University (Japan) in Systems Engineering. From 2001 till 2004, he joined Tokyo Institute of Technology (Japan), as a research associate. From 2004 till 2008, he joined Okayama University (Japan) as an Associate Professor, in the Division of Industrial Innovation Sciences. From 2007 till 2008, he was a Visiting Professor at the University of Toronto. Dr. Gaber is leading multidisciplinary research on smart energy with applied AI that includes smart modeling and Multiphysics simulation, LLM and semantic networks for resilient energy, transportation, and community infrastructures. Among recent development is autonomous drone-based inspection, CT-based integrity control, human experience retention system, and intelligent safety management systems.

Key Publications:

- Hossam A.Gabbar, Abderrazak Chahid, Manir U. Isham, Shashwat Grover, Karan pal Singh, Khaled Elgazzar, Ahmad Mousa, and Hossameldin Ouda, HAIS: Highways Automated-Inspection System, Technologies 2023, 11, 51.

https://doi.org/10.3390/10.3390/technologies11020051.

- Hossam A.Gabbar, Abderrazak Chahid, Md. Jamiul-Alam Khan, Oluwabukola Grace, Matthew Immanuel, CTIMS: Automated Defect Detection Framework Using Computed Tomography (CT), Appl. Sci. 2022, 12(4), 2175; https://doi.org/10.3390/app12042175.

- Hossam A. Gabbar, A. Chahid, M. J. A. Khan, O. Grace-Adegboro and M. I. Samson, "Tooth.AI: Intelligent Dental Disease Diagnosis and Treatment Support Using Semantic Network," in IEEE Systems, Man, and Cybernetics Magazine, vol. 9, no. 3, pp. 19-27, July 2023, doi: 10.1109/MSMC.2023.3245814.

- Hossam A.Gabbar, Sk Sami Al Jabbar, Hassan Hassan, Jing Ren, Development of Knowledge Base using Human Experience Semantic Network for Instructive Texts, Appl. Sci. 2021, 11(17), 8072; https://doi.org/10.3390/app11178072.

- Hossam A.Gabbar, Ahmed S. Eldessouky, Energy Semantic Network for Building Energy Management, Intelligent Industrial Systems, Springer, September, 2015, DOI 10.1007/s40903-015-0023-8.

Hui Zhu

Professor, Finance, Faculty of Business and IT

Dr. Hui Zhu is a Professor of Finance at Ontario Tech University in Canada. She earned her Ph.D. in Economics from Queen's University. She was a visiting scholar at Johannes Kepler University Linz in Austria and an adjunct professor at the University of Ottawa. Her research is primarily in empirical finance with a significant focus on fixed-income securities, initial public offerings (IPOs), corporate innovation, corporate social responsibility, and international finance. She has published over 20 research papers in refereed journals such as the Journal of Banking and Finance, Journal of Corporate Finance, Financial Management, Journal of Financial Research, International Review of Financial Analysis, Journal of International Financial Markets, Institutions and Money, and Pacific-Basin Finance Journal. She has presented her research findings at over 50 prestigious finance conferences and various research institutions in Canada and internationally. Dr. Zhu received the Faculty Research Excellence Award in 2020 and 2023. She was also a scholarship recipient of the Faculty Mobility for Partnership Building Program and the Canada-China Scholars Exchange Program. Dr. Zhu held internal research grants such as Building Equality, Diversity, Inclusion Knowledge in Research, several Partnership and Research Explore Stream grants, and Research Policy Grants. She has twice held external grants from the Social Sciences and Humanities Research Council of Canada (SSHRC).

Key Publications:

- Is Corporate Social Responsibility A Matter of Trust? A Cross-country Investigation (with Eva Wagner), International Review of Financial Analysis, 93, (May 2024): 103127.

- Investor Heterogeneity and Negative Skewness in Stock Returns: Evidence from Institutional Investors (with Ramzi Benkraiem, Stéphane Goutte, Samir Saadi and Steven Zhu), Journal of International Financial Markets, Institutions and Money, 81, (2022): 101690.

- Does National Culture affect Corporate Innovation? International Evidence (with Narjess Boubakri, Imed Chkir, and Samir Saadi), Journal of Corporate Finance 66, (2021): 101847.

- Institutional Influence on Syndicate Structure and Cross-border Leveraged Buyouts (with Chen Liu and Lynnette Purda), 50(1), Financial Management, (2021): 169-202.

- Customer-Supplier Relationships and the Cost of Debt (with Kelly Cai), Journal of Banking and Finance 110, (2020): 105686.

Igor Kotlyar

Associate Professor, Faculty of Business and IT

Dr. Igor Kotlyar is an Associate Professor in the Faculty of Business and IT at Ontario Tech University, where his research applies Artificial Intelligence to the assessment of interpersonal skills, bridging AI with education, organizational behavior, and human resource management. His work has been published in respected journals across AI, education, and organizational behavior, including Computers in Human Behavior, The Leadership Quarterly, Journal of Creative Behavior, Journal of Research on Technology in Education, International Journal of Artificial Intelligence in Education, and International Journal of Selection and Assessment. Through these publications, he has contributed to critical discourse on AI-enhanced assessment and feedback in both educational and organizational contexts. Dr. Kotlyar holds a PhD from the Rotman School of Management at the University of Toronto. His previous experience founding two tech firms specializing in AI-driven simulation technologies further informs his academic insights, underscoring AI's transformative potential in skill development and evaluation.

Key Publications:

- Kotlyar, I., Pearse, N. J., & Krasman, J. (2024). Understanding cross-country differences in assessment simulations: insights from South African and Canadian students. Discover Education, 3(1), 1-23.

- Kotlyar, I., Sharifi, T., & Fiksenbaum, L. (2023). Assessing teamwork skills: can a computer algorithm match human experts?. International Journal of Artificial Intelligence in Education, 33(4), 955-991.

- Kotlyar, I., & Krasman, J. (2022). Virtual simulation: New method for assessing teamwork skills. International Journal of Selection and Assessment, 30(3), 344-360

- Kotlyar, I., Krasman, J., & Fiksenbaum, L. (2021). Virtual high-fidelity simulation assessment of teamwork skills: How do students react?. Journal of Research on Technology in Education, 53(3), 333-352.

Isabel Pedersen

Professor, Faculty of Social Science and Humanities

Dr. Isabel Pedersen is a Professor of Communication Studies at Ontario Tech University, specializing in the intersection of technological change and its cultural, ethical, and political implications. Dr. Pedersen's research focuses on the lifecycle of technology—design, adoption, and adaptation—with a particular emphasis on Artificial Intelligence. Dr. Pedersen's expertise has been recognized through influential roles, including serving on the Meta Reality Labs Policy Advisory Council, the IEEE Standards Association's Global XR Ethics Working Group (P7030), and as Canada Research Chair (2012-2022). She is the founding Director of the Digital Life Institute, an international research network of multidisciplinary scholars. Her recent co-authored books include Augmentation Technologies and Artificial Intelligence in Technical and Professional Communication: Designing Ethical Futures (Routledge, 2023) and Writing Futures: Collaborative, Algorithmic, Autonomous (Springer, 2021). Her work has appeared in leading journals such as AI and Society, Frontiers in Artificial Intelligence, Journal of Information, Communication and Ethics in Society, and Communication Design Quarterly. In 2020, Dr. Pedersen pioneered Ontario Tech's first graduate course in Global AI Ethics, establishing a framework for ethical considerations in the field of computer science.

Key Publications:

- Pedersen, I. The Rise of Generative AI and Enculturating AI Writing in Postsecondary Education. Frontiers in Artificial Intelligence. Volume 6. 2023.

- Pedersen, I. Generative AI, cultural adaptation, and postsecondary education. (July, 2024) The Open/Technology in Education, Society, and Scholarship Association Journal. 4(1), 1-19.

- Slane, A., and Pedersen, I. Bringing Older People's Perspectives on Consumer Socially Assistive Robots into Debates about the Future of Privacy Protection and AI Governance AI & Society: Knowledge, Culture and Communication. March 16, 2024. https://doi.org/10.1007/s00146-024-01894-3

- Duin, A. H. and Pedersen, I. Augmentation technologies and artificial intelligence in technical communication: Designing ethical futures. Routledge, Taylor & Francis, 2023.

- Duin, A. H. and Pedersen, I. Writing Futures: Collaborative, Algorithmic, Autonomous (Studies in Computational Intelligence) Berlin: Springer-Verlag. 2021.

Janette Hughes

Professor, Canada Research Chair,
Director of Centre for Digital Innovation in Education,
Director of STEAM 3D Maker Lab,
2025-2027 Chair of Women in Research Council

Dr. Janette Hughes is a Canada Research Chair, in Technology and Pedagogy and Professor in the Faculty of Education at Ontario Tech University. She is the recipient of multiple research and teaching awards and research grants. She is widely published (86 PR Journal Articles; 42 Conference Proceedings Papers; 4 Books, 35 Book Chapters) and is author of The Digital Principal, a guide for school administrators who are interested in promoting technology-rich learning environments for students and teachers. Dr. Hughes is a prolific author and presenter, sharing her work both nationally and internationally in prestigious scholarly and professional journals, keynote talks, and conferences. She has presented more than 140 peer-reviewed research papers conferences across Canada, the United States, Europe, Asia, and South America. Attesting to the recognition of her leadership in technology and pedagogy, Dr. Hughes is routinely contacted by school districts, Ministry personnel and industry partners to consult on a variety of topics, including online teaching and learning, equity issues in ed tech, creating innovative learning environments, establishing STEAM focused Makerspaces in schools, shifting pedagogies in a digital era, the social and ethical implications of AI, and how to foster the development of global (21st century) skills and competencies in K-12 and higher education.

Key Publications:

- Morrison, L., Hughes, J., Craig, C. (under review: abstract accepted). AI in education: An ethical framework and rubric in action. Technology, Pedagogy & Education.

- Morrison, L., Hughes, J. & Craig, C. (accepted). Evaluating AI Tools for Use in K-12: A Rubric for Teachers and Students. AI in K-12 Education: Shaping Future Classrooms.

- Hughes, J. & Morrison, L. (accepted). A Brave New World: The Perils of AI Image Generators for Women. AI in K-12 Education: Shaping Future Classrooms.

- Butler-Ulrich, T. & Hughes, J. (accepted). Supporting Ethical Artificial Intelligence Literacy Through Technical Competencies and Critical Thinking. CSSE, McGill University, June 2024.

- Hughes, J. & Gadanidis, M. (accepted). An exploration of AI writing tools for secondary school teachers and students. TIE Conference, Cambridge, UK. March 2025.

- Butler-Ulrich, T., Hughes, J., Morrison, L. (2025). Creativity and Generative AI for Preservice Teachers. In Creativity for Contemporaneity, InTech Open.

Jeremy Bradbury

Professor, Computer Science, Faculty of Science

My research focuses on the development of high-quality testing and debugging practices and education/skills training. First, I focus on the development of new automated testing and debugging tools using machine learning (ML), natural language processing (NLP) and large language models (LLMs) that support the tester. These tools prioritize supporting testers in low-resource contexts (where data and computation maybe limited) as well as supporting testers based on their capabilities and limitations. Second, I focus on the development of AI-based personalized learning tools and games that provide testers opportunities to enhance their skills and improve their testing and debugging capabilities. Personalization in training is essential to ensuring that the individual needs of each tester are addressed.

Key Publications:

- Riddhi More and Jeremy S. Bradbury. An analysis of LLM fine-tuning and few-shot learning for flaky test detection and classification. Submitted to international conference, Sept. 2024.

- Michael A. Miljanovic, Jeremy S. Bradbury. “Engineering Adaptive Serious Games Using Machine Learning.” in Software Engineering for Games in Serious Contexts – Theories, Methods, Tools, and Experiences, 2023, 17 pages.

- Jude Arokiam, Jeremy S. Bradbury. “Automatically Predicting Bug Severity Early in the Development Process,” Proc. of the 42nd International Conference on Software Engineering (ICSE 2020), The New Ideas and Emerging Results (NIER) track, Seoul, South Korea, Oct. 2020.

- Michael A. Miljanovic, Jeremy S. Bradbury. “GidgetML: An Adaptive Serious Game for Enhancing First Year Programming Labs,” Proc. of the 42nd International Conference on Software Engineering (ICSE 2020), The Software Engineering Education and Training (SEET) track, Seoul, South Korea, Oct. 2020.

- David Kelk, Kevin Jalbert, Jeremy S. Bradbury. “Automatically Repairing Concurrency Bugs with ARC,” Proc. of the 1st International Conference on Multicore Software Engineering, Performance, and Tools (MUSEPAT 2013), pages 73-84, Saint Petersburg, Russia, Aug. 2013.

Jia Li

Professor, Mitch & Leslie Frazer Faculty of Education, Ontario Tech University

Dr. Jia Li is a Professor (full) at the Mitch & Leslie Frazer Faculty of Education, Ontario Tech University. She is Chairperson of Publications for the Canadian Association for Curriculum Studies (CACS) and serves for Editorial Advisory Board of the Canadian Journal of Education (CJE)/La Revue canadienne de l’éducation (RCE). She received her doctoral degree from Ontario Institute for Studies in Education, University of Toronto and conducted her post-doctoral research work at Queen’s University. She was a Canada-U.S. Fulbright Scholar at the Harvard Graduate School of Education (2011-2012), and a John A. Sproul Research Fellow at the University of California, Berkeley (2018-2019). Her teaching and professional experience include instructional design and assessment of technology-assisted educational interventions using both quantitative and qualitative methods.

Dr. Li’s research agenda focuses on an interdisciplinary approach to address challenge areas in education by leveraging cutting edge technologies, data-driven innovative language and literacy interventions. This include using AI to support the development of academic reading and writing skills for linguistically diverse students. These include diverse urban students from low-income families, university English language learners and Indigenous youth. Her research has been funded by the Social Sciences and Humanities Research Council of Canada and Fulbright Canada. The results of her work have been published in high impact journals

including Computers & Education, Teaching and Teacher Education, Language Learning & Technology, and Computer Assisted Language Learning.

Dr. Li is an invited reviewer for over 30 refereed journals, of which many reported high Impact Factors. These include the top 3 journals in education and technology, the top 2 journals in technology assisted language learning, the top 1 journal in teacher education, and a top 3 journal in education

First AI-related manuscript in progress aiming to a high impact peer-reviewed journal.

Justin Rawlins

Academic Associate, Communication and Digital Media Studies

Justin Owen Rawlins is the author of Imagining the Method (University of Texas Press, 2024). His work has also appeared in Journal of Film and Video, Velvet Light Trap, Celebrity Studies, Quarterly Review of Film and Video, as well as Journal of Cinema and Media Studies (forthcoming 2025). His new book, provisionally titled "Speculative Acting," will explore the use of AI to revivify deceased screen performers. This project examines how the rhetoric and self-positioning of the tech and finance firms at the heart of this rapidly materializing Hollywood-adjacent media production ecosystem carve out a distinct identity that resides at the uneasy intersection of the film, tech, and finance industries.

Key Publications:

- Imagining the Method: Reception, Identity, and American Screen Performance. (University of Texas Press, January 2024).

- "The Scandalous Speculative: Stardom and the AI-ification of Posthumous Performance." Celebrity Studies Conference, Amsterdam, Netherlands, July 2024. [Conference Presentation]

Kanika Samuels-Wortley

Associate Professor & Canada Research Chair, Faculty of Social Science and Humanities, Women in Research Council Chair

Before joining Ontario Tech University, Dr. Kanika Samuels-Wortley was an Assistant Professor in the Department of Criminology at Toronto Metropolitan University and the Institute of Criminology and Criminal Justice at Carleton University. Presently, she is a Visiting

Fellow at Australian National University at the School of Regulation and Global Governance (RegNet) in Canberra, Australia. Dr. Samuels-Wortley holds a Ph.D. in Sociology (2021) from the University of Waterloo, an MA and BA in Criminology from Ontario Tech and the University of Toronto, respectively.

Dr. Samuels-Wortley's research explores the intersection of race, racism, and the criminal justice system. Her research aims to advance critical race discourse in Canada through empirical mixed-methods approaches. Through the *Criminological Research Advancing Racial Equity Lab* (cRARE Lab), Dr. Samuels-Wortley and her team engage in research to better understand how bias and discrimination impact racialized peoples experiences and perceptions of the police, court, and correctional system. This includes an exploration into the use of predictive AI technologies within criminal justice processes and the role they play in exacerbating racial inequities in Canada.

Dr. Samuels-Wortley has published in prestigious peer reviewed journals, including Race and Justice, Crime and Delinquency, and the Canadian Journal of Criminology and Criminal Justice. Her research has been supported by a number of awards and grants, facilitating both international and national engagement, including a SSHRC Partnership Grant which involves a multi-disciplinary research team across several academic institutions in Canada. Dr. Samuels-Wortley has served as a member of the research committee for the Learning Advisory Committee on Diversity, Equity, and Inclusion for Correctional Service Canada, and is currently a research member with the Canadian Association of Chiefs of Police.

Key Publications:

- Harb, J., Anantharajah, K., Samuels-Wortley, K., Qureshi, N. (2024) Back at the Kitchen Table: Querying Feminist Support in the Academy. International Feminist Journal of Politics, 26(2), 427-446.

- Samuels-Wortley, K. (2024). Racialization and Crime. In N. Boyd (Ed.) Understanding Crime in Canada: An Introduction to Criminology, Third Edition. Emond Publishing.

- Samuels-Wortley, K. (2024) Community Policing, Police Militarization, and Canada's Colonial Project. In Sebastián Sclofsky and Analicia Mejia Mesinas (Eds.) In Police and State Crime in the Americas: Southern and Postcolonial Perspectives (pp. 99-122), New York, Palgrave Macmillan.

- Greene, C., Urbanik, M.-M., Samuels-Wortley, K. (2022). "It stays with you for life": The everyday nature and impact of police violence in Toronto's inner city. International Journal of Environmental Research and Public Health, Vol. 19, pg. 1-11.

- Samuels-Wortley, K (2022). Black on Blue, will not do: Navigating Canada's evidence-based policing community as a Black academic: A personal counter-story, in Derek

Silva and Mathieu Deflem (Eds.) Sociology of Crime, Law, and Deviance: Diversity in Criminology and Criminal Justice Studies, pg. 63-82. Emerald Publishing.

Karla Dhungana Sainju

Associate Professor, Criminology and Justice, Faculty of Social Science and Humanities, Women in Research Council Chair

One of my areas of expertise is bullying and my research related to this topic has examined various aspects including macro and micro-level influences of bullying, role of teachers and schools, xenophobic bullying, identity-based bullying, gender-based violence, and bullying discourse on social media. With support from grants through a SSHRC institutional small grant and a Mitacs Research Training grant, I've conducted studies where I merged social science and social media data and machine learning to provide an interdisciplinary approach to examine the old issue of bullying in a new way. While my work in the area of AI research is still in its infancy, my interests broadly is to explore how data sources such as Big Data and social media can address pressing societal questions using AI tools such as machine learning and quantitative and qualitative social science approaches. I am currently putting together proposals to examine the impact of hashtag feminism, especially as it relates to the #MeToo movement, and bullying and suicide-related discourse on social media. I hypothesize that this research will provide important implications for intervention, digital activism, social movements, and considerations of how to utilize social media for positive change. I am eager to engage and learn more about how my interests may align with and support the work of MAIRI.

Key Publications:

- Dhungana Sainju, K., Mishra, N., Kuffour, A., & Young, L. Bullying Discourse on Twitter: An Examination of Bully-Related Tweets Using Supervised Machine Learning. Computers in Human Behavior, 120, 106735. https://doi.org/10.1016/j.chb.2021.106735.

- Dhungana Sainju, K., Kuffour, A., Young, L., & Mishra, N. Bullying-Related Tweets: A Qualitative Examination of Perpetrators, Targets, and Helpers. International Journal of Bullying Prevention, 4(1), 6-22. Part of the special issue: The Use of Artificial Intelligence to Address Online Bullying and Abuse. https://doi.org/10.1007/s42380-021-00098-3

- Dhungana Sainju, K., Zaidi, H, Mishra. N., & Kuffour, A. Xenophobic Bullying & COVID-19: An Exploration Using Big Data & Qualitative Analysis. International Journal of Environmental Research and Public Health, 19(8), 4824. Part of the special issue:

Second Edition of Stigma, Health and Wellbeing. https://doi.org/10.3390/ijerph19084824

- Dhungana Sainju, K., Young, L., Kuffour, A., & Mishra, N. A Machine Learning and Qualitative Examination of Cyberbullying Experiences on Twitter. Journal of Social Media in Society, 11(2), 209-235.

Kathleen Pierce

Academic Associate, Faculty of Business and IT

I have a Bachelor of Arts in Business and Communication Arts from the University of Waterloo and a Master of Education in Adult Education and Community Development from OISE, University of Toronto. Since 2011, I've taught business and communication at various post-secondary institutions, focusing on effective teaching and business communication. In early 2023, I began researching generative AI to stay ahead of its impact on my students. I became fascinated with all things "Generative AI", and this led me to develop a program with the Continuing Education department called Generative AI for Business Leaders", which we delivered twice in 2024, with the next session planned for winter 2025. In addition, I've presented at two conferences on the topic of using AI in education ("Teaching professor conference" in New Orleans, 2023, and Ontario Tech's "AI in Education" conference, 2024).

Key Publication:

- Pierce, Kathleen. "Ai-Powered Personalized Feedback – Save Time & Spark Critical Minds." Artificial Intelligence in Education Conference Shaping Future Classrooms, Ontario Tech University, 29 May 2024, https://ecampusontario.pressbooks.pub/artificialintelligenceineducationconference/chapter/ai-powered-personalized-feedback-save-time-spark-critical-minds/

Ken Pu

Associate Professor, Computer Science, Faculty of Science

Dr. Ken Pu earned his PhD in Computer Science from the University of Toronto in 2006 and has been a faculty member at Ontario Tech University since 2007. His primary areas of expertise include big data, data lakes, novel data models, and query languages. He has worked in several areas: applying machine learning techniques to data lake management, developing search algorithms for internet-scale open data repositories, and exploring new approaches in time-series databases.

Recently, Dr. Pu's research has pivoted toward the intersection of machine learning and artificial intelligence within data management, focusing on how these technologies can enhance data processing and analysis. His current work emphasizes the development of data processing pipelines and the use of large language models to automate workflows as an effort to harness the power of AI to improve reliability and efficiency of modern workplace.

Key Publications:

- Ma, Limin, and Ken Q. Pu. "Accelerating Relational Keyword Queries With Embedded Predictive Neural Networks." 2024 IEEE International Conference on Information Reuse and Integration for Data Science (IRI). IEEE Computer Society, 2024.

- Wasti, Syed Mekael, Ken Q. Pu, and Ali Neshati. "Large Language User Interfaces: Voice Interactive User Interfaces powered by LLMs." Intelligent Systems Conference. Cham: Springer Nature Switzerland, 2024.

- Ma, Limin, and Ken Q. Pu. "Neural Network Accelerated Tuple Search For Relational Data." 2022 IEEE 23rd International Conference on Information Reuse and Integration for Data Science (IRI). IEEE, 2022.

- Nargesian, Fatemeh, Ken Pu, Bahar Ghadiri-Bashardoost, Erkang Zhu, and Renée J. Miller. "Data lake organization." IEEE Transactions on Knowledge and Data Engineering 35, no. 1 (2022): 237-250.

Khalid Elgazzar

Associate Professor, Canada Research Chair, Faculty of Engineering and Applied Science

Dr. Khalid Elgazzar is a Canada Research Chair and assistant professor with the Faculty of Engineering and Applied Science at Ontario Tech University, Canada and holds an adjunct assistant professor at Queen's University where he also received his PhD degree in Computer Science from the School of Computing in 2013. He is the founder and director of the IoT Research Lab at Ontario Tech University. Prior to joining Ontario Tech, he worked at University of Louisiana at Lafayette and Carnegie Mellon School of Computer Science. Dr. Elgazzar named the recipient of the outstanding achievement in sponsored research award from UL Lafayette in 2017 and the distinguished research award from Queen's University in 2014. He also received several recognition and best paper award at top international venues. Dr. Elgazzar is world leader in the areas of Internet of Things (IoT), computer systems, real-time data analytics, and mobile computing. He is currently an associate editor for a number of IEEE/ACM journals and transactions in Peer-to-Peer Networking, Future Internet, Internet of Things and Mobile Computing. He also chaired a number of IEEE conferences and symposia

on mobile computing, communications and IoT. Dr. Elgazzar is Senior IEEE Member and an active volunteer in technical program committees and organizing committees in both IEEE and ACM events.

Key Publications:

- Amr Zaki, Sara Elsayed, Khalid Elgazzar, Hossam Hassanien, "Quality and Budget-Oriented Task Offloading for Vehicular Cooperative Perception Using Reinforcement Learning", IEEE Journal of Internet of Things, 2024.

- Amr Zaki, Sara Elsayed, Khalid Elgazzar, Hossam Hassanien, "Quality-Aware Task Offloading for Cooperative Perception in Vehicular Edge Computing", IEEE Transactions on Vehicular Technology, 2024.

- Ahmed Elgazwy, Somayya Elmoghazy, Khalid Elgazzar, Alaa Khamis, "Pedestrian Crossing In- tent Prediction using Vision Transformers", The 27th IEEE International Conference on Intelligent Transportation Systems (ITSC), Edmonton, Canada, September 24 - 27, 2024.

- Abeer Badawi, Ahmed Badr, Somayya Elmoghazy, Sara Elgazzar, and Khalid Elgazzar, Amer Burhan, "A Real-Time System for Monitoring and Managing Neuropsychiatric Symptoms in Dementia Patients" The 6th International Conference on Communications, Signal Processing, and their Applications, ISTANBUL, Turkey, 8-11 July 2024.

- Dipkumar Patel, Khalid Elgazzar, "Deep Learning Based Road Boundary Detection Using Camera and Automotive Radar", The 35th IEEE Intelligent Vehicles Symposium (IV) (IEEE IV 2024), Jeju Island, Korea, June 2-5, 2024.

Langis Roy

Professor, Electrical, Computer and Software Engineering,
Faculty of Engineering and Applied Science

Has co-authored over 100 scientific papers and holds three patents on RF system-on-package designs. His current research interests include microwave electronics, integrated active antennas, reconfigurable microwave components, wireless sensors, high-performance electronic circuit packaging, and aerospace/automotive applications, now extending to terahertz biosensing and wireless power harvesting.

Laura Morrison

Assistant Professor, Faculty of Education

Dr. Laura Morrison is an Assistant Professor in the Learning Sciences within the Faculty of Education at Ontario Tech University. Her research focuses on innovative education and emerging technologies, with expertise in critical digital literacies, promising practices for online and hyflex teaching and learning and making as a pedagogical approach for inclusive education. Her current research is investigating AI literacy and ethics in education. Dr. Morrison is a prolific scholar who has published extensively and presented her research at over 30 national and international conferences, and she is co-editor of the Journal of Digital Life and Learning.

Key Publications:

- Morrison, L., Hughes, J., & Craig, C. (2024). Evaluating A.I. tools for use in education: A rubric for teachers and students. Proceedings of AI in Education Conference, 2024. https://ecampusontario.pressbooks.pub/artificialintelligenceineducationconference/

- Hughes, J., & Morrison, L. (2024). A brave new world: The perils of A.I. image generators for women. Proceedings of AI in Education Conference, 2024. https://ecampusontario.pressbooks.pub/artificialintelligenceineducationconference/

- Morrison, L., Hughes, J., & Craig, C. (Accepted). A.I. in education: An ethical framework and rubric in action. The South East Asian Conference on Education 2025, Kuala Lumpur.

- Butler-Ulrich, T., Hughes, J., & Morrison, L. (Accepted). The impact of generative AI on student creativity and well-being. ITAR Conference November 2024, Costa Rica.

- Morrison, L., Hughes, J., & Craig, C. (Submitted). A.I. in education: An ethical framework and rubric in action. International Journal of Artificial Intelligence in Education.

Li Yang

Assistant Professor, Faculty of Business and IT

Li Yang is an Assistant Professor in the Faculty of Business and Information Technology at Ontario Tech University. He received his Ph.D. in Electrical and Computer Engineering from Western University in 2022. He was the vice chair of the IEEE Computer Society, London Section, Canada, from 2022 to 2023. He was also on the technical program committee for

IEEE GlobeCom 2023 and 2024, the workshop chair for SMC-IoT 2023, and the technical session chair for IEEE CCECE 2020. His papers and code publications related to AI have received more than three thousand citations and GitHub stars. Li Yang's research focuses on applying AI and machine learning to cybersecurity, with a particular emphasis on intrusion detection and anomaly detection in 5G/6G networks and IoT systems. This involves the development of optimized and Automated ML (AutoML), concept drift adaptation, online learning, and continual learning techniques to enhance cybersecurity measures. Additionally, his work extends to the realms of trustworthy AI and AI security, specifically addressing adversarial machine learning attacks and defense strategies. Li Yang is also included in Stanford University/Elsevier's List of the World's Top 2% Scientists. He was ranked among the world's Top 0.5% of researchers in 'Networking & Telecommunications' in 2024, and 52nd in Canada.

Key Publications:

- L. Yang and A. Shami, “On hyperparameter optimization of machine learning algorithms: Theory and practice,” Neurocomputing, vol. 415, pp. 295–316, 2020, doi: 10.1016/j.neucom.2020.07.061.

- L. Yang, A. Moubayed, I. Hamieh, and A. Shami, “Tree-Based Intelligent Intrusion Detection System in Internet of Vehicles,” in 2019 IEEE Global Communications Conference (GLOBECOM), 2019, pp. 1–6. doi: 10.1109/GLOBECOM38437.2019.9013892.

- L. Yang and A. Shami, “A Lightweight Concept Drift Detection and Adaptation Framework for IoT Data Streams,” IEEE Internet of Things Magazine, vol. 4, no. 2, pp. 96–101, 2021, doi: 10.1109/IOTM.0001.2100012.

- L. Yang and A. Shami, “A Transfer Learning and Optimized CNN Based Intrusion Detection System for Internet of Vehicles,” in 2022 IEEE International Conference on Communications (ICC), 2022, pp. 1–6. doi: 10.1109/ICC45855.2022.9838780.

- L. Yang and A. Shami, “IoT Data Analytics in Dynamic Environments: From An Automated Machine Learning Perspective,” Engineering Applications of Artificial Intelligence, vol. 116, pp. 1–33, 2022, doi: 10.1016/j.engappai.2022.105366.

Mariana Shimabukuro

Associate Teaching Professor, Computer Science, Faculty of Science

Mariana Shimabukuro (she/her) is an Associate Teaching Professor in the Faculty of Science and a Ph.D. candidate at Ontario Tech University; her current research is related to creating

learner-centred foreign language learning applications leveraging generative AI, NLP, and other data-driven resources. She has been supervised by Dr. Christopher Collins since 2015 when she started her M.Sc. degree (2017). Her research interests include language learning, data visualization, HCI, recommendation systems, robotics and education.

Key Publications:

- Panchal, D., Collins, C., & Shimabukuro, M. (2024, October). LingoComics: Co-Authoring Comic Style AI-Empowered Stories for Language Learning Immersion with Story Designer. In Adjunct Proceedings of the 37th Annual ACM Symposium on User Interface Software and Technology (pp. 1-3).

- Leung, B., Shimabukuro, M., & Collins, C. (2024, October). NeuroSight: Combining Eye-Tracking and Brain-Computer Interfaces for Context-Aware Hand-Free Camera Interaction. In Adjunct Proceedings of the 37th Annual ACM Symposium on User Interface Software and Technology (pp. 1-3).

Matthew Shane

Associate Professor, Psychology, Faculty of Social Science and Humanities

I am an Associate Professor of Psychology and Director of the Clinical Affective Neuroscience Laboratory at Ontario Tech University, where I have held a tenure-track position since January 2013. Prior to that, I held a non-tenure track Research Associate position at The Mind Research Network in Albuquerque, New Mexico, where I undertook cutting-edge psychologically and neuroscience-based research focused on socioemotional processing in healthy and offender populations.

Across both institutions, I have established and maintained several strong programs of research, utilizing both psychological and neuroscientific methods, dedicated to the study of emotional and cognitive processing in healthy and antisocial populations. Main areas of interest include the detrimental consequences of an avoidant coping style, and the emotional deficits seen within individuals with heightened psychopathic traits.

To support this work, I have received over five million dollars in competitive research funding, including funding for several large-scale NIH- (1 RO1; 3 R21s) and tri-council-(2 SSHRC IDG; 1 NSERC Discovery Grant) sponsored projects. I currently hold a SSHRC IDG and an an NSERC Discovery Grant, and was primary applicant on a successful CFI-JELF awarded in the spring of 2023.

In total, these projects has led to 31 peer-reviewed publications in high-tier academic journals, 2 book chapters, several preprints, and over 80 conference abstracts/presentations.

This work has been fortunate enough to have received considerable attention from both academic colleagues (amassing a total of 3022 academic citations) and the popular media (e.g. the New York Times, the Discovery Channel). Moving forward, I plan to increasingly incorporate AI into the research workflow, to facilitate the research process, and to further elucidate the neural features underlying healthy and problematic emotional processing.

Key Publication:

- Shane MS, Denomme WJ. Machine learning approaches for parsing comorbidity/heterogeneity in antisociality and substance use disorders: A primer. Personality Neuroscience. 2021;4:e6. doi:10.1017/pen.2021.2

Meaghan Charest-Finn

Assistant Professor, Automotive and Mechatronics Engineering,
Faculty of Engineering and Applied Science.

Dr. Meaghan Charest-Finn is an assistant professor in the Faculty of Engineering and Applied Science Department of Automotive and Mechatronics Engineering at Ontario Tech University. She teaches Industrial Automation, Machine learning, and Artificial Intelligence, among other courses. Her research focuses on developing advanced automation methods to control complex systems effectively. She has worked on integrating Model Predictive Controls and Machine learning schemes into the modelling and control of real-world systems.

Key Publications:

- M. Charest-Finn and R. Dubay, “General Industrial Process Optimization Method to Leverage Machine Learning Applied to Injection Moulding”, Expert Systems, e13769, Oct. 2024, doi: 10.1111/exsy.13769

- S. Mohsini, D. Landori-Hoffmann, A. K. Komarsofla, M. Charest-Finn and R. Dubay, “ Control of a Self Balancing Bicycle Robot using PID control tuned with linear Regression”, the Canadian Society for Mechanical Engineering International Congress (CSME), Toronto, Canada, May 2024

- A. K.Komarsofla, M. Charest-Finn, S. Nokleby. (2023). Autonomous Inspection of Steel Pipe Weld Lines Implementing Frequency Analysis Combined with YOLOv5. CSME-2023. Canadian Society Mechanical Engineering (CSME), Sherbrook, Canada, 2023

- M. Charest, R. Finn, and R. Dubay, “Integration of artificial intelligence in an injection molding process for on-line process parameter adjustment,” in 2018 Annual IEEE International Systems Conference (SysCon), Apr. 2018, pp. 1–6.

Michael Bliemel

Professor of Information Systems, Faculty of Business and IT

Dr. Bliemel has had diverse interdisciplinary research experience around the impacts of new technologies, data literacy, business analytics, e-health, problem gambling, gamification in education, information systems, e-commerce, NeuroIS and human computer interaction. His current interests are in the strategic management of information technology, the innovation and adoption of emerging technology in business. He explores these topics at different levels, ranging from firm performance to task performance and individual usability perspectives.

Dr. Bliemel has been recognized with several awards for university teaching and for academic leadership. He works closely with leading companies and industry organizations to build connections between academia, business and government around the topics of analytics, digital literacy and digital transformation. Dr. Bliemel has also taught professors and professionals analytics and has coached several winning student teams in local, provincial and global analytics competitions.

Key Publications:

- V. Pandeliev, A. A. Namanloo, K. Lyons, M. Bliemel and H. Ali-Hassan, "A Serious Game for Teaching Data Literacy," 2022 IEEE Games, Entertainment, Media Conference (GEM), St. Michael, Barbados, 2022, pp. 1-6, doi: 10.1109/GEM56474.2022.10017613.

- Pierre-Majorique Léger, Jean-François Plante, Jean-François Michon, Forough Karimi-Alaghehband, Michael Bliemel, and Marc Fredette, “EDGE: A Simulation Game to Change How We Teach and Learn Analytics”, Prototype at 2018 Pre-ICIS SIGDSA Symposium, San Francisco, December 13th, 2018

- Alex McLeod Jr., Michael Bliemel, and Nancy Jones, “Examining the Adoption of Big Data and Analytics Curriculum”, Business Process Management Journal, Vol. 23 Issue: 3, 2017, pp. 506-517

- SHRC Knowledge Synthesis Report with Mike Smit, Hossam Ali-Hassan, Michael Bliemel, Dean Irvine, Daniel Kelley, Stan Matwin, and Brad Wuetherick, “Strategies and Best Practices for Data Literacy Education”, 2015

- Michael Bliemel and Kristof Schneider, “Introduction to next generation Business Intelligence with Automated Analytics Mode in SAP Predictive Analytics”, in Business Intelligence SAP University Alliances Faculty Community, April 2015

Michael Miljanovic

Assistant Teaching Professor, Faculty of Science

Dr. Michael Miljanovic is the Software Education Lead of the Software Engineering & Education Research (SEER) Lab at Ontario Tech University. His thesis focused on the application of machine learning to educational programming games for computer science, and was part of the SEER Lab's Serious Games for Computer Science Project. His research interests include pedagogical techniques, serious games, and adaptive learning tools.

Key Publications:

- Miljanovic, Michael A., and Jeremy S. Bradbury. "Engineering Adaptive Serious Games Using Machine Learning." Software Engineering for Games in Serious Contexts: Theories, Methods, Tools, and Experiences. Cham: Springer Nature Switzerland, 2023. 117-134.

- Miljanovic, Michael A. Adaptive serious games for computer science education. Diss. University of Ontario Institute of Technology, 2020.

- Miljanovic, Michael A., and Jeremy S. Bradbury. "GidgetML: An adaptive serious game for enhancing first year programming labs." Proceedings of the ACM/IEEE 42nd International Conference on Software Engineering: Software Engineering Education and Training. 2020.

- Miljanovic, Michael Alexander. "Enhancing computer science education with adaptive serious games." Proceedings of the 2019 ACM Conference on International Computing Education Research. 2019.

- Miljanovic, Michael A., and Jeremy S. Bradbury. "Making serious programming games adaptive." Joint International Conference on Serious Games. Cham: Springer International Publishing, 2018.

Miguel Vargas Martin

Professor, Faculty of Business and IT

Dr. Miguel Vargas Martin is Professor in Computer Science at Ontario Tech University. PhD (Computer Science) from Carleton University, Master's degree (Electrical Engineering) from CINVESTAV del IPN, and Bachelor of Science (Computer Science) from UAA. Licenced Professional Engineer in the Province of Ontario. His research area include AI-assisted computer and systems security, natural language processing, companion robots.

Key Publications:

- Reyes-Acosta, R., Dominguez-Baez, C., Mendoza-Gonzalez, R., & Vargas Martin, M. (2024). Analysis of machine learning-based approaches for securing the Internet of Things in the Smart Industry: A state of knowledge review. International Journal of Information Security. To appear.

- Nimmagadda, R., Arora, K., & Vargas Martin, M. (2022). Emotion recognition models for companion robots. The Journal of Supercomputing, 1–18.

- Maraj, A., Vargas Martin, M., & Makrehchi, M. (2024). Words that stick: Using keyword cohesion to improve text segmentation. In Conference on computational natural language learning (CoNLL 2024), Miami, USA: Association for Computational Linguistics.

- Mithila, M., Yu, F., Vargas Martin, M., & Wang, S. (2024). Visualizing differential privacy: Assessing infographics' impact on layperson data-sharing decisions and comprehension. In Conference on Privacy, Security, and Trust (PST). IEEE.

- Maraj, A., Vargas Martin, M., & Makrehchi, M. (2024). Coherence graphs: Bridging the gap in text segmentation with unsupervised learning. In Conference on natural language & information systems (NLDB), Turin, Italy: Springer.

Min Dong

Professor, Electrical, Computer and Software Engineering,
Faculty of Engineering and Applied Science

Min Dong received a Ph.D. degree in Electrical and Computer Engineering with a minor in Applied Mathematics from Cornell University, Ithaca, New York, in 2004 and a B.Eng. degree from Tsinghua University, Beijing, China, in 1998. From 2004 to 2008, she was with Corporate Research & Development at Qualcomm Research, Qualcomm Inc., San Diego, CA. Since 2008,

she has been with the Faculty of Engineering and Applied Science at Ontario Tech University, where she is currently a Professor in the Department of Electrical, Computer and Software Engineering. She served as the Associate Dean (Academic) of the Faculty of Engineering and Applied Science from January 2017 to June 2017 (interim) and during 2021 and 2022. She also holds a status-only Professor appointment in the Department of Electrical and Computer Engineering at the University of Toronto.

Prof. Dong is an IEEE Fellow. She received the Early Researcher Award from the Ontario Ministry of Research and Innovation in 2012, the Best Paper Award at IEEE ICCC 2012, and the 2004 Best Paper Award from the IEEE Signal Processing Society (Transactions). She is also a co-author of The Best Student Paper at IEEE SPAWC 2021 and the Best Student Paper of Signal Processing for Communications and Networks at IEEE ICASSP 2016. She is a recipient of the NSERC Discovery Accelerator Supplement (DAS award) in 2019.

Key Publications:

- J. Wang, B. Liang, M. Dong, G. Boudreau, and H. Abou-Zeid, “Joint online optimization of model training and analog aggregation for wireless edge learning,” IEEE/ACM Transactions on Networking, vol. 32, pp. 1212-1228, April 2024

- F. Moradi Kalarde, M. Dong, B. Liang, Y. Ahmed, H.T. Cheng, "Beamforming and device selection design in federated learning with over-the-air aggregation," IEEE Open Journal of the Communications Society, vol. 5, pp. 1710-1723, March 2024.

- C. Zhang, M. Dong, B. Liang, A. Afana, Y. Ahmed, “Multi-model wireless federated learning with downlink beamforming,” in Proc. of IEEE International Conference on Acoustics Speech and Signal Processing (ICASSP), April 2024

- C. Zhang, M. Dong, B. Liang, A. Afana, and Y. Ahmed, “Joint downlink-uplink beamforming for wireless multi-antenna federated learning,” in the 21st International Symposium on Modeling and Optimization in Mobile, Ad Hoc and Wireless Networks (WiOpt), August 2023.

- S. Kiani, M. Dong, S. ShahbazPanahi, G. Boudreau, and M. Bavand, "Learning-based user clustering in NOMA-aided MIMO networks with spatially correlated channels," IEEE Transactions on Communications, vol. 70, no. 7, pp. 4807-4821, July 2022.

Pariss Garramone

Associate Teaching Professor and Undergraduate Program Director of Liberal Studies, Faculty of Social Science and Humanities

Dr. Pariss Garramone, PhD, is an Associate Professor of Teaching and the Undergraduate Program Director of Liberal Studies at Ontario Tech University. Dr. Garramone is an active board member of the Oshawa Culture Leadership Council and has helped to facilitate approaches for land-based slow pedagogy for teaching and learning about local heritage and digital archival research for students. Currently, her research focuses on assessing the implementation of scaffolded AI literacy for composition classes and equity-focused community building for online learning.

Key Publication:

- King, A. & Garramone, P. (forthcoming, December 2024). Teaching writing in the time of ChatGPT: Rethinking what counts as learning. Artificial Intelligence, Assessments and Academic Integrity. Springer Publishing.

Patrick Hung

Professor, Faculty of Business and IT

Patrick C. K. Hung is a Professor at Ontario Tech University, Faculty of Business and Information Technology. He is a Leverhulme Visiting Professor at Aston University, England, and an Honorable Guest Professor at Shizuoka University, Hamamatsu, Japan. He was also a Distinguished Visiting Fellow at Abertay University, Scotland, and a Visiting Researcher at the University of São Paulo, Brazil. Dr. Hung worked with Boeing Research and Technology in Seattle on aviation services-related research with two U.S. patents on the mobile network dynamic workflow system. Before that, he was a Research Scientist with Australia's Commonwealth Scientific and Industrial Research Organization. He is a founding member of the IEEE Technical Committee on Services Computing and IEEE Transactions on Services Computing. In addition, he is an editorial board member for the IEEE Transactions on Engineering Management and a coordinating editor of the Information Systems Frontiers.

Key Publications:

- Bonfim Pita, M. A., Fantinato, M., and Hung, P. C. K. (2025). SeniorMedManagement: Assistive Solution to Help Older Adults Manage Treatment Using Social Robots and Virtual Assistants, The 58th Hawaii International Conference on System Sciences (HICSS-58), Big Island, Hawaii, United States of America, 10 Pages.

- Tashiro, J. S. and Hung, P. C. K. (2024). Complexities of Using Large Language Model Generative AI in Health Education and Robots, The 17th International Conference on Blended Learning, Macao SAR, China, Springer's Lecture Notes in Computer Science Series, Page(s): 77-89.

- Liu, Y.-H., Hung, P. C. K., Iqbal, F., and Fung, B. C. M. (2021). Automatic Fall Risk Detection Based on Imbalanced Data, IEEE ACCESS, Vol. 9, Page(s): 163594-163611.

Peter Lewis

Associate Professor & Canada Research Chair, Faculty of Business and IT

Dr. Peter Lewis holds a Canada Research Chair in Trustworthy Artificial Intelligence (AI), at Ontario Tech University, Canada, where he is an Associate Professor and Director of the Trustworthy AI Lab. Peter's research advances both foundational and applied aspects of AI and draws on extensive experience applying AI commercially and in the non-profit sector. He is interested in where AI meets society, and how to help that relationship work well. His current research is concerned with challenges of trust, bias, and accessibility in AI, as well as how to create more socially intelligent AI systems, such that they work well as part of society, explicitly taking into account human factors such as norms, values, social action, and trust.

He is Associate Editor of IEEE Transactions on Technology & Society, IEEE Technology & Society Magazine (TSM) and ACM Transactions on Autonomous and Adaptive Systems (TAAS), a board member of the International Society for Artificial Life (ISAL) with responsibility for Social Impact, and Co-Chair of the Steering Committee for the IEEE International Conference on Autonomic and Self-organizing Systems (ACSOS). He has published over 100 papers in academic journals and conference proceedings, as well as the foundational book Self-aware Computing Systems: An Engineering Approach, in 2016. He has a PhD in Computer Science from the University of Birmingham, UK.

Key Publications:

- Peter R. Lewis and Stefan Sarkadi. Reflective Artificial Intelligence. Minds and Machines, 34:1–30, 2024.

- Peter R. Lewis and Stephen Marsh. What is it like to trust a rock? A functionalist perspective on trust and trustworthiness in Artificial Intelligence. Cognitive Systems Research, 72:33–49, 2022.

- Chloe M. Barnes, Abida Ghouri, and Peter R. Lewis. Explaining evolutionary agent-based models via principled simplification. Artificial Life, 27(3), 2021.

- Simon T. Powers, Anikó Ekárt, and Peter R. Lewis. Modelling enduring institutions: The complementarity of evolutionary and agent-based approaches. Cognitive Systems Research, 52:67–81, 2018.

- Peter R. Lewis, Arjun Chandra, Funmilade Faniyi, Kyrre Glette, Tao Chen, Rami Bahsoon, Jim Torresen, and Xin Yao. Architectural aspects of self-aware and self-expressive computing systems. IEEE Computer, 48:62–70, 2015.

Pierre Côté

Professor & Director, Institute for Disability and Rehabilitation Research, Faculty of Health Sciences

Dr. Côté is a professor and epidemiologist in the Faculty of Health Sciences at Ontario Tech University. He holds the Hann-Kelly Family Chair in Disability and Rehabilitation Research and the Ontario Tech University Research Excellence Chair in Musculoskeletal Rehabilitation. He held the Canada Research Chair in Disability Prevention and Rehabilitation from 2013-2023. His clinical training was in the field of chiropractic, he completed his Master of Science degree in Surgery from the University of Saskatchewan and his PhD in Epidemiology from the University of Toronto. Dr. Côté is the Director of the Institute for Disability Prevention and Rehabilitation (IDRR) at Ontario Tech University, Director of the World Health Organization (WHO) Collaborating Center on Rehabilitation and Musculoskeletal Health and Chair of the IDRR unit of the Cochrane Collaboration Thematic Group – Functioning, Disability and Rehabilitation. Côté is also appointed as a Professor of Epidemiology at the Dalla Lana School of Public Health, University of Toronto; Adjunct Professor of Disability Prevention at Southern Denmark University; and as Honorary Professor, School of Physiotherapy, MGM Institute of Health Sciences, Navi Mumbai, India. His current research focuses on understanding “who” could benefit from rehabilitation and “what” rehabilitation interventions are effective for individuals with musculoskeletal conditions. Professor Côté has published more than 400 scientific papers in peer-reviewed journals.

Pooria Madani

Assistant Professor, Faculty of Business and IT

Dr. Pooria Madani is an Assistant Professor at Ontario Tech University, with research in adversarial machine learning and cybersecurity funded by prominent agencies, including NSERC and NCC. His work sits at the intersection of machine learning and cybersecurity, focusing on emerging threats in connected and automated vehicles, IoT, and aerospace

systems. Dr. Madani collaborates with industry partners on projects such as securing satellite communication networks and enhancing IoT cybersecurity to strengthen defenses against evolving cyber threats. He holds a Ph.D. in Computer Science from York University (2021), an M.Sc. in Computer Science from the University of New Brunswick (2015), and a B.Sc. (Honours) in Computer Science from the University of Prince Edward Island (2012).

Key Publications:

- Bakos, Steve, Pooria Madani, and Heidar Davoudi. "Noise as a Double-Edged Sword: Reinforcement Learning Exploits Randomized Defenses in Neural Networks." arXiv preprint arXiv:2410.23870 (2024).

- Setak, Mohammad, and Pooria Madani. "Fine-Tuning LLMs for Code Mutation: A New Era of Cyber Threats." arXiv preprint arXiv:2410.22293 (2024).

- Madani, Pooria. "Metamorphic malware evolution: The potential and peril of large language models." 2023 5th IEEE International Conference on Trust, Privacy and Security in Intelligent Systems and Applications (TPS-ISA). IEEE, 2023.

- Madani, Pooria, Natalija Vlajic, and Ivo Maljevic. "Randomized moving target approach for MAC-layer spoofing detection and prevention in IoT systems." Digital Threats: Research and Practice 3.4 (2022): 1-24.

- Madani, Pooria, and Natalija Vlajic. "Robustness of deep autoencoder in intrusion detection under adversarial contamination." Proceedings of the 5th Annual Symposium and Bootcamp on Hot Topics in the Science of Security. 2018.

Qusay Mahmoud

Professor of Software Engineering, Faculty of Engineering and Applied Science

My current research centers on (1) developing middleware for intelligent software systems, aimed at creating a secure, adaptable, and responsive layer that can support the demands of complex systems. As software systems continue to proliferate—ranging from smart cities and healthcare devices to industrial automation—these systems require middleware that can manage vast, heterogeneous data streams in real time, applying intelligent filtering, processing, and decision-making to ensure both functionality and security. My work leverages artificial intelligence within middleware architecture to address unique challenges, such as scalability, data integrity, privacy, and resilience to cyber-attacks; and (2) integrating AI into engineering education, exploring ways in which AI can support student learning and promote critical thinking in technical fields.

Key Publications:

- P Sarzaeim, QH Mahmoud, A Azim, A Framework for LLM-Assisted Smart Policing System, IEEE Access, 2024

- P Sarzaeim, QH Mahmoud, A Azim, Experimental Analysis of Large Language Models in Crime Classification and Prediction, Proceedings of the Canadian Conference on Artificial Intelligence, 2024.V Gharavian, et al.,

- Intrusion Detection for Wireless Sensor Network Using Graph Neural Networks, 2023 IEEE Symposium Series on Computational Intelligence (SSCI), 807-813

- A Avan, F Kheiri, QH Mahmoud, A Azim, M Makrehchi, S Rahnamayan, A Task Scheduler for Mobile Edge Computing Using Priority-based Reinforcement Learning, 2023 IEEE Symposium Series on Computational Intelligence (SSCI), 539-546

- M Lescisin, QH Mahmoud, Design and Development of Policy Enforcement for the Privacy by Design Framework, 2023 20th ACS/IEEE International Conference on Computer Systems and Applications (AICCSA)

  And I maintain this blog: https://DrQWrites.com

Rajen Akalu

Associate Professor, Faculty of Business and IT

Rajen Akalu is an associate professor in the Faculty of Business and IT at Ontario Technology University in Oshawa. He is also the founder of the Akalu Law Professional Corporation www.akalulaw.com. His law firm provides legal services to individual and corporate clients on issues relating to information governance, privacy compliance, security policy, and starting a business. His research interests law firm practice areas relate to privacy law and artificial intelligence.

Key Publications:

- Curzon, J., Kosa, T. A., Akalu, R., & El-Khatib, K. (2021). Privacy and artificial intelligence. IEEE Transactions on Artificial Intelligence, 2(2), 96-108.

- Akalu, R. (2023). The Academic Vampire. Independently Published (Amazon) [Has a chapter on AI]

Robin Kay

Professor, Faculty of Education

Dr. Robin Kay is a Full Professor in the Faculty of Education at Ontario Tech University in Oshawa, Canada. Dr. Kay received his MA in Computer Applications in Education at the University of Toronto and his Ph.D. in Cognitive Science (Educational Psychology) at the University of Toronto. He has published over 200 articles, chapters, and conference papers in the area of pedagogy, education, and technology and has taught in the fields of computer science, mathematics, and educational technology for over 30 years at the high school, college, undergraduate and graduate level.

Current projects include research on AI in education, e-learning tools, online and blended learning in secondary and higher education, video podcasts, scale development, emotions and the use of computers, and factors that influence how students learn with technology

Robyn Ruttenberg-Rozen

Assistant Professor, Faculty of Education

Dr. Robyn Ruttenberg-Rozen is an inclusion scholar. Through her work she seeks to understand how historically marginalized STEM learners, leverage their agency and powers to learn, innovate, and make positive social change in the world. As an interdisciplinary scholar, she draws from the fields of disability, science and technology studies, mathematics education, inclusion, and gender studies. Since beginning her current role, Robyn has published 30 publications and has received over 1 million dollars of funding, including a prestigious NFRF grant as Nominated Principal Investigator. For this grant, Robyn is leading a team of interdisciplinary scholars from Canada the US and South Africa. In 2023 Robyn received a fully funded scholar in residence to Durban University of technology where she helped build research capacity in South African TVET colleges. Community is always at the center of Robyn's work, and aside from her international work, locally she has helped develop programming for the Ontario Science Centre, co-organized stakeholder events with Future Black Female, co-led workshops on belonging for Canadian mathematicians and educators, given numerous invited talks including on the future of AI in education at the Enoch Turner School house, and was invited to a give a presentation to the Special Committee on Social Policy about mathematics education at the Legislative Assembly of Ontario. Robyn is passionate about teaching and mentoring. In 2020 she received the Ontario Tech 2020 Early Career Teaching Award and in 2022 she received the Tim McTiernan Mentorship Award. In 2023 she was the faculty nominee for the Teaching Excellence Award. In 2024 Robyn received the Ontario Tech Excellence in Research Award in the category of Emerging Scholar.

Salma Karray

Professor and Research Excellence Chair, Faculty of Business and IT

Dr. Salma Karray is the Research Excellence Chair in Marketing Analytics and Decision Models and Professor at the Faculty of Business and Information Technology. She uses optimization, data analytics, and AI techniques to help businesses improve their performance and strive to be competitive. Applications of her work include digital advertising, pricing, retailing, loyalty program management, CRM, and e-commerce.

Dr. Karray works with students and colleagues at Ontario Tech in the Business Analytics and AI lab, the Modeling and Computational Science program (C.L.A.I.M lab), and the Computer Science program at the Faculty of Science. She has also collaborated with students at the University of Waterloo and Toronto Metropolitan University, where she holds adjunct positions.

Key Publications:

- Maarfavi N and Karray, S. (2024). Predicting user engagement toward movie trailers using applications of AI tools. AIMS conference, June 2024.

- Machado, M. and Karray, S. (2022). Assessing credit risk of commercial customers using hybrid machine learning algorithms. Expert Systems with Applications. 200: 116889.

- Machado, M. and Karray, S. (2022). Applying hybrid machine learning algorithms to assess customer risk-adjusted revenue in the financial industry. Electronic Commerce Research and Applications. 56: 101202.

- Marcos, M. and Karray, S. (2022). Integrating Customer Portfolio Theory and the Multiple Sources of Risk-Approaches to Model Risk-Adjusted Revenue. 18th IFAC Workshop on Control Applications of Optimization CAO 2022, France.

- Machado, M., Karray, S. and de Souza, I T. (2019). LightGBM: an Effective Decision Tree Gradient Boosting Method to Predict Customer Loyalty in the Finance Industry. IEEE ICCSE 2019 conference proceeding. IEEE ICCSE 2019, Toronto, Canada.

Sanaa Alwidian

Assistant Professor of Software Engineering, Faculty of Engineering and Applied Science

Dr. Sanaa Alwidian is an assistant professor of software engineering at the Department of Electrical, Computer, and Software Engineering at Ontario Tech University, and the director of the Requirements and Software Engineering Advanced Research (ReSEARch) Lab. Her research focus is on requirements engineering (RE), human-centric software engineering, and AI-enabled solutions for requirements and software engineering. Her background in applying AI and machine learning-enabled solutions to complex software problems ensures the integration of advanced, scalable techniques that enhance the system's resilience to evolving requirements and constraints. By focusing on both technical and human-centric requirements, Dr. Alwidian contributes meaningfully to the development of reliable, efficient and high-performance systems. Her work has been published in top peer-reviewed journals and conferences.

Prior to joining Ontario Tech, Dr. Alwidian worked as a Postdoctoral Research Fellow with the GEODES Software Engineering Research Lab at the Université de Montréal. She conducted research on the intersection of AI and Software Engineering, where she investigated research opportunities about the application of Model Driven Software Engineering abstractions, methodologies, and technologies to the AI embedded systems. To achieve this, she collaborated with the National Bank of Canada (NBC) on a project titled "Performance Management of AI Initiatives". The purpose of this project was to monitor the performance of the deployment of AI initiatives in the NBC's business processes in order to monitor the quality of decision-making processes and to achieve an optimal allocation of resources. From 2015 to 2020, she worked as research and a teaching assistant at the University of Ottawa, and as a researcher at the CyberJustice lab, where she contributed to the development of a framework to model and analyze sensitive data in jurisdiction systems in Canada, where most of these systems deployed AI systems. Dr. Alwidian has considerable teaching experience in several academic institutions across three countries. Sanaa holds a Ph.D. degree in Computer Science from the University of Ottawa, and she was the recipient of the prestigious Ontario Trillium Scholarship (OTS), awarded to the best international doctoral students from around the world (with a first-class average and excellent academic record). She has also received the International Ontario Graduate Scholarship (OGS), the University of Ottawa Excellence Scholarship, the International Doctoral Scholarship, the BMO Financial Group Scholarship, and the Scientific Research Scholarship/ Jordan.

Key Publications:

- Siddeshwar, V., Alwidian, S. and Makrehchi, M., 2024. A Systematic Review of AI-Enabled Frameworks in Requirements Elicitation. IEEE Access.

- Siddeshwar, V., Alwidian, S. and Makrehchi, M., 2024, September. A Comparative Study of Large Language Models for Goal Model Extraction. In Proceedings of the

ACM/IEEE 27th International Conference on Model Driven Engineering Languages and Systems (pp. 253-263).

- Siddeshwar, V., Alwidian, S. and Makrehchi, M., 2024, September. Goal Model Extraction from User Stories Using Large Language Models. In International Conference on the Quality of Information and Communications Technology (pp. 269-276). Cham: Springer Nature Switzerland.

- Zhao, W., Mahmoud, Q.H. and Alwidian, S., 2023. Evaluation of GAN-based model for adversarial training. Sensors, 23(5), p.2697.

- Zhao, W., Alwidian, S.A. and Mahmoud, Q.H., 2023, February. Evaluation of GAN Architectures for Adversarial Robustness of Convolution Classifier. In SafeAI@ AAAI.

Shahram S. Heydari

Professor, Faculty of Business and Information Technology

Shahram S. Heydari is a Professor with the Faculty of Business and Information Technology, University of Ontario Institute of Technology (Ontario Tech), Canada; and the Co-Director of Ontario Tech Advanced Networking Technology and Security Research Laboratory. Prior to joining Ontario Tech, he was a System Designer and a member of Scientific Staff with Nortel Networks, where he worked on element management in ultrahigh speed IP/MPLS routers, performance modeling of automatically switched optical networks (ASON), and proprietary voice-over-IP transport control protocols. His main research interests include network design and planning, software-defined networking, applications of artificial intelligence (AI) in network management, and network quality of experience (QoE). He received the B.Sc. and M.Sc. degrees in electronic engineering from Sharif University of Technology, Iran, the M.A.Sc. degree from Concordia University, Montreal, and the Ph.D. degree from the University of Ottawa, Canada.

Key Publications:

- Sabeel, Ulya, Shahram Shah Heydari, Khalil El-Khatib, and Khalid Elgazzar. "Unknown, Atypical and Polymorphic Network Intrusion Detection: A Systematic Survey." IEEE Transactions on Network and Service Management (2023).

- U. Sabeel, S. S. Heydari, H. Mohanka, Y. Bendhaou, K. Elgazzar and K. El-Khatib, "Evaluation of Deep Learning in Detecting Unknown Network Attacks," 2019 International Conference on Smart Applications, Communications and Networking (SmartNets), Sharm El Sheikh, Egypt, 2019.

- Chauhan, Ravi, and Shahram Shah Heydari. "Polymorphic Adversarial DDoS attack on IDS using GAN." 2020 International Symposium on Networks, Computers and Communications (ISNCC). IEEE, 2020.

- Hassan, Ali, and Shahram Shah Heydari. "Enterprise Application Outage Prediction Using XGBoost and LSTM." 2023 19th International Conference on Network and Service Management (CNSM). IEEE, 2023.

- Sabeel, U., Heydari, S.S., El-Khatib, K. and Elgazzar, K., 2024. Incremental Adversarial Learning for Polymorphic Attack Detection. IEEE Transactions on Machine Learning in Communications and Networking.

Stephen (Steve) Marsh

Professor, Faculty of Business and IT

Steve is a computational philosopher who thinks, writes and talks about social norms in sociotechnical environments. These include trust, distrust, untrust, forgiveness, wisdom, hope, and grace. He has published and presented about all of these topics. His seminal PhD thesis at the University of Stirling in Scotland introduced the concept of computational trust in 1994. He has been at Ontario Tech in the Faculty of Business and IT since 2012, prior to which he was a Research Scientist at the Communications Research Centre (Government of Canada) and before that a Research Officer at the National Research Council of Canada. He lives in Ontario with his family and other animals.

Key Publications:

- Lewis, P.R. & Marsh S., 2022. What is it like to trust a rock? A functionalist perspective on trust and trustworthiness in Artificial Intelligence. Cognitive Systems Research 72, 33-49. https://doi.org/10.1016/j.cogsys.2021.11.001

- Marsh, S., Atele-Williams, T., Basu, A., Dwyer, N., Lewis, P.R., Miller-Bakewell, H., Pitt, J., 2020. Thinking about Trust: People, Process, and Place. Patterns 1(3). https://doi.org/10.1016/j.patter.2020.100039

- Marsh, S., Briggs, P., El-Khatib, K., Esfandiari, B., Stewart, J., 2011. Defining and Investigating Device Comfort. Journal of Information Processing, June 2011. Information Processing Society of Japan. 19:231-252. http://www.jstage.jst.go.jp/article/ipsjjip/19/0/19_231/_article

- Marsh, S. and Briggs, P., 2009. Examining Trust, Regret and Forgiveness as Computational Concepts. Chapter 2 of Golbeck, J., Computing with Social Trust, Springer.

- Marsh, S., 2021. Trust Systems. Ecampus Ontario Open Educational Resource Textbook. https://ecampusontario.pressbooks.pub/trustsystems/

Stephen Jackson

Associate Professor, Faculty of Business and IT

I am an Associate Professor in Management Information Systems at Ontario Tech University, Faculty of Business and Information Technology. I have taught at various universities in the UK, including the University of London (Royal Holloway), and the University of Southampton. Before joining academia, I worked as an IT consultant for PricewaterhouseCoopers and was involved in various IT projects across different industry sectors in Europe and Asia. My research focuses on the social, behavioral, and cultural aspects of implementing and managing AI-based systems in organizations. I have published in international journals, including Information and Organization, Journal of the Association for Information Science and Technology, Computers in Human Behavior, Information Systems Frontiers, Studies in Higher Education, Behaviour and Information Technology, International Journal of Information Management, British Journal of Educational Technology, among others.

Key Publications:

- Jackson, S., & Panteli, N. (2024). AI-based digital assistants in the workplace: An idiomatic analysis. Communications of the Association for Information Systems, 55, pp-pp. Retrieved from https://aisel.aisnet.org/cais/vol55/iss1/22.

- Jackson, S. (2024). Understanding trust in workplace AI: A multi-stakeholder lens. Proceedings of the 30th Americas Conference on Information Systems, Salt Lake City, Utah, USA.

- Jackson, S. (2024). The Janus-faced nature of educational AI. The 8th International Conference on Advances in Artificial Intelligence, London, England.

- Jackson S., & Panteli, N. (2023). Trust or mistrust in algorithmic grading? An embedded agency perspective. International Journal of Information Management, 69, 1-12.

Steven Livingstone

Associate Professor, Computer Science, Faculty of Science

I am an Associate Professor in the Computer Science Group, Faculty of Science, at Ontario Tech University, where I lead the Affective Data Science Lab (ADSL). My research focuses on emotion; how we express it through facial expressions, vocal patterns, and physical changes, and what happens in our bodies and brains when we experience emotion. My work combines experimental methods and quantitative modeling to generate new insights into emotion theory. I am also interested in the rehabilitation of facial and vocal deficits in neurodegenerative disorders such as Parkinson's disease.

Key Publications:

- Conley, W. L.Conley, W. W., & Livingstone, S. R. (under review). EMGFlow: A Python package for pre-processing and feature extraction of electromyographic signals. Journal of Open Source Software.

- Livingstone, S. R., & Russo, F. A. (2018). The Ryerson Audio-Visual Database of Emotional Speech and Song (RAVDESS): A dynamic, multimodal set of facial and vocal expressions in North American English. PLoS ONE, 13(5), e0196391.

Tanner Mirrlees

Associate Professor, Communication and Digital Media Studies,
Faculty of Social Science and Humanities

Tanner Mirrlees is an Associate Professor and current Director of the Communication and Digital Media Studies program in the Faculty of Social Science and Humanities at Ontario Tech University. Mirrlees earned a PhD from York University and Toronto Metropolitan University's Joint Graduate Program in Communication & Culture, and won the prestigious Governor General's Gold Medal Award for achieving the highest academic standing in the program. Mirrlees is a past president of the Canadian Communication Association (CCA) (2020-2022), a past organizer of the CCA's annual conference for the Congress of the Federation for the Humanities and Social Sciences (2018-2020), and currently serves on the Board of Directors for the Canadian Journal of Communication and the US-based critical media studies journal, Democratic Communiqué. Mirrlees is the author or co-author of numerous books including Work in the Digital Media and Entertainment Industries: A Critical Introduction (Routledge, 2024), Global Entertainment Media: Between Cultural Imperialism and Cultural Globalization (Routledge, 2013), Hearts and Mines: The US Empire's Cultural Industry (UBC Press, 2016), and EdTech Inc.: Selling, Automating and Globalizing Higher Education in the Digital Age (Routledge, 2019). Mirrlees is also the co-editor of Media

Imperialism: Continuity and Change (Rowman & Littlefield, 2019), Media, Technology, and the Culture of Militarism (Democratic Communiqué, 2014), and The Television Reader (Oxford University Press, 2012).

Mirrlees' current inter-disciplinary research encompasses: the international political economy of technology corporations; Empire and the creative and technology industries; energy sustainability, environmental media and "green technology"; creativity; work and labor in the media and creative industries; war, military futurism, and media technologies; educational sociology and the EdTech industries; social media platform activism, from the Left to the far Right; globalization of entertainment; Internet, platform and AI law, policy and regulation; political communication, PR, propaganda and technology; popular culture, media representations, and ideology; video games and society; science, technology and society (STS) studies; techno-politics and ethics; critical theory of technology, including AI and other techno-social systems.

Mirrlees has given over 100 public presentations, with recent keynotes including "Automating Creativity? Questioning AI's Impact on the Arts (for Educators)" for the Hot Docs Teachers Conference, and "The US and China's Digital Tech War: A New Asymmetric Rivalry. Mirrlees has co-organized over 40 public events (conferences, symposia, and webinars), interviewed with print, radio, TV, digital and podcast media (most recently an episode of Courage my Friends, an AI and higher education), written op-eds, appeared in documentaries such as Theaters of War (Media Education Foundation), Myths on Screen: Hollywood's Role in War and Propaganda (CBC IDEAS), and Man Up! The Masculinity Crisis (CBC IDEAS), co-created podcasts including Tech-Bros and Techno-Utopias: A Darts and Letters Mini-Series, authored video essays for YouTube. Mirrlees is currently co-creating a new podcast series called Green Dreams: A Podcast Series on Our Renewable Futures (with Dr. Imre Szeman and Cited Media Productions), and working toward the completion of a book on the social imaginaries surrounding green technologies, and another, on global Hollywood in the digital age.

Key Publications:

- Work in the Digital Media and Entertainment Industries: A Critical Introduction (Routledge, 2024).

- EdTech Inc.: Selling, Automating and Globalizing Higher Education, in the Digital Age (with Shahid Alvi) (Routledge, 2019).

- The US and China's digital tech war: a new rivalry within and beyond US Empire. In A New Global Geometry (pp. 6-96), edited by Greg Albo. Merlin Press (2024).

- Automating Creativity? Questioning AI's Impact on the Arts (for educators). Hot Docs conference keynote (delivered to 600 high school teachers) (2024): https://www.youtube.com/watch?v=nT9mw5Xd1Fk

- EdTech, AI, and platform capitalism in the classroom. Courage my Friends podcast. Tommy Douglas Institute and Rabble.ca (2024): https://rabble.ca/podcast/edtech-ai-classroom/

Tanya Karam-Zanders

Associate Teaching Professor, General Psychology,
Faculty of Social Science and Humanities

I am a cognitive and social psychologist with research and expertise in areas of social cognition and human memory. My Bachelor's degree is in Psychology, my Master's degree is in Cognitive and Social Processes, and my PhD is in Cognitive and Developmental Psychology. As a teaching faculty, I have taught many different psychology courses, many of which are directly related to issues relevant to AI research. Notably, I teach Introduction to Cognitive Psychology, Thinking and Decision-Making, Social Cognition, Memory, Motivation, and Emotion. I have recently served on a PhD dissertation proposal committee of a student in FBIT whose research explores normative reasoning and social intelligence in AI systems. In working with this student, and his mentor, Dr. Peter Lewis, I have had the opportunity to have meaningful discussions regarding the intersection between human psychology and artificial intelligence. We also collaborated with Marieke van Otterdijk, a scholar from Norway, among others on a project titled "From Human to Agent Intuition: An Architecture for Intuitive Cognition" which is currently under review. Despite having conducted little research in artificial intelligence, I believe I can be of value to the institute and its research endeavors by providing a unique perspective that is necessary in all aspects of AI.

Tao Liu

Assistant professor, Mechanical Engineering, Faculty of Engineering and Applied Science

My research areas mainly focus on computational biomechanics and sport biomechanics. My research has centered on the use of computational modelling, machine learning and engineering principles to evaluate clinical conditions and inform the design of health technology. My research has included developing novel approaches to understand low back pain etiology, scoliosis brace design, and design of talus implants, which have been patented and are currently in use at the University of Alberta Hospital. I am currently collaborating

with different industry partners, such as CCM hockey and Adidas, to help evaluate and improve their product to enhance running performance.

Key Publications:

- Liu T., El-Rich M., 2024, "Subject-specific Trunk Segmental Masses Prediction for Musculoskeletal Models using Artificial Neural Networks", Medical & Biological Engineering & Computing (IF=3.2)

- Liu T., Aziz Vaqar H., El-Rich, M., 2023, "Sensitivity of Subject-Specific Upper Body Musculoskeletal Model Predictions to Mass Scaling Methods", Computers in Biology and Medicine, 165 (IF=7.7)

- Liu T., Khalaf K., Hebela N., Westover L., Galbusera F., El-Rich M., 2021, "A Novel Methodology for the Prediction of Trunk Mass Distribution Using Anthropometric Measurements", J. Biomech, 122, 110437 (IF=2.4)

- Liu T., Jomha N., Adeeb S., El-Rich M., Westover M.L., 2020 "Investigation of the average shape and principal variations of the human talus bone: an automatic groupwise registration", Front Bioeng Biotechnol, 8, 656. (IF=6.064)

Zenia Kish

Assistant Professor, Communication and Digital Media Studies,
Faculty of Social Science and Humanities

Dr. Zenia Kish is an interdisciplinary scholar committed to publicly-engaged teaching and research that bridges the humanities and social sciences. Her work explores unconventional forms of media across global contexts, including the mediation of philanthropy and agriculture, and makes connections between digital media studies, strategic communication, critical finance studies, American studies, food and agriculture, and development. She is Associate Editor at the Journal of Cultural Economy, and serves on the boards of the Journal of Environmental Media and Communication and Race. Before joining Ontario Tech University, Zenia was Assistant Professor of Media Studies at the University of Tulsa, where she also served as the Associate Director of the Oklahoma Center for the Humanities. Zenia's work on food, agriculture, and the environment explores representations of food and farming on social media as well as the socio-technical infrastructures reshaping the global agri-food system. Her co-edited book Food Instagram: Identity, Influence and Negotiation (University of Illinois Press 2022, with Emily Contois) offers innovative frameworks and case studies at the intersection of social media studies and food studies, and was awarded the 2023 Best Edited Volume Prize from the Association for the Study of Food and Society. She is a member of the NSF-funded Agri-Food Technology Research Project (UC-AFTeR) based at

the University of California, Santa Cruz, which examines how Silicon Valley is reshaping the food and ag tech sectors, including research on tech pitching practices and open data in food and agriculture. She also co-edited a special issue of New Media and Society on “farm media” with Benjamin Peters that opens up new lines of agricultural inquiry for media studies.

Key Publications:

- “Agrarian Platform Capitalism: Digital Rentiership Comes to Farming,” with Emily Reisman and Madeleine Fairbairn, Antipode

- “Setting Data Free: The Politics of Open Data for Food and Agriculture,” with Madeleine Fairbairn, New Media & Society, 25, no. 8 (Aug 2023): 1935-1959

- “Pitching Agri-Food Tech: Performativity and Non-Disruptive Disruption in Silicon Valley,” with Madeleine Fairbairn and Julie Guthman, Journal of Cultural Economy 15, no. 5 (2022): 652-670

- “Investing for Profit, Investing for Impact: Moral Performances in Agricultural Investment Projects,” with Madeleine Fairbairn, Environment and Planning A 50, no. 3 (May 2018): 569-588

MAIRI Budget

	Items	Year 1	Year 2	Year 3	Year 4	Year 5	Total	Justification
1. Operatonal Budget								
1.1 Labour Costs - Staff								
	Research Project Manager	$ 57,717	$ 71,268	$ 73,248	$ 77,206	$ 79,186	$ 358,625	
								Level 8 (union possible), assumes Research Project Manager starts two
	Benefits (9%)	$ 5,195	$ 6,414	$ 6,592	$ 6,949	$ 7,127	$ 32,276	LTE (9%); FTE (23%)
SUB-TOTAL Labour		**$ 62,912**	**$ 77,682**	**$ 79,840**	**$ 84,155**	**$ 86,313**	**$ 390,901**	
1.2 Labour Costs - Director								
	Teaching Release - Director	$ 9,024	$ 9,285	$ 9,563	$ 9,563	$ 9,563	$ 46,998	1 course release for the Director
	Benefits (9%)	$ 812	$ 836	$ 861	$ 861	$ 861	$ 4,230	
SUB-TOTAL LABOUR		**$ 9,836**	**$ 10,120**	**$ 10,424**	**$ 10,424**	**$ 10,424**	**$ 51,228**	
1.3 Research Entity Operating Costs								
	Technical/Consulting Services						$ -	
	IT Support						$ -	
	Equipment	$ 2,000					$ 2,000	
	Office Supplies and Services						$ -	
	Staff and Director Travel						$ -	
	Technical Grant Writer/Consultant		$ 20,000		$ 20,000		$ 40,000	
	Other (explain)						$ -	
SUB-TOTAL-Research Entity Operating Costs		**$ 2,000**	**$ 20,000**	**$ -**	**$ 20,000**	**$ -**	**$ 42,000**	
2. Research Networking								
	Seminars and workshops						$ -	
	Conference	$ 5,000.00	$ 5,000.00	$ 5,000.00	$ 5,000.00	$ 5,000.00	$ 25,000	Internal Conference Y1&2; Y3-5 expand to external attendees for a fee.
	High profile speaker event	$ 1,500.00					$ 1,500	For advancement purpose
	Research awards for seed fund / hackathons	$ 10,000.00	$ 10,000.00	$ 10,000.00	$ 10,000.00	$ 10,000.00	$ 50,000	Two per year, as an incentive for new projects
SUB-TOTAL-Research Networking		**$ 16,500**	**$ 15,000**	**$ 15,000**	**$ 15,000**	**$ 15,000**	**$ 76,500**	
3. Communications								
	Launch of Institute	$ 2,000	$ -	$ -	$ -	$ -	$ 2,000	Expenses to launch Institute
	Communications Material (zap stand, electro	$ 2,000	$ 500	$ 500	$ 500	$ 500	$ 4,000	Promotinoal material
	Other (merch)	$ 5,000	$ 2,000	$ -	$ -	$ -	$ 7,000	Merchandize
		$ 9,000	**$ 2,500**	**$ 500**	**$ 500**	**$ 500**	**$ 13,000**	
4. Knowledge Transfer and Dissemination								
	Other (explain)							
SUB-TOTAL								
TOTAL OPERATIONAL BUDGET		**$ 100,248**	**$ 125,302**	**$ 105,764**	**$ 130,078**	**$ 112,237**	**$ 573,629**	
REVENUE								
	Faculty contribution (Director's Faculty)	$ 9,836	$ 10,120	$ 10,424	$ 10,424	$ 10,424	$ 51,228	**Assumed course release covered in kind**
	Advancement funds	$ 50,000	$ 50,000	$ 30,000	$ 30,000	$ 30,000	$ 190,000	**Y3-5 unconfirmed, requires donors to be identified**
	VPRI Funds / Collaborating Faculties	$ 50,000	$ 25,000	$ -	$ -	$ -	$ 75,000	
	Indirect Cost from Contracts (25%)	$ -	$ 37,500	$ 75,000	$ 112,500	$ 112,500	$ 337,500	**Assumes 25% of overheads from eligible grants are available for institute operating, as per policy: https://usgc.ontariotechu.ca/policy/policy-library/policies/legal,-compliance-and-governance/indirect-costs-of-research-policy.php.**
TOTAL REVENUE		**$ 109,836**	**$ 122,620**	**$ 115,424**	**$ 152,924**	**$ 152,924**	**$ 653,728**	
TOTAL OPERATIONAL BUDGET LESS REVENUE		**$ 9,588**	**$ (2,682)**	**$ 9,660**	**$ 22,845**	**$ 40,687**	**$ 80,099**	

Notes:
Requires a steady state income from grant overhead and/or targeted advancement funds.
Based on a steady state grant income by Y3 of 20 faculty holding grants each worth $75k / year, with 30% overhead, or an equivalent configuration.
If this is not significantly below budget, Research Project Manager position may not be feasible.
If this is met or exceeded, funds will be directed to research capacity building costs,
E.g.: selective grant fund matching, bank-style postdoctoral researchers for exploratory industry collaborations, cross-faculty HQP to engage in interdisciplinary projects, and researcher travel, as determined by the ILT.

The Mindful AI Research Institute (MAIRI)

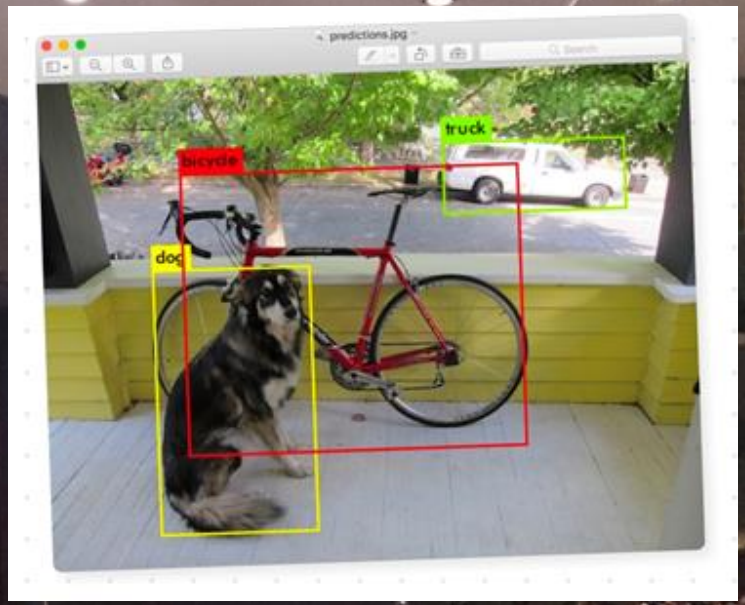
Concept & Story: *AI in a Socio-Technical World*

Given where AI is today – and how fast it is changing…

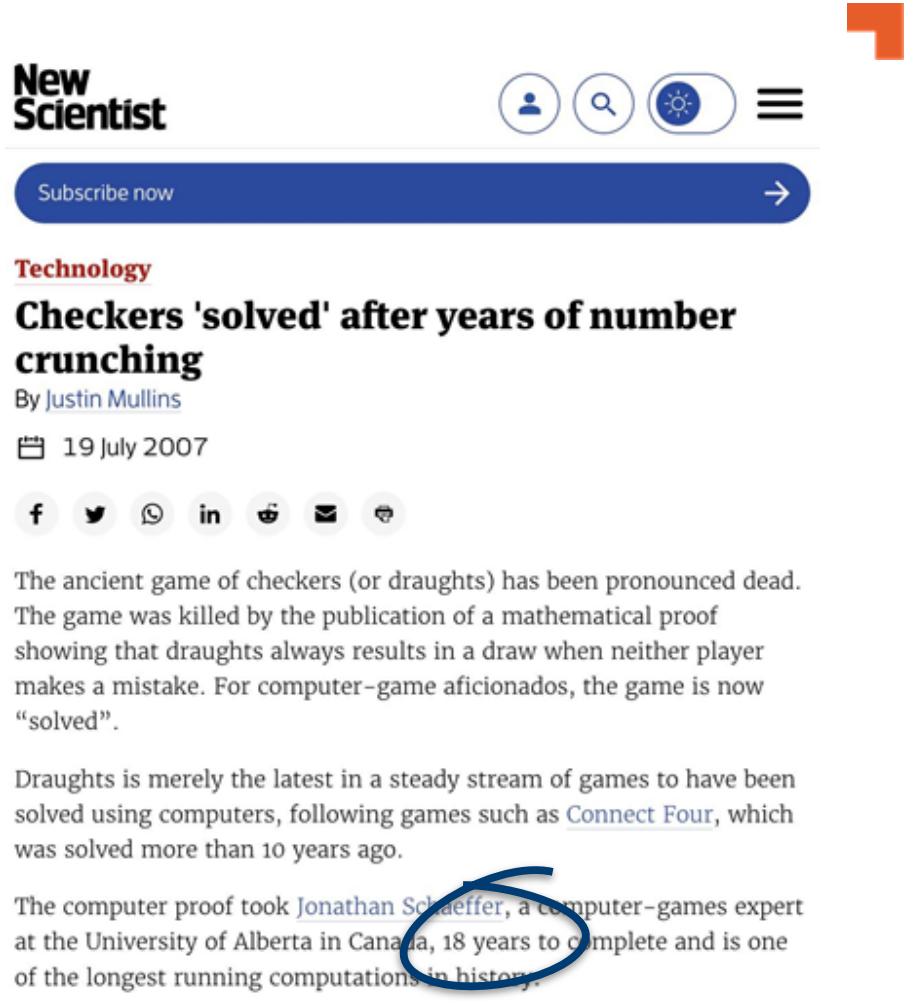
Let's imagine what intelligent machines could be:
- in 10 years time,
- in 50 years time
…and how we want to build and use them.

- What's missing from today's intelligent machines?
- What would we like future intelligent machines to become?
- How could they – and our use of them – be more mindful of people and the planet?

Around 10 years ago, the AI world was very excited about things that looked like this…



Just over 15 years ago, this is what results in AI for games looked like…



New Scientist

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Technology

Checkers 'solved' after years of number crunching

By Justin Mullins

19 July 2007

The ancient game of checkers (or draughts) has been pronounced dead. The game was killed by the publication of a mathematical proof showing that draughts always results in a draw when neither player makes a mistake. For computer-game aficionados, the game is now "solved".

Draughts is merely the latest in a steady stream of games to have been solved using computers, following games such as Connect Four, which was solved more than 10 years ago.

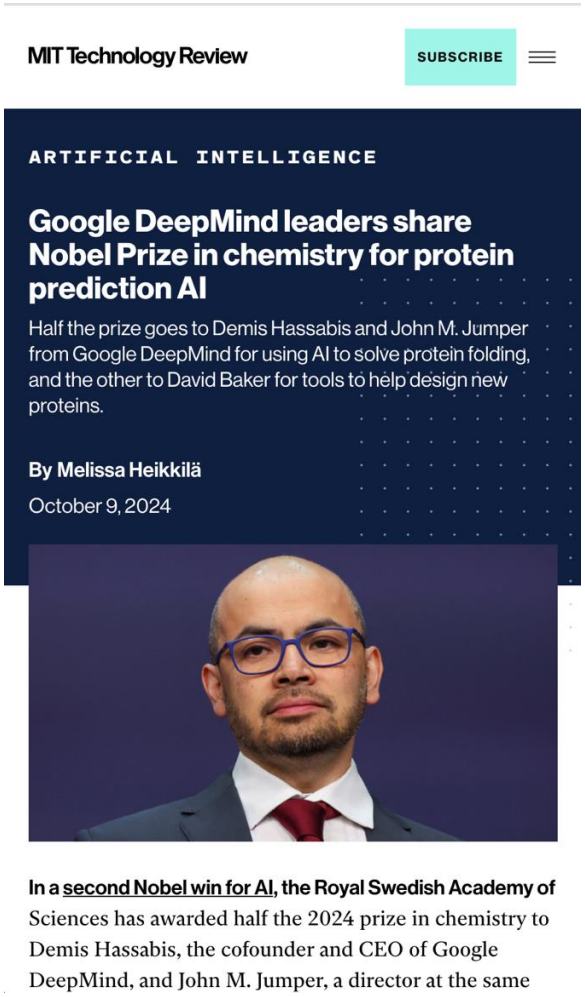
The computer proof took Jonathan Schaeffer, a computer-games expert at the University of Alberta in Canada, 18 years to complete and is one of the longest running computations in history.

Similarly to previous general purpose technologies, such as the invention of the Internet,

Today's AI technology is having a transformational effect,

And is poised to change many areas of work and life.

But in complex ways.



MIT Technology Review

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ARTIFICIAL INTELLIGENCE

Google DeepMind leaders share Nobel Prize in chemistry for protein prediction AI

Half the prize goes to Demis Hassabis and John M. Jumper from Google DeepMind for using AI to solve protein folding, and the other to David Baker for tools to help design new proteins.

By Melissa Heikkilä

October 9, 2024

In a second Nobel win for AI, the Royal Swedish Academy of Sciences has awarded half the 2024 prize in chemistry to Demis Hassabis, the cofounder and CEO of Google DeepMind, and John M. Jumper, a director at the same

9TO5Mac

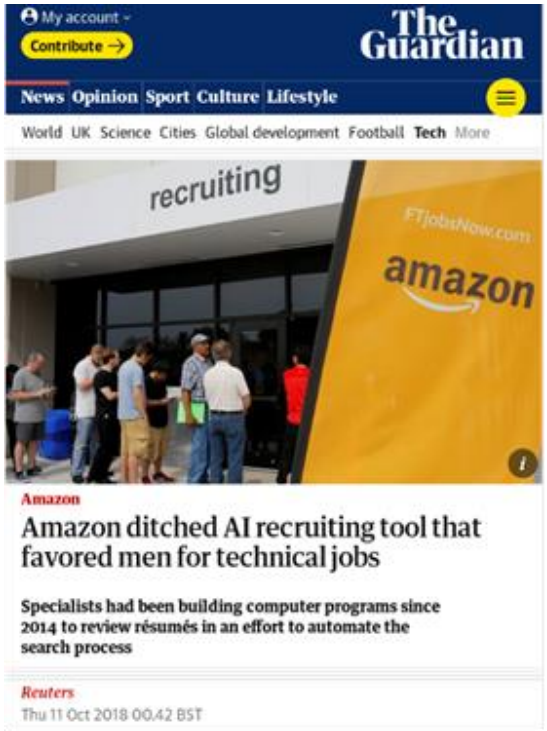
Amazing iPad AI tutor demo points to an incredible new world for students

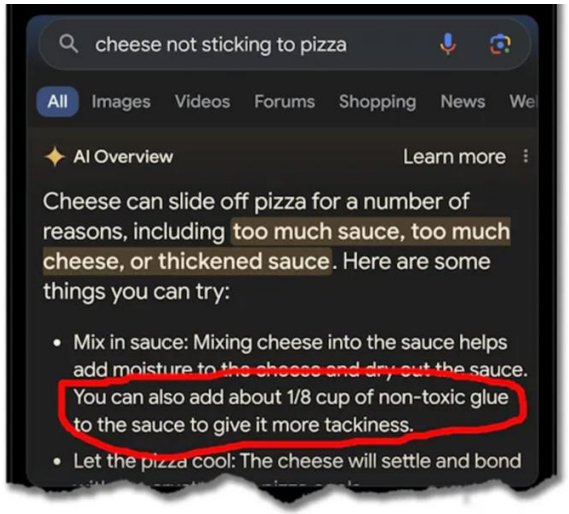
Ben Lovejoy | May 14 2024 - 4:13 am PT

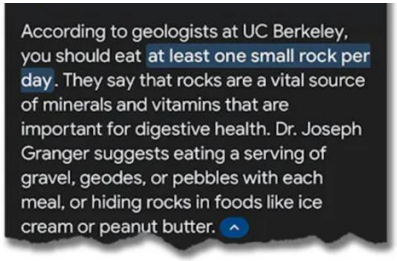
17 Comments

If you haven't yet watched yesterday's OpenAI event, I highly recommend doing so. The headline news was that the latest GPT-4o model works seamlessly with any combination of text, audio, and video.

That includes the ability to 'show' the GPT-4o app a screen recording you are taking of another app – and it's this capability the company showed off with a pretty incredible iPad AI tutor demo ...







It is a rocky road, with dangers in building ‘incomplete artificial minds’… and in applying them without sufficient care.

mindful

1. careful, thoughtful, observant

   "to think and consider before taking action"

2. conscious or aware of something

   especially context, self, and consequences

3. *(archaic)* having a good mind

Mindful Artificial Intelligence

A vision for intelligent machines…

that have **rich and balanced cognitive abilities**,

that are developed in **participatory and responsible** ways,

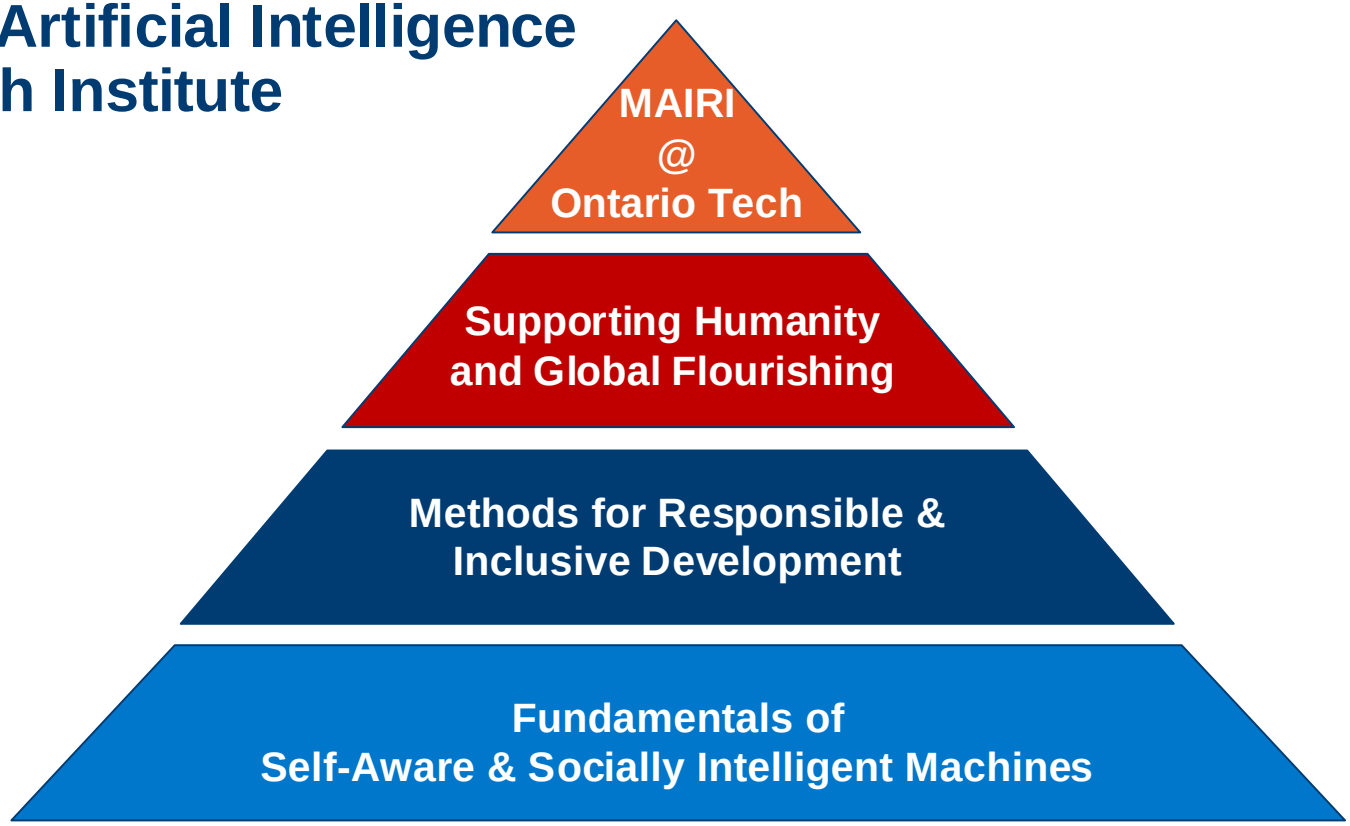
and used **intentionally, carefully, and opportunistically,**

in ways that **support humanity** and tackle **planetary challenges**.

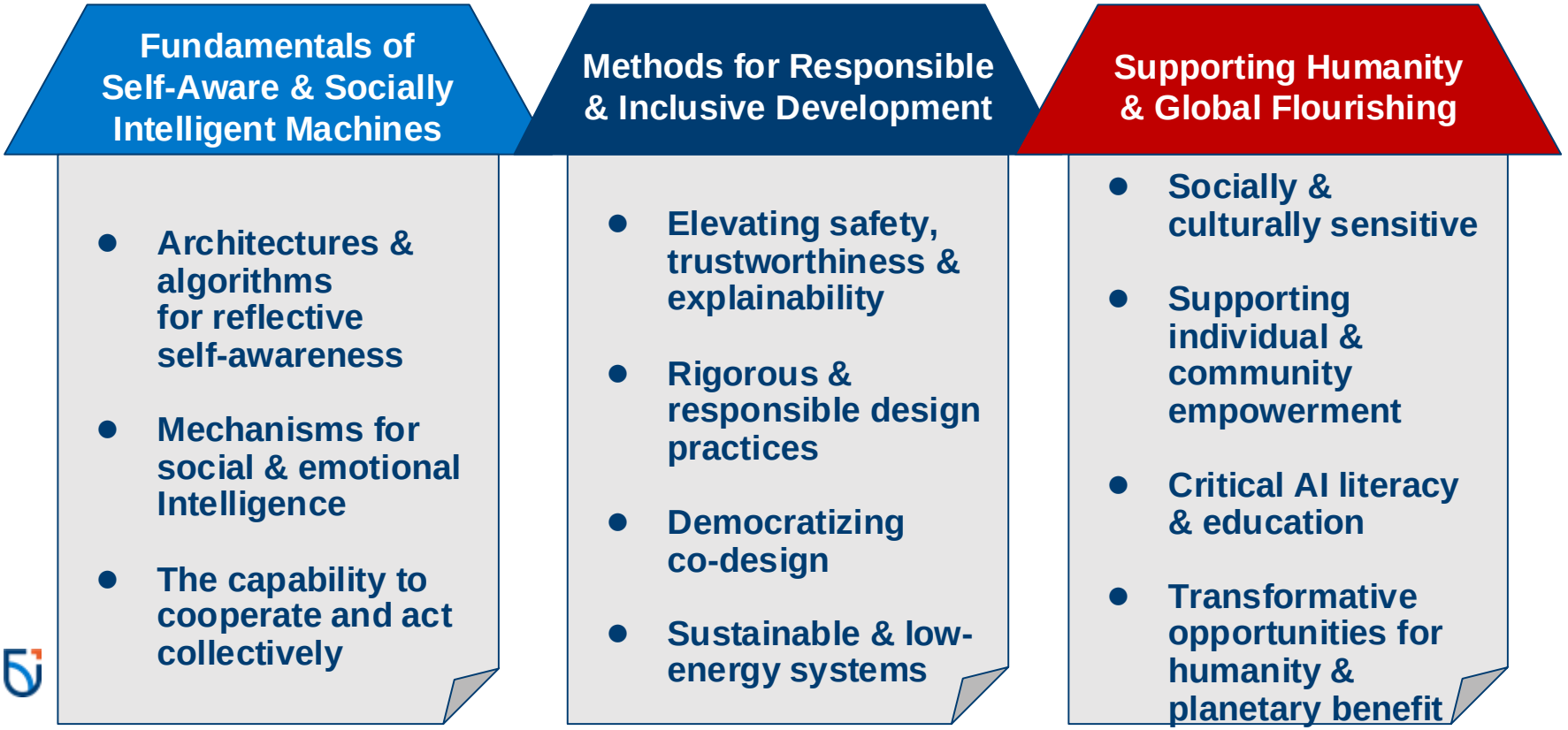
A vision born from the idea that we already expect intelligent machines to do more than solve puzzles, control equipment, or predict from data.

And that the building and use of these new machines should be done in the right way.

Mindful Artificial Intelligence Research Institute



Mindful Artificial Intelligence: Research Themes



Mindful Artificial Intelligence Research Institute (MAIRI)

An opportunity…

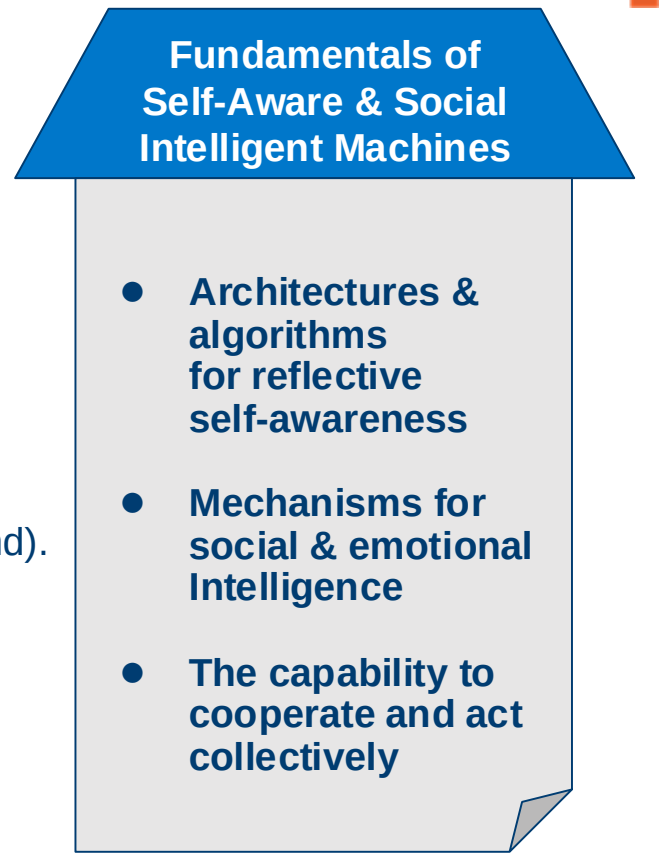
- To build on Ontario Tech's strengths, commitments, and purpose:
  - AI *'with a conscience'.*
  - Societal mission.
  - Strategic industry, academic, and civic society partnerships.
  - People and organizations empowered with and through technology.
- To lead a creative, ambitious, and distinctive research vision.
- By taking a holistic perspective on intelligent machines and their ecosystems.
- By taking a People, Society, and Planet-first approach to AI.

Research Theme

Machines that **reflect on themselves** and
the **social context and impact** of their actions.

That…

- Can model and learn about themselves -
  and how they react to their environment as it changes.
- Reason about and simulate the consequences of their
  own decisions, and model those of others (Theory of Mind).
- Understand their social role(s) and impact,
  reason normatively, and act accordingly.
- Model and reason about their own trustworthiness.
- Challenge: Today's AI does not have the required
  cognitive mechanisms for this.



Underpins: responsibility, trustworthiness, social & cultural sensitivity, human-machine partnership.

Research Theme

Development processes that are **responsible**, **trustworthy**, **repeatable, collaborative, responsive,** and **sustainable**.

That…

- Are in partnership with affected groups through co-design.
- Are responsive to changing needs and emerging uncertainties and complexities.
- Are transparent, open and honest about risks and failures, privacy-preserving, and empowering.
- Use interpretable techniques and models to support this.
- Are energy conscious and prioritize sustainability.
- Are agile, but the antithesis of *'move fast and break things'*.

Methods for Responsible & Inclusive Development

- **Elevating safety, trustworthiness & explainability**
- **Rigorous & responsible design practices**
- **Democratizing co-design**
- **Sustainable & low-energy systems**

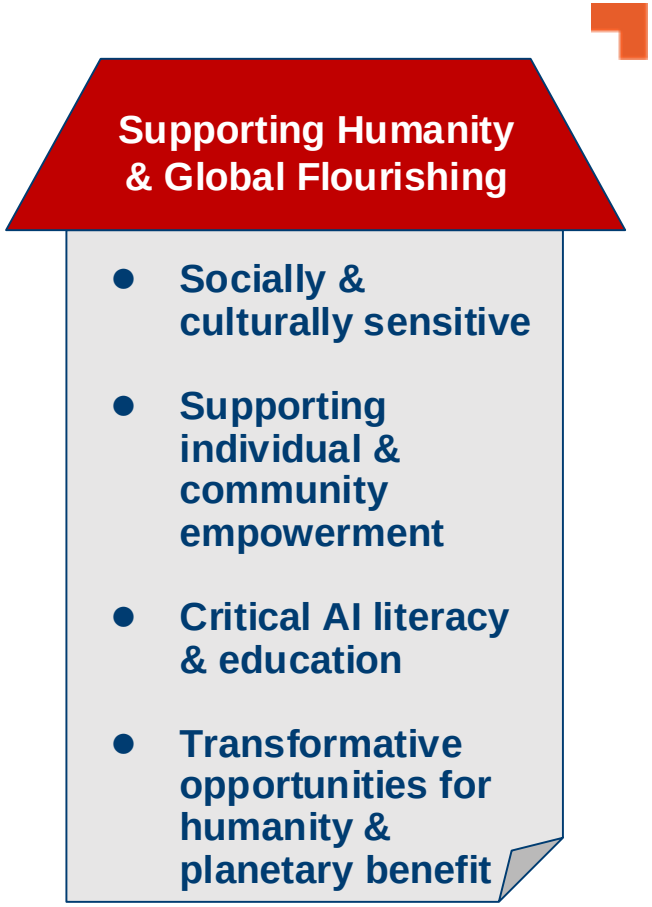
Underpins: responsibility, trustworthiness, rigor, empowerment, equity, privacy, democracy.

Research Theme

An approach to deployment that is **intentional, careful**, **critical**, and through interdisciplinary **partnership.**

That…

- Looks for new opportunities for intelligent machines to help tackle the most important problems of our time.
- Acknowledges that domain expertise is essential.
- Uses guardrails to provide safety;
  and is transparent about possible failures and risks.
- Harnesses new cognitive abilities to extend guardrails to provide reflective socially and culturally sensitivity behaviour regulation.
- Changes the nature of work to provide meaningful, empowering human activity – not the reverse.



Underpins: sustainability, conscientiousness, safety, human flourishing.

How Will We Know We Are Successful?

- Do we offer a **world-class experience** for graduate students, researchers, and research-active faculty?
- Are we **known** for something unique?
- Are we **publishing** world-leading research?
- Do we have the **critical mass** to be competitive for larger grants?
- Do we attract **attention from industry** looking for ‘the next big thing’?
- Are we **informing decision makers**, policy, and government?
- Do we enjoy a broad national and international academic **network**?

Institute Structure & Activity

- Cross-Faculty: FBIT, Science, FSSH, FEd, FHS, Engineering…
- Institute Director
- Institute Leadership Team (Director, Theme Co-Leads)
- Research Project Manager
- Institute-level Activity & Funding:
  - Seminar series; Invited speakers; Thematic workshops; Annual conference
  - Strong branding and sense of identity; Web & social media presence
  - Pump-priming grants; Research travel funds; Bridging funds; Consultancy Opportunities; Partnership Generation; Business Development
- A ‘Connector’: Hub-and-Spoke Model with Affiliated Labs and Researchers:

Institute Physical Space & Visibility

- To achieve a **high profile and sense of community**, congruent physical space and on-campus visibility are important. This is being explored separately from the main MAIRI proposal, through the usual processes.

- A few options (there will be more):

  - **Review SIRC configuration** with a view to creating congruent areas of the building for different research institutes, groups, and concentrations.

    Accompanied by corridor-level branding. E.g. →

  - First floor **'shop front' as part of a new building development**, to grow general on-campus awareness, foster a 'collision environment' for researchers, and have a space to welcome visitors and partners.

Roadmap

Initial Development Period: January – May 2023 [Completed]

- Scoping conversations with key senior stakeholders & administration (Deans & ADRs, adjacent CRCs, Research Office, Advancement)
- Environmental Scan (internal & external)

Consultation & Refinement Period: June 2023 – Dec 2023 [Completed].

Formal Proposal / Approvals Process & Brand Development: Summer & Fall 2024

- *"Faculty members… must submit to the dean(s) of the Faculty or Faculties to which they are appointed a proposal outlining the planned research entity."*
- *"The sponsoring dean(s) will then submit the proposal to the Research Board which, in turn, will be responsible for advising Academic Council and the Board of Governors on the establishment of the research entity."*

Institute Launch: Early 2025.

BOARD REPORT

SESSION:		**ACTION REQUESTED:**	
Public	☒	**Decision**	☒
		Discussion/Direction	☐
		Information	☐
Financial Impact	☒ **Yes** ☐ **No**	**Included in Budget**	☒ **Yes** ☐ **No**

TO: **Board of Governors**

DATE: **February 20, 2025**

FROM: **Academic Council**

PRESENTED BY: **Les Jacobs, Vice-President, Research and Innovation**

SUBJECT: **Establishment of Advanced Manufacturing Research Center (AMRC)**

BOARD MANDATE:
In accordance with Article 1.4(b) of By-law No. 2 and the Procedures for the Creation of Research Entities, Academic Council makes recommendations to the Board on matters including the establishment of research centres.

Academic Council is seeking the Board's approval of the establishment of the Advanced Manufacturing Research Centre (AMRC).

BACKGROUND/CONTEXT & RATIONALE:
The Advanced Manufacturing Research Center (AMRC) aims to bring together a diverse and multidisciplinary community of researchers who are interested in studying today and future needs of manufacturing systems including the needs of manufacturing sectors in the aspects of **P**redictivity, **A**gility, **R**econfigurability, **S**ustainability, and **I**ntelligence (**PARSI**). PARSI demonstrates the five research angles of the advanced manufacturing research center. The five research angles in advanced manufacturing research center are define based on the most crucial challenges in manufacturing and relevant industries in Canada and worldwide. The angles are described as follows.

Predictivity: Inclusion of the four aspects of metrology and inspection, maintenance planning, multi-physics simulation, and digital twin philosophy allows AMRC research to predict the health, and the sources of uncertainties in the manufacturing units, and processes.

Agility: Developing agile manufacturing units and systems with the novel aspects of the fifth industrial revolution to put “human in the loop” in the most efficient way, in combination with applications of the traditional cyber-physical solutions, autonomous technologies, robots and

collaborative robots to create the most agile manufacturing solutions is the focus of this angle at AMRC.

Reconfigurability: Developing the manufacturing solutions at AMRC with the capabilities for reconfiguration including the parameters of self-adaptation, self-calibration, and self-adjustment aim toward the best ways in use of the available resources with their ultimate efficiencies.

Sustainability: Design and Manufacturing are merged at AMRC for the most sustainable development of the products. The efficiency of the Design for Manufacturing, topology optimization, and advanced materials supports the sustainability of the manufacturing process to maintain the required design specifications, features, and tolerances, consumption of energy, and impact with the environment at minimum waste.

Intelligence: AMRC supports the Canadian and worldwide industries to develop and implement intelligent manufacturing systems by developing cyber-physical solutions with a combination of data sensory, connectivity, data analytics, and intelligent decision-making manufacturing features.

Concept development, modeling, developing methodologies, and work with industries to advance the technology readiness level of the developed solutions are the four radial depths of the research work at AMRC.

The University's commitment in advancing the field is further demonstrated by the skills and background of the hired Faculty members over a decade to create a team of experts in product design and manufacturing. The objective of AMRC is to create a strong support to our partners, Canadian industries, and to our community for better and more efficient design and development of products, machines, processes, and technologies.

The two main niche areas that PARSI-AMRC is aim to focus are advanced design and manufacturing of parts, components, and assemblies in Battery and Fuel Cell Electric Vehicles (B-FC EV), and Small Modular Reactor (SMR) technologies. Vehicle designers rely on manufacturability principles to create structure and packaging of the components with the goal of weight reduction and improving stiffness for more fuel-efficient, more environmentally friendly, faster, and safer to use vehicles. By understanding the manufacturing constraints and limitations, designers can optimize the shape and configuration of the parts to minimize manufacturing costs, waste, and time. Similar research and development also can be considered in power generation industries. By optimizing the structure of the vehicles, designers can improve the vehicle handling, drivability, and performance while also improving its fuel economy, or the battery range in the case of electric vehicles.

In sports, the optimization and customization of design of equipment and its manufacturability plays a critical role in helping athletes with their performance. By reducing weight and improving the performance using new materials, athletes can run faster, jump higher, and throw farther. This is particularly important in sports such as cycling, skiing, and swimming, where the efficiency of the tools can make a significant difference in a race. Research, innovation, and design of customized sport equipment aligned with the current research and development at Ontario Tech in additive manufacturing and rapid fabrication has a great potential as a niche area.

In the construction industry, the manufacturability of many components can be researched using the methodologies developed at PARSI-AMRC. Considering the recent applications of 3D printing and additive manufacturing principles in construction, a significant contribution to the construction industries can be pictured in a near future.

These research areas have significant economic and environmental benefits, as more energy-efficient products can reduce the cost of services to the community and minimize the carbon footprint of the relevant industries.

Research in the five core angles and applications allow developing adaptive designs and product development for a wide range of engineering applications to improve their performance, efficiency, environment friendliness, and safety. The ultimate goal of PARSI-AMRC is to advance scientific knowledge in developing and evaluating products in various complexities with the best use of the resources. The outcomes of the conducted research and developed innovative technologies will transform the future of Durham region, Ontario, and Canada.

Ontario Tech University is a leader in product design and manufacturing engineering research, as evidenced by its excellence of the researchers in the field and state-of-the-art research facilities. Manufacturing engineering program has been the first engineering program at Ontario Tech with the objective to respond to the needs of the Canadian industries in various sectors.

RESOURCES REQUIRED:

Physical Requirements:

Advanced Manufacturing Research Center will utilize the space currently available to its founding members. However, a central office will be necessary to coordinate activities and hold meetings with potential clients and stakeholders. The location of this office in close proximity to the research infrastructure is crucial, and thus an office in the ACE building would be ideal for this purpose.

Staffing Requirements:

As the Advanced Manufacturing Research Center is built upon existing faculty collaborations and labs, a key area of growth is to acquire a grant writer who can assist with ongoing projects as well as proposals in the development stage. Thus, the primary goal in the first few years is to establish a reliable funding source for hiring a staff member. To achieve this objective, the proposers will be encouraged to include funding for this position in their grant applications**.**

IMPLICATIONS:

Ontario Tech University's strategic research plan aims to foster interdisciplinary research collaborations that address complex global needs of the society with full consideration of environmental impacts of the technologies. Tech with conscious is one of the main perspectives in developing Ontario Tech research which is also inherent in vision and mission of AMRC.

Advanced Manufacturing research is one of the key subjects in Ontario Tech’s strategic research plan. In addition, the Ontario Tech’s strategic research plan is used directly to define the strategic research applications/fields at AMRC. These research applications/fields are defined currently as, battery and fuel cell electric vehicles, autonomous vehicles including air and road transportation, energy sectors including the developments of Small Modular Reactors, sport tools and equipment, and defense.

By leveraging the expertise in engineering design, advanced manufacturing, and material, AMRC will conduct cross-disciplinary research that brings together expertise to address the challenges in various industries and sectors that are vital to the economy, security, and global competitiveness of Canada. Moreover, AMRC’s main mission is to develop innovative solutions to enhance the safety, performance, and efficiency of various industries, including automotive, renewable energy production, and aerospace. These research activities are aligned well with Ontario Tech University's strategic research priorities, which include energy and sustainability.

Furthermore, the AMRC's research mandate involves collaboration with industry partners, government agencies, and other academic institutions, which provides opportunities for knowledge transfer and contributes to the development of a skilled workforce. This approach aligns well with Ontario Tech University's commitment to fostering partnerships that support economic and social development.

ALIGNMENT WITH MISSION, VISION, VALUES & STRATEGIC PLAN:

3.1.2. Vision

Our vision is to be a world-class center for research and innovation in the field of advanced manufacturing toward better design and maintenance of efficient and environment friendly products, machines, processes, and equipment.

3.1.3. Mission

AMRC's mission is to drive the development and advancement of cutting-edge technologies and practices that enhance the advanced manufacturing research angles in four levels of conceptualization, modeling, methodology development, and technology readiness improvement in various fields such as Battery and Fuel Cell Electric Vehicles, autonomous vehicles including air and road transportation, sport, defense, and energy sectors. By leveraging the expertise in engineering design, manufacturing, materials, adaptation, and body and surface development research, we seek to push the boundaries of what is possible and deliver innovative solutions that address real-world challenges.

ALTERNATIVES CONSIDERED:

Review and Revision: The four radial levels of conceptualization, modeling, methodology development, and technology readiness improvement are the essential research levels at AMRC and are defined as the core components of the mission in this research center. These four levels of research comprehensively cover the entire range of research envisioned for AMRC.

The five research angles of Predictivity, Agility, Reconfigurability, Sustainability, and Intelligence are selected based on the needs of today and future of industries in Canada and worldwide. However, these five angles can be reviewed and revised every five years to keep the research themes at AMRC always update and align with the needs to the society.

CONSULTATION:

Consultation and feedback on the establishment of the Advanced Manufacturing Research Center (AMRC) were carried out at different levels among the Faculty of Engineering and Applied Science starting from 2022. The proposal of the AMRC was presented in the Faculty Council on March 28, 2024. Then, the proposal was discussed with the University Research Committee on November 19, 2024.

COMPLIANCE WITH POLICY/LEGISLATION:

The establishment of the AMRC aligns with Ontario Tech University's Procedure for the Creation of Research Units, Centres, and Institutes.

NEXT STEPS:

Board of Governors for approval.

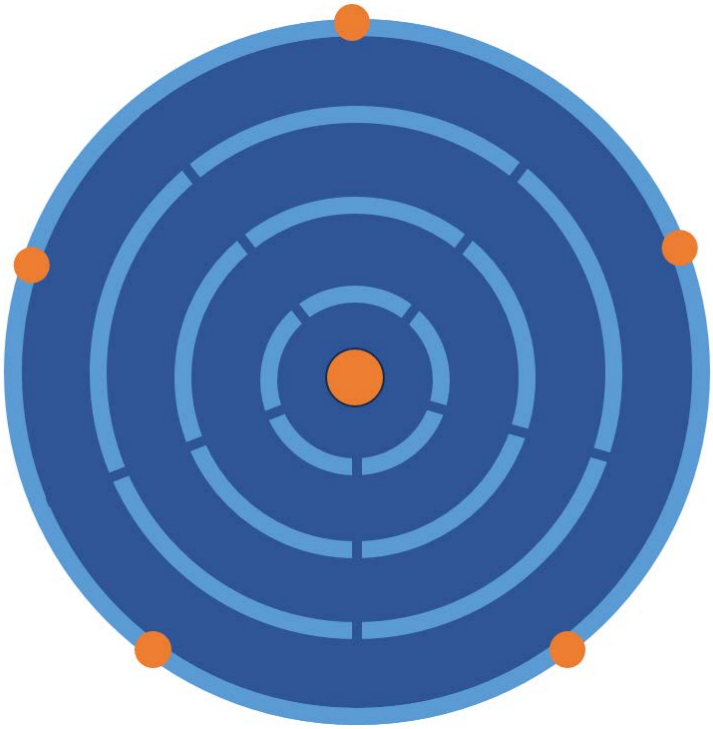
MOTION FOR CONSIDERATION:

That pursuant to the recommendation of the Academic Council, the Board of Governors hereby approves the establishment of the Advanced Manufacturing Research Centre (AMRC), as presented.

SUPPORTING REFERENCE MATERIALS:

- The proposal for Advanced Manufacturing Research Center is attached.
- The detailed budget projection for the first five years of AMRC including all sources of income and expected expenses and disbursements are presented in attached excel file.

Proposal for the Establishment of Advanced Manufacturing Research Center (AMRC)



March, 2024

1. Name of the Entity:
PARSI - Advanced Manufacturing Research Center (AMRC).

2. Proposers – including name, title, and contact information

Dr. Ahmad Barari, Professor, Faculty of Engineering and Applied Science, Ontario Tech University

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Dr. Ghaus Rizvi, Professor, Faculty of Engineering and Applied Science, Ontario Tech University

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Dr. Remon Pop-Iliev, Professor, Faculty of Engineering and Applied Science, Ontario Tech University

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Dr. Hossam Kishawy, Professor and Dean, Faculty of Engineering and Applied Science, Ontario Tech University

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Dr. Amirkianoosh Kiani, Associate Professor, Faculty of Engineering and Applied Science, Ontario Tech University

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Dr. Sayyed Ali Hosseini, Associate Professor, Faculty of Engineering and Applied Science, Ontario Tech University

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Dr. Jana Abou-Ziki, Assistant Professor, Faculty of Engineering and Applied Science, Ontario Tech University

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Dr. Ramona Fayazfar, Assistant Professor, Faculty of Engineering and Applied Science, Ontario Tech University

Tel: 905.721.8668 x5751 | ramona.fayazfar@ontariotechu.ca

3. Background Description and Justification

3.1. Explain why the entity is needed at Ontario Tech University, and if possible, the larger community.

The Advanced Manufacturing Research Center (AMRC) aims to bring together a diverse and multidisciplinary community of researchers who are interested in studying the today's and future;s needs of manufacturing systems including the needs of manufacturing sectors in the aspects of **P**redictivity, **A**gility, **R**econfigurability, **S**ustainability, and **I**ntelligence (**PARSI**). PARSI demonstrates the five research angles of the advanced manufacturing research center (Figure 1).

Figure 1 – The five research angles of PARSI Advanced Manufacturing Research Center

Concept development, modeling, developing methodologies, and work with industries to advance the technology readiness level of the developed solutions are the four radial depths of the research work at PARSI-AMRC. The five research angles in advanced manufacturing research center are define based on the most crucial challenges in manufacturing and relevant industries in Canada and worldwide. PARSI's five angles and their combination are uniquely pictured at AMRC. The angles are described as follows.

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Intelligence: AMRC supports the Canadian and worldwide industries to develop and implement intelligent manufacturing systems by developing cyber-physical solutions with a combination of data sensory, connectivity, data analytics, and intelligent decision-making manufacturing features.

3.1.1. Impacts on the Industries and Society

The university's commitment to advancing the field is further demonstrated by the skills and background of the hired Faculty members over a decade to create a team of experts in product design and manufacturing. The objective of PARSI-AMRC is to create a strong support to our partners, Canadian industries, and to our community for better and more efficient design and development of products, machines, processes, and technologies.

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environment friendliness, and safety. The ultimate goal of PARSI-AMRC is to advance scientific knowledge in developing and evaluating products in various complexities with the best use of the resources. The outcomes of the conducted research and developed innovative technologies will transform the future of Durham region, Ontario, and Canada.

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3.1.2. Vision

Our vision is to be a world-class center for research and innovation in the field of advanced manufacturing toward better design and maintenance of efficient and environment friendly products, machines, processes, and equipment.

3.1.3. Mission

AMRC's mission is to drive the development and advancement of cutting-edge technologies and practices that enhance the advanced manufacturing research angles in four levels of conceptualization, modeling, methodology development, and technology readiness improvement in various fields such as Battery and Fuel Cell Electric Vehicles, autonomous vehicles including air and road transportation, sport, defense, and energy sectors. By leveraging the expertise in engineering design, manufacturing, materials, adaptation, and body and surface development research, we seek to push the boundaries of what is possible and deliver innovative solutions that address real-world challenges.

3.2. Describe how the entity will foster synergistic collaboration that would not otherwise be possible, and how the entity would facilitate research among scholars within the university and in the wider community.

The Advanced Manufacturing Research Center will provide a platform for researchers from different disciplines and backgrounds to come together and collaborate on cutting-edge research that would not be possible otherwise. By fostering synergistic collaboration, the center will enable researchers to pool their knowledge, expertise, and resources to tackle complex problems that require a multidisciplinary approach.

Within the university, AMRC will facilitate research among scholars by providing access to the state-of-the-art research facilities and equipment, as well as by organizing workshops, seminars, and other events that bring together researchers from different departments and faculties. The center will also support graduate and postdoctoral research programs that enable students and early-career researchers to gain hands-on experience in advanced manufacturing research.

Beyond the university, AMRC will foster research collaboration with scholars in the wider community through partnerships with industry, government agencies, and other academic institutions. AMRC will provide a forum for researchers to share their findings, exchange ideas, and collaborate on research projects that have real-world applications. By bringing together researchers from diverse backgrounds and sectors, the research center will facilitate the translation of research findings into practical solutions that can have a positive impact on the society.

The Advanced Manufacturing Research Center will be uniquely positioned to foster innovation and advance knowledge in the angles of manufacturing Predictivity, Agility, Reconfigurability, Sustainability, and Intelligence. The Institute will bring together a collection of unique expertise and will have access to state-of-the-art research facilities that are among the most sophisticated in the world. This combination of expertise and resources makes the center a reference for researchers from all over the world to collaborate and conduct cutting-edge research. With its world-class facilities and expertise, the Institute will push the boundaries of what is possible in engineering design and manufacturing with resource adaptation research, enabling researchers to deliver innovative solutions that address real-world challenges. The AMRC's focus on practical solutions that have real-world impact will also help to attract researchers and collaborators who are passionate about making a positive difference in the world.

Overall, the Advanced Manufacturing Research Center will be a hub of innovation and collaboration that will bring together the best and brightest researchers from around the world to advance the frontiers of design and manufacturing engineering.

4. Research Mandate

4.1. Outline the type of research to be performed and identify the scope of activities envisaged.

The Advanced Manufacturing Research Center is aimed on better design and manufacturing of products considering the five angles of Predictivity, Agility, Reconfigurability, Sustainability, and Intelligence. The research projects at AMRC will be conducted in four radial levels of Conceptualization, Modeling, Methodology development, and Technology Readiness Level Improvement. The combination of these four levels in five angles of PARSI research creates 20 research themes at AMRC. This combination of research levels- angles is graphically demonstrated in Figure 2.

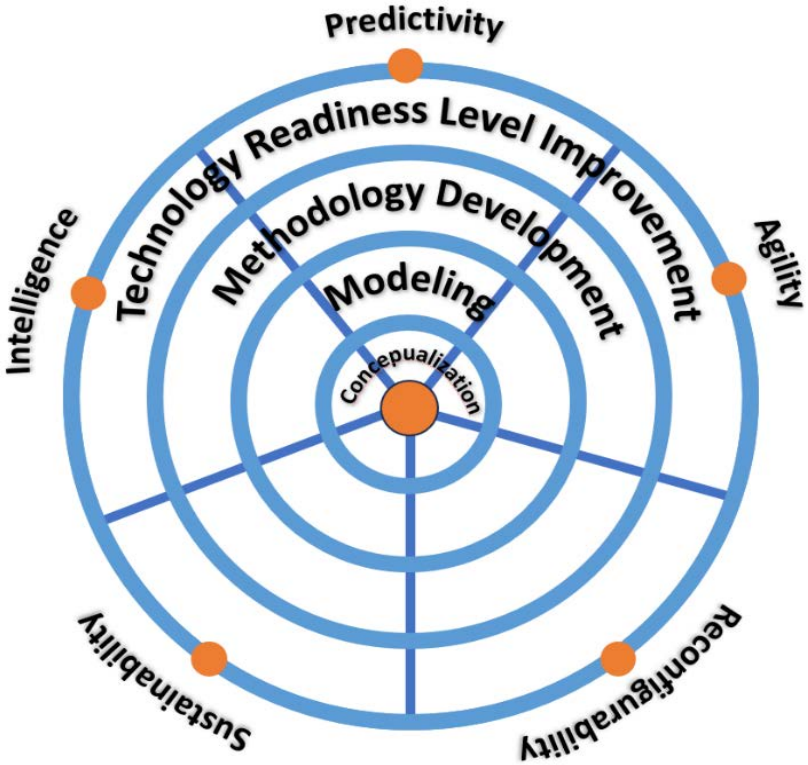

Figure 2 – The AMRC's 20 research themes as the combination of research radial levels- angles

The Radius-Angle theme chart in Figure 3-a presents a systematic approach at AMRC aligned with its vision and mission. The chart presented in Figure 3-a is used to define what specific research themes need to be completed to achieve a level of research maturity. As an example, Figure 3-b presents the example of a manufacturing research targeting and model development for predictivity, methodology development for agility, and reconfigurability, full technology development for sustainability, and a conceptual level of intelligence.

The approach of using these 20 research themes at AMRC will be used in developing proposals, defining research projects/programs, management of the projects, scheduling, allocation of the resources, and research maturity assessment.

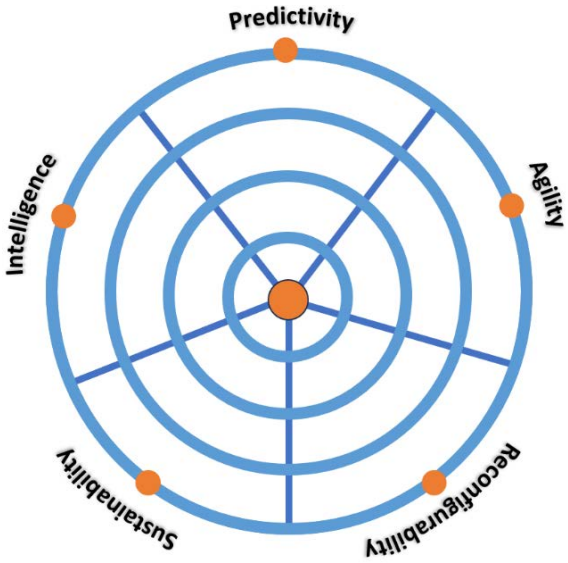

Figure 3-a- Research Radios-Angle theme chart

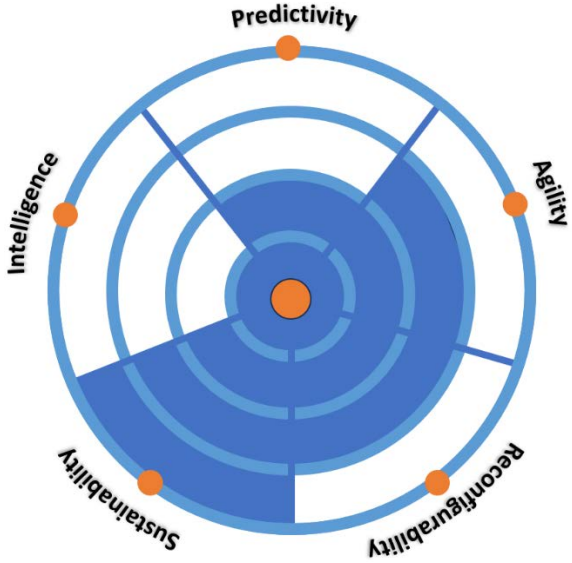

Figure 3-b- Example of a manufacturing research target at AMRC

Figure 3- Research themes at AMRC

4.1.1. Review and Revision

The four radial levels of conceptualization, modeling, methodology development, and technology readiness improvement are the essential research levels at AMRC and are defined as the core components of the mission in this research center. These four levels of research comprehensively cover the entire range of research envisioned for AMRC.

The five research angles of Predictivity, Agility, Reconfigurability, Sustainability, and Intelligence are selected based on the needs of today and future of industries in Canada and worldwide. However, these five angles can be reviewed and revised every five years to keep the research themes at AMRC always update and align with the needs to the society.

4.2. Explain how the research activities align with Ontario Tech University's Strategic Research Plan.

Ontario Tech University's strategic research plan aims to foster interdisciplinary research collaborations that address complex global needs of the society with full consideration of environmental impacts of the technologies. Tech with conscious is one of the main perspectives in developing Ontario Tech research which is also inherent in vision and mission of AMRC.

Advanced Manufacturing research is one of the key subjects in Ontario Tech's strategic research plan. In addition, the Ontario Tech's strategic research plan is used directly to define the strategic research applications/fields at AMRC. These research applications/fields are defined currently as, battery and fuel cell electric vehicles, autonomous vehicles including air and road transportation, energy sectors including the developments of Small Modular Reactors, sport tools and equipment, and defense.

By leveraging the expertise in engineering design, advanced manufacturing, and material, AMRC will conduct cross-disciplinary research that brings together expertise to address the challenges in various industries and sectors that are vital to the economy, security, and global competitiveness of Canada. Moreover, AMRC's main mission is to develop innovative solutions to enhance the safety, performance, and efficiency of various industries, including automotive, renewable energy production, and aerospace. These research activities are aligned well with Ontario Tech University's strategic research priorities, which include energy and sustainability.

Furthermore, the AMRC's research mandate involves collaboration with industry partners, government agencies, and other academic institutions, which provides opportunities for knowledge transfer and contributes to the development of a skilled workforce. This approach aligns well with Ontario Tech University's commitment to fostering partnerships that support economic and social development.

4.2.1. The Importance of Advanced Manufacturing Research at Ontario Tech University

Ontario Tech University is an innovation-oriented Canadian research-intensive university that advances the discovery and application of knowledge with its industry partners to accelerate economic growth, technology advancement and regional development. In the area of Advanced and Intelligent Manufacturing, and Institutional Research Priority, it merges the multidisciplinary talent of its world-class researchers with globally leading research facilities to support the commercialization of innovation at the pace of industry. Its team of industry veterans, coupled with faculty members experienced in industry partnerships, have a demonstrated track record of working with Canadian based businesses to bring new products to Market.

4.2.2. The Importance of Advanced Manufacturing Research Worldwide

Research at Ontario Tech University has always positioned itself as an important contributor to the advanced manufacturing space. In the current climate of global economic uncertainty, restoring and extending Canada's manufacturing capacity is a key to securing the country's economic future. Considering its geographic location and research potentials, Ontario Tech prioritizes supporting the next manufacturing generation of Canadian in innovation, science, and economic development. Disruptive and emerging technologies are creating new opportunities to expand these contributions. The integration of intelligent and autonomous technologies that utilize artificial intelligence and machine learning for advanced manufacturing is a research priority for the university, allowing us to build on current research

strengths to establish itself as a leader in intelligent manufacturing and materials innovation. This is a respond to the forecasted demands from the industries in moving towards the objectives of the fourth and fifth industrial revolutions.

Working collaborative with our extensive network of industry partners, our researchers are recognized leaders in manufacturing engineering as well as the synthesis and characterization of materials. Applications of this award-winning research have led to the development of sustainable and environmentally friendly approaches and techniques for manufacturing processes, product development and energy systems. This multidisciplinary research involving both scientists and engineers is transforming manufacturing processes in a range of sectors of the economy in Canada and abroad. Our graduate students are important contributors to this research strength. Our target areas in Advanced Manufacturing include:

- Industry 4.0 and 5.0 revolutions
- Cyber physical systems in manufacturing
- Digital Manufacturing
- Design for manufacturing
- IOT – software and devices
- Data Analytics
- Vision Systems Robotics/Smart Machines
- Additive/Subtractive Manufacturing
- Smart Materials
- Opto-electronic and Energy material
- Micro-electronics.

4.2.3. The Target Applications and Industerial Sectors

Additionally, establishing AMRC is of national importance as it would contribute to the development of advanced technologies in design and manufacturing in the following various industries and sectors:

1- Aerospace Industry: The aerospace industry is a key driver of innovation and economic growth, with significant contributions to the Canada's GDP, exports, and job creation. Developing more efficient, safe, and sustainable aircrafts and spacecrafts is crucial to maintaining the competitiveness of the aerospace industry. AMRC will contribute to this goal by conducting research on advanced design for manufacturing, manufacturability of new materials, and PARSI angles in production systems that improve the performance and reduce the environmental impacts of aircraft and spacecraft.

2- Transportation Sector: Manufacturing also plays a critical role in the transportation sector, including road, rail, and maritime transport. Improving the design for manufacturing, vehicle weight reduction methodologies, and manufacturing efficiency of vehicles and ships can reduce fuel consumption, emissions, and operating costs, while increasing safety and comfort for passengers. AMRC will contribute to this goal by developing innovative technologies and designs that reduce production cost and waste and improve performance of vehicles and ships.

3- Renewable Energy: The development of renewable energy is crucial to reducing dependence on fossil fuels and mitigating climate change. Developing many of the crucial parts and components employed in renewable energy generation industries such as turbines are impellers are

geometrically and metallurgically very complex. AMRC aims to conduct fundamental research on design, manufacturing, and repair of parts, machines, and equipment needed for developing clean energy systems with the objective of reducing manufacturing time and cost and improving the performance and efficiency.

4- National Security: Advanced Manufacturing is also critical to national security, particularly in the development of advanced military aircraft, missiles, and drones. AMRC contributes to support national defense by conducting research on advanced manufacturing and material processing that enhance the performance and survivability of military aircraft and weapons systems under extreme working conditions.

5- Sport and Canadian Athletics: Customization and optimization in design of sport tools and equipment based on the exact specifications needed by the individual athletics is highly critical in their performance. Weight reduction and improving the performance of the equipment is highly constrained due to the limitations in manufacturability. This is particularly important in sports such as cycling, skiing, and swimming, where the efficiency of the tools can make a significant difference in a race. AMRC aims to lead research in design for manufacturability of parts, machines, and equipment needed for better performance of Canadian athletics in national and international competitions.

Overall, the Advanced Manufacturing Research Center is a valuable contributor to Ontario Tech University's strategic research plan as it embodies the interdisciplinary approach and focus on tackling the Predictivity, Agility, Reconfigurability, Sustainability, and Intelligence challenges in advanced manufacturing that is central to the university's research priorities.

4.3. Provide evidence for the long-term sustainability of the entity, including research activities that go beyond collaboration on a single project.

The Advanced Manufacturing Research Center is proposed by world-renowned researchers who are experts in their respective fields. Their expertise has earned them funding from government agencies and industry partners, amounting to more than $6.5 million over the last five years since 2018. The 8 founders of this research center have also published a remarkable number of research papers, including over 310 journal articles, 415 referred conference articles, 23 book chapters, and 6 books.

The proposal for AMRC is based on the solid foundation of the proposers' significant contributions to the five advanced manufacturing research directions, namely Predictivity, Agility, Reconfigurability, Sustainability, and Intelligence. The founders have established a track record of success that will serve as the backbone of AMRC. Additionally, the research center will benefit from strategic collaborations that the proposers have established with both national and international partners, including Ontario Power Generation, General Motors Canada, Honda Canada, Magna International, and Bombardier Aerospace among others.

With the support of the proposers and their partners, AMRC will be well-positioned to advance the advanced manufacturing research. The research center will leverage the knowledge and expertise of its founders to undertake groundbreaking research and innovation, addressing critical global challenges.

5. Key Research Facilities

The Advanced Manufacturing Research Center will rely on the following existing research labs with their research infrastructures as the foundation for conducting its diverse research activities:

1- Advanced Digital Manufacturing and Advanced Digital Metrology Laboratories (AD2M Labs)
2- Automotive Center of Excellence (ACE) prototyping and fabrication facilities
3- Centre for Characterization of Polymers and Cellular Polymeric Composites
4- Machining Research Laboratory (MRL)
5- Micro-Machining Laboratory
6- Silicon Hall: Micro/Nano Fabrication Facility
7- Eco-friendly Center of Circular Advanced Materials and Additive Manufacturing (ECAM)

The available research infrastructures and objectives in these laboratories are briefly presented here.

5-1 available research infrastructure and equipment

Advanced Digital Design, Manufacturing, and Metrology Laboratories (AD2M Labs)

The Advanced Digital Design, Manufacturing, and Metrology Laboratories (AD2Mlabs) at Ontario Tech University contribute to variety of national and international projects in collaboration with industries, research centers, and universities (www.AD2Mlabs.com). The research areas at AD2M Labs include digital design and manufacturing, precision manufacturing, manufacturing data collection and analytics, intelligent manufacturing systems, and advanced manufacturing technologies including digital metrology, and 3D printing.

- ***Advanced Digital Design Laboratory*** includes Multi-physics Simulation, CAD/CAM, Topology Optimization and Generative Design, digital twin simulation platforms, various digital design software and hardware workstations.
- ***Advanced Digital Manufacturing Laboratory*** is equipped with a wide spectrum of CAD/CAM/CAE commercial and lab proprietary software packages, super-computing hardware setup, multiple Fused Filament Fabrication machines for polymers, and Selective Laser Sintering for steel, aluminum, and titanium additive manufacturing, and its exclusively developed variable-layer 3D Printer, and layer-less DLP printer with the corresponding custom software packages.
- ***Advanced digital Metrology Laboratory*** is equipped with multi-scale digital metrology and digital inspection systems, laser scanners, tactile probing, surface topography (micro scale), long range laser tracker (up to 40 m). A variety of Laser scanners and other commercially available and customized design lab proprietary optical sensors, contact metrology probs and corresponding robotic arms, Laser tracker, 3D surface topography microscope, on-machine measurement tactile probs, and a variety of metrology software tools.

Automotive Center of Excellence (ACE) Prototyping and Fabrication Facilities

Ontario Tech's ACE Research Facility is one of the leading product development and advanced manufacturing centers in Canada. This research and development facility is commercially available to customers who want to bring their ideas into a proof of concept and make them ready for market. In fact, over 95% of ACE's operational revenue comes from its commercial research partnerships from over 60 different industry different clients each year. Clients include manufacturers of all descriptions, start-up

companies and researchers in Canada and from around the world. The entire facility, or specific chambers, can be rented at a globally competitive hourly rate. Perhaps more importantly, industry partners have access to ACE's 20+ staff of industry experts that work with clients to develop product validation and test plans, along with engineering support to prototype and improve upon existing designs. ACE is equipped with a machine shop and manufacturing infrastructure to fabricate research related parts and components and for prototype development.

Centre for Characterization of Polymers and Cellular Polymeric Composites (CCPCPC)

Available equipment and instrumentation resources at Centre for Characterization of Polymers and Cellular Polymeric Composites (CCPCPC) include 3D Micro Computer Tomography SkyScan 1172 from Bruker, Thermogravimetric Analyzer (TGA), Differential Scanning Calorimeter (DSC), Thermomechanical Analyzer (TMA), Dynamic Mechanical Analyzer (DMA), ARES Rheometer, Keyence Digital Microscope, Single Screw Extruder, Twin Screw Extruder, Ultimaker 3D printer, dual print head, & Ultimaker Cura 3D printing software, Filabot EX2 Filament Extruder, Airpath, & Spooler, Water Jacketed CO2 Incubator chamber (Thermo Scientific, Forma Series 3), Rotational Foam Molding Experimental Setup, Electrospinning Experimental Setup (three units), Fume Hood, Carver Heated plates press, Microtrac particle analyzer, Avery precision balance, and Microtome.

Machining Research Lab (MRL)

Machining Research Lab is a multidisciplinary lab, conducting research on additive, subtractive and hybrid of additive and subtractive manufacturing. MRL is equipped with all machining facilities including advanced Computer Numerical Control (CNC) machine center, machining force dynamometer, machining tools and fixtures, and Scanning Electron Microscope (SEM). (https://mrlab.ca)

Micro-Machining Laboratory

Micro-Machining Laboratory is equipped with micromachining facilities including electrochemical processes and Spark Assisted Chemical Engraving (SACE) machine.

Silicon Hall: Micro/Nano Fabrication Facility

Silicon Hall is focused on Micro/Nano Fabrication and surface processing. It is equipped with variety of equipment for laser processing of the part surfaces and micro/nano fabrication. (https://siliconhall.info/)

Eco-friendly Center of Circular Advanced Materials and Additive Manufacturing (ECAM)

E-CAM focuses on developing innovative and environmentally sustainable materials and methodologies to create sustainable, recyclable, and circular products for point-of-need additive manufacturing of parts, helping to address acute AM supply chain and climate change challenges, accelerate the development of in-house expertise, and empower engineers to design more game-changing parts for innovative applications. To this end, the mission of the E-CAM research group is to bridge low-cost additive manufacturing with materials science, nanotechnology, sustainability, and circular economy, through advanced computational and experimental techniques. Bioaugmentation of circular materials, development of recyclable and sustainable feedstock/products, conducting methodological investigations evaluating how processing and material interaction affect final properties, and implanting post-surface

treatment to enhance performance outcomes for end-use applications are the main focus of the E-CAM. The Lab's commitment to utilizing sustainable and recyclable materials in conjunction with circular manufacturing practices forms its core identity. At E-CAM, the production of advanced materials and the pursuit of environmentally-friendly manufacturing practices coexist. Circularity is at the core of everything we do, as part of our net-zero journey. ECAM is equipped with a variety of desktop and customized 3D printers, Extruders, Shredder, metallography equipment, and advanced characterization facilities like XRD.

6. Student Involvement and Training

6.1. Background

The manufacturing program at Ontario Tech was established in 2003 as it first engineering program, and the fourth manufacturing engineering program in Canada when there were only three other accredited manufacturing programs running across Canada (Calgary, Manitoba, and McMaster). The Manufacturing Engineering curriculum at Ontario Tech University provides students with a solid grounding in fundamentals, with significant content in engineering sciences, engineering design and manufacturing content. The Manufacturing Engineering program provides students with a general background of engineering enhanced by detailed knowledge and skills required for manufacturing industry and its related industrial sectors.

Manufacturing Engineering is a vital field of study, as this industry converges a wide range of concepts such as Mechanical Engineering, Electrical Engineering, system design and analysis, and scheduling and management. Hence, to cope with future demands of industry, our Manufacturing Engineering program is designed in close connection with other engineering disciplines. It has a strong mechanical engineering foundation, which is further enhanced by some elements of math, electrical and software engineering (mainly 1st and 2nd year courses). However, the focal point of this program is manufacturing, so the students are offered a wide range of core courses purposefully designed for introducing different aspects of Manufacturing Engineering and related areas to the students (mainly 3rd and 4th year courses).

Manufacturing engineering is dynamically changing, and it has been our mandate to update our program according to the needs of industry. More technical elective courses are being developed to fulfill this need.

Engineering design and manufacturing cannot be decoupled in today’s industries. Our programs are developed based on the need to merge and conduct design and manufacturing concurrently. A student gets involved in this paradigm of thinking from their second year and through every consecutive year they will experience it through their courses, culminating with their last year capstone design project.

The faculty members in Manufacturing Engineering are conducting leading edge research in key areas such as high-speed machining, machining difficult-to-cut materials, finite element modeling of manufacturing processes, surface integrity, additive manufacturing, coordinate metrology, nano and micro fabrication, industry 4.0, digital manufacturing, Artificial Intelligence, and multi-objective optimization in manufacturing process control, advanced materials manufacturing etc.

6.2. Involvement of Students in AMRC

The level and type of involvement of undergraduate or graduate students in the activities of advanced manufacturing research will depend on the specific research projects and programs undertaken by the

AMRC. However, it is expected that undergraduate and graduate students will have the opportunity to participate in research activities and projects as well as training programs designed to enhance their skills and knowledge in advanced manufacturing.

AMRC will provide unique research and training opportunities for students at all levels. Undergraduate students may participate in research projects as part of their coursework or through internship programs, allowing them to gain valuable hands-on experience in the field. Graduate students may have the opportunity to participate in more advanced research projects, assisting in the development of cutting-edge technologies and contributing to the advancement of the field.

AMRC will also offer specialized training programs for students, including workshops, seminars, and short courses, designed to enhance their knowledge and skills in the field. These training programs may cover topics such as design for manufacturing, subtractive manufacturing, additive manufacturing, design of tools and fixtures, design of dies and molds, weld design and weld process planning, robotic and automation, developing assembly lines, production line analyses, optimization, and customization, end more. The training programs will provide students with the skills and knowledge they need to be successful in their future careers, whether in academia or industry.

In addition to research and training opportunities for undergraduate and graduate students, Advanced Manufacturing Research Center may offer professional industrial courses to professionals already working in various manufacturing fields. AMRC also develops partnership and teaching and learning agreements with the national and international universities, institutions, and research center in various areas and applications of advanced manufacturing technologies that allows researchers and students mobility and collaboration programs.

These professional industrial courses would be designed to provide advanced training and development opportunities for professionals in industry, government agencies, and other organizations involved in the field. By participating in these courses, professionals would be able to stay up-to-date with the latest developments in the field and enhance their skills and knowledge, improving their ability to contribute to their organizations and the industry as a whole. The courses may also provide opportunities for professionals to network with other experts in the field, sharing knowledge and ideas and building valuable connections.

Professional industrial courses offered by AMRC would be developed and taught by experts in the field, including the founders and collaborators. These courses would be tailored to the needs of industry professionals, providing practical knowledge and skills that can be applied directly in the workplace.

Overall, the Advanced Manufacturing Research Center will provide unique and valuable research and training opportunities for undergraduate and graduate students as well as for professionals working in the industry. These opportunities will allow the trainees to gain hands-on experience in cutting-edge research and technology development, as well as enhance their skills and knowledge in the various directions of advanced manufacturing systems.

7. Research Dissemination and Service Plan

Advanced Manufacturing Research Center will have a strong focus on dissemination of research and the provision of service within Ontario Tech University and to the outside community. The followings are some of the unique plans that will be implemented:

1. Dissemination of Research: The institute will disseminate research through various channels such as peer-reviewed journals, conference presentations, and workshops. The institute will also create a comprehensive website that will provide information on research projects, publications, and events. This website will be regularly updated with the latest research findings and outcomes.

2. Service Plan: The Advanced Manufacturing Research Center has a comprehensive service plan that involves developing various programs to serve and impact the community. For instance, the institute plans to organize community outreach programs aimed at providing information and resources on resilient and sustainable manufacturing systems to local communities.

3. Additionally, AMRC intends to partner with industry leaders, government agencies, and non-profit organizations to offer technical expertise and support for various projects. This collaboration will help to promote the AMRC's research, as well as foster innovation and sustainable development practices.

4. Furthermore, through its extensive network, AMRC will be in a position to provide technical expertise, research findings, and other resources to policymakers. This information will be instrumental in helping policymakers to make informed decisions regarding policy development and implementation in areas such as sustainable design, manufacturing, and social-economic modeling of manufacturing and production systems.

8. Resource Requirements

8.1 Physical Requirements

Advanced Manufacturing Research Center will utilize the space currently available to its founding members. However, a central office will be necessary to coordinate activities and hold meetings with potential clients and stakeholders. The location of this office in close proximity to the research infrastructure is crucial, and thus an office in the ACE building would be ideal for this purpose.

8.2 Staffing Requirements

As the Advanced Manufacturing Research Center is built upon existing faculty collaborations and labs, a key area of growth is to acquire a grant writer who can assist with ongoing projects as well as proposals in the development stage. Thus, the primary goal in the first few years is to establish a reliable funding source for hiring a staff member. To achieve this objective, the proposers will be encouraged to include funding for this position in their grant applications.

9. Budget

The detailed budget projection for the first five years of Advanced Manufacturing Research Center including all sources of income and expected expenses and disbursements are presented in attached excel file.

Short Biography and Curricula Vitae of the Founding Members

Dr. Ahmad Barari, PhD, Peng

Professor

Dr. Ahmad Barari is a Professor in Department of Mechanical and Manufacturing Engineering at Ontario Tech University. Dr. Barari has been primarily involved in research and development in engineering design and advanced manufacturing technologies for over 25 years. He has a successful track of research that has attracted more than 50 sources of funds from the federal / provincial organizations and industrial sectors. His excellent experience in engineering education has led to the development and delivery 32 Mechanical and Manufacturing Engineering courses at graduate and undergraduate levels. Professor Barari has over 200 referred and indexed publications in highly ranked periodic journals and conference proceedings.

He has been in editorial board of various high prestige journals and proceedings. He organized, chaired, or administrated over 30 academic national or international events, conference topics, invited sessions, and seminars. Dr. Barari serves currently as vice-chair academic Technical Committee on Manufacturing Plant Control and the chair of Intelligent Manufacturing Systems Working Group in International Federation of Automatic Control (IFAC). Dr. Barari is also a member of several committees and project groups at the American Society of Mechanical Engineering (ASME) including the ASME Model-Based Enterprise Standards Committee (MBE SC), and ASME Y14.46, Product Definition for Additive Manufacturing.

Dr. Barari is the director of the Advanced Digital Manufacturing and Advanced Digital Metrology labs (AD2Mlabs) at Ontario Tech University (www.AD2Mlabs.com). The labs contribute to many national and international projects in collaboration with industries, research centers, and universities. The research is focused on digital design and manufacturing, precision manufacturing, manufacturing data collection and analytics, intelligent manufacturing systems, and advanced manufacturing technologies including digital metrology and 3D printing.

Dr. Ghaus Rizvi, PhD, Peng

Professor

Dr. Ghaus Rizvi is a professor in the Department of Mechanical and Manufacturing Engineering at Ontario Tech University, Oshawa, Canada. His research interests include advanced manufacturing, biomaterials and tissue scaffolds, development of sensor materials, polymer and composite processing, 'Green' composites, novel composite materials, nano materials, coloration of plastics, wood-plastic composites, and materials characterization. He has over 150 manuscripts in peer reviewed journals and conferences. He has supervised many postdoctoral fellows, PhD students, Master students, undergraduate research students, and more than 140 undergraduate students on various capstone projects. His students have presented papers in many international conferences in Europe, Asia, Africa and America.

Dr. Rizvi is a co-director of the Centre for Characterization of Polymers and Cellular Polymeric Composites (CCPCPC).

Dr. Remon Pop-Iliev, PhD, PEng

Professor

Professor Remon Pop-Iliev attracted significant research funding (> $6.15 million) from industrial and government sources. His research program has been funded by NSERC, OPG, GMCL, CFI, AUTO21, APC, CDEN, ORF and OCE through individual and collaborative research projects. He has over 150 archival journal and conference referred publications and 63 keynote speeches, invited lectures and conference presentations. He trained in his research group multiple PDFs, PhD, MASc, MEng, undergraduate RAs, and over 200 undergraduate students. He has developed innovative polymer processing technologies for the manufacture of polyolefin foams and foamed composites blown by environmentally safe chemical blowing agents. He is an expert in processing polymeric foams and composites using chemical and physical blowing agents, especially in the areas of foaming in rotational molding, compression molding, and polymer extrusion. He has pioneered and patented a technology that utilizes polypropylene in single-charge integral-skin rotational foam molding. Also, he developed and patented a novel polymer processing technology referred to as Rapid Rotational Foam Molding (RRFM). He has further developed the very first processing technology enabling the use of physical blowing agents for the manufacture of functionally graded cellular polymeric composites utilizing RRFM.

Dr. Pop-Iliev is the co-director of the Characterization of Polymers and Cellular Polymeric Composites (CCPCPC) Laboratory.

Dr. Hossam Kishawy, PhD, Peng

Professor

Dr. Kishawy is the Dean of the Faculty of Engineering and Applied science and a professor in Department of Mechanical and Manufacturing Engineering at Ontario Tech University. His research interests cover several aspects of advanced manufacturing and sustainable manufacturing processes, environmentally friendly processes, optimization, design and stress analysis. His recent book entitled "Machining Difficult-to-Cut Materials: Basic Principles and Challenges" (recently published by Springer) presents the state-of-the-art research related to the machining of difficult-to-cut materials and his findings in the area of machining mechanics, surface quality and integrity. Together with his research group, he has patents and over 200 publications in reputable journals, conferences and book chapters. He is a Fellow of the ASME, CSME and EIC, senior member of the SME and a member of the association of Ontario Professional Engineers.

Dr. Amirkianoosh Kiani, PhD, Peng

Associate Professor

Dr. Amirkianoosh Kiani joined Ontario Tech University as a faculty member in the Department of Mechanical and Manufacturing Engineering in July 2017, specializing in advanced manufacturing and pulsed-laser materials processing. His significant contributions have propelled the development of laser-based methodologies for the synthesis of quantum-nanofibrous and 3D nanostructured materials. These advancements are pivotal for the next generation of opto-electronic applications and quantum energy storage devices, offering precise control over functionality and improved electrochemical properties. Under Dr. Kiani's leadership, the "Silicon Hall: Micro/Nano Fabrication Facility" was established at Ontario Tech, serving as a nexus for collaboration with industry partners on cutting-edge projects funded by federal, provincial, and private sectors. Prior to his current role, Dr. Kiani was an Assistant Professor in the Department of Mechanical Engineering at the University of New Brunswick, where he served from 2014 to 2017. His research there was centered on laser bio-nanofabrication, contributing to the evolution of academic programs in laser materials processing and photonics manufacturing systems. Dr. Kiani's research has been disseminated widely through many peer-reviewed academic publications, including contributions to leading journals such as Nature Scientific Reports, iScience, Journal of Energy Storage, Sensors & Actuators B, and Applied Surface Science, reflecting his impactful work in the field of advanced manufacturing and nano materials.

Dr. Sayyed Ali Hosseini, PhD, Peng

Associate Professor

Dr. Sayyed Ali Hosseini is an Assistant Professor in the Faculty of Engineering and Applied Science at Ontario Tech University. His research area covers tool design, simulation of machining processes, material modelling, and machining difficult-to-cut materials. He is a member of SME, ASME, CSME and a registered professional engineer in Ontario, Canada. Examples of current research projects include Design of Variable Microgeometry Milling Inserts for Machining Hardened Steels (Joint project with Sandvik Cormorant), Sustainable Machining Using Micro-textured Nano-structured Coated Cutting Tools, and Additive Manufacturing Process Optimization and Planning. He is currently the vice chair of CSME Manufacturing Technical Committee.

Dr. Jana Abou-Ziki, PhD, Peng

Assistant Professor

Dr. Abou Ziki is an Assistant Professor in the Department of Mechanical and Manufacturing Engineering at Ontario Tech University, Canada. She obtained her Bachelor degree in Mechatronics Engineering from Rafik Hariri University in Lebanon in 2009. Following that, she obtained her PhD in Mechanical Engineering in 2014 from Concordia University, Canada. The significance of her work is evident by the number of papers she published and awards she recieved. Dr. Abou Ziki's research at Ontario Tech focuses on developing non-conventional manufacturing techniques, both additive and subtractive, to make them more suited for rapid prototyping of parts made of different materials.

With the high competition existing in the market nowadays, the rapidly increasing customer demand and the high-quality expectations require advanced and precise yet flexible manufacturing processes. There is rise in demand for personalized products, something that requires developing processes that are flexible enough to meet this demand at a fast speed while offering high quality and still be profitable to the industry. Making these processes smarter and more accessible will be a game changer. Dr. Abou Ziki's research program builds on her experience and expertise while developing technologies, both additive and subtractive, to enhance the manufacturing throughput and flexibility as well as quality and speed of manufacturing. Her team's recent research in the field of electroforming, which is an additive manufacturing process, has succeeded in designing molds that allow forming 2.5D and potentially 3D metal parts. Prior to that only 2D parts were possible to be manufactured with this process. Furthermore, her work in the field of micromachining nonconductive materials allowed developing machine learning algorithms an electrochemical technique called SACE to make it a smarter rapid prototyping process. Dr. Abou Ziki is also interested in developing smart hybrid manufacturing processes which cultivate the advantages of single processes. Functionalizing surfaces during machining is also an area of interest to her as this reduces the extra step of post processing required to impart certain properties on the surface. Dr. Abou Ziki is currently supervising a diverse team of students and her work led to multiple journal papers, conference proceeding publications and conference presentations.

Dr. Ramona Fayazfar, PhD, Peng

Assistant Professor

Dr. Ramona (Haniyeh) Fayazfar, Ph.D., P.Eng., is an Assistant Professor at the Department of Mechanical and Manufacturing Engineering at Ontario Tech University. She is the director of the Eco-Friendly Center of Circular Advanced Materials and Additive Manufacturing (E-CAM). She holds an affiliate associate graduate faculty appointment in Materials Science. Dr. Fayazfar holds a Ph.D., MS.C., and B.S.C. with high honors in Material Science and Engineering from the Sharif University of Technology. Before joining Ontario Tech, she was a postdoctoral fellow in the Multi-Scale Additive Manufacturing group at the University of Waterloo.

She has over 20 years of experience in advanced materials, additive manufacturing, sustainable (nano) materials, electrochemistry, and surface engineering. Her current research in her group concentrates on Additive Manufacturing (metals, polymers, ceramics, composites), Bio Augmentation of Circular and Carbon-Negative Materials, Sustainable and Recyclable Materials for 3D Printing, Biomass-filled Biodegradable/Recyclable Polymeric Composites, Surface Engineering, and Advanced Coatings, as well as Sensors and Wearables for Point-of-care Diagnostics and Health Monitoring. She has been awarded the 'Best Research Award' for Innovative Development of Advanced Nanocomposite Materials as a Highly Sensitive Biosensor, presented by the International Research Awards on New Science Inventions 2021. Her research contributions have been recognized by Best Paper/Presentation awards at international materials, manufacturing, and engineering education conferences. She is also a recipient of the First Place Award in recognition of being ranked first among MS.C. and Ph.D. graduates in the Department of Materials Science and Engineering at the Sharif University of Technology.

Research Entity Budget

	Items	Year 1	Year 2	Year 3	Year 4	Year 5	Total	Justification
1. Operatonal Budget								
1.1 Labour Costs - Staff								
	Administrative Assistant	$ -	$ 15,000	$ 35,000	$ 35,000	$ 35,000		Not needed in the first year. After the revenue comes from the secured grants/contracts an admin assiatnt will be hired in year 2 for part time contribution.
	Grant Writer	$ 30,000	$ 30,000	$ 30,000	$ 30,000	$ 30,000		A grant writer will be hired as part time. Contengient on the amount of funds secured in the first few years, this poistion may be turned into a full time position.
	Benefits (9%)	$ 2,700	$ 4,050	$ 5,850	$ 5,850	$ 5,850		
SUB-TOTAL Labour		**$ 32,700**	**$ 34,050**	**$ 70,850**	**$ 70,850**	**$ 70,850**	**$ 279,300**	
1.2 Labour Costs - Director								
	Teaching Release	$ -	$ -	$ -	$ -	$ -		Not needed.
	Benefits (9%)							Not needed.
SUB-TOTAL LABOUR		**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	
1.3 Research Entity Operating Costs								
	Technical/Consulting Services							Not needed.
	IT Support							Not needed.
	Equipment							Not needed.
	Office Supplies and Services							Not needed since this is provided by the Faculty.
	Staff and Director Travel							Faculty member budget.
	Other (explain)							Not needed.
SUB-TOTAL-Research Entity Operating Costs		**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	
2. Research Networking								
	Seminars and workshops	$ 8,000	$ 10,000	$ 10,000	$ 15,000	$ 20,000	$ 63,000	Annual workshop hosting costs.
	Conference							
	Other (explain)							
SUB-TOTAL-Research Networking		**$ 8,000**	**$ 10,000**	**$ 10,000**	**$ 15,000**	**$ 20,000**	**$ 63,000**	
3. Communications								
	Website	$ 1,500	$ 1,500	$ 1,500	$ 1,500	$ 1,500	$ 7,500	Website creation, hosting, and maintenance fees
	Other (explain)							
		$ 1,500	**$ 1,500**	**$ 1,500**	**$ 1,500**	**$ 1,500**	**$ 7,500**	
4. Knowledge Transfer and Dissemination								
	Publication Costs	0	1000	1000	2000	2000	$6,000	Promotional materials.
	Other (explain)							
SUB-TOTAL		**$ -**	**$ 1,000**	**$ 1,000**	**$ 2,000**	**$ 2,000**	**$ 6,000**	
TOTAL OPERATIONAL BUDGET	**TOTAL OPERATIONAL BUDGET**	**$ 42,200**	**$ 46,550**	**$ 83,350**	**$ 89,350**	**$ 94,350**	**$ 355,800**	
REVENUE								
	VPRI Contributions	$ 25,000	$ 25,000	$ 25,000	$ 25,000	$ 25,000	$ 125,000	
	External Grant Funding (Director)	$ 4,000	$ 4,000	$ 10,000	$ 10,000	$ 12,000	$ 40,000	**Unsecured- Proposed that the director of the centre contribute $4,000 in the first two years towards the centre. This will ramp up to $10,000 in year 3 and $12000 in year 5, based on the flow of grants. This will be built into the grant applications.**
	External Grant Funding (Members)	$ 17,500	$ 17,500	$ 42,000	$ 42,000	$ 49,000	$ 168,000	**Unsecured - Proposed that each of faculty member collaborating in the centre contribute $2,500 each towards centre staff and resourcing. This will ramp up to $6,000 in year 3 and $7,000 in year 5, depening on the flow of grants. This will be built into the grant applications.**
	Industrail Short Courses		$ 10,000	$ 15,000	$ 20,000	$ 25,000	$ 60,000	**Unsecured - the short courses will run in year 2 once the center is established and well connected with industry.**
TOTAL REVENUE		**$ 46,500**	**$ 56,500**	**$ 92,000**	**$ 97,000**	**$ 111,000**	**$ 393,000**	
TOTAL OPERATIONAL BUDGET LESS REVENUE		**$ 4,300**	**$ 9,950**	**$ 8,650**	**$ 7,650**	**$ 16,650**	**$ 37,200**	

BOARD REPORT

SESSION:		**ACTION REQUESTED:**	
Public	☒	**Decision**	☒
		Discussion/Direction	☐
		Information	☐
Financial Impact	☒ **Yes** ☐ **No**	**Included in Budget**	☒ **Yes** ☐ **No**
TO:	**Board of Governors**		
DATE:	**February 20, 2025**		
FROM:	**Academic Council**		
PRESENTED BY:	**Les Jacobs, Vice-President, Research and Innovation**		
SUBJECT:	**Establishment of Interdisciplinary Centre for Preventative Nutrition & Technology (ICPNT) (formerly named as Centre for Interdisciplinary Nutrition Research & Innovation (CINRI)**		

BOARD MANDATE:
In accordance with Article 1.4(b) of By-law No. 2 and the Procedures for the Creation of Research Entities, Academic Council makes recommendations to the Board on matters including the establishment of research centres.

Academic Council is seeking the Board's approval of the establishment of the Interdisciplinary Centre for Preventative Nutrition & Technology (ICPNT).

BACKGROUND/CONTEXT & RATIONALE:

We propose to establish the Interdisciplinary Centre for Preventative Nutrition & Technology (ICPNT) at Ontario Tech University. The ICPNT aims to be recognized globally as a leader in interdisciplinary applied nutrition research, driving innovative policy and practice solutions that address real-world nutrition problems in Canada and beyond. Its mission is to improve the health and well-being of populations and communities locally, nationally, and internationally through visionary interdisciplinary nutrition research. The ICPNT is committed to research focused on identifying nutrition-related concerns and on interventions and policies that improve health and well-being across the life course. By integrating technology and artificial intelligence (AI), and prioritizing equity, diversity, and inclusion, we will enable progressive, effective and sustainable solutions for individuals, practitioners and policymakers. We are also dedicated to cultivating the next generation of outstanding researchers who will advance innovation in tackling global nutrition challenges.

The ICPNT'S interdisciplinary and technological expertise uniquely positions it to conduct cutting-edge nutrition research that captures the multifaceted nature of nutrition challenges and how they interact with personal and environmental factors. The ICPNT will distinguish itself from nutrition research centres in Canada and abroad, which tend to be focused on clinical sciences, basic sciences, food innovation, agriculture, or specific life stages or diseases. Through our review of similar nutrition research centres nationally and globally, the ICPNT stands out as the only known entity with a research mandate that meaningfully integrates technology with nutrition science. As nutrition increasingly intersects with technology and AI to innovate dietary assessments, education initiatives, lifestyle interventions, and data analyses, centres like the ICPNT, prioritizing cutting-edge technological innovations as part of its research, are uniquely positioned to become leaders in solving "wicked" nutrition problems using innovative tools.

Such collaboration is integral to innovation and will allow the ICPNT to become a leader in solving complex intersectoral problems that represent the most challenging issues our society faces today. Specifically, we envision a research program that will include three nutrition research domains: 1) chronic disease risk and management; 2) health and wellness across the lifespan; and 3) education, implementation and practice. Each domain incorporates a technology- and equity-focused lens and includes a research and dissemination plan to facilitate policy and practice change. The research will target several key areas for action, including perinatal families; parents and the school food environment; tackling disparities in knowledge, behaviour, and health/food literacy; food insecurity in youth, adults and older adults; the barriers practitioners face in translating nutrition recommendations into practice; and nutrition-related behaviours and inequities impacting chronic disease risk.

Currently, there are no research entities at Ontario Tech dedicated to tackling the varied and complex nutrition issues facing the world today. This formal interdisciplinary research centre will draw on expertise from the Faculty of Health Sciences, Faculty of Education, and Faculty of Business and Information Technology, existing research Centres and Institutes at Ontario Tech, and leverage relationships with external partners to propel innovation. The Centre will strengthen the impact of Ontario Tech's nutrition research while also advancing Ontario Tech's values and strategic research priorities: Healthy population, community well-being, and social justice; Tech with a conscience; Equity, diversity, and inclusion; Engaging communities where they live, work, and play; Partnership-building and collaboration; Training and capacity-building, Creating a sticky campus.

RESOURCES REQUIRED:
Physical Requirements:

No new infrastructure needed. At start-up, the ICPNT members will use their existing research spaces (Box 2), which may require expansion in the future as the Centre grows. The new home to the Faculty of Health Sciences, Shawenjigewining Hall, will provide additional space for the ICPNT research activities, such as a meeting place for collaborations, and a safe space for students, faculty, partners, and staff. There are no new lab requirements for the ICPNT at the present time.

Box 2. Description of available infrastructure/research space

Dr. Arcand	Lab that includes 4 offices (2x desks each) for trainees in U5 building
Dr. Hughes	STEAM 3D Maker Lab (virtual tour - https://janettehughes.ca/lab/)
Dr. Sun	Geriatric Dementia Unit; Research Office (experiential student placement at Ontario Shores Centre for Mental Health Sciences)
Dr. Kapralos	1 lab (GAMER Lab) for trainees in SIRC building

8.1.2. The ICPNT and its members will require the use of basic office lab equipment (e.g., computers, phones, desks, monitors, copiers) and software for data collection (e.g., Qualtrics, REDCap), analysis (e.g., R Studio, SPSS, NVivo) and writing (e.g., Endnote). Many of these resources are available internally. Any resources requirements above and beyond what is internally available will be purchased with the ICPNT faculty member research funds (e.g., wearables or mobile devices for intervention delivery or data collection). As new research is planned, more specialized resources may be required and ICPNT faculty members will apply for funds to cover these resource costs. The ICPNT will utilize library resources to access journal articles, books, and periodicals; however, ICPNT faculty members have Research Librarians on their teams to assist with research projects that utilize scoping and systematic review methodologies.

Staffing Requirements:

No new infrastructure needed. At start-up, the ICPNT members will use their existing research spaces (Box 2), which may require expansion in the future as the Centre grows. The new home to the Faculty of Health Sciences, Shawenjigewining Hall, will provide additional space for the ICPNT research activities, such as a meeting place for collaborations, and a safe space for students, faculty, partners, and staff. There are no new lab requirements for the ICPNT at the present time.

Box 2. Description of available infrastructure/research space

Dr. Arcand	Lab that includes 4 offices (2x desks each) for trainees in U5 building
Dr. Hughes	STEAM 3D Maker Lab (virtual tour - https://janettehughes.ca/lab/)
Dr. Sun	Geriatric Dementia Unit; Research Office (experiential student placement at Ontario Shores Centre for Mental Health Sciences)
Dr. Kapralos	1 lab (GAMER Lab) for trainees in SIRC building

8.1.2. The ICPNT and its members will require the use of basic office lab equipment (e.g., computers, phones, desks, monitors, copiers) and software for data collection (e.g., Qualtrics, REDCap), analysis (e.g., R Studio, SPSS, NVivo) and writing (e.g., Endnote). Many of these resources are available internally. Any resources requirements above and beyond what is internally available will be purchased with the ICPNT faculty member research funds (e.g., wearables or mobile devices for intervention delivery or data collection). As new research is planned, more specialized resources may be required and ICPNT faculty members will apply for funds to cover these resource costs. The ICPNT will utilize library resources to access journal articles, books, and periodicals; however, ICPNT faculty members have Research Librarians on their teams to assist with research projects that utilize scoping and systematic review methodologies.

Administrative support will be provided by a part-time Coordinator, hired as an employee of the ICPNT. They will be responsible for assisting the Director with administrative and organizational tasks. Compensation for the Coordinator will derive from ICPNT member grants. In Year 1, additional funds are requested as part of the Start-up funds (Section 8.3.2) to support the development of ICPNT processes and online presence.

Graduate students and postdoctoral fellows will be recruited each year as part of the ICPNT training activities. They participate in research and dissemination activities, seminar planning, and mentor undergraduate students. These students will be funded through Teaching Assistantships or partially funded Teaching Assistantships that are funded by Ontario Tech; and/or Graduate Research Assistantships that are funded by the ICPNT faculty members through their operating grants; and/or by external scholarships such as Ontario Graduate Scholarships, or those from

CIHR, NSERC or SSHRC. The ICPNT will aim to have at least one postdoctoral fellow each year. The postdoctoral fellow will conduct advanced research under the supervision of the ICPNT faculty members, contributing to published work, grant applications, and student training. Postdoctoral fellows will be funded through the ICPNT faculty member's operating grants and/or competitive scholarship programs from agencies such as the Banting Postdoctoral Fellowship program, CIHR, SSHRC, NSERC, or the Heart & Stroke Foundation.

Future expansion the number of staff and trainees will be reevaluated as research projects are initiated and contingent upon securing funding to support this growth.

8.2.2 There are currently no ongoing agreements with personnel who are employees of external institutions or corporations. Such agreements will be prepared on an ongoing basis.

IMPLICATIONS:

Sustainability. In the past, ICPNT members have collectively secured more than $14 million in total research funding as principal applicants or investigators (PIs) from all sources. The ICPNT PIs currently have 2.7 million in funds secured for the next 5 years, with more funds expected as new grant applications are submitted. The ability of the members to jointly obtain funding, and contribute funds to future ICPNT operations, is evident from the numerous successful grant applications that they have worked on together in the past.

Securing external funding will ensure a steady flow of resources to support the ICPNT's research activities. Long term success and sustainability of funding is expected given past successes in securing funds from a variety of sources. Regarding longer-term funding for the ICPNT, the Faculty of Health Sciences and Dr. Arcand is working closely with Advancement to secure donations for a Research Chair funding and/or funding for the ICPNT. These efforts could provide opportunities for individuals or organizations to become named sponsors of the Centre, and the funds raised can be used to support the operations of the ICPNT or to establish a Research Chair position linked to the Centre. The ICPNT will also focus on pursuing a wide range of funding opportunities that can support ICPNT operations and research, including tri-agency councils and those that value an interdisciplinary approach (e.g., New Frontiers in Research Fund, Canadian Foundation for Innovation). Each ICPNT faculty member will act as the lead within their respective research areas while leveraging the collective expertise of all members to strengthen their proposals through internal peer review. The funds will be used to support research pursuits, graduate students, research assistants, postdoctoral fellows, and dissemination activities (e.g., conferences, journal publications, seminars). ICPNT members will apply for funding opportunities to support the management and infrastructure of the ICPNT as needs arise going forward (e.g., external research grants will have funds allocated to support the ICPNT operations). In addition, funding from the Canadian Foundation for Innovation (CFI) Infrastructure Operating Fund helps cover a portion of the operating and maintenance costs of CFI-funded research infrastructure. All students working with the ICPNT will additionally be encouraged to apply for scholarships with mentorship to develop their applications. The ICPNT members will also actively fundraise to support ICPNT work. Each year, the budgetary needs of the ICPNT will be re-evaluated to ensure the efficient use of resources.

ALIGNMENT WITH MISSION, VISION, VALUES & STRATEGIC PLAN:

ICPNT Vision

To be recognized globally as a leader in interdisciplinary applied nutrition research, driving innovative policy and practice solutions that address real-world nutrition problems in Canada and beyond.

ICPNT Mission Our mission is to improve the health and well-being of populations and communities locally, nationally, and internationally through visionary interdisciplinary nutrition research. We are committed to research focused on identifying nutrition-related concerns and on interventions and policies that improve health and well-being across the life course. By integrating technology and artificial intelligence (AI), and prioritizing equity, diversity, and inclusion (EDI), we will enable progressive, effective and sustainable solutions for individuals, practitioners and policymakers. We are also dedicated to cultivating the next generation of outstanding researchers who will advance innovation in tackling global nutrition challenges. *Global and national need for a Centre for Nutrition Innovation, Policy & Practice* Maintaining a healthy diet across the lifespan is essential. Poor nutrition can negatively impact physical and cognitive development in children and increase susceptibility to all forms of malnutrition (e.g., undernutrition, micronutrient deficiencies, obesity) and to noncommunicable diseases (NCDs) (e.g., diabetes, cardiovascular disease (CVD), stroke, cancer, dementia). These adverse outcomes lead to profound and lasting social, economic, and health consequences for individuals, their families, communities, and countries. While dietary needs vary, individually, culturally, and globally, the core principles of a healthy diet are consistently recognized. For adults, a healthy diet includes fruits, vegetables, legumes, nuts, whole grains, and limited free sugars, saturated fats, trans fats, and sodium. The same tenets apply to children, in addition to encouraging exclusive breastfeeding until six months of age, with complementary foods then added, containing no added sugars and sodium.

ALTERNATIVES CONSIDERED:

The ICPNT will position Ontario Tech as a leader in nutrition-related knowledge, attitudes, and behaviours, nutrition security, health promotion and policy interventions with a focus on equity, AI, and technology (Section 4.1), raising the University's global presence in nutrition research. We envision the Centre's growing reputation will act as a beacon, attracting top students and trainees who seek to engage in impactful interdisciplinary nutrition research. The ICPNT's potential for success is bolstered by the extensive track records of the individual members (Section 7), with the expectation that accomplishments will be amplified with collective efforts unified by a common vision.

CONSULTATION:

- Consultation and feedback on the establishment of the Interdisciplinary Centre for Preventative Nutrition & Technology (ICPNT) were carried out at different levels among the Faculty starting from September 25, 2024. The proposal of the ICPNT was presented in the Faculty Council on October 2, 2024. Then, the proposal was discussed with the University Research Committee on November 19, 2024.

- These existing relationships speak to the capacity of our members to work cooperatively, and through the ICPNT, even members without prior relationships will have the opportunity to work together on new research projects (Section 4.1) and joint efforts to leverage past success in obtaining external funding (Section 4.3). Beyond the member relationships, the ICPNT will work closely with other Ontario Tech entities, including those our members are involved in. Dr. Hughes is the inaugural Director of the *Centre for Digital Innovations in Education* (CDIE), which focuses on community-driven educational innovation through the inclusion of internal and external community partners. The CDIE, led by the Faculty of Education, aligns naturally with the ICPNT, particularly for research focused on health and wellness across the lifespan, education, practice, and implementation, and the cross-cutting theme of practice and policy change (Section 4.1).

COMPLIANCE WITH POLICY/LEGISLATION:

The establishment of the ICPNT aligns with Ontario Tech University's Procedure for the Creation of Research Units, Centres, and Institutes.

NEXT STEPS:

Board of Governors for approval.

MOTION FOR CONSIDERATION:

That pursuant to the recommendation of the Academic Council, the Board of Governors hereby approves the establishment of the Interdisciplinary Centre for Preventative Nutrition & Technology (ICPNT), as presented.

SUPPORTING REFERENCE MATERIALS:

- Proposal, budget, researchers' CV's.

Proposal for the establishment of an Interdisciplinary Centre for Preventative Nutrition & Technology

ONTARIO TECH UNIVERSITY

1. Name of the Entity (Unit, Centre or Institute)

Interdisciplinary Centre for Preventative Nutrition & Technology (ICPNT)

2. Proposers – including name, title, and contact information

Dr. JoAnne Arcand, Associate Professor, Research Excellence Chair in Food, Nutrition & Health, Faculty of Health Sciences, Ontario Tech University. Tel: 905.721.8668 ext. 3796; joanne.arcand@ontariotechu.ca

Dr. Jennifer Abbass Dick, Associate Professor, Faculty of Health Sciences, Ontario Tech University. Tel: 905.721.8668 ext. 3735; jennifer.abbassdick@ontariotechu.ca

Dr. Caroline Barakat - Associate Professor, Faculty of Health Sciences, Ontario Tech University; Tel: 905.721.8668 ext. 2173; caroline.barakat@ontariotechu.ca

Dr. Janette Hughes, Professor and Canada Research Chair in Technology and Pedagogy, Faculty of Education Ontario Tech University; Director, Centre for Digital Innovations in Education (CDIE). Tel: 905.721.8668 ext. 2875; janette.hughes@ontariotechu.ca

Dr. Bill Kapralos, Associate Professor, Game Development and Interactive Media, Faculty of Business and Information Technology, Ontario Tech University. Tel: 905.721.8668 ext. 2882; bill.kapralos@ontariotechu.ca

Dr. Janet McCabe - Associate Professor, Faculty of Health Sciences, Ontario Tech University; Tel: 905.721.8668 ext. 6270; janet.mccabe@ontariotechu.ca

Dr. Winnie Sun, Associate Professor, Research Excellence Chair in Healthy Aging and Dementia Care, Faculty of Health Sciences, Ontario Tech University; Director and co-lead, Advancement for Dementia Care Centre (ADCC). Tel: 905.721.8668 ext. 5349; winnie.sun@ontariotechu.ca

Dr. Mavra Ahmed, Adjunct Professor, Faculty of Health Sciences, Ontario Tech University; Research Associate Department of Nutritional Sciences and Joannah and Brian Lawson Centre for Child Nutrition, University of Toronto. Tel: 416.978.7921; mavz.ahmed@utoronto.ca

Dr. Mary L'Abbé, Adjunct Professor, Faculty of Health Sciences, Ontario Tech University; Professor Emeritus, Department of Nutritional Sciences, University of Toronto; Director, WHO Collaborating Centre on Nutrition Policy for Chronic Disease Prevention. Tel: 416. 946.7545; mary.labbe@utoronto.ca

3. Background Description and Justification

3.1. Explain why the entity is needed at Ontario Tech University, and if possible, the larger community.

We propose to establish the Centre for Interdisciplinary Nutrition Research & Innovation (ICPNT) at Ontario Tech University to address a considerable and unmet need in nutrition research, as detailed below. Currently, there are no research entities at Ontario Tech dedicated to tackling the varied and complex nutrition issues facing the world today. This formal interdisciplinary research centre will draw on expertise from several faculties and leverage relationships with external partners to propel innovation, including a strong emphasis on technology. The Centre will bolster the impact of Ontario Tech's nutrition research while also advancing Ontario Tech's strategic research priorities.

ICPNT Vision

To be recognized globally as a leader in interdisciplinary applied nutrition research, driving innovative policy and practice solutions that address real-world nutrition problems in Canada and beyond.

ICPNT Mission

Our mission is to improve the health and well-being of populations and communities locally, nationally, and internationally through visionary interdisciplinary nutrition research. We are committed to research focused on identifying nutrition-related concerns and on interventions and policies that improve health and well-being across the life course. By integrating technology and artificial intelligence (AI), and prioritizing equity, diversity, and inclusion (EDI), we will enable progressive, effective and sustainable solutions for individuals, practitioners and policymakers. We are also dedicated to cultivating the next generation of outstanding researchers who will advance innovation in tackling global nutrition challenges.

Global and national need for a Interdisciplinary Centre for Preventative Nutrition & Technology

Maintaining a healthy diet across the lifespan is essential. Poor nutrition can negatively impact physical and cognitive development in children,[1] and increase susceptibility to all forms of malnutrition (e.g., undernutrition, micronutrient deficiencies, obesity) and to non-communicable diseases (NCDs) (e.g., diabetes, cardiovascular disease (CVD), stroke, cancer, dementia).[2-4] These adverse outcomes lead to profound and lasting social, economic, and health consequences for individuals, their families, communities, and countries.[2, 3] While dietary needs vary, individually, culturally, and globally, the core principles of a healthy diet are consistently recognized.[5] For adults, a healthy diet includes fruits, vegetables, legumes, nuts, whole grains, and limited free sugars, saturated fats, trans fats, and sodium.[5] The same tenets apply to children, in addition to encouraging exclusive breastfeeding until six months of age, with complementary foods then added, containing no added sugars and sodium.[5]

Despite having a robust understanding of what a healthy diet entails, there is a dire need for improved nutritional quality in Canada and globally, given current poor nutritional status, health outcomes, and nutritional inequities.[2, 6, 7] Progress toward the United Nations (UN) sustainable development goal (SDG) to "end hunger, achieve food security and improved nutrition and promote sustainable agriculture" by 2030 has primarily stagnated or regressed.[6] In 2023, 9.1% (713 million to 757 million people) of the world's population experienced hunger.[6] In 2022, 22.3% (148 million) of children under 5 years old were affected by stunting and 6.8% (45 million) experienced wasting – many living in Central and Southern Asia or sub-Saharan Africa.[6] Additionally, worldwide, 20% of youth, and 43% of adults were overweight, with 8% of youth and 890 million adults living with obesity.[6, 8] Globally, dietary risk factors contribute to an estimated 11 million deaths and 255 million disability-adjusted life years (DALYs) annually among adults 25 years and older.[7] The leading dietary risk factors contributing to deaths and DALYs were high intake of sodium, low intake of whole grains, and low intake of fruits.[7] In Canada, 27-39% of all-cause mortality in men and 9-23% of all-cause mortality in women is attributable to poor dietary patterns.[9] Unhealthy eating in Canada costs $13.8 billion annually[10] – an amount comparable to the economic costs of smoking and exceeding the costs associated with physical inactivity.

Dietary patterns are complex, evolve over time, and are shaped by a multitude of interrelated factors, each representing an opportunity to intervene.[11] Individual-level determinants include cognitions, skills and behaviours, lifestyles, and biological and demographic factors.[11] Environmental-level determinants span social (e.g., friends, family, peers, social norms, role modelling), physical (e.g., home, schools, work site, restaurants, supermarkets), and macro-level environments (e.g., cultural values and factors, economic systems, food industry, food distribution, marketing, media, food policies, health care systems, education system land use).[11] These socio-ecological factors relate closely to the concept of nutrition security by influencing equitable and sustained availability (e.g., quantity and quality of food), access (e.g., obtainability, alignment with an individual's cultural, social, or dietary preferences), affordability (e.g., financial resources, food cost) and utilization (e.g., factors impacting use and intake, like food knowledge and skills, food waste, mobility, social isolation) of foods that promote well-being and prevent and treat disease.[12] Consequently, the complexity of food systems and the factors influencing diets and nutrition security demand an equally intricate response, which includes the engagement of scholars and stakeholders from multiple disciplines and sectors.[13]

In addition, technology is transforming the field of nutrition in unprecedented ways. The last decade or so has seen the proliferation of digital technologies to address nutrition problems, taking the form of eHealth (e.g., health-related websites, wearables or software) and mHealth tools (mobile apps), that are being applied in clinical, community, and public health settings.[14-17] Technology and artificial intelligence (AI) can be used to assess diets, educate about nutrition, personalize nutrition interventions by analyzing individual data to provide tailored recommendations and predict health outcomes, enhance the analysis of

large datasets and uncover patterns and trends that inform public health strategies and clinical interventions. The future application of AI related to nutrition may be vital for preventing and managing chronic diseases. AI in nutrition research and practice is an emerging field with significant potential. A recent scoping review identified only 22 studies that applied AI to address nutrition challenges, with the most common application being for dietary assessment and dietary pattern identification.[18] This review suggests there is an extraordinary opportunity for leadership in integrating technology and AI into nutrition research and practice, which can be harnessed with the ICPNT at Ontario Tech.

The ICPNT's interdisciplinary and technological expertise uniquely positions it to conduct cutting-edge nutrition research that captures the multifaceted nature of nutrition challenges and how they interact with personal and environmental factors. Such collaboration is integral to innovation and will allow the ICPNT to become a leader in solving complex intersectoral "wicked" problems that represent the most challenging issues we face today. Specifically, we envision a research program that will include three nutrition research domains: 1) chronic disease risk and management; 2) health and wellness across the lifespan; and 3) education, implementation and practice. Each domain will execute a research and dissemination plan to facilitate policy and practice change while incorporating a technology- and equity-focused lens. The research will target several key areas for action, including perinatal families; parents and the school food environment; tackling disparities in knowledge, behaviour, and health/food literacy; food insecurity in youth, adults and older adults; the barriers practitioners face in translating nutrition recommendations into practice; and nutrition-related behaviours and inequities impacting chronic disease risk.

The recent commitments from the World Health Organization (WHO) and the UN to address nutrition issues further underscore the considerable nutrition problems facing the world and emphasize more than ever, the need for effective and equitable interventions, though these challenges resist simple solutions.[2, 6, 19, 20] The ICPNT will play a crucial role in supporting several national and international goals, including the:

- Canadian government's commitment to an overall healthier food environment, as emphasized in its Healthy Eating Strategy for Canada, which is poised to address key factors related to improving healthy eating information, improving the nutritional quality of foods, and protecting vulnerable populations.[21]
- UN SDGs of ending hunger, supporting health and well-being, and reducing inequalities (SDG 2, 3, 10) and fostering collaboration and partnerships with governments, non-governmental organizations (NGOs) and other stakeholders to strengthen efforts (SDG 17).[22]
- WHO's NCD Global Action Plan, which was developed with a vision for a world free of the avoidable burden of noncommunicable diseases, including the overarching principles of taking a life-course approach, empowerment of people and communities, use of evidence-based strategies, equity-based approaches, and multisectoral action.[23]

- Food and Agriculture Organization of the UN's mandate to end hunger and malnutrition across the globe and its strategic framework (2022-2031). This framework seeks to support the SDGs, including through better nutrition, better environment, better life, and better production while leaving no one behind. [24]
- WHO/Pan-American Health Organization (PAHO) Sustainable Health Agenda (2018-30) which calls for strong measures to address inequity through food quality, access, and availability as a means to improve risk factors and outcomes related to NCDs and mental health.[25]
- WHO/PAHO Strategy and Plan of Action on Health Promotion (2019-30), which prioritizes integrating the social determinants of health into health promotion efforts as a strategy to address health equity, enabling community participation and empowerment, and strengthening key healthy settings (e.g., schools, houses, workplaces).[26]

The need for nutrition research that strongly aligns with the ICPNT mission has also been emphasized by the Canadian non-profit sector. For instance, the Heart & Stroke Foundation published a call to action for increasing food and nutrition research, monitoring, and evaluation, with the aim of creating a better understanding of the impact of diet on health and disease and to inform the development and evaluation of nutrition interventions.[27]

The need for a an Interdisciplinary Centre for Preventative Nutrition & Technology at Ontario Tech

The ICPNT will distinguish itself from nutrition-focused research centres in Canada and abroad, which tend to be focused on clinical sciences, basic sciences, food innovation, agriculture, or specific life stages or diseases. Through our review of similar nutrition research centres nationally and globally, the ICPNT stands out as the only known entity with a research mandate that meaningfully integrates technology and AI with nutrition science. As nutrition increasingly intersects with technology and AI to innovate dietary assessments, education initiatives, lifestyle interventions, and data analyses, centres like the ICPNT, prioritizing cutting-edge technological innovations as part of its research, are uniquely positioned to become leaders in solving "wicked" nutrition problems using innovative tools.

There is also currently no research entity at Ontario Tech aiming to deliver the comprehensive applied nutrition research proposed by the ICPNT. By establishing a ICPNT, Ontario Tech will address this gap and provide the infrastructure needed for this interdisciplinary, collaborative, and innovative work. The ICPNT aligns well with and will contribute to advancing Ontario Tech's research mission and strategy (Section 4.2). Briefly, Ontario Tech is uniquely positioned to establish a research centre dedicated to advancing innovative nutrition research with its commitment to addressing societal challenges through innovation and research excellence. The ICPNT will address a critical global need that is aimed at achieving Ontario Tech's strategic research priority of "*healthy population, community well-being, and social justice*," while thoroughly considering "*tech with a*

conscience" and "*equity, diversity, and inclusion"* in its planning. The ICPNT will benefit from being situated at Ontario Tech, which has technology at the heart of its values. With faculty experts to collaborate with – leading to cutting-edge research and innovations – the ICPNT will become a leader in digital nutrition and the only known nutrition-focused research centre or institute with technology as a core theme in Canada. The ICPNT will benefit the University and the local community by providing access to exemplary nutrition research; enhancing educational opportunities and serving as an education hub; attracting high-quality training and research collaborations; promoting diversity; creating jobs; increasing awareness of nutrition and health for optimal growth and development and chronic disease prevention; and reducing health disparities in the community over the long term.

Nutrition is already an area of research excellence at Ontario Tech and can be strengthened by the multidisciplinary nature of the Faculty of Health Sciences and its programs (Nursing, Health Sciences/Public Health, Kinesiology, Medical Laboratory Sciences), as well as with collaborations across the university and broader academic and stakeholder communities in Canada and elsewhere. Current nutrition research at Ontario Tech explores:

- Nutrition risks and interventions to support well-being (e.g., sleep, mental health, infant, child health and development);
- NCD prevention/ management (e.g., CVD, hypertension, diabetes, dementia);
- Evaluation of health promotion (e.g., breastfeeding support, healthy eating education, social marketing), policy (e.g., dietary sodium reduction), and practice (e.g., diverse health care providers including family doctors and dietitians, hospital administration) interventions for youth, for persons with disabilities, older adults, and the general population at large, regionally, across Canada, and globally; and
- Nutrition research questions using varied methodologies (e.g., RCTs, systematic reviews, community-based interventions, qualitative inquiry, implementation science, co-participatory action research).

The ICPNT will build on this foundation by formalizing an interdisciplinary collaboration of experts from various fields, breaking down research silos, and leveraging shared relationships with external partners to drive innovation and strengthen the impact of Ontario Tech's nutrition research (Section 6). The Centre will integrate expertise from across Ontario Tech, including the Faculty of Health Sciences, Faculty of Education, and Faculty of Business and Information Technology (Section 3.2). The ICPNT will position Ontario Tech as a leader in nutrition-related knowledge, attitudes, and behaviours, nutrition security, health promotion and policy interventions with a focus on equity, AI, and technology (Section 4.1), raising the University's global presence in nutrition research. We envision the Centre's growing reputation will act as a beacon, attracting top students and trainees who seek to engage in impactful interdisciplinary nutrition research. The ICPNT's potential for success is bolstered by the extensive track records of the individual members

(Section 7), with the expectation that accomplishments will be amplified with collective efforts unified by a common vision.

3.2. Describe how the entity will foster synergistic collaboration that would not otherwise be possible, and how the entity would facilitate research among scholars within the university and in the wider community.

In Canada, nutrition science programs, centres and institutes have traditionally been housed within faculties of agriculture or medicine with the foundation of nutrition rooted in agricultural, clinical, and basic science research. However, an interdisciplinary approach is vital to effectively tackle the complex nutrition issues, often termed "wicked" challenges, facing society today.[28] At Ontario Tech, the interdisciplinary nature of the Faculty of Health Sciences and the broader university fosters rich opportunities for cross-disciplinary collaboration, bringing together researchers who contribute diverse perspectives and methodological expertise (Section 7). The ICPNT will foster synergy by uniting members from the Faculty of Health Sciences, Faculty of Education, and Faculty of Business and Information Technology to engage in integrative research collaborations, communicate with knowledge users, and develop relationships with stakeholders. These relationships will capitalize on the complementary skills and knowledge of each member, collectively working towards a shared mission. As a small university, Ontario Tech offers an opportunity for accessible and organic collaborations across and within faculties that may be more challenging to accomplish at larger academic institutions. The ease of collaborating at Ontario Tech is evident from the past work of the ICPNT members.

The Centre will offer a way to formalize and expand upon the existing relationships that have developed among several members over the years. For example, Dr. Arcand, Dr. Hughes and Dr. Kapralos have been collaborating since 2016. Lately, they received a Canadian Institutes for Health Research (CIHR) project grant examining the efficacy of a digital school-based nutrition education intervention to improve healthy eating knowledge, attitudes, and behaviours ($481,950). This tri-agency funding builds upon their past funded collaboration ($1.175 million Ontario Research Fund – Research Excellence grant) that focused on designing, developing, and researching, educational apps. Additionally, Dr. Arcand, Dr. L'Abbé, and Dr. Ahmed have also partnered on several grants together, including a four-year CIHR project grant investigating the contextual and behavioural factors related to sodium intake among Canadian adults ($623,476). Dr. Sun and Dr. Abbass Dick have most recently joined forces to look at the effectiveness of eHealth breastfeeding co-parenting educational resources on overcoming early breastfeeding challenges and increasing exclusivity rates in the first four weeks postpartum. Dr. Barakat, Dr. Abbass Dick, and Dr. Sun received a grant in 2017 for a scaling-up approach to educating home care nurses about de-prescribing to promote safety in medication management among frail older adults ($14,939). These existing relationships speak to the capacity of our members to work cooperatively, and through the ICPNT, even members without prior relationships will have the opportunity to work together on new research

projects (Section 4.1) and joint efforts to leverage past success in obtaining external funding (Section 4.3).

Beyond the member relationships, the ICPNT will work closely with other Ontario Tech entities, including those our members are involved in. Dr. Hughes is the inaugural Director of the *Centre for Digital Innovations in Education* (CDIE), which focuses on community-driven educational innovation through the inclusion of internal and external community partners. The CDIE, led by the Faculty of Education, aligns naturally with the ICPNT, particularly for research focused on health and wellness across the lifespan, education, practice, and implementation, and the cross-cutting theme of practice and policy change (Section 4.1). Similarly, Dr. Sun is the Director and co-lead for the *Advancement for Dementia Care Centre* (ADCC) (https://dementiaresearch.ca/), which is dedicated to unearthing solutions that enhance the quality of life and support for those affected by dementia through innovation in research and deployment of new technologies. The ADCC is a combined effort between Ontario Tech and Ontario Shores Centre for Mental Health Sciences. Dietary health is not only an important factor relating to the onset and progression of dementia,[4] but dementia can also negatively affect a person's nutritional status.[29] The scope of the ADCC aligns well with the ICPNT's research Domain 1, which focuses on chronic disease risk and management (Section 4.1). There will also be opportunities for collaboration with Ontario Tech's *Institute for Disability and Rehabilitation Research* (IDRR). The IDRR is dedicated to the study of disability and rehabilitation related to musculoskeletal pain and mental health conditions. Nutrition and food insecurity in this population is an area of focus for the IDRR, and a reciprocal relationship between the research entities could be highly beneficial. For instance, the "Canadian Nutrition and Health Survey" led by Dr. Arcand will enable novel explorations of the intersection between nutrition and disability. In past years, the IDRR documented food insecurity and its association with mental health among Ontario Tech students, further demonstrating a connection between fields and the potential to benefit Ontario Tech with such relationships. Dr. Kapralos is one of the co-directors of the maxSIMhealth Lab (https://www.maxsimhealth.com/) which is a multidisciplinary collaborative focused on transforming healthcare through innovative simulation experiences and hands-on learning. maxSIMhealth leverages state-of-the-art manufacturing, design, and simulation labs, bringing together expertise from diverse faculties, including Health Sciences, Business and Information Technology, Engineering and Applied Sciences, Education, and Social Sciences, as well as partnering with several community organizations. The ICPNT can work with the maxSIMhealth team to identify innovative and technology-driven solutions to nutrition problems.

The ICPNT will actively bridge the gap between the university and the wider community by maintaining and cultivating relationships with key stakeholders and knowledge users from across organizational and geographic boundaries. Examples of partnerships for the ICPNT draw from the longstanding collaborative relationships our members already have with local, provincial, national, and international organizations. Dr. L'Abbé is the director of the WHO Collaborating Centre for Nutrition Policy for Chronic Disease Prevention, and Dr.

Arcand is a Scientist affiliated with that Centre, contributing substantially to its research mandate during the last renewal. The WHO Centre, which is one of only two WHO nutrition centres in Canada, provides technical advice, training and education, and conducts research to build up the evidence base to inform work on food and nutrition policies and support capacity-building efforts for NCD prevention. The scope of this WHO Centre clearly aligns with research Domain 1, consisting of research on chronic disease risk and management (Section 4.1). Working together will provide the ICPNT with opportunities to meet the requests of the WHO and the PAHO and ensure the research outputs are user-guided and actionable (e.g., revision to the WHO/PAHO sodium reduction targets). The ICPNT members also have partnerships with many organizations, including, but not limited to, Durham Region Health Department, Lakeridge Health, Toronto Public Health, Simcoe Muskoka District Health, 49 school boards across all regions of Ontario, Ontario Physical and Health Education Association, Ontario Dietitians in Public Health, Health Canada, Canadian Nutrition Society, Dietitians of Canada, International Development Research Centre, Heart & Stroke, International Network for Food and Obesity / Non-communicable Diseases Research, Monitoring and Action Support (INFORMAS), Food and Agricultural Organization of the UN, and others (see Section 7 for a full list of partnerships).

Synergy within the Centre will be further enhanced through structured networking and communication opportunities, including regularly scheduled meetings for all members with roundtable updates, quarterly meetings with the Scientific Executive Committee (Section 8.2), quarterly student seminars/workshops (Section 5.2), and social events. Collaboration within the Centre will also be increased through the co-supervision of graduate students, postdoctoral fellows, and undergraduate students completing research practicums and capstone projects (Section 5.1). This will enable engagement within and between disciplines and faculties.

4. Research Mandate

4.1. Outline the type of research to be performed and identify the scope of activities envisaged.

The ICPNT will conduct research across three domains: 1) Chronic Disease Risk & Management; 2) Health and Wellness Across the Lifespan, and; 3) Education, Implementation & Practice, all of which will include a research and dissemination plan to facilitate policy and practice change, ultimately leading to improved nutrition and health outcomes for people in Canada and worldwide (Figure 1). Each domain will include a strong emphasis on technology and equity-focused research (also detailed in Section 4.2).

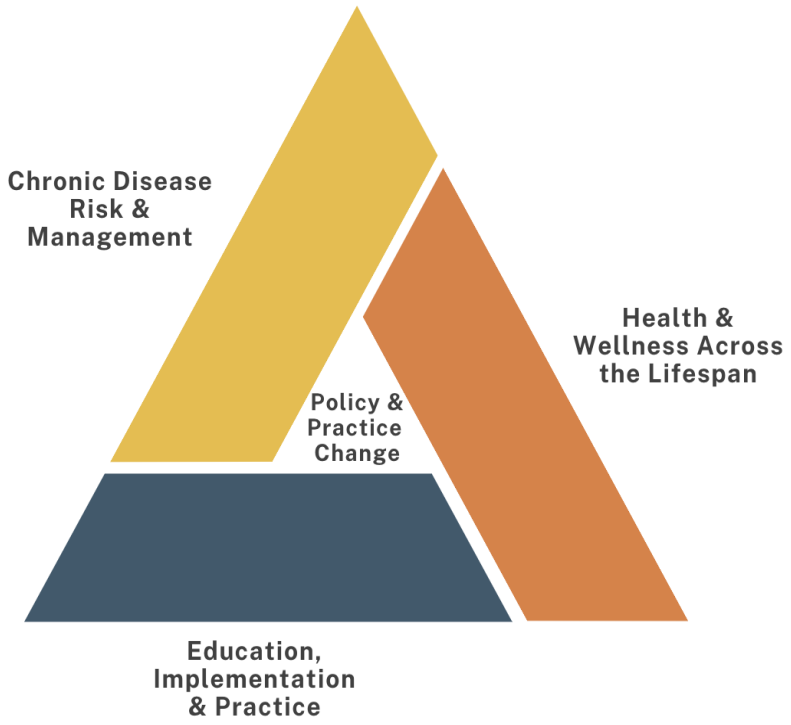

Figure 1. The ICPNT research domains

Domain 1: Chronic Disease Risk and Management

Overview and Impact: This research will inform dietary guidelines and effective interventions that improve chronic disease-related health outcomes and quality of life for individuals in the general population and with chronic diseases. This will be achieved by identifying and addressing nutritional risk factors related to chronic diseases and by investigating the underlying cognitive, social, environmental, and behavioural factors influencing dietary intake and chronic disease risk, integrating concepts like food and health literacy. It will explore the reciprocal interactions between individuals and various interconnected systems and settings, such as the food environment (e.g., food quality, food safety, food advertising), the physical environment, the digital information environment, the healthcare environment, and the policy environment. Emphasizing EDI and participatory action research methods, the research will incorporate diverse perspectives to inform its strategies. Using technology (including AI) to address nutrition challenges can lead to improved data collection and personalized dietary recommendations, enhancing individuals' ability to make informed choices. It also fosters greater access to nutrition information and expert advice, particularly in underserved areas, empowering communities to improve their health.

Domain 1, Focus 1. To conduct public health and clinical studies on nutritional risk factors related to the onset and management of chronic diseases, such as CVD, cancer, dementia, and chronic kidney disease.

Approaches. This research will use both public health and clinical research approaches to investigate and address nutritional risk factors for chronic diseases, which includes evaluating the impact of these nutritional risk factors on health outcomes using surveillance, observational studies, and intervention trials. Public health research may include monitoring and assessing the nutritional quality of the food supply, overall dietary intake and/or community-based interventions. Observational studies may examine the impact of nutritional risk factors on dietary and health outcomes, including cost-benefit analyses. Clinical research will focus on intervention studies, such as trials and pilot or feasibility studies, to assess the effectiveness and acceptability of dietary interventions and their impact on clinical outcomes and quality of life. When relevant, systematic reviews will be conducted to inform this research.

Example of Domain 1, Focus 1

A multi-country study on the availability of sodium-reduced foods and progress in reducing sodium in low- and middle-income countries in Latin America.
Low- and middle-income countries are disproportionately impacted by CVD, hypertension, and excess dietary sodium; making reductions in the sodium content of foods a critical public health strategy. As part of her leadership role in a large research consortium funded by the International Development Research Centre, Dr. Arcand evaluated the sodium content of packaged foods in four Latin American countries, and examined the extent to which food manufacturers had reduced sodium levels over four years, including the proportion of foods that met the WHO/Pan-American Health Organization (PAHO) sodium reduction targets. This research took place in Argentina, Costa Rica, Paraguay, and Peru. Dr. Arcand and her team found that some food categories had significantly reduced sodium levels, but many did not. This data also highlighted that the sodium targets set by the WHO/PAHO were not stringent enough to make meaningful population-level changes in sodium intake, necessitating revised sodium reduction targets. Following the publication of this data, Dr. Arcand co-chaired a WHO/PAHO committee to revise the WHO/PAHO sodium reduction targets, which were published in 2022.

Blanco-Metzler A., et al. 2021. Changes in the sodium content of foods sold in four Latin American countries: 2015 to 2018. Nutrients, 13(11), p.4108.

Domain 1, Focus 2. To examine and intervene on nutrition-related cognitive, social, and behavioural risk factors that promote the onset of chronic diseases or are implicated in their management.

Approaches. This research will integrate theoretically-derived factors influencing nutrition and health, including food and health literacy. Study designs will be applied to reflect the nature of the research question, such as qualitative and mixed methods studies, cross-sectional surveys, clinical and community-based interventions, and systematic/scoping reviews. This research will emphasize the principles of EDI which ensures end-users (including those from under-represented groups) are at the centre of the research - enabling action through a research cycle that is reflective, iterative, and draws on their different perspectives.

Example of Domain 1, Focus 2

Canadian Nutrition and Health Survey (CNHS)
Dr. Arcand has led the development, validation, and administration of a CIHR-funded national cross-sectional survey among Canadian adults - the CNHS - focused on food, nutrition, and health. This cross-sectional survey will 1) elucidate the cognitive, behavioural and environmental drivers of dietary sodium intakes in Canada, including analyses of how key indices of sodium knowledge, attitudes, and, behaviours have changed over the past 13 years in Canada, 2) evaluate food literacy, including its determinants and correlates with healthy eating behaviours, 3) explore where Canadians obtain their nutrition information, their trust in those sources, and their confidence in navigating the nutrition 'infodemic', the latter being WHO public health priority, and 4) evaluate how Canadians identify, perceive and respond to (e.g., trust, purchase intentions) conflicts of interest and paid product endorsements among Registered Dietitians on social media; data that can drive professional regulatory policies in Canada and abroad. This forthcoming data will provide crucial insights to advance Canadian public health nutrition policies and programs.

Domain 1, Focus 3. To address nutrition-related chronic disease risk and management through technology and AI.

Approaches. The research in Domain 1 will include the meaningful integration of technology when examining or addressing nutrition in relation to chronic disease risk and its management. Here, technology will be strategically developed (using rigorous evidence-based approaches), tailored and applied to meet the needs of specific populations, nutritional challenges, and settings. In creating new technologies, end users will be actively involved in every phase of the design, development, and implementation processes to ensure the tools are relevant and impactful. These actions will be crucial for enhancing accessibility, personalization, and the effectiveness of interventions; ultimately empowering individuals and communities to make informed choices that promote better health outcomes. Using AI to personalize user experiences to align with individual sociodemographic factors, preferences, and health conditions, our interventions will enable more targeted interventions. This results in real-time, adaptive feedback tailored to meet users' unique nutritional needs and health objectives, thus leading to improved nutrition and health outcomes.

Study designs will vary based on the stage of development and evaluation, ranging from exploratory qualitative and mixed-method approaches to more conclusive randomized controlled trials. This approach will ensure the technology is user-centred and thoroughly tested across different phases. Important outcomes such as feasibility, acceptability, and changes in nutrition knowledge, attitudes and behaviours will be evaluated, as well as nutrition and health outcomes (e.g., changes in dietary intake, changes in blood pressure) and health care integration metrics. In addition to using technology as a clinical and public health intervention to improve health outcomes (e.g., Sodium Calculator, "Our Voice" app), technology will also be used in data analysis (e.g., natural language processing for qualitative studies, machine learning for quantitative databases). For instance, AI will be leveraged to analyze datasets and identify behavioural trends over time, particularly patterns in food choices influenced by environmental and social factors, including food marketing and social media.

Example of Domain 1, Focus 3

Natural language processing and machine learning approaches for food categorization and nutrition quality prediction compared with traditional methods

Large food databases are required for food supply research in public health; however food categorization and nutrient profiling are labor intensive, time consuming, and costly tasks, given the number of products and labels in large food composition databases and the dynamic food supply. In a recently published study, Dr. Ahmed and L'Abbe used a pretrained language model and supervised machine learning to automate food category classification and nutrition quality score prediction based on manually coded and validated data, and compared prediction results with models using bag-of-words and structured nutrition facts as inputs for predictions. Food product information from University of Toronto Food Label Information and Price Database 2017 (n = 17,448) and University of Toronto Food Label Information and Price Database 2020 (n = 74,445) databases were used. Health Canada's Table of Reference Amounts (TRA) (24 categories and 172 subcategories) was used for food categorization and the Food Standards of Australia and New Zealand (FSANZ) nutrient profiling system was used for nutrition quality score evaluation. TRA categories and FSANZ scores were manually coded and validated by trained nutrition researchers. A modified pretrained sentence-Bidirectional Encoder Representations from Transformers model was used to encode unstructured text from food labels into lower-dimensional vector representations, followed by supervised machine learning algorithms (i.e., elastic net, k-Nearest Neighbors, and XGBoost) for multiclass classification and regression tasks. Pretrained language model representations utilized by the XGBoost multiclass classification algorithm reached overall accuracy scores of 0.98 and 0.96 in predicting food TRA major and subcategories, outperforming bag-of-words methods. For FSANZ score prediction, our proposed method reached a similar prediction accuracy (R^2: 0.87 and MSE: 14.4) compared with bag-of-words methods (R^2: 0.72-0.84; MSE: 30.3-17.6), whereas structured nutrition facts machine learning model performed the best (R^2: 0.98; MSE: 2.5). The pretrained language model had a higher generalizable ability on the external test datasets than bag-of-words methods. The automation used in this study achieved high accuracy in classifying food categories and predicting nutrition quality scores using text information found on food labels. This approach is effective and generalizable in a dynamic food environment, where large amounts of food label data can be obtained from websites.

Hu G, Ahmed M, L'Abbe M. 2023. Natural language processing and machine learning approaches for food categorization and nutrition quality prediction compared with traditional methods. Am J Clin Nutr. 117(3):553-563

Domain 1 Research: Examples of Research Looking forward

- Examine the relationship between the food literacy status of Canadians and its relationship to chronic disease risk including overall diet quality and nutrients of concern (sugar, sodium and saturated fat), with detailed analyses by under-represented groups using AI algorithms to identify patterns and disparities in food literacy and diet quality.
- Use AI to predict cognitive, behavioural and environmental risk factors associated with excess dietary sodium intake, and to identify target populations and personalized behavioural messaging for dietary sodium reduction campaigns.
- Develop, test, and evaluate a social marketing strategy for sodium reduction based on findings from the *Canadian Nutrition and Health Survey* and qualitative research.

- Adapt and validate the *Canadian Nutrition and Health Survey* dietary sodium module to Latin American countries to address WHO recommendation of longitudinal surveillance of sodium knowledge, attitudes, and behaviours in populations.
- Evaluate changes in knowledge, attitudes, and behaviours that occur after using a dietary sodium eHealth education intervention (Sodium 101) among persons with dementia and their caregivers.
- Examine toxins that affect health and chronic disease risk through food ingestion—such as acrylamides, heavy metals (Hg, Cd), polycyclic aromatic hydrocarbons (PAHs), and others. Leverage AI-based predictive models to identify correlations with food consumption patterns.
- Use citizen science research approaches to assess the barriers and drivers Canadians experience in their everyday life related to awareness, engagement, empowerment, and agency in dietary sodium reduction (including how these differ by socio-cultural subgroup) using a novel technology - "Our Voice" app (Stanford University), using AI-driven language processing identify trends in consumer experiences and behaviours.
- Assess the nutritional quality, marketing, and affordability of ethnic foods using the Food Label Information and Price database and examine the barriers and facilitators to healthy eating across ethnic groups, includes those at highest risk for metabolic and cardiovascular disease (e.g., people of South Asian decent).
- Scale-up FoodFlip© app by incorporating novel interpretative nutrition rating systems that align with dietary recommendations for chronic diseases, such as diabetes and/or hypertension, to help people with chronic diseases make healthier food choices.

Domain 2: Health and wellness across the lifespan

Overview and Impact: The research will identify novel solutions to enhance nutritional health, performance, and well-being and intervene to support the nutritional needs of diverse populations, particularly high-risk and under-represented groups, using nutrition policies, programs and community-based interventions. It will investigate factors affecting food availability, access, affordability, and utilization, and will focus on health equity for marginalized populations. Emphasizing technology-based tools and interventions will enable individuals to make informed decisions at every stage of life. By thoughtfully developing and applying technology, the ICPNT research will provide innovative resources for optimal infant and toddler feeding, foster food literacy skills in youth, and offer personalized nutrition solutions for adults. These advancements will improve nutrition, support better health outcomes, and enhance quality of life as dietary needs change over time.

Domain 2, Focus 1. To identify a range of factors, from the perinatal period to elderhood, that impact the (in)equitable availability, access, affordability, and utilization (including knowledge, attitudes, and behaviours) of foods that promote growth, nutritional health, and performance; and that prevent disease and disability.

Approaches. This research will examine nutritional needs and challenges to optimize nutritional health and diet quality during each stage of the life cycle (perinatal period to elderhood), including conditions and scenarios where nutritional needs may be altered (e.g., high-performance athletes; pregnancy, menopause) or where individuals may be at elevated nutritional risk (e.g., food insecure households, people with disabilities, hospitalized patients or community-dwelling elders). This research will strongly emphasize considerations related to health equity for traditionally disadvantaged and/or under-represented populations in the research design. These studies will apply a variety of methodologies such as qualitative research designs, cross-sectional observational studies, mixed methods studies, dietary surveillance studies, and intervention studies.

Example of Domain 2, Focus 1

Understanding the Nutritional Health of Special Olympics Athletes
People with intellectual disabilities are at higher risk of nutritional inadequacy and for developing obesity and chronic diseases. Dr. Janet McCabe recently supervised an undergraduate research practicum student to determine which aspects of nutritional adequacy are being examined in the context of adults with intellectual disabilities. They conducted a secondary data analysis of the Health Promotion Dataset maintained by Special Olympics International. The cohort analyzed included the Special Olympics athletes who participated in the 2020 Winter Games. The analysis showed a relationship between nutritional inadequacy and high classifications of body mass index (BMI) and blood pressure. A large proportion of athletes were overweight (29.4%) or obese (39%), and many were classified as having Stage 1 hypertension (35.4%). Athletes reported low intakes of fruits and vegetables, and high amounts of unhealthy snack foods. All these trends were consistent amongst both male and female athletes. This study reflects the importance of planning, promoting, and implementing more accessible health promotion activities for individuals with intellectual disabilities. These improvements will support adults with intellectual disabilities and their caregivers in developing the skills to improve their dietary intake, which has potential to impact their nutritional adequacy, quality of life, and risk of chronic conditions. Dr. McCabe has subsequent studies on nutrition planned for this population.

Ciardullo, P. and McCabe, J., 2021. Investigating the Nutritional Health of Special Olympics Athletes: A 2020 Overview. Cureus Journal of Medical Science.

Domain 2, Focus 2. To evaluate nutrition policies and community-based interventions to promote nutritional health.

Approaches. This research will examine the effectiveness and implementation of a range of healthy eating policies and interventions targeting factors that impact the availability, access, affordability, and utilization of foods that promote health and prevent disease, such as the food supply, food labelling and marketing, the digital food environment, and population-level behavioural interventions, among others. This research will include an examination of the effectiveness of policies and interventions designed to support healthy eating in defined communities such as those based on cultural or geographic identities (e.g., dietary interventions for the South Asian community, food access in rural/remote communities) and in various settings where people work, live, and play (e.g., school food programs, food procurement standards in daycares, and breastfeeding policies in health care organizations). Several research methodologies will be applied, including

participatory action research, qualitative and mixed methods research, observational studies (cross-sectional, dietary surveillance studies), systematic reviews, and intervention designs (trials, pilot, and feasibility studies).

Example of Domain 2, Focus 2

Assessing the impact of school food programs on students' dietary intakes, nutrition knowledge, attitude and behaviours, mental health, and academic achievements

The school food environment represents an effective setting for interventions to influence children's food choices at a time when foundational dietary and other health habits are developed. Throughout their learning years, nutrition affects children's health, well-being, and academic performance, and schools offer an important setting to promote health behaviors that can last a lifetime. The implementation of school food programs can enable healthy school food environments to offer various forms of support for children (e.g., nutritional, behavioural, social, familial). Upstream approaches should therefore explore school food programs for their potential role as viable public health interventions and levers for food environment transformation. As a co-chair of the INFORMAS food provision module, Dr. Mavra Ahmed investigated the school food environments across Canada. Among a sample of 111 elementary and secondary schools, the majority reported having their own written school food policy, of which 82% regularly offered at least one sugary beverage, while only 14% provided exclusively healthier options, such as water and unsweetened beverages. Overall, 55% of schools regularly sold both fruits and vegetables. Schools with a self-developed food policy were more likely to offer fruits and vegetables regularly (66%) compared to those without a policy (43%). Building on this research, Dr. Ahmed is currently conducting more detailed analyses of the impact of school food programs, in partnership with the Toronto District School Board. Specifically, she is assessing the impact of various school food program modalities (e.g., procurement standards, food quality, health promotion) on students' academic achievement, health and emotional well-being, dietary intake, and food and nutrition knowledge, attitudes and behaviours. Through this impactful research, Dr. Ahmed and her team are providing policymakers and school boards with crucial data to inform school food programs and how they impact children's growth and well-being.

Vaillancourt C, Ahmed M, et al. 2024. Food environment research in Canada: A rapid review of methodologies and measures deployed between 2010 and 2021. Int J Behav Nutr Phys Act, 2024. 21: 18.

Ziraldo, E., Ahmed, M., et al. 2024. Nutrient intakes of Canadian children and adolescents at school by meal and location of food preparation. Applied Physiology, Nutrition and Metabolism, Accepted.

Ahmed M, et al. 2024. Impact of the COVID-19 pandemic on the delivery, adaptability and resiliency of school food programs across Canada. Frontiers in Nutrition. 3:11:1296620

Domain 2, Focus 3. To improve nutritional health and well-being across the lifespan through technology and AI.

Approaches. The research in Domain 2 will include technology in several ways to promote nutritional health and well-being. The approaches used will be similar to those summarized in Domain 1, Focus 3. Here, the application of technology for supporting nutritional health across the lifecycle will include developing tailored eHealth interventions that address specific dietary needs of diverse populations. By leveraging technology, AI, immersive realities, wearables and health behaviour change theory, our tools will deliver

targeted and tested intervention strategies, providing personalized recommendations for healthy eating and engaging learning experiences for all ages to effectively influence nutrition knowledge, attitudes, and behaviours. It is felt this is an area where ICPNT can demonstrate leadership in AI. In Domain 2, Focus 1, AI and/or statistical algorithms will be used to analyze datasets to identify trends and outcomes, facilitating predictive analytics to measure impact and guide policy adjustments, as well as for supporting personalized nutrition and behavioural approaches. Further, AI can enable the analysis of large datasets to identify patterns in food access and nutrition, assess trends nutrition misinformation discourse on social media, examine factors that increase malnutrition risk, or provide personalized and equitable dietary recommendations and real-time feedback. For Domain 2, Focus 2, AI-driven chatbots could offer real-time dietary advice or guidance on food choices, while virtual reality simulations could immerse users in scenarios that promote healthy eating habits. Further, the nutrition serious games we develop, such as Foodbot Factory, can also incorporate AI-based virtual assistants/tutors, or use AI to personalize/adapt the game environment to make learning experiences more engaging. In all technologies used in our research, a user-centered design approach will ensure that tools remain relevant, with ongoing evaluation to assess their impact on dietary habits and overall health outcomes.

Example of Domain 2, Focus 3

A validation study of the AI-based RxFood mobile application

Image-based mobile applications that use artificial intelligence (AI) to measure foods and nutrients in the diet are increasingly available dietary assessment tools. These tools easily support individualized dietary assessment, using AI to provide personalized feedback and guidance to support healthy eating. Additionally, collecting high quality dietary intake data in research and clinical practice with traditional dietary assessment tools (e.g., food records) can be burdensome, time and resource intensive, and require users to have numeracy and literacy skills. The Canadian-based RxFood app uses photos, text, speech, and AI to capture and analyze dietary intake. However, the extent to which the RxFood app accurately assesses nutrient intakes is unknown – data that is critical to support its broader implementation. With funding from the Ontario Centres for Innovation, Dr. Arcand's team is partnering with RxFood Inc. to determine the degree to which RxFood accurately estimates intakes of energy, macronutrients and nutrients of public health concern, compared to a weighted food record (WFR, gold standard). Additionally, the research tests the hypothesis that the RxFood app has higher usability compared to a WFR among healthy adults. Healthy adults (≥18 years, mobile device users) will concurrently capture their dietary intake using RxFood and WFR over 3 consecutive days. This data will support the use of a highly novel AI tool in advancing delivery of healthy eating guidance and dietary assessment.

Domain 2 Research: Examples of Research Looking Forward

- Examine the prevalence of household food insecurity in persons with different types of disabilities by applying geospatial analysis with AI tools to map food insecurity.
- Explore the range of factors that influence food intake in athletes with intellectual disabilities, guided by the domains of food security (availability, affordability, access and utilization of foods that promote health and prevent disease).
- Conduct a cross-sectional analysis of the association between diet quality and the presence of different types of disability.

- Assess food availability and food quality for adults with intellectual and developmental disabilities, with the use of AI tools to analyze photos of food items or meals using image recognition to assess food quality and portion sizes, in supportive living arrangements.
- Examine Canadians' use of tech (e.g., internet, social media) to obtain nutrition information, and how the public identifies and responds to nutrition information and mis/dis-information found online, including social media; responding to the WHO infodemic priorities.
- Explore students' perspectives on barriers and facilitators to implementing school food programs using AI to cluster qualitative data and identify emergent patterns.
- Develop and test training, health and safety, and nutrition standards for school food programs: nutrient profiling, dietary index, and menu quality.
- Use grounded theory approach to explain the underlying factors influencing the nutrition habits and preferences of school-aged children.
- Conduct a needs assessment among youth to understand the influence of digital media (e.g., social media, digital marketing) on health and food literacy. Through social media analytics, AI tools can analyze social media content to understand trends in digital marketing and its impact on youth food choices and health literacy.

Domain 3: Education, Implementation, and Practice Research

Overview and Impact: This research is rooted in the principles of implementation science. It considers that there is robust scientific evidence on the nutrition recommendations necessary to promote and support health and well-being. However, a core outstanding challenge is effectively translating these recommendations into policy, practice and everyday dietary behaviours and choices. Therefore, by bridging the gap between science and practice, this research will enhance the overall health impact of nutritional science through the identification of implementation processes and tactics that can maximize the adoption, reach, and effective utilization of interventions. The research also applies evidence-based approaches when implementing and sustaining interventions across personal, clinical practice, and policy settings by using established models and engaging stakeholders using participatory action research approaches. Additionally, it addresses the challenges faced by practitioners in education, medicine, and dietetics when implementing nutrition-focused policies in real-world practice settings.

Domain 3, Focus 1. To explore the unique challenges that education, medical, and dietetic practitioners face when implementing nutrition-focused policies and recommendations into practice. This research includes developing and evaluating innovative strategies to support and sustain implementation efforts.

Approaches. This research will draw on the principles of implementation science and apply a variety of frameworks and theories, guided by the setting and implementation challenges. Study designs and outcomes will be informed by research questions and may

include qualitative studies, mixed methods studies, surveys, Delphi studies, quasi-experimental designs, and intervention studies. In addition to identifying barriers and facilitators to implementation, iterative feedback loops will provide key data needed to develop, tailor, and adapt implementation strategies and explain implementation outcomes. End users and stakeholders will be integrated throughout the research process to maximize the relevance and impact of the data. This research may also include systematic reviews to understand the totality of evidence on the implementation of specific intervention types, enabling the development of new and innovative strategies to advance the field.

Example of Domain 3, Focus 1

Healthcare providers' perceptions of barriers, facilitators, and acceptability of an eHealth resource
Breastfeeding is the recommended infant feeding method by all leading health authorities due to its importance to the health of women and their infants. Although the majority of Canadian women initiate breastfeeding, the rates remain suboptimal. Many women experience breastfeeding difficulties leading to premature supplementation and cessation. Additionally, they report receiving insufficient support from healthcare providers (HCPs) with conflicting information. To address this long-standing clinical issue, Dr. Jennifer Abbass-Dick's program of research has focused on working in a participatory manner with parent populations (couples- mothers and their co-parents, Indigenous families, and young, single mothers) and HCPs to create evidence-informed breastfeeding eHealth resources. These resources have been evaluated and are currently being implemented in clinical settings with partnering hospitals and the health department to standardize breastfeeding education across a health region. To address the effective implementation of the eHealth resource in clinical practice, Dr. Abbass-Dick conducted a needs assessment with HCPs to determine the barriers, facilitators, and perceived acceptability of the eHealth resource. HCPs completed an online questionnaire informed by the Consolidated Framework for Implementation Research. HCPs agreed the resource was credible, up to date, covered relevant topics, would ease their ability to provide breastfeeding education, and would increase consistent messaging. Concerns were expressed regarding how this would be used in clinical interactions due to challenges with navigation, searchability, and the large amount of content. In response to these findings, funding has been received to survey and interview healthcare providers and parents to determine the adaptations needed to inform the implementation process, specifically how this eHealth resource can best be used in clinical interactions. This research can significantly improve breastfeeding education and support across the perinatal period and increase parents' breastfeeding health literacy and ability to meet their infant feeding goals. Dr. Abbass-Dick has significant leadership in this area, founding and leading the Canadian Breastfeeding Research Network and a breastfeeding resource website for the public.

Abbass-Dick, J., et al. 2024. Health care providers' perceptions of barriers, facilitators, and acceptability of an eHealth resource: Descriptive study. International Health Trends and Perspectives, 4(1), 68–87.

Abbass Dick, J., et al. 2018. Designing an eHealth breastfeeding resource with Indigenous families using a participatory design. Journal of Transcultural Nursing: 29(5):480-488.

Abbass Dick, J., et al. 2017. The development and piloting of an eHealth breastfeeding resource targeting fathers and partners as co-parents. Midwifery, 50, 139-147.

Domain 3, Focus 2. To develop, test, and evaluate the impact of novel interventions, with an emphasis on those that use technology and AI, that support the implementation of clinical, public health or education-based guidelines and policies by practitioners. This

research includes examining strategies for implementing, scaling, and sustaining eHealth nutrition interventions in personal, clinical practice, and policy settings.

Approaches. The approaches and study designs used will be similar to those described in Domain 1 (Focus 3) and Domain 2 (Focus 3). Given the pragmatic nature of this research, an interdisciplinary approach be critical. Likewise, the rigorous use of iterative feedback loops will enable the research to be more responsive, equitable, and adaptable to real-world needs. This research will also engage stakeholders in a participatory-action research approach that emphasizes the importance of co-production, where knowledge users (e.g., public/citizens, decision-makers, practitioners, and researchers) are integrated into every stage of the research process. This process will support health equity and enable the integration of diverse perspectives, worldviews, and social/cultural norms into how we understand, develop, implement, and sustain the implementation of interventions over the long term. Research designs are typically applied considering the phase of research and include qualitative studies, mixed methods studies, cross-sectional designs such as surveys, pilot/feasibility studies to establish proof of concept, and pragmatic randomized controlled trials.

Example of Domain 3, Focus 2

Development, evaluation, and future implementation of Foodbot Factory, a curriculum-based nutrition education in elementary schools

Developing food literacy (i.e., the interrelated set of knowledge, attitudes, skills, and behaviours required for healthy eating) among children has been identified as a public health priority due to its association with healthy eating habits. To support the development of children's food literacy, specifically their nutrition knowledge, Dr. Arcand's research team has developed and tested a curriculum-based nutrition education intervention called Foodbot Factory. It facilitates nutrition education for children in Grades 4 and 5, created in collaboration with Dr. Bill Kapralos, Dr. Ann LeSage and Dr. Janette Hughes (funded by an Ontario Research Fund - Research Excellence grant). The content in Foodbot Factory aligns with Canada's Food Guide and the Ontario Health and Physical Education curriculum. It consists of a serious game played as a mobile app, and includes accompanying lesson plans for teachers to use the intervention in their classrooms. Pilot studies in a test environment showed Foodbot Factory resulted in greater nutrition knowledge, compared to a control intervention. Now, with CIHR funding, the efficacy of Foodbot Factory is being evaluated as part of a cluster randomized controlled trial in classrooms across Ontario. Alongside this work, qualitative interviews are being conducted with classroom teachers to guide implementation strategies for scaling up the Foodbot Factory in Canadian classrooms. This research has the potential to significantly improve the implementation of health education curricula in Canada by supporting student learning about nutrition and enabling the development of lifelong healthy eating habits.

Franco-Arellano, B., et al. 2023. Updating the Foodbot Factory serious game with new interactive engaging features and enhanced educational content. Applied Physiology, Nutrition, and Metabolism, 49(1), pp.52-63.

Brown, J.M., et al. 2020. Optimizing child nutrition education with the Foodbot Factory mobile health app: formative evaluation and analysis. JMIR formative research, 4(4), p.e15534.

Froome, H.M., et al., 2020. The effectiveness of the Foodbot Factory mobile serious game on increasing nutrition knowledge in children. Nutrients, 12(11), p.3413.

Research Domain 3 - Examples of Research Looking forward:

- Evaluate the implementation of a breastfeeding eHealth resource in clinical settings to increase breastfeeding health literacy and rates.
- Examine the barriers and facilitators nurses experience in providing nutrition education of people with intellectual and developmental disabilities.
- Examine Registered Dietitians use and trust in technology-based practice tools, and the barriers and facilitators to their implementation.
- Co-create, evaluate, test, and implement a plan to support the scalability and sustainability of Foodbot Factory intervention in diverse Canadian classroom settings.
- Develop a nutrition curriculum with teachers as part of the national delivery of school food programs to address students' knowledge, attitudes, and behaviour.
- Develop and test, with teachers, tools to support the implementation of curriculum-based nutrition education (e.g., an online repository of training resources, etc.).
- Research to support the implementation of eHealth tools in primary care practice and community settings: Sodium 101 website and the Sodium Calculator+.
- Assess the implementation of a mobile app intervention for parents to that supports the healthfulness of school-boxed lunches by employing machine learning to analyze parent and student behavioral data including factors influencing choices

4.2. Explain how the research activities align with Ontario Tech's Strategic Research Plan.

The ICPNT will undoubtedly contribute to advancing Ontario Tech's research mission and strategy through its alignment with several research priorities and core research values.

Healthy population, community well-being, and social justice

The ICPNT's mission to improve the health and well-being of populations and communities locally, nationally, and internationally through visionary and innovative interdisciplinary nutrition research wholly aligns with the Ontario Tech strategic research priority (2020-2025) of *healthy population, community well-being, and social justice* and will contribute to advancing Ontario Tech's research mission and strategy. This priority calls for scientific discovery focused on human health and well-being, including using research synergies to strengthen contributions to global public health and health promotion while supporting national and international collaborations. ICPNT will support this priority by focusing on nutrition-related public health and health promotion research and will bolster Ontario Tech's reputation for high-quality socially conscious research by concentrating on factors contributing to disparities and inequities in nutrition (Section 4.1).

Tech with a conscience

Technology is incorporated into the mission statement and will form a core value of the ICPNT through the integration and application of technology whenever appropriate. As such, ICPNT research activities will contribute to the realization of the University's

institutional priority of *tech with a conscience*. The concept of *tech with a conscience* is highly relevant to the ICPNT's mission of using innovation in research to address pressing real-world social and health challenges currently facing Canadians and people worldwide. The ICPNT will strive to be *inventive* and *imaginary*, incorporating technological advancements into traditional nutrition interventions. Technology will be developed with interdisciplinary teams using thoughtful, evidence-based approaches that consider the latest frameworks, theories and health behaviour change strategies. Technology will also be informed and driven by the needs of external partners and end-users who are integrated into the design and evaluation processes. These are critical considerations to ensure that tech is developed and implemented in a meaningful manner that maximizes effectiveness and enables adaptability and sustainability in the long term, avoiding the trendy and/or gimmicky attributes that have flooded the nutrition technology marketplace.

The ICPNT members already embody the *tech with a conscience* value, and they have a strong track record of using technology in their research and dissemination. Members with technology as a core research focus include Dr. Kapralos, Dr. Hughes, Dr. Sun, Dr. Arcand, Dr. Abbas-Dick, Dr. Ahmed and Dr. L'Abbé. The use of technology in research is described in detail in the Research Mandate in Section 4.1: Domain 1 (Focus 3), Domain 2 (Focus 3) and Domain 3 (Focus 2). Some examples of technology created by the ICPNT faculty members include eHealth tools such as websites, web apps and other software (e.g., https://breastfeedinginfo.ca/, https://www.breastfeedingresearchers.ca/, https://fknm-test-deployment.vercel.app), mHealth tools such as apps for phones and tablet (e.g., Foodbot Factory, FoodFlip, Sodium Navigator HF), and other tools such as educational videos (e.g., Breastfeeding Information for Parents), and research innovations (e.g., Global Nutrient Profiling Calculator Tool, AI-based prediction models for food classification and nutritional quality). These tools have integrated immersive realities (virtual and augmented reality), wearables, AI, gamification, and behaviour change theory and strategies. Existing tools are continually enhanced to avoid obsolescence.

The ICPNT members incorporate technology and AI into their research in different ways. By way of some examples from the three ICPNT scientific leads, Dr. Arcand focuses on the development and evaluation of novel eHealth and mHealth theory-based behavioural nutritional interventions for both adults and children. She has received approximately $1.4 million as Principal Investigator for tech-based nutrition research. For instance, the Sodium Calculator developed by Dr. Arcand has estimated sodium intakes for over 500,000 users. In addition, her team's Foodbot Factory app has received in-kind support from Health Canada, since the tool is viewed as a strategy to support the national implementation of Canada's Food Guide for teachers and children. Dr. Arcand is also examining the public's interaction with technology as a source of nutrition information, including the spread and uptake of nutrition mis- and dis-information, an identified global public health priority as highlighted by the WHO Infodemic initiatives. Her planned research will also examine Registered Dietitians use and trust in technology-based practice tools, and the barriers and facilitators to their implementation. This is a critical consideration so that the dietetic practice can advance with the emergence of AI-based

nutrition interventions. As another example, Dr. Ahmed has recently completed postdoctoral training in Nutrition and AI and applies AI to research data collection and analysis, in addition to developing and evaluating population-based mHealth interventions to support healthy food choices. She has recently led practice-changing research demonstrating how AI can be leveraged to collect nutrition composition data from the internet. Dr. Abbass Dick is leading internationally recognized efforts that use technology to support perinatal families with breastfeeding. For example, the breastfeeding-related website developed by Dr. Abbass Dick is freely accessed by over 500 users a month and the related educational videos include one with over 6.7 million views.

Equity, diversity, and inclusion

EDI will be integrated into every facet of the ICPNT, from the development of the ICPNT itself to training activities, research planning, and research dissemination. The nature of the ICPNT's research projects supports the University's commitment to EDI by exploring and intervening in factors that impact nutritional inequities and disparities. The ICPNT will foster an inclusive culture where distinct ideas, contributions, and different ways of knowing are valued, which also meets the core research value of being *integrative* and contributes to the Ontario Tech mission of *creating a sticky campus* (expanded upon below). The ICPNT will be composed of members and trainees with diverse research expertise, academic training, backgrounds, workforce experience, and lived experiences. Trainees working in the ICPNT will be recruited with the consideration of enhancing the diversity of perceptions and lenses by recruiting from other universities and internationally, with advertisements directed to diverse candidate pools using non-gendered, inclusive and unbiased language that explicitly states the ICPNT's commitment to EDI. Members of the ICPNT will complete EDI training and unconscious bias training. Most of the ICPNT faculty members have an EDI plan for their research program.

Health disparities and equity will be a cross-cutting theme across all research areas (Section 4.1). This consists of accounting for nutrition security which includes the identification of nutrition-related structural and social inequities experienced by groups who may be disproportionately impacted by disparities in the access, availability, affordability, and utilization of foods that impact dietary intake patterns and diet quality, as well as conducting analyses on traditionally underrepresented groups (and their intersectional identities) such as women, gender minorities, persons with disabilities, Indigenous Peoples, racialized individuals, 2SLGBTQIA+ communities, persons in low- and middle-income countries; and others that may be at relatively higher nutritional risk and/or more likely to experience food insecurity such as college and university students, older adults and single-parent families. EDI in the research design will be guided by Gender-based Analysis Plus and Tri-agency Best Practices.[30, 31] EDI principles will be integrated into each phase of research project planning, including the literature review, study design, recruitment and sampling procedures, randomization, statistical analyses, and reporting and presentation. Research at the ICPNT will emphasize the use of co-creation and participatory approaches that place end-users at the centre of the research - enabling action through a research cycle that is reflective, iterative and draws on different

perspectives. This approach speaks to equity by seeking to understand the unique drivers and challenges related to healthy eating, especially those in under-represented subgroups who may be differently impacted by interventions. All team members on a research project who meet ICMJE authorship criteria will have an opportunity to be included as co-authors on publications, regardless of training level. The ICPNT Scientific Executive Committee (Section 8.2) will appoint an equity, diversity, inclusion, indigenization, and accessibility (EDIIA) champion, with the primary responsibility of raising EDIIA issues for discussion.

Engaging communities where they live, work, and play

The use of co-creation and participatory approaches will also ensure the ICPNT research *engages communities where they live, work, and play (Core Research Value)* so that initiatives are more practical, sustainable, and impactful. The Co-produced Pathway to Impact framework[32] enables integrating diverse perspectives, worldviews and social/cultural norms into how we understand, develop, implement and sustain interventions (expanded in Section 6). A key example of the co-participatory action research the ICPNT will undertake is with the Toronto District School Board to assess the impact of school food nutrition programs (Domain 2). Our intervention research will enhance engagement by addressing local needs and priorities, and reaching people in their everyday environments through collaborations with schools, workplaces, and health organizations, online and social media engagement, and tailored communications that are linguistically and culturally appropriate. With this in mind, the ICPNT will collaborate closely with our local research partners when operating in different geographical contexts (e.g., LMIC, LAC), and our digital innovations will be disseminated widely by being freely accessible and equitably incorporated into school and health systems. This approach will take advantage of the widespread availability of technology in these settings and in Canadian homes.

Partnership-building and collaboration

Ontario Tech has highlighted its commitment to fostering multidisciplinary efforts with its institutional priority of emphasizing *partnership-building and collaboration*. In 2023, Ontario Tech's strategic commitment to involving industry, community, and government partners in collaborative, responsive and result-driven research earned them the distinction of Canada's Research University of the Year among smaller institutions. The ICPNT will help sustain this recognition by emphasizing research that keeps end-users at the forefront, utilizing co-creation and participatory research methods (Section 4.1). The ICPNT is being established by a team with numerous and strong relationships with external academics, government, and health organizations that extend well beyond Canada. The ICPNT will support existing partnerships and stimulate new connections by drawing from the members' networks and the extensive system of partners associated with Ontario Tech, including the newly established partnership between Ontario Tech and Lakeridge Health. Partnership building and collaborations will be crucial to the ICPNT for co-producing research projects of high relevance to knowledge users (Section 4.1), recruiting and training students (Section 5), and disseminating results (Section 6). Additional details on partnerships and collaborations in the ICPNT are presented in Sections 3.2 and 7.

Training and capacity-building
Another Ontario Tech institutional priority core to the ICPNT includes *training and capacity-building*. The ICPNT is committed to nurturing the next generation of exceptional health researchers who grasp the importance of and know how to engage in interdisciplinary collaborations that are essential to addressing complex nutrition problems. Ontario Tech's core mission to *cultivate a dynamic learning environment for students* will be supported through the ICPNT's incorporation of experiential learning opportunities where students can combine in-class concepts and reflectivity to help solve real-world nutrition problems. Further details on training and capacity building are in Section 5.

Creating a sticky campus
We anticipate that the ICPNT will play an integral role in heightening the visibility of nutrition on the Ontario Tech campus and ultimately enhancing the overall university experience for students, helping to create a *sticky campus*. This is especially important given the rise in food insecurity on university campuses, including Ontario Tech. In terms of nutrition initiatives, Ontario Tech has fostered belonging and engagement through a variety of initiatives. These include the Peer Wellness Education Team where Dr. Arcand has advised on nutrition, as well as a community garden from which excess produce is donated to local food banks and soup kitchens. There are also a variety of food donation drives on campus; but these are not frequent enough to match the food insecurity issues our campus faces, and there is student food bank. Collectively, the ICPNT members and trainees can more strongly advocate for such important initiatives on campus. Addressing hunger will not only improve health and quality of life, but also student academic achievement. Such activities not only enhance the learning and engagement of students but also work towards the UN SDGs (SDG 2). We envision that the ICPNT will be able to act as a resource to lead or inform other campus-based nutrition interventions and improve university food policy to ensure high-quality, accessible, and affordable food options are available on campus. Furthermore, the ICPNT will support student-based initiatives related to nutrition, such as the Canadian Nutrition Society University Student Rep program and the Obesity Canada Student and New Professional university representative program.

4.3. Provide evidence for long-term sustainability of the entity, including research activities that go beyond collaboration on a single project.

The ICPNT is being developed with the expectation that it will remain both relevant and sustainable in the long term. This forward-looking approach involves ensuring that it operates efficiently and contributes to the field of nutrition through strategic collaboration, effective capacity building, and high-quality research.

Strong Management and Governance: The sustainability of the ICPNT will be enhanced through strong resource management and a solid management plan that outlines the organizational and governance structure (Section 8). With ICPNT membership including

the leads of two other Centres at Ontario Tech (i.e., CDIE, ADCC), we bring established expertise in the development and management of research centres, which we will apply to ICPNT from its very foundation. While the CDIE is newly established, the ADCC has been successfully running for nearly two years under Dr. Sun's leadership and has already shown progress on research initiatives looking at virtual reality applications to promote the social connectedness of persons with dementia and leveraging AI and a conversational robot to detect and manage symptoms of dementia. The ADCC also recently secured a CIHR Planning and Dissemination grant for "Participatory Approaches to Building Partnerships: Advancement for Dementia Care Centre" and was featured in the Ontario Legislative Assembly in October 2023 where Lorne Coe (MPP, Whitby, ON) highlighted the critical importance and potential impact of the ADCC. The previously described partnerships and collaborations will also be essential for the sustainability of the ICPNT by ensuring the relevance of research projects and the wide dissemination of outputs.

Funding Strategy: Securing external funding will provide a continuous stream of resources to support the ICPNT's research and training activities (Section 8.3.3). Members of the ICPNT have demonstrated their potential for success in securing funding from various sponsors, including federal (CIHR, Social Sciences and Humanities Research Council (SSHRC), Natural Sciences and Engineering Research Council of Canada (NSERC), International Development Research Centre, Public Health Agency of Canada, Health Canada, EduCanada), provincial (Government of Ontario, Ontario Centres for Innovation, Saskatchewan Health Research Foundation), NGOs and not-for-profit (WHO/PAHO, Heart & Stroke, Canadian Stroke Network, Retail Council of Canada, Special Olympics Canada), and industry partner (Manulife) sources. Combined, ICPNT members have collectively secured more than $14 million in total research funding as principal applicants or investigators (PIs) from all sources. The ability of the members to jointly obtain funding is evident from the numerous successful grant applications that they have worked on together in the past (Section 3.2). The ICPNT will emphasize the pursuit of all relevant funding opportunities, including those that value an interdisciplinary approach (e.g., New Frontiers in Research Fund, Canadian Foundation for Innovation) beyond just tri-agency council grants, and through industry partnerships. Each member will act as the lead within their respective research domains but will utilize the collective knowledge of all members to enhance their proposals through internal peer review. Our members, in addition to having secured a substantial amount of funding, are also versed in reviewing grants and awards applications for national granting agencies. Furthermore, all students working with The ICPNT will be encouraged to apply for scholarships and will be given mentorship in developing their applications. Encouragement and mentorship are critical for promoting equity, particularly because women, a primary demographic in the nutritional sciences, often undervalue their abilities and past successes.[33] ICPNT members will also actively fundraise to support ICPNT work. Our members have demonstrated success in securing donations and contracts in the past, such as a $120,000 donation from Manulife to Dr. Arcand's lab and $120,000 to $150,000 contracts, annually, from the WHO/PAHO to the WHO Collaborating Centre on Nutrition Policy for Chronic Disease prevention. Philanthropic donations could provide opportunities for individuals or organizations to

become named sponsors of the Centre, and the funds raised can be used to support the operations of ICPNT or to establish a Research Chair position linked to the Centre. There may also be opportunities to create a revenue stream through the members' eHealth and mHealth tools. For instance, while the tool itself will remain freely available, a small fee for teachers and parents to access educational resources accompanying the Foodbot Factory could be implemented. A teacher training program in nutrition, potentially co-developed with the CDIE, could be used to further diversify funding sources in the future.

Capacity Building and Student Training: The sustainability of the ICPNT will be enhanced through capacity-building and collaboration. The *ICPNT* will augment a strong foundation of expertise by recruiting and training talented students and creating a supportive learning environment (Section 5). Our members have collectively supervised or are currently supervising 156 students at the graduate level, as well as numerous undergraduates, post-doctoral fellows, interns, and research associates. We are certain that the ICPNT will continue on this trajectory and foster the attraction of new students, which will enhance the reach of the Centre by expanding its network as students transition into their careers.

Strong Research and Strategic Recruitment: The potential for the ICPNT to conduct high-quality research is undeniable, given the prior success of its members which includes many awards of recognition within Ontario Tech, provincially, nationally and globally. The ICPNT members' short bios are provided in Section 7. The ICPNT does not require the addition of new faculty for its successful launch. However, continued growth and sustainability of the ICPNT in the long-term would benefit from the strategic recruitment of nutrition-focused faculty members (new and to replace recent retirements), especially those whose research aligns with the ICPNT research mandate (e.g., nutrition and AI) and/or that compliments existing disciplines or expertise within the Faculty of Health Sciences (e.g., nutrition and aging, nutrition in persons with disabilities). An ideal strategy would be to incorporate an Associate Professor with an established research program, providing instantaneous benefits to the ICPNT, and an Assistant Professor who would promote sustained development.

5. Student Involvement and Training

5.1. Explain the level and type of involvement of undergraduate or graduate students in the entity's activities. Describe the unique research and training opportunities that will arise as a result of the entity.

It is paramount that future researchers are equipped with diverse research and leadership skills to tackle complex nutrition problems. The ICPNT will ensure this need is met through various avenues. The ICPNT faculty members will be committed to recruiting all levels of trainees on an annual basis. The ICPNT will work to attract top talent to Ontario Tech by bringing trainees in through our member networks and external collaborators and partners. Aligned with our commitment to EDI, the ICPNT will actively facilitate the recruitment of individuals with diverse perceptions and lenses by recruiting from all faculties, other

universities, and internationally. This approach builds on the leadership strategy of Dr. Arcand, who has successfully recruited 81% of her graduate students and postdoctoral fellows from other universities. The ICPNT will also welcome visiting scholars from other countries to promote mutual learning opportunities in which the visiting scholar will gain a better understanding of the Canadian research environment while bringing diversity and fresh insights into the training environment for local students. Visiting scholars will help to develop a more globally connected research environment that fosters collaboration with researchers abroad. Recruitment from various faculties will not only contribute to the diversity of the research team but will also foster cross-disciplinary collaboration. The ICPNT members will have the opportunity to co-supervise students from other faculties, or participate as thesis advisory committee members, enabling a truly integrated research approach. Our members have experienced previous success with cross-faculty trainee supervision, such as developing the Foodbot Factory (Section 4.1), where students from the Faculty of Business and Information Technology played key roles in a nutrition-focused project. Building on this success, there are already plans to engage Faculty of Business and Information Technology students in nutrition capstone projects in 2025.

A goal of the ICPNT will be to foster equal opportunities and a sense of belonging for all by building an inclusive culture that values distinct opinions, inputs, contributions, and different ways of knowing. By working closely with the ICPNT members and partners, trainees will learn the importance of interdisciplinary research. They will get to explore diverse perspectives that will deepen their understanding of and appreciation for a vast range of knowledge approaches. Collaboration with peers from other disciplines, such as public health, health sciences, education, and technology, will offer opportunities for reciprocal learning and will broaden their understanding of the intersection between nutritional sciences and other sectors, while also growing their research network beyond their primary field of study.

The ICPNT will engage trainees in a wide range of activities, offering unique research and training opportunities that are critical to developing the next generation of outstanding researchers. The trainee experience will be enriched by participating in experiential learning. Trainees will learn about the research process by being actively involved in projects, taking on roles that involve identifying research questions, conceptualizing studies, collecting and analyzing data, interpreting results, and disseminating findings. Specifically, trainees will gain skills in conducting systematic/scoping reviews, policy and intervention creation and analyses, and dietary and epidemiological cross-sectional studies, to name a few, using qualitative, quantitative, mixed methods, and co-participatory approaches. During the process, they receive training on using relevant analysis software such as R, SAS, SPSS, and NVivo. As part of a larger team, trainees will collaborate on other ongoing studies that may involve app development, experiments, surveys, or fieldwork. Trainees will be directed to EDI and sex and gender-based analyses modules and resources (e.g., CIHR Unconscious Bias training, Women's College Hospital's Intersectionality as a Research Lens training, CIHR Institute of Gender and Health's training, anti-oppression training, Canadian Nutrition Society's Nutrition and

Indigenous Health) and other research and career resources (e.g., SickKids knowledge translation and research integrity training, Ontario Tech career development resources, Research Impact knowledge mobilization training). Trainees will build on their knowledge mobilization (KMb), presentation and networking skills by translating their work for various audiences (e.g., policymakers, the public, clinicians), publishing in academic journals, and presenting their research in at least one national and international conference per year. In time, with philanthropic and other resource investments in the ICPNT, we will offer travel awards to trainees to attend national and international conferences (see Budget). To demonstrate the ICPNT's commitment to supporting the development of scientific independence among postdoctoral fellows (and early career researchers), we will allocate $10,000/year of any philanthropic donations obtained to supporting new projects or seed funding that align with the areas of the ICPNT (see Budget and Section 8). Finally, trainees will have the opportunity to be the first author on publications for the studies where they lead the research design, data collection, analysis or writing. KMb activities will provide trainees with insights into how their research can be applied in real-world settings and how it can address practical challenges. The emphasis on technology across all research domains will further equip students for the future by providing them with exposure to state-of-the-art innovations in the field of nutrition.

Graduate students and postdoctoral fellows will be encouraged to build valuable skills in leadership by mentoring other students and through teaching opportunities, either as teaching assistants for nutrition courses, guest lecturers, sessional lecturers, community guest speakers, or by presenting in quarterly student seminars (expanded in Section 5.2). Graduate students and postdoctoral fellows will be tasked with developing skill-building workshops as part of these seminars for trainees to gain insights into nutrition and research topics. Seminar workshop planning would include identifying relevant topics, defining learning objectives, creating content, facilitating the workshop, and collecting participant feedback. Graduate students and postdoctoral fellows will also be trained in the development of grant proposals to foster critical thinking and grantsmanship skills. The ICPNT will commit to this by having at least one student involved in every grant submission, who will attend meetings and will review or contribute to writing and submitting the proposal.

The Centre will also offer an engaging environment for student placements and internships to meet critical professional competencies (e.g., dietetic internships supervised by a Registered Dietitian, Master of Science in Nursing project placements, medical student internships). As a Registered Dietitian, the ICPNT Director has previously supervised dietetic interns completing research-based practicums and is committed to mentoring and guiding the next generation of dietitians. These interns will have a unique opportunity to participate in remarkable research studies that can have a direct impact on dietetic practice (Section 4.1; Domain 3). The ICPNT will also be an ideal environment for registered dietitians wanting to complete graduate studies. Registered Dietitians will bring a wealth of rich experiences to the training environment and will be ideally positioned to help answer important practice-based research questions. Dr. Arcand has successfully

supervised four registered dietitians completing graduate studies and continues to be approached by others.

All leadership, collaboration, teaching, and research activities will be guided by close mentorship from ICPNT members. The ICPNT will offer valuable learning opportunities tailored to the trainees' needs, interests and career aspirations as determined using the CIHR Individual Development Plan tool and the Declaration on Research Assessment (DORA).[34] All trainees will have access to a network of ICPNT members and peers for support with research, writing, and career development. These connections will be facilitated through regularly scheduled meetings, social activities, and the use of collaborative platforms (e.g., Slack, Google Workspace) where trainees can meet, ask questions, help their peers, share documents, and seek feedback. Trainees will also be encouraged to collaborate through training platforms such as SMART (https://smart-training.ca/). Students will graduate from their program of study experienced in a field of critical significance within Canada and worldwide, equipped with strong research, communication, leadership, problem-solving, networking, and critical thinking skills, preparing them to transition seamlessly into the workforce.

Monetary support for trainees will also be prioritized. The ICPNT will offer stipends to supplement typical funding packages for graduate and postdoctoral fellows to boost student engagement and attract top candidates when funds are available. Undergraduate research assistants will be hired to work on research projects as the opportunity arises. Research grant funding will be used to provide for trainees attending conferences where they present their work. The ICPNT will endeavour to establish scholarships for students as fundraising initiatives show success.

5.2. Describe the contribution, if any, to the development of new courses, seminars, or instructional programs in collaboration with the appropriate Faculty/ies.

The ICPNT will offer a seminar/workshop series for trainees that alternates between opportunities for trainees to present their research activities and skill-building workshops. Initially these seminars will be offered quarterly, and more frequently as the ICPNT becomes established. The research seminars will act as a forum for students to receive constructive feedback and discuss methodological concerns with their peers, faculty members, and other interested researchers. The workshops will teach students about relevant research topics (e.g., research ethics, research methodologies, literature appraisal, nutrition trends, technological advancements, scholarship writing, literature reviews, R coding). These will be particularly useful for undergraduate students coming from disciplines other than nutrition or with limited research experience to gain a baseline understanding of the concepts and ideas underpinning the ICPNT research.

As the ICPNT is established and internal capacity grows through collaborations and the hiring of new faculty to replace recent retirements, new courses in nutrition would be developed to supplement the introductory nutrition course that is already mandatory for

most programs in the Faculty of Health Sciences. The latter underscores the faculty's commitment to nutrition and its vital role in the health sciences field. Each course developed through the ICPNT will add to this foundation, offering students enriched learning opportunities. Looking ahead, the ICPNT will consider the following:

- A senior public health nutrition course focused on food and nutrition policy at the undergraduate and/or graduate level. Dr. Ahmed created a similar course on this topic at York University for School of Kinesiology and Health Science (KINE4170). This course has been highly rated by students and offered every year since its development with full class enrolment. This course strongly aligns with Research Domain 1 (Section 4.1).
- Senior lifecycle nutrition course at the undergraduate and/or graduate level. Such a course has been of interest to students in public health, nursing, and kinesiology and it is continually requested on course evaluations for introductory nutrition courses taught by Dr. Arcand. This course strongly aligns with Research Domain 2 (Section 4.1).
- Micro-credentials in Nutrition. The ICPNT will draw from Dr. Sun's experience developing the dementia care micro-credential program in collaboration with Ontario Shores Centre for Mental Health Sciences and the Alzheimer's Society of Durham Region. Similar to the program developed by Dr. Sun, micro-credentials in nutrition could be used to enable competency development among trainees and/or healthcare professionals.

6. Research Dissemination and Service Plan

Describe any unique plans for dissemination of research, and/or how the research entity will provide service and impact programs and policies within UOIT and to the outside community.

Meaningful partnerships with community, industry, government, non-profits, and NGOs will maximize the Centre's exposure and strengthen our research impact. The ICPNT will utilize an integrated knowledge translation strategy following the Co-produced Pathway to Impact framework,[32] with knowledge translation being considered throughout the research cycle by collaborating with knowledge users in the co-creation of research (e.g., study design, methods, tools, recruitment, analysis), dissemination, uptake, and implementation process. Using participatory approaches and iterative feedback loops, co-produced research is more responsive, equitable and adaptable to real-world needs. This includes coordinated opportunities for researchers to have an impact by sharing their outputs with decision-makers (producer-push) and for decision-makers to inform the research (user-pull).[35] As seen with other public health efforts,[32] such infrastructure can effectively foster collaboration between researchers and knowledge users to increase research relevance, adaptability, and support for dissemination of the research outputs to organizational networks, accelerating research impact. Subsequently, health, education, and policy knowledge users can integrate the ICPNT research outputs into products, policies, and programs that benefit end users. They will serve as knowledge brokers via their expansive networks that reach end users, including the public. The ICPNT will also

follow the framework of Lavis et al.[36] by asking questions about What should be transferred to decision-makers (message). To whom should the knowledge be transferred (audience)? By whom should the knowledge be transferred (messenger)? How should the knowledge be transferred (process, tactics)? With what effect should the knowledge be transferred (evaluation)? The answers to each of these will vary by intended impact, audience, and setting (Table 1).

Table 1. Proposed knowledge mobilization strategies

Audience	KMb Goals	Dissemination Tactics	Evaluation Metrics
Public	To increase awareness and interest in nutrition and the need for nutrition policies. To improve food literacy to address misconceptions. To support engagement through information sharing and the use of ICPNT digital interventions.	Media releases (newspaper, magazines), social media and website content (posts, videos, infographics), WHO Infodemic report.[37] Integrate digital tools in existing infrastructure in diverse public settings, such as schools, libraries, community centres, pharmacies, grocery stores, and in health care.	# website visits, social media engagement, # uses/downloads of digital interventions, # products disseminated by KMb partners
Decision makers, government, non-governmental organizations	To inform decision-making and policy change (e.g., school food and beverage policies, national food policies). To enhance the implementation of population-wide nutrition strategies.	Synthesis documents, technical reports, policy briefs, newsletters that communicate study results and totality of the issue. Scheduled meetings with health and education decision makers at the national, provincial/ territory/ state level and with local school boards administrators where applicable. Outreach activities.	# products disseminated by KMb partners, # of policy/program changes related to the research outputs, # of communications and meetings, # of event attendees
Practitioners in public health, health care, and education	To increase awareness of the importance of dietary risk factors for well-being, chronic disease prevention and management. To support practitioners in being sources of credible information. To increase the use of our evidence-based digital tools in teaching and health practice.	Editorial, commentary and review articles in journals and newsletters; LinkedIn and X posts. Systematic reviews on nutrition and health written in language easily understood by stakeholders with varying levels of scientific literacy. Communication messages developed and sent to partners	# website visits, social media engagement, # uses/downloads of digital interventions, # products disseminated by KMb partners, # of event attendees

		(e.g., school boards, public health care organizatons). Conference symposium and panel presentations. Outreach activities.	
Researchers	To share new knowledge (methodologies, findings, KMb) and advance the field.	Peer-reviewed publications, conference abstracts, and symposium presentations in national and international conferences. Outreach activities.	# publications, # abstracts, # presentations, # new collaborations, # new or refined IP products, # of event attendees

Traditional academic dissemination activities are a forte of the members of the ICPNT. Collectively, the ICPNT members have demonstrated outstanding productivity with >760 published journal articles, 31 books, 88 book chapters, 96 technical reports, and hundreds of conference abstracts and presentations. The ICPNT research findings will be incorporated into teachings at Ontario Tech, with the anticipation that it will expand the reach of the ICPNT outputs and attract interested trainees. Our members have been responsible for teaching a combined 57 different undergraduate and graduate courses at Ontario Tech, including *Nutrition for Nursing Practice*; *Nutrition and Health; Health and Healing: Healthy Communities Nursing Theory and Practicum; Nursing Leadership and Innovation; Research Approaches for Nursing and Health Sciences; Information Literacy; Digital Literacies: Theory, Practice and Research; Technology and the Curriculum; Leadership and Technology; Topics in Digital Media; Virtual Reality and User Interaction; Environmental Determinants of Health, Applied Biostatistics for the Health Sciences,* and many others.

Our members are also well-versed in less traditional forms of dissemination, including through website development (e.g., https://breastfeedinginfo.ca/, https://www.breastfeedingresearchers.ca/, https://fknm-test-deployment.vercel.app), educational videos (e.g., Breastfeeding Information for Parents), digital innovations (e.g., Sodium Calculator, Foodbot Factory, FoodFlip, Global Nutrient Profiling Calculator Tool; Sodium Navigator – HF), and media coverage. A dedicated ICPNT website and social media accounts (e.g., X, LinkedIn), will be used to share the mission of the centre and the research outputs to enhance the visibility of the ICPNT's achievements. Social events will also provide a chance to inform community members about the ICPNT, share our research initiatives and results, promote discussion, and attract interested trainees.

7. Membership List, CVs and Affiliations

Provide the name, faculty (or institutional affiliation), Curriculum Vitae, and expected contribution of members. (Research entities shall not normally require the hiring of new

full-time academic faculty. Each member, including the director, should hold an academic appointment at the university).

Work at the ICPNT, as well as the ICPNT management itself, will leverage the extensive past experiences and networks of our members. The 9 members of the ICPNT include the Director, Dr. JoAnne Arcand, and 8 core scientists who are faculty members (Table 2). Short bios of each of the members are provided below. The responsibilities of conducting research, seeking funding, and overseeing the supervision of trainees will fall on each scientific lead in their respective domains, with overlap and collaboration where relevant. Research experts will contribute to the ICPNT across domains, imparting their expertise in areas of health technology, education, nutrition policy, and research methods. All members will have the opportunity to impart their experiences and perspectives throughout the development of research proposals and during the research process.

Members will closely collaborate with faculty and students affiliated with Ontario Tech, as well as a number of external partners including leading experts and stakeholders in Canada and beyond (see Box 1). These connections will be instrumental for recruiting students and trainees (Section 5), uptake of the research (Section 6), and co-creation of research activities (Section 4).

Table 2. ICPNT members

Name	**Position/Faculty**	**Area of expertise /contribution**
Domain/ Scientific Leads		
JoAnne Arcand, PhD	Associate Professor, Faculty of Health Sciences	Nutrition policy, clinical and community-based interventions, e/mHealth, mixed methodologies
Jennifer Abbass Dick, PhD	Assistant Professor, Faculty of Health Sciences	Breastfeeding, eHealth, implementation science, mixed methodologies
Mavra Ahmed, PhD	Adjunct Professor, Faculty of Health Sciences, Research Associate, Joannah and Brian Lawson Centre for Child Nutrition and Department of Nutritional Sciences, University of Toronto, Course Director, School of Kinesiology and Health Science, York University	School-based interventions, e/mHealth, food environments, food and nutrition policy, nutritional epidemiology

Research Experts		
Janette Hughes, PhD	Professor, CRC Technology and Pedagogy, Faculty of Education	Education, technology, pedagogy, digital literacies, AI in education
Bill Kapralos, PhD	Associate Professor, Faculty of Business and Information Technology	eHealth, technology, immersive technologies, AI
Mary L'Abbé, PhD	Adjunct Professor, Faculty of Health Sciences, Professor Emeritus, University of Toronto	Nutrition policy and interventions for chronic disease prevention, nutrition regulations
Janet McCabe	Associate Professor, Faculty of Health Sciences	Intellectual disabilities, children
Winnie Sun, PhD	Associate Professor, Faculty of Health Sciences	Qualitative methods, older adults, cognitive disability, dementia care, AgeTech
Caroline Barakat	Associate Professor, Faculty of Health Sciences	Environmental and food safety

Dr. JoAnne Arcand (ICPNT Director) is an Associate Professor in the Faculty of Health Sciences at Ontario Tech and a Registered Dietitian with a cross-appointment with the Department of Nutritional Sciences at the University of Toronto (status only) (https://arcandnutritionlab.com/). Dr. Arcand has expertise This includes clinical and population-based interventions that ensure people have access to healthy foods, and that support behaviour change at multiple levels, from children to older adults, to patients living with chronic diseases, and to practitioners who support these groups within health, education and policy systems. Dr. Arcand is also involved in numerous knowledge translation activities, including the development of novel tools to translate scientific information to the public, patients and clinicians. She volunteers her time to several committees with Hypertension Canada, the Canadian Nutrition Society and the Dietitians of Canada. She is also actively involved in the international Science of Salt research group, affiliated with the World Hypertension League and WHO Collaborating Centre for Salt Reduction, and chairs a subcommittee that conducts regular systematic reviews of studies published on dietary sodium and health outcomes. She was awarded an Ontario Tech Research Excellence Chair in Food, Nutrition & Health, a National New Investigator Award from the Heart and Stroke Foundation of Canada, was the recipient of the 2017 CIHR-INMD-Canadian Nutrition Society New Investigator Prize, and was awarded a Notable Achievement Award from the World Hypertension League for her significant contributions to dietary sodium reduction. In the nine years since starting at Ontario Tech, Dr. Arcand has acquired $2.6 million in research funding as a PI and $5.1 million as Co-PI or Co-I; much of this is to fund projects strongly aligned with ICPNT's mission. Dr. Arcand's work has been

published in high-profile journals and presented to a variety of stakeholder groups, including clinicians, academics, the food industry and the government. Her outputs include 94 journal articles, 105 abstracts, 2 book chapters, 12 technical reports, and IP rights on 6 innovative eHealth tools (Google scholar h-index: 33; 4459 citations (Oct. 2024)).

Dr. Jennifer Abbass Dick is an Associate Professor in the Faculty of Health Sciences at Ontario Tech, a Registered Nurse and a Registered Lactation Consultant. Her research program involves designing, evaluating, and implementing innovative technology-enhanced interventions for new parents and their families that increase health outcomes, such as breastfeeding. She is dedicated to assisting and empowering parents to have a positive and healthy transition to parenthood. Dr. Abbass Dick and a team of professionals from Ontario Tech, Durham Region Health Department, and Lakeridge Health have created an Online Breastfeeding Course for Parents to standardize breastfeeding education across the Health Region, it has over 500 users monthly and has videos on You Tube created by her team imbedded in it, one of which had over 6.7 million views (April 2024). Dr. Abbass Dick founded the Canadian Breastfeeding Research Network, a national network of Canadian breastfeeding researchers focused on collaboration to achieve breastfeeding protection, promotion and support. Dr. Abbass Dick has secured over $140,000 in grant funding as a PI and has been a co-investigator on grants totalling almost $18 million (including one grant of $17 million). Dr. Abbass Dick has authored 25 publications and three dozen conference abstracts (Google Scholar h-index: 12; 755 citations (Oct. 2024)).

Dr. Caroline Barakat is an Associate Professor in the Faculty of Health Sciences at Ontario Tech and a health geographer specializing in environmental health. Her research centers on child and adolescent health, population health, environmental epidemiology, and health inequities. She has led major research initiatives, including the Hamilton Children Cohort Study on Air Quality and a national project in the UAE that collected data on medical diagnoses and environmental exposures from over 30,000 residents, including 6,000 adolescents. Dr. Barakat also served as a Co-Investigator for a Public Health Agency of Canada project that reviewed risk factors for neurological conditions. Her recent work examines exposures to toxins from personal care and cleaning products, the influence of environmental factors on adolescent physical activity, and cannabis use during adolescence. Dr. Barakat has secured over $4 million in research funding, with nearly $3 million as principal or co-investigator. She has been awarded 12 Tri-Council grants, including seven as principal investigator, and currently holds five ongoing Tri-Council grants, reflecting a strong and sustained research program in child and adolescent environmental health. With more than 60 publications, her work informs policy on environmental health issues, including air quality, food safety, and public health interventions (Google Scholar h-index: 14; 586 citations (Oct. 2024)).

Dr. Janette Hughes is a Professor and Canada Research Chair of Technology and Pedagogy in the Faculty of Education at Ontario Tech, and the inaugural Director of the Centre for Digital Innovations in Education (CDIE). Dr. Hughes specializes in the transformation of literacy practices through making and new digital media. Her research and teaching interests include critical making, critical digital literacies, digital making, adolescent literacies and identity, writing and digital media, new literacies and conceptualizations of learning, digital citizenship, and AI in education. Dr. Hughes is particularly interested in how critical making and digital media enable users to teach, learn, connect, collaborate, communicate critique, create, and promote social change. Her research in the field of digital literacies has been featured in numerous education journals and recognized nationally and internationally. She is the recipient of the Ontario Ministry of Research and Innovation's Early Researcher Award and the Ontario Research Fund—Research Excellence Award. Dr. Hughes has vast experience working with large budgets, research teams, and institutional/ community/ industry partners and collaboratively developing policies and procedures for large-scale research projects. Dr. Hughes has authored four books, 35 book chapters, 87 journal articles, and over 130 conference presentations (Google Scholar h-index: 30; 2966 citations (Oct. 2024)).

Dr. Bill Kapralos is an Associate Professor in the Faculty of Business and Information Technology at Ontario Tech, an Adjunct Professor in the Department of Engineering and Computer Science at York University (Toronto, Canada), and an Honourable Guest Professor at Shizuoka University (Hamamatsu, Japan). He is also the Technical Lead of the Collaborative Human Immersive Interaction Laboratory (CHISIL), a collaborative laboratory examining the application of virtual reality, augmented reality and mixed realities in clinical, medical, and patient education in the perioperative period. His current research interests include immersive technologies, serious gaming, multi-modal virtual environments/simulation/reality, the perception of auditory events, and 3D (spatial) sound generation. He currently leads the serious gaming theme within the SSHRC Interactive and Multi-Modal Experience Research Syndicate (IMMERSe) initiative. Dr. Kapralos is a past recipient of an IBM Centres for Advanced Studies Faculty Award, a Google Faculty Research Award (co-recipient), an NSERC and Japan Society for the Promotion of Science (JSPS) Fellowship to conduct research in Japan, an Australian Government 2018 Endeavour Executive Fellowship to conduct research in Australia, an Ontario Tech Research Excellence Award, and an Ontario Tech Research Excellence Chair. Dr. Kapralos has been awarded grants totalling over $830,000 in funding as a PI and $10 million as a co-investigator. Dr. Kapralos has edited 8 books, authored 76 journal publications, 19 book chapters, 183 conference/workshop proceedings, 77 abstracts, and presented 72 keynote and invited presentations (Google scholar h-index: 31; 4541 citations (Oct. 2024)).

Dr. Janet McCabe is an Associate Professor in the Faculty of Health Sciences at Ontario Tech. Dr. McCabe is a Registered Nurse whose work focuses on people with

intellectual and developmental disabilities (IDD) and their supporters (e.g. family, caregivers, and communities) to study health promotion, disease prevention, and the social determinants of health. In doing so, Dr. McCabe aims to positively impact the experiences and lives of people with IDD, their supports, and the education of health providers, both current and future. Using qualitative and mixed methods approaches rooted firmly in critical theory Dr. McCabe's work has recently focused on food security in the context of adults with IDD throughout COVID. Dr. McCabe also works closely with both Special Olympics Canada and Special Olympics Ontario – where she volunteers as a Clinical Director for Health Athletes – Health Promotion programming – supporting heathy choices for athletes (including healthy eating). Dr. McCabe has been awarded grants totalling over $180,000 in funding as a PI or co-PI and $5.7 million as a co-investigator. Dr. McCabe has authored 13 peer-reviewed journal articles, two book chapters, one technical report, two research reports, and presented at several meetings and symposia.

Dr. Winnie Sun is an Associate Professor of nursing in the Faculty of Health Sciences at Ontario Tech, and she holds a research appointment as the co-research director for the Regional Centre of Dementia Care and Recovery in Ontario Shores Centre for Mental Health Sciences. Dr. Sun is the Director and co-lead for the Advancement for Dementia Care Centre (ADCC) and a research collaborator at the Aging Gracefully across Environments using Technology to Support Wellness, Engagement, and Long Life, Network Centres of Excellence (AGE-WELL-NCE). She is currently leading the development of virtual reality reminiscence therapy for persons with dementia funded by the Centre for Aging and Brain Health Innovation (CABHI). Dr. Sun possesses a strong publication record, with 76 refereed journal articles, 106 conference presentations, and book chapters in community health, mental health, gerontechnology, geriatric and dementia care, as well as an active and diversified track record of conducting interdisciplinary research in gerontology, including Tri-Council, national and provincial funding from CIHR, SSHRC, Canadian Frailty Network, Ontario Trillium Foundation, CABHI SPARK-ON program, WeRPN (Registered Practical Nurses' Association of Ontario) and Ministry of Colleges and Universities Micro-credentials Challenge Fund. Dr. Sun was also recently awarded an Ontario Tech Research Excellence Chair in Healthy Aging and Dementia Care, an Alzheimer's Society of Durham Region Ambassador Award, and was nominated for the Nursing Research Excellence Award.

Dr. Mavra Ahmed is an Adjunct Professor with the Faculty of Health Sciences at Ontario Tech and a Research Associate in the Department of Nutritional Sciences and Joannah and Brian Lawson Centre for Child Nutrition, University of Toronto. Dr. Ahmed has experience in nutrition and food policy and clinical nutrition with strong expertise in research methods and extensive collaborations with both private and public partners. Dr. Ahmed obtained her PhD, specializing in the characterization of dietary intakes of the Canadian Armed Forces and the evaluation of novel technologies for assessing diets. She also holds a CIHR Fellowship in the Strategic

Training Program in Public Health Policy, a CIHR Fellowship in Artificial Intelligence for Public Health from the Dalla Lana School of Public Health and a Visiting International Research Fellowship from College of Nursing and Health Sciences, Flinders University, Australia. Her current research focuses on driving equity-focused policy shifts by determining the relationships between social determinants of health, dietary patterns/intakes and nutrition-related behaviours and knowledge to improve the health of vulnerable populations. She is fronting the Feeding Kids, Nourishing Minds school nutrition research initiative that aims to provide a comprehensive overview of school food programs in Canada and identify best practices in relation to the design, delivery, and measurement of school food programs. Dr. Ahmed is also focused on exploring the use of machine learning and AI in evaluating the Canadian food environment, specifically the impact of the nutritional value of foods on health outcomes and in relation to help guide Canadian nutrition policy development, implementation and evaluation and in order to help Canadian consumers eat healthy and manage chronic diseases. Dr. Ahmed has published 51 journal articles, 8 technical reports, 93 abstracts and has IP rights on 2 e/mHealth products (Google Scholar h-index: 15; 803 citations (Oct. 2024)).

Dr. Mary L'Abbé is an Adjunct Professor with the Faculty of Health Sciences at Ontario Tech and a Professor Emeritus and former Chair in the Department of Nutritional Sciences at the University of Toronto (https://labbelab.utoronto.ca/). Dr. L'Abbé is also the Director of the WHO Collaborating Centre on Nutrition Policy for Non-communicable Disease Prevention. Her research examines the nutritional quality of the food supply, nutrient profiling methods, front-of-pack labelling, dietary intake patterns and costs, and consumer research related to obesity and NCD. She has served on numerous expert committees for the WHO, PAHO, Dietary Reference Intakes, Health Canada and others. Professor L'Abbé is a member of the Order of Canada and Fellow of the Canadian Nutrition Society, the American Society of Nutrition and the International Union of Nutritional Sciences. She has received numerous national and international awards for her research and nutrition leadership. Since 2011, Dr. L'Abbé has received over $6.5 million in funding as a PI and helped secure over $11 million as a co-investigator. Dr. L'Abbé has authored 297 journal publications, >65 reports for government or WHO bodies, 16 book chapters, 25 monographs, and >150 abstracts (Web of Science h-index: 45 (May 2024)).

Box 1. ICPNT Member's External Partner and Relationship Organizations	
Local (Ontario)	
49 Ontario school boards	Simcoe Muskoka District Health
Alzheimer's Society of Durham Region (ASDR)	St. Michael's Hospital
Centre for Aging and Brain Health Innovation (CABHI)	Sunnybrook Health Sciences Centre
Durham Region Health Department	The Coalition of Healthy School foods
Durham Region Long-Term Care Division	Toronto Foundation for Student Success
Lakehead University	Toronto Metropolitan University
Lakeridge Health	Toronto Public Health
Mount Sinai Hopsital	University of Guelph
Ontario Dietitians in Public Health	University of Toronto
Ontario Physical and Health Education Association	University of Waterloo
Ontario Shores Centre for Mental Health Sciences	WeRPN (Registered Practical Nurses' Association of Ontario)
Oshawa Senior Community Centre (OSCC)	Western University
Queen's University	York University
National (Canada)	
AGE-WELL	McGill University
Canadian Frailty Network	Memorial University
Canadian Medication Appropriateness and Deprescribing Network	Neurofit
Canadian Nutrition Society	Novo Nordisk Centre for Population Health
Canadian Sport Institute - Pacific	RxFood Inc.
Dietitians of Canada	Senior Care Network
Health Canada	SenseTech Solution Inc.
Heart & Stroke Foundation	University of Calgary
HeartLife Inc.	University of Ottawa
Hypertension Canada	University of Saskatchewan
International Development Research Centre	University of Victoria
Manulife	
International	
CODEX	University of Amsterdam, Netherlands
Flinders University, Australia	University of Auckland, New Zealand
Food and Agricultural Organization	University of Dundee, Scotland
George Institute for Global Health, Australia	University of Leeds, UK
German Sport University Cologne, Germany	University of Newcastle, Australia
INCIENZA, Costa Rica	University of Paris-Descartes, France
International Network for Food and Obesity / Non-communicable Diseases Research Monitoring and Action Support (INFORMAS)	University of Sao Paulo, Brazil
International Society for Behavioural Nutrition and Physical Activity	University of South Australia, Australia
Karlsruhe Institute of Technology, Germany	World Health Organization
Pan-American Health Organization	

8. Resource Requirements

8.1. Physical Requirements

8.1.1. Explain the type, size and location of space desired, and how the desired space is appropriate to the proposed research entity's needs. Specific space commitments must be secured from the office of the Provost. Mention all special equipment or other requirements that have space implications.

At start-up, the ICPNT members will use their existing research spaces (Box 2), which may require expansion in the future as the Centre grows. The new home to the Faculty of Health Sciences, Shawenjigewining Hall, will provide additional space for the ICPNT research activities, such as a meeting place for collaborations, and a safe space for students, faculty, partners, and staff. There are no new lab requirements for the ICPNT at the present time.

Box 2. Description of available infrastructure/ research spaces

Dr. Arcand	Lab that includes 4 offices (2x desks each) for trainees in U5 building
Dr. Hughes	STEAM 3D Maker Lab (virtual tour - https://janettehughes.ca/lab/)
Dr. Sun	Geriatric Dementia Unit; Research Office (experiential student placement at Ontario Shores Centre for Mental Health Sciences)
Dr. Kapralos	1 lab (GAMER Lab) for trainees in SIRC building

8.1.2. Provide a complete list of all required resources and equipment including computers, phones, and copiers. Specify what internal resources (i.e. library, audio-visual) will be used and to what extent.

The ICPNT and its members will require the use of basic office lab equipment (e.g., computers, phones, desks, monitors, copiers) and software for data collection (e.g., Qualtrics, REDCap), analysis (e.g., R Studio, SPSS, NVivo) and writing (e.g., Endnote). Many of these resources are available internally. Any resources requirements above and beyond what is internally available will be purchased with the ICPNT faculty member research funds (e.g., wearables or mobile devices for intervention delivery or data collection) . As new research is planned, more specialized resources may be required and ICPNT faculty members will apply for funds to cover these resource costs. The ICPNT will utilize library resources to access journal articles, books, and periodicals; however, ICPNT faculty members have Research Librarians on their teams to assist with research projects that utilize scoping and systematic review methodologies.

8.2. Staffing Requirements and Governance Structure

8.2.1. Explain any requirements for administrative, and/or technical personnel support from the University. List the following for each support staff member:

- Proposed Employer (University or Entity)

- Role or Duties
- Source of Compensation

Administrative support will be provided by a part-time Coordinator, hired as an employee of the ICPNT. They will be responsible for assisting the Director with administrative and organizational tasks. Compensation for the Coordinator will derive from ICPNT member grants. In Year 1, additional funds are requested as part of the Start-up funds (Section 8.3.2) to support the development of ICPNT processes and online presence.

Graduate students and postdoctoral fellows will be recruited each year as part of the ICPNT training activities. They participate in research and dissemination activities, seminar planning, and mentor undergraduate students. These students will be funded through Teaching Assistantships or partially funded Teaching Assistantships that are funded by Ontario Tech; and/or Graduate Research Assistantships that are funded by the ICPNT faculty members through their operating grants; and/or by external scholarships such as Ontario Graduate Scholarships, or those from CIHR, NSERC or SSHRC. The ICPNT will aim to have at least one postdoctoral fellow each year. The postdoctoral fellow will conduct advanced research under the supervision of the ICPNT faculty members, contributing to published work, grant applications, and student training. Postdoctoral fellows will be funded through the ICPNT faculty member's operating grants and/or competitive scholarship programs from agencies such as the Banting Postdoctoral Fellowship program, CIHR, SSHRC, NSERC, or the Heart & Stroke Foundation.

Future expansion the number of staff and trainees will be reevaluated as research projects are initiated and contingent upon securing funding to support this growth.

8.2.2. For personnel within the research entity who are employees of external institutions or corporations and not employees of Ontario Tech, provide copies of agreements outlining the obligations of both Ontario Tech and the external institution or corporation.

There are currently no ongoing agreements with personnel who are employees of external institutions or corporations. Such agreements will be prepared on an ongoing basis.

8.2.3. Describe the governance structure for the research entity. Indicate the structure, composition and decision-making processes that will facilitate the operations and research activities of the research entity.

The organizational structure of the ICPNT is summarized in Figure 2.

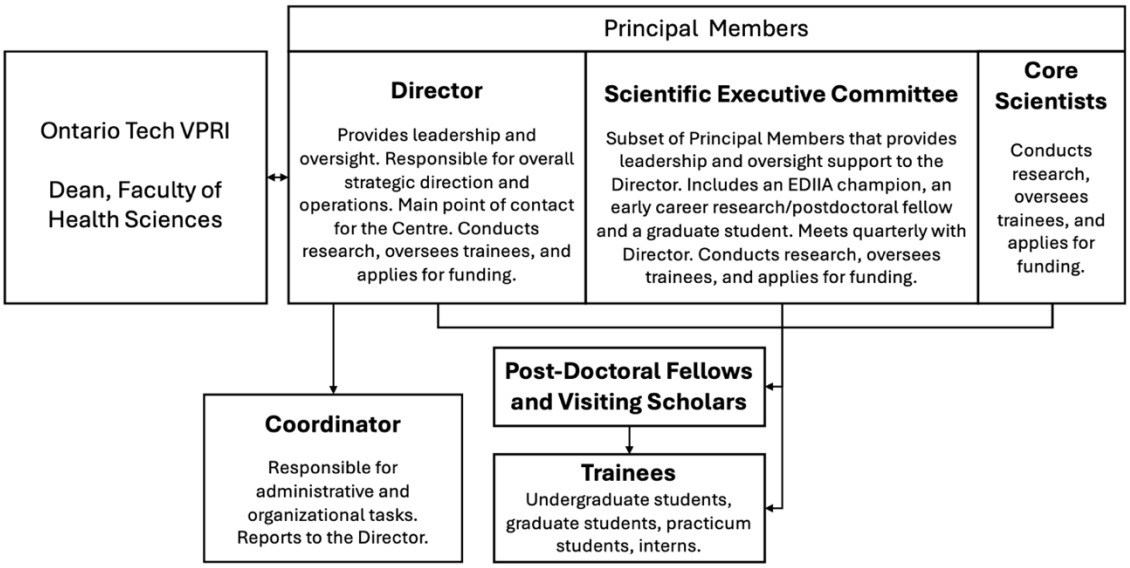

Figure 2. Organizational structure of the ICPNT

Briefly, ICPNT leadership and oversight will be the responsibility of the Director and Scientific Executive Committee. ICPNT leadership will be supported by a Coordinator, and activities will be informed by trainees of all levels.

The **Director** will be the main point of contact for the ICPNT and will report to the Dean of the Faculty of Health Sciences and the Vice President of Research and Innovation. The Director will oversee most activities in the ICPNT and be responsible for overall strategic direction and operations of the Centre, including managing budgets, communications with members and stakeholders, organizing outreach activities, coordinating meetings, supporting members, trainees, and staff, and representing the ICPNT. They will Chair the Scientific Executive Committee and work with the Coordinator to ensure the implementation of the ICPNT activities and initiatives, including the direction of the ICPNT training resources, activities and programming. The Director will ensure adherence to institutional policies related to the Centre and will lead any funding applications to directly support the activities of the Centre.

The **Scientific Executive Committee** will be comprised of three ICPNT core scientists (faculty members) who will assist the Director in making high-level decisions about research priorities, funding, and strategic planning. The Scientific Executive Committee will also appoint an EDIIA champion from the ICPNT members to ensure that EDIIA-related issues are consistently integrated into the decision-making process. The committee will also include one early career researcher/postdoctoral fellow and one graduate student representative. The committee will work with the Director to prioritize and facilitate the organization of ICPNT events and learning opportunities, such as workshops and seminars, aimed at enhancing the professional development of trainees. The Scientific Executive Committee will meet quarterly, or more often as needed, and decisions will be

made by consensus to ensure that all voices are heard and considered. All ICPNT faculty members will be responsible for conducting research, overseeing trainees, and securing funding through competitive grant applications. Clear accountability measures will be in place ensuring the alignment of research initiatives with the committee's strategic priorities, including regular progress reports and assessments of EDIIA integration.

A **Coordinator** will take on the responsibility of administrative and organizational tasks within ICPNT, reporting directly to the Director. Tasks will include scheduling meetings, coordinating communications and social media, implementing outreach activities, engaging with external stakeholders, planning and coordination of workshops/seminars to ensure the successful and smooth launch and sustainability of the Centre. The Coordinator will also support the preparation of annual reports as well as grant submissions and funding applications directly related to ICPNT operations.

Postdoctoral fellows, visiting scholars, and trainees will participate in ICPNT activities as part of the ICPNT members' labs and in coordinated workshops/seminars, collaborative research and in social events organized through the ICPNT. They will directly inform the ICPNT activities that support their scientific training, networking and professional development

8.3. Budget and Financial Requirements

8.3.1. Prepare a detailed budget projection for the first five years of operation, including all sources of income, expected expenses/disbursements. (See Excel Template)

A five-year ICPNT budget projection is provided in the Appendix. Funding for all ICPNT research activities will come from external grants. The initial ICPNT operating costs will be funded by smaller unrestricted grants held by Dr. Arcand, with a request for start-up funds from Ontario Tech to cover the additional hours needed to launch the ICPNT. Research and operating estimates may increase as Members successfully obtain new and larger grants as they work together to support the ICPNT mandate. Additionally, it is expected that most trainees and postdoctoral fellows will obtain provincial and national scholarships, based on a successful track record from our members' trainees and as high calibre talent is recruited to Ontario Tech through the ICPNT. The Faculty of Health Sciences and Dr. Arcand have been working with Advancement at Ontario Tech to secure a large donation for a Research Chair and/or support for the ICPNT. If successful, these will be a source of funds to enhance the ICPNT activities, such as providing trainees with travel awards or scholarships. These funds will also be used to provide seed funding for the independent research ideas of postdoctoral fellows, preparing and supporting their success for future faculty positions.

8.3.2. Start-up funding may be available for the establishment of research entities. Justify your request for start-up funding.

Start-up funding is requested for a total of $25,000. Start-up funds will cover expenses that cannot be readily mobilized in Year 1 from existing grants, for the purpose of ensuring a successful launch of the ICPNT. Having start-up funds will expedite the work required to launch the ICPNT. Initiating the ICPNT in a timely manner is considered critical to support Ontario Tech's recently launched *"Tech with a Conscience"* fundraising campaign, which includes strategic fundraising activities that align with the ICPNT mandate (e.g., a Research Chair in Nutrition Security). Start-up funds are considered reasonable in this circumstance since there is not yet a philanthropic or industry partner financially supporting the ICPNT, and no member currently holds substantive programmatic research funds through the Canada Research Chair program, CIHR Applied Public Health Research program, or through a philanthropic donation.

The requested start-up funds will cover the following:

- *Establishing a Presence for the ICPNT:* A logo, website, social media accounts and other promotions (e.g., conference session proposals, outreach to partners and stakeholders) will be developed to give the ICPNT a digital presence, promote awareness among partners, and to expand the reach and dissemination of the ICPNT research outputs. A ICPNT website will become a source of information for interested collaborators, trainees, and partners to learn more about the ICPNT's mission and research mandate – supporting recruitment and partnership development. We will work with the website development company Gray Cyan, who developed Dr. Arcand's lab website, and with students in the Faculty of Business and IT on logo development (Requested for Year 1: $5,000).

- *Coordinator*: A part-time Coordinator will be integral to the successful launch of the ICPNT, especially during the first year to ensure a smooth and successful launch. In Year 1, they will coordinate and support activities to establish a digital and institutional presence in Year 1 (e.g., develop website content); in addition to the roles and responsibilities described in Section 8.2.3. In Years 1 and 2, funding for the ICPNT Coordinator will be mobilized from Dr. Arcand's Research Excellence Chair (REC) as this provides funding for research leadership (Award value is $15,000 annually). It is anticipated that the efforts to secure funds for ICPNT in Y1 will result in secured funds for Year 2 to Year 5, and beyond (Requested for Year 1: $10,000).

- *ICPNT Postdoctoral fellow stipend*. Funds are requested in Year 1 for the partial stipend of a postdoctoral fellow, who will be provided with dedicated time to conduct work to the launch the ICPNT. The postdoctoral fellow will work with the Director to form the governance structures and with the Coordinator to establish the academic activities by seeking input from trainees from all disciplines. They will also work with the Director on applications to funding opportunities to support

ICPNT operations, including working with Advancement to secure donations. This is a unique opportunity for a postdoctoral to establish research leadership and grant writing skills (Requested for Year 1: $10,000, where a postdoctoral fellow is typically paid $50,000 in Dr. Arcand's lab).

8.3.3. Provide a plan for the long-term financial sustainability, including external funding, of the Research Entity.

Securing external funding will ensure a steady flow of resources to support the ICPNT's research activities (Section 4.3). Long term success and sustainability of funding is expected given past successes in securing funds from a variety of sources, as summarized in Section 4.3 and Section 7. Regarding longer-term funding for the ICPNT, the Faculty of Health Sciences and Dr. Arcand is working closely with Advancement to secure donations for a Research Chair funding and/or funding for the ICPNT. These efforts could provide opportunities for individuals or organizations to become named sponsors of the Centre, and the funds raised can be used to support the operations of the ICPNT or to establish a Research Chair position linked to the Centre. The ICPNT will also focus on pursuing a wide range of funding opportunities that can support ICPNT operations and research, including tri-agency councils and those that value an interdisciplinary approach (e.g., New Frontiers in Research Fund, Canadian Foundation for Innovation). Each ICPNT faculty member will act as the lead within their respective research areas while leveraging the collective expertise of all members to strengthen their proposals through internal peer review. The funds will be used to support research pursuits, graduate students, research assistants, postdoctoral fellows, and dissemination activities (e.g., conferences, journal publications, seminars). ICPNT members will apply for funding opportunities to support the management and infrastructure of the ICPNT as needs arise going forward (e.g., external research grants will have funds allocated to support the ICPNT operations). In addition, funding from the Canadian Foundation for Innovation (CFI) Infrastructure Operating Fund helps cover a portion of the operating and maintenance costs of CFI-funded research infrastructure. All students working with the ICPNT will additionally be encouraged to apply for scholarships with mentorship to develop their applications. The ICPNT members will also actively fundraise to support ICPNT work. Each year, the budgetary needs of the ICPNT will be re-evaluated to ensure the efficient use of resources.

The ICPNT does not require the addition of new faculty for its successful launch. However, continued growth and sustainability of the ICPNT in the long-term would benefit from the strategic recruitment of nutrition-focused faculty members (new and to replace recent retirements), especially those whose research aligns with the ICPNT research mandate (e.g., nutrition and AI) and/or that compliments existing disciplines or expertise within the Faculty of Health Sciences (e.g., nutrition and aging, nutrition in persons with disabilities). An ideal strategy would be to incorporate an Associate Professor with an established research program, providing instantaneous benefits to the ICPNT, and an Assistant Professor who would promote sustained development.

9. Intellectual Property and Commercialization

9.1. Describe any proposed arrangements with members (including members from external institutions) relating to the ownership and/or commercialization of intellectual property created through work undertaken at the Research Entity

The ICPNT will use the intellectual property policy of Ontario Tech. In general, the policy states that all academic personnel own the intellectual property they create in the course of their teaching, research and other scholarly activities. The intellectual property is jointly owned by the faculty member and their students and postdoctoral fellows. Academic personnel will retain the right to publish their work and use the results in subsequent research. Collaboration agreements with external institutions, agencies, or companies, will detail intellectual property rights in advance and in writing based on the contributions made. Ontario Tech will be included in the agreements if University resources or funds are involved. All personnel participating in research that requires a collaboration agreement will be made aware of the stipulations. Any changes or waivers will be made with informed consent. The Ontario Tech *policy on the commercialization of intellectual property* will be followed if the creator(s) intend to commercialize. An IP officer at Ontario Tech will be consulted with any queries that arise and to ensure collaboration agreements are sound.

9.2. Describe proposed arrangements for the conduct of private sector contract research.

Any arrangements for the conduct of private sector contract research will be consistent with Ontario Tech policies and procedures. The ICPNT faculty members will draw on their wealth of prior experience collaborating with private sector partners (e.g., Neurofit, Manulife, etc.) and will leverage this experience for partnerships in the future.

10. Summary

Establishing a ICPNT at Ontario Tech presents a unique opportunity to tackle complex and multifaceted nutrition challenges facing the world today. The ICPNT will operate as a self-sustaining research entity, leveraging interdisciplinary collaborations from the faculties of Health Sciences, Business and Information Technology, and Education and meaningful partnerships with community, industry, government, and NGOs. The ICPNT faculty members have extensive track records for securing funding, disseminating and translating research findings, supervising and mentoring trainees, and are considered leaders in their respective fields. With collective efforts towards a unified vision, we are confident that the ICPNT is well-positioned to emerge as a recognized leader in interdisciplinary and technology-driven nutrition research and, through this, will enhance the research reputation and visibility of Ontario Tech. The ICPNT will also undoubtedly contribute to advancing Ontario Tech's strategic research plan with a vision and research mandate that aligns with the University's priorities and values.

11. Appendices

A. Member CVs
B. Budget Projection for the first five years of operation

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Appendix

A) Budget for ICPNT operations

CENTRE OPERATIONAL BUDGET

Items		Year 1	Year 2	Year 3	Year 4	Year 5	Total	Justification
1. Operatonal Budget of Centre								
1.1 Labour Costs - Staff for Centre								
	Research Centre Coodinator	$ 17,072	$ 14,427	$ 15,008	$ 15,308	$ 15,615	$ 77,430	0.1 FTE in Y1 and Y2 secured. Y2-Y5 0.2 FTE with funds to be secured or mobilized from operating grants. Y1 includes an additional $10000 resquested as part of start-up funds in Y1 to support timely launch of the CINRI and its presence (proposal Section 8). Includes a 2% annual COLA
	Postdoctoral fellow	$ 10,000						Requested as start-up funds. Support launch of the CINRI.
	Benefits (9%)	$ 1,536	$ 1,298	$ 1,351	$ 1,378	$ 1,405	$ 6,969	Benefits applied to the Coordinator only
SUB-TOTAL-Labour (Staff)		**$ 28,608**	**$ 15,725**	**$ 16,359**	**$ 16,686**	**$ 17,020**	**$ 84,399**	
1.2 Labour Costs - Centre Director								
	Teaching Release (Director) - Faculty funded	$ 8,187	$ 8,351	$ 8,518	$ 8,688	$ 8,862	$ 42,605	1 course/year. Y1 rate based on the 2024-25 CA. Includes a 2% annual COLA
	Benefits (9%)	$ 737	$ 752	$ 767	$ 782	$ 798	$ 3,834	
SUB-TOTAL-Labour (Director)		**$ 8,924**	**$ 9,102**	**$ 9,284**	**$ 9,470**	**$ 9,659**	**$ 46,440**	
1.3 Research Entity Operating Costs								
	Office Supplies and Services	$ 500	$ 500	$ 500	$ 500	$ 500	$ 2,500	Miscellaneous office supplies and supplies needed for workshop activitires
	Graduate student scholarships & travel awards			$ 20,000	$ 20,000	$ 20,000	$ 60,000	
	Postdoctoral fellow/Early Career Researcher grants			$ 10,000	$ 10,000	$ 10,000	$ 30,000	
SUB-TOTAL-Research Entity Operating Costs		**$ 500**	**$ 500**	**$ 30,500**	**$ 30,500**	**$ 30,500**	**$ 92,500**	
2. Research Networking								
	Seminars and Workshops	$ 300	$ 600	$ 750	$ 750	$ 750	$ 3,150	Includes seminars/workshops (refreshments); honouriums for external speakers
SUB-TOTAL-Research Networking		**$ 300**	**$ 600**	**$ 750**	**$ 750**	**$ 750**	**$ 3,150**	
3. Communications								
	Website, Logo development	$ 5,000	$ 300	$ 300	$ 300	$ 300	$ 6,200	Y1 requested as part of start-up funds. Justification in the proposal Section 8.
SUB-TOTAL-Communications		**$ 5,000**	**$ 300**	**$ 300**	**$ 300**	**$ 300**	**$ 6,200**	
4. Knowledge Transfer and Dissemination								
	Publication Costs - Reports		$ 1,000	$ 1,000	$ 1,000	$ 1,000	$ 4,000	Annual reports, knowledge translation activities of the Centre
SUB-TOTAL- Knowledge Transfer and Dissemination		**$ -**	**$ 1,000**	**$ 1,000**	**$ 1,000**	**$ 1,000**	**$ 4,000**	
TOTAL OPERATIONAL BUDGET		**$ 43,332**	**$ 26,228**	**$ 57,193**	**$ 57,706**	**$ 58,229**	**$ 236,689**	
REVENUE								
	External Funding - Secured from Director	$ 9,500	$ 9,500	$ -	$ -	$ -	$ 19,000	Funded by the Dr. Arcand's Research Excellence Chair and other grants in Y1 and Y2
	External Funding - Unsecured Donations/grants	$ -	$ 10,000	$ 50,000	$ 50,000	$ 50,000	$ 160,000	A portion of future grants will be allocated to the ICPNT
	Start-up funds requested from VPRI	$ 25,000	$ -	$ -	$ -	$ -	$ 25,000	Unsecured
	FHSc Contribution - Teaching Release (Director)	$ 8,924	$ 9,102	$ 9,284	$ 9,470	$ 9,659	$ 46,440	Secured
TOTAL REVENUE		**$ 43,424**	**$ 28,602**	**$ 59,284**	**$ 59,470**	**$ 59,659**	**$ 250,440**	
TOTAL OPERATIONAL BUDGET LESS REVENUE		**$ 92**	**$ 2,375**	**$ 2,091**	**$ 1,764**	**$ 1,430**	**$ 13,751**	

Appendix

B) Budget for research activities conducted under the ICPNT

CENTRE RESEARCH BUDGET

		Year 1	Year 2	Year 3	Year 4	Year 5	Total	
Labour Costs - Research Staff								**Comments**
	*Masters Students**	$ 48,000	$ 48,000	$ 48,000	$ 48,000	$ 48,000	$ 240,000	GRA for 3 MHSc students, Y1- Y3 secured
	*PhD Students**	$ 54,000	$ 54,000	$ 54,000	$ 54,000	$ 54,000	$ 270,000	GRA for 2 PhD students, Y1 - Y3 secruted
	*Post-Doctoral Fellow**	$ 55,000	$ 55,000	$ 55,000	$ 55,000	$ 55,000	$ 275,000	GRA for 1 PDF, Year 1- 3 secured
	Research Assistants	$ 93,600	$ 93,600	$ 93,600	$ 93,600	$ 93,600	$ 468,000	Graduate student hires, estimated 10/year
	Research Associates	$ 254,800	$ 259,896	$ 265,094	$ 270,396	$ 275,804	$ 1,325,989	e.g., Dietitians, IT specialists, Analysts, Teachers, 2% annual COLA
	Benefits (9%)	$ 31,356	$ 31,815	$ 32,282	$ 32,760	$ 33,246	$ 161,459	
SUBTOTAL Trainees		**$ 536,756**	**$ 542,311**	**$ 547,976**	**$ 553,755**	**$ 559,650**	**$ 2,740,448**	
Research Operating Costs								
	Scientist Travel/Conferences	$ 10,000	$ 10,000	$ 12,000	$ 12,000	$ 15,000	$ 59,000	KT to scientific conferences, stakeholder meetings
	Publications	$ 8,000	$ 8,000	$ 12,000	$ 12,000	$ 16,000	$ 56,000	Estimates. Publication cost vary by journal and dicipline.
	Software	$ 5,000	$ 5,000	$ 5,000	$ 5,000	$ 5,000	$ 25,000	Qualtrics, Nvivo, Unity, ESHA Food Processor, Block screeners, etc.
	Equipment - computer equipment	$ 500	$ 3,800	$ 500	$ 3,800	$ 500	$ 9,100	Laptop docking stations 4@$1675 = $6700, other misc. computer/electronic research supplies ($500/year)
	Equipment - tablets	$ -	$ 3,000	$ -	$ -	$ 3,000	$ 6,000	Classroom set of android tables (n=35 + cases)
	Contracts (tech)	$ 300,000	$ 300,000	$ 300,000	$ 300,000	$ 300,000	$ 1,500,000	Development of e&mHealth tools, AI integration
	Contracts (market research)	$ 90,000	$ 90,000	$ 90,000	$ 90,000	$ 90,000	$ 450,000	analysis
SUBTOTAL Research Operating		**$ 413,500**	**$ 419,800**	**$ 419,500**	**$ 422,800**	**$ 429,500**	**$ 2,105,100**	
TOTAL RESEARCH COSTS		**$ 950,256**	**$ 962,111**	**$ 967,476**	**$ 976,555**	**$ 989,150**	**$ 4,845,548**	
REVENUE RESEARCH								
	External Funding (Director) - Secured	**$ 351,238**	**$ 291,238**	**$ 291,238**	**$ -**	**$ -**	**$ 933,714**	**External funds currently held**
	External Funding (Director) - Unsecured	$ 50,000	$ 100,000	$ 200,000	$ 500,000	$ 500,000	$ 1,350,000	CIHR, SSHRC, Heart & Stroke, donations etc,
	External Funding (Members) - Secured	**$ 887,821**	**$ 377,000**	**$ 250,000**	**$ 150,000**	**$ 150,000**	**$ 1,814,821**	**External funds currently held**
	External Funding (Members) - Unsecured	$ 1,000	$ 400,000	$ 600,000	$ 700,000	$ 700,000	$ 2,401,000	CIHR, SSHRC, NSERC, Mitac, donations, etc.
	TOTAL REVENUE	**$ 1,290,059**	**$ 1,168,238**	**$ 1,341,238**	**$ 1,350,000**	**$ 1,350,000**	**$ 6,499,535**	
	TOTAL REVENUE LESS EXPENSES	**$ 339,803**	**$ 206,127**	**$ 373,762**	**$ 373,445**	**$ 360,850**	**$ 1,653,986**	

NOTE: All estimates are subject to change based on new grants, contracts and donations secured.

BOARD REPORT

SESSION:	**ACTION REQUESTED:**
Public ☒	**Decision** ☐
Non-Public ☐	**Discussion/Direction** ☐
	Information ☒

TO: **Board of Governors**

DATE: **February 13, 2024**

PRESENTED BY: **Pamela Onsiong**

SLT LEAD: **Brad MacIsaac**

SUBJECT: **3rd Quarter - Operating Forecast for year ending March 31, 2025**

COMMITTEE/BOARD MANDATE:
The Committee is responsible for overseeing the financial affairs of the University, including approval of the annual budget and financial reporting to ensure that appropriate financial controls, reporting processes and accountabilities are in place at the University.

BACKGROUND/CONTEXT & RATIONALE:

In February 2024, and in response to the Blue-Ribbon Panel recommendations, the Ontario government announced a **$903.0M investment over 3 years** through the new Postsecondary Education Sustainability Fund ("PESF") starting in 2024-25. At the time the 2024/25 budget was finalized in March 2024, the University had no indication from the Ministry as to the amount of PESF fund it will receive for the current year.

In April 2024, the Board approved a **balanced budget for 2024/25** based on estimated revenue and expense assumptions. This budget included **an estimated $2.0M PESF in revenue** and a **net surplus contingency of $5.4M** that will be released for future capital infrastructure and new investments in IT, academic and student-related space, should the budget assumptions be met or exceeded.

This report provides the Committee with an overview of the projected year-end results against the approved budget (Appendix 1).

Technical point only: The operating budget is based on a projection of cash receipts and expenditures for the year. This contrasts with the audited financial statements which are prepared in accordance with generally accepted accounting principles ("GAAP") for non-for-profit organizations in Canada. In arriving at the year-end results on a GAAP basis, adjustments are required to be made to the management report, e.g.

- The management report includes cash outlays for capital investment in the budget year while the GAAP financial statements include an expense that reflects the amortization of capital assets over their useful lives.
- Conversely, the GAAP financial statements include the non-cash unrealized gain/loss on endowed investments while these are not budgeted and therefore not included in the management report.

HIGHLIGHTS

Based on Winter 2025 Day 10 enrolment count and expense forecasts from budget holders the **net operating surplus for the year projected at $6.5M**, is ~ $1.1M above the $5.4M planned surplus to be set aside for reserves, albeit with **forecast variances to budget** across several revenue and expense lines.

Revenue

Total revenue is favourable $9.4M (or 4%) against original budget. Approximately 60% of the increase in revenues have offsetting expenses or were for planned reserves, and these are included in this forecast under the Expense and Capital sections. Revenue increase is largely driven by:

1) **Grant** increase of $5.9M (or 7%), comprises of higher than expected provincial grants, including $3.6M of one-time PSEF grant, $0.5M of a new one-time Efficiency and Accountability Fund ("EAF") and $0.5M higher than expected facilities renewal grant, and other increases, none of which exceeds $0.5M.

2) **Tuition revenues** increase of $4.6M (or 4%) against budget is largely driven by a higher than budgeted domestic enrolment. Total enrolment projection is favourable ~ 403 FTE (or 4%) against an approved budget of 10,387 FTE – see Appendix 2.

   Domestic enrolment remains strong with a net forecast increase of 312 FTE (additional ~ $3.4M in revenues) with the most significant increases in Education and Health Sciences. Total international enrolment increased net 91 FTE against budget with $1.2M increase in tuition revenues and with international students registering in lower fee programs than outlined in the budget assumptions.

Revenue (contd)

As a result of the increase in projected enrolment and revenues, Management has allocated funds to support academic growth and invested in strategic initiatives in support of student experience and capital infrastructure at the University. These additional costs are included in the forecast expenses.

Expenses

Total operating expenses for academic, academic and support units are unfavourable net $3.3M (or 2%) against budget.

1) **Total labour** is favourable $1.0M, and comprises of $5.1M of savings in full-time positions primarily attributable to vacant positions and some labour cost recovery from externally funded research grants. These savings are offset by $4.1M increase in limited term contracts.

   Increase in limited term contracts is driven by:

   (a) $2.1M increase required to back-fill full-time vacant positions, increase in administrative workload and increase in contracts for students in the University's work study program.

   (b) $1.0M increase in teaching assistants and sessionals due to increased enrolment

   (c) $1.0M salary adjustment retroactive to Sep 1, 2022 further to the ratification of the collective agreement for teaching & research assistants and exam invigilators in Nov 2024.

2) **Operating expenses** for the academic, academic support and administrative units are unfavourable $4.3M against budget and include:

   a) $1.8M of higher than budgeted **consulting services**, including costs associated with the new student residence and campus land development, the purchase of Campus Corners, and IT consulting services.

   b) $1.7M of unbudgeted estimated loss for its subsidiary, Ontario Tech Talent

   c) $0.5M increase in **entrance scholarships** as increased enrolment resulted in more students meeting the eligibility criteria for these scholarships.

Capital Expenses are unfavourable $3.4M (or 40%) against budget, and is mainly driven by:

1) $1.0M of campus renovations, funded by higher than expected provincial facilities renewal grant and expendable donations.

2) $1.0M of Banner (the University's Enterprise Resource Planning system) migration to Cloud. This project was initially budgeted to be funded from prior year student ancillary reserves (see offsetting $1.0M positive variance under Revenue "Student Ancillary"), and is now being funded using current year operating surplus.

3) $1.3M capital investment for the portion of the purchase of the **Campus Corners location which is not funded by prior year reserves and external financing** (see under "Other disclosures" below).

Other disclosures

On September 17, 2024, and in alignment with its Campus Master Plan, the University acquired **50% of an administrative building and its surrounding locations,** "Campus Corners" valued at $35.4M for a net cash consideration of $12.9M ($13.3M including HST, net of rebate) . This acquisition is being funded through a combination of current year surplus (see under "Capital Expenses" Item 3, above), prior year reserves and external financing.

FINANCIAL IMPLICATIONS:

The primary purpose of this financial update is to report on the projected year-end results of the operating budget. Maintaining a balanced (or surplus) budget is critical to Ontario Tech University's short-term financial health and long-term financial sustainability.

SUPPORTING REFERENCE MATERIALS:

- Appendix 1: Management Reporting: Operating Forecast Summary for the year ending March 31, 2025

APPENDIX 1

Ontario Tech University

Management Reporting: Forecast vs Approved Budget Summary
For the year ending March 31, 2025 (in $ 000's)

	April 1, 2024 - March 31, 2025			
	Total Annual Budget	Y/E Forecast	Fav. (Unfav.) Forecast vs Budget $ / %	
Revenue				
Grants	86,974	92,894	5,919	7%
Tuition	112,234	116,814	4,580	4%
Student Ancillary	18,261	17,279	(982)	-5%
Other	26,785	26,714	(71)	0%
Total Revenue	**$ 244,254**	**$ 253,701**	**$ 9,447**	**4%**
Expenditures				
Academic	97,473	96,686	787	1%
Academic Support	55,055	55,912	(857)	-2%
Administrative	33,345	36,544	(3,199)	-10%
Sub-total	**$ 185,873**	**$ 189,141**	**$ (3,268)**	**-2%**
Purchased Services	**16,323**	**16,469**	(146)	**-1%**
Total Ancillary/Commercial	**11,981**	**11,230**	751	**6%**
Debt Interest Expense	**8,474**	**8,200**	274	**3%**
Total Operating Expenses	**$ 222,650**	**$ 225,040**	**$ (2,390)**	**-1%**
Net Contribution from Operations	**$ 21,605**	**$ 28,661**	**$ 7,056**	**33%**
Capital Expenses funded from Operations	**8,424**	**11,820**	**(3,396)**	**-40%**
Principal Repayments - debt & capital leases	**10,567**	**10,317**	**250**	**2%**
Operating Surplus	**2,613**	**6,524**	**3,911**	**150%**
Funded through PY restricted reserves	**373**	**0**	**(373)**	**-100%**
Contingency Fund	**2,443**	**0**	**(2,443)**	**-100%**
Total Operating Surplus	**$ 5,429**	**$ 6,524**	**$ 1,095**	**20%**
Additional disclosures:				
Purchase of 50% of Campus Corners, to be funded by current/prior year reserves and external financing	**$ -**	**$ 12,059**	**$ (12,059)**	**N/A**

APPENDIX 2

Ontario Tech University

Management Reporting: Enrolment Table

FTE's	2023/24 Actual	2024/25 Budget	Q3 Forecast *	Variance to Budget
Undergraduate				
Domestic	**8,717**	**8,783**	**9,069**	**286**
International	**753**	**776**	**753**	**-23**
Graduate				
Domestic	**462**	**477**	**503**	**26**
International	**354**	**351**	**465**	**114**
Total FTE's	**10,286**	**10,387**	**10,790**	**403**

* Q3 Forecast reflects Winter 2025, Day 10 enrolment count. With four enrolment count dates over the year, this is currently an estimate until final winter count in February 2025.

Current eligible undergraduate and graduate enrolment projection is within the + / - 3% of the University's corridor midpoint. Core Operating Grant remains flat as under the new funding formula implemented by the Ministry in 2017 -18, the funding for domestic students for the current year remains at the 2016 – 17 level.

BOARD REPORT

SESSION:	**ACTION REQUESTED:**
Public ☒	**Decision** ☐
Non-Public ☐	**Discussion/Direction** ☐
	Information ☒

TO: **Board of Governors**

DATE: **February 20, 2025**

PRESENTED BY: **Pamela Onsiong**

SLT LEAD: **Brad MacIsaac**

SUBJECT: **Financial Statements (unaudited) for the 9 months ending December 31, 2024**

COMMITTEE/BOARD MANDATE:
The Committee is responsible for overseeing the financial affairs of the University, including approval of the annual financial statements and financial reporting to ensure that appropriate financial controls, reporting processes and accountabilities are in place at the University.

BACKGROUND/CONTEXT & RATIONALE:

This report provides the Committee with an overview of the statements of financial position, operations and cash flow as at December 31, 2024, together with a year-over-year comparison (Appendix 1).

These financial statements are prepared on a consolidated basis in accordance with Canadian Accounting Standards for Non-for-Profit Organizations and include the results of its fully-owned subsidiaries, Regent Square Property Corporation accounted for on a consolidation basis and Ontario Tech Talent ("TALENT") accounted for on an equity basis. TALENT is a for profit entity, controlled by the University and it follows Canadian Accounting Standards for Private Enterprises, with no significant differences in accounting policies from those followed by the University.

HIGHLIGHTS:

In addition to normal operating activities, these Consolidated financial statements reflect the purchase of 50% of the Campus Corners location on September 17, 2024. This acquisition **aligns with the campus master plan and the "shift away" from the more expensive leased buildings** (Campus Corners was under

an operating lease agreement since 2010) **to owned buildings**. The impact of this financial transaction is disclosed in these financial statements.

The purchase price of Campus Corners was for net cash consideration of $12.9M ($13.3M including HST). This purchase is being funded through a combination of current year surplus, prior year reserves and external financing with a financial institution.

The University continues to operate within a fiscally-constrained environment, given the significant impacts of the provincially mandated 2019 tuition fee cut and the subsequent tuition freeze for Ontario students, the cap of provincial funding at the 2016-17 level for domestic students along with inflationary cost pressures on its operations.

Statement of Operations

The statement of operations shows **a net deficit of $1.0M** at the end of the reporting quarter. Total revenue increased $12.8M (or 7.1%) and expenses increased $13.5M (or 7.5%) over the prior year.

The University follows Canadian Accounting Standards for Non-for-Profit Organizations, Part lll of the Chartered Professional Accountants of Canada ("CPA") Handbook. In compliance with these standards, student tuition fees are recognized as revenue in the statement of operations when courses are provided, resulting **in the deferral of $51.0M in tuition fees** at the end of the reporting quarter. This deferred revenue will be taken into income by the end of the fiscal year, thus bridging the gap in the operating deficit.

The $12.8M increase in revenue is mainly driven by:

(1) $11.0M (or 13.8%) increase in **student fees**, of which $8.1M relates to student tuition fees and $2.8M to student ancillary fees. Increase in student tuition is attributable to the increase in domestic enrolment (669 FTE) and international undergraduate enrolment (118 FTE) over the prior year. Increase in ancillary fees is attributable to year-over-year growth and timing of spend of these fees.

(2) $1.2M increase in **non-cash unrealized gain on investments** due to more favourable global market conditions, driven by strong earnings in US tech companies at the end of the reporting quarter.

(3) $1.3M increase in **Other income** primarily due to the change in accounting and recognition of surplus revenues from the University's revenue generating units in the current year. These revenues were deferred in the prior year.

The $13.5M increase in expenses is largely driven by:

(1) $7.9M increase in **salaries and benefits** for faculty and staff. Increase is comprised of $4.6M for annual salary increases, $1.4M increase in new full-time hires and $1.9M for limited term contracts for teaching assistants, sessionals and administrative staff, driven by year-over-year increase in enrolment growth.

Salaries and benefits which comprise over half of the total expenses of the University and are mostly tied to collective agreements, increased $7.9M (or 7.7%) thus consuming ~ 62% of the year-over-year increase in total revenue.

(2) $1.1M increase in **unrealized non-cash loss on swap** due to the less favourable prevailing swap rate in the current year

Statement of financial position

Despite the ongoing financial pressures attributable to the ongoing tension between revenues and expenses, the **statement of financial position** remains stable with stable liquidity and net assets increase of $8.2M (or 6.8%) versus the prior year. Net Assets increased in line with the net increase in assets and liabilities, and are supported by cash and restricted investments.

Total assets at $573.1M increased $7.3M (or 1.0%) over the prior year and is largely driven by:

(1) $4.0M increase in **accounts receivable** includes $3.9M of increase in student receivable attributable to year-over-year enrolment growth, offset by other immaterial variances.

Other accounts receivable balance of $57.4M is comprised of $53.0M of student receivable ($49.0M for the winter semester with payment due date of Jan 17th, $4.0M for fall 2024 and prior receivable), $4.4M of trade, research and ACE receivables.

(2) $4.4M increase in **endowed investments** held at PH&N and comprising of $3.1M of mark-to-market unrealized gains due to more favourable market conditions in the current year, $1.7M net investment income and capital gains, $0.6 new endowed donations, offset by $1.0M of endowed awards to students.

(3) $4.6M in **capital assets** which comprises of net asset additions of $26.3M (includes $18.0M acquisition of the Campus Corners locations, $4.3M of operating and research equipment, $2.0M building renovations) vs net impact of accumulated amortization of $21.7M.

Total liabilities at $445.2M decreased $0.9M over the prior year due to:

(1) $6.7M increase in **accounts payable and accrued liabilities**, largely driven by $4.0M due to timing of payment for third party invoices and $2.4M of student unapplied credits as a result of increased acceptance deposits and pending refunds at the end of the reporting quarter.

(2) $9.9M in total **debt repayment**

FINANCIAL IMPLICATIONS:

The primary purpose of this financial update is to report on the statement of financial position of the University for the fiscal year ending March 31, 2024. Maintaining a stable financial position is critical to Ontario Tech University's long-term financial sustainability.

COMPLIANCE WITH POLICY/LEGISLATION:
These audited financial statements are prepared in compliance with generally accepted accounting principles for not-for-profit organizations.

SUPPORTING REFERENCE MATERIALS:
• Appendix 1: Consolidated (unaudited) Financial Statements for the 9 months ending December 31, 2024.

Appendix 1

Consolidated (unaudited) Financial Statements of

ONTARIO TECH UNIVERSITY

For 9 months ending December 31, 2024

ONTARIO TECH UNIVERSITY
Consolidated Statement of Financial Position
As at December 31, 2024 (in '000s)

		Dec 2024		Dec 2023		YOY Variance		Mar 2024
ASSETS								
Current Assets								
Cash and cash equivalents	**$**	**48,363**	$	68,399	$	(20,036)	$	82,502
Short-Term Investments		**17,000**		-		17,000		-
Grant receivable		**10,972**		11,680		(708)		9,859
Other accounts receivable		**57,483**		53,419		4,063		9,876
Prepaid expenses, deposits and inventories		**2,412**		2,694		(282)		2,656
		136,229		136,192		37		104,892
Endowed investments		**39,707**		35,307		4,399		36,442
Other assets		**2,805**		4,519		(1,714)		1,763
Capital assets		**393,376**		388,763		4,613		387,177
Intangible asset - goodwill		**973**		973		-		973
TOTAL ASSETS	**$**	**573,091**	$	565,755	$	7,335	$	531,247
LIABILITIES								
Current Liabilities								
Accounts payable and accrued liabilities	**$**	**32,146**	$	25,444	$	6,702	$	34,363
Deferred revenue		**81,021**		79,807		1,213		32,800
		113,167		105,251		7,915		67,163
Other debt		**5,452**		6,096		(644)		5,939
Obligations under capital leases		**26,467**		26,954		(487)		26,841
Debenture debt		**120,778**		129,205		(8,427)		129,205
Fair value of interest rate swap		**20,917**		21,228		(310)		20,263
Deficiency in other investments		**3,002**		2,417		585		1,811
Deferred capital contributions		**155,399**		154,878		521		153,400
	$	**445,182**	$	446,029	$	(846)	$	404,622
Net Assets								
Net assets, excluding current year surplus	**$**	**99,604**	$	93,171	$	6,433	$	93,160
Endowments		**29,282**		26,855		2,427		27,022
Current year deficit		**(977)**		(299)		(679)		6,443
	$	**127,908**	$	119,727	$	8,181	$	126,625
TOTAL LIABILITIES AND NET ASSETS	**$**	**573,091**	$	565,755	$	7,335	$	531,247

ONTARIO TECH UNIVERSITY
Consolidated Statement of Operations
For the 9 months ending December 31, 2024 (in '000s)

		Dec 2024		Dec 2023		Variance
REVENUE						
Grants - operating and research	**$**	**61,196**	$	62,430	$	(1,234)
Grants - debenture		**13,500**		13,500		-
Donations		**1,773**		1,850		(77)
Student tuition fees		**90,654**		79,681		10,973
Revenues from purchased services		**1,146**		1,036		110
Other income		**11,655**		10,336		1,320
Amortization of deferred capital contributions		**6,349**		6,058		291
Interest revenue		**3,668**		3,484		184
Unrealized gain on investments		**1,678**		470		1,208
	$	**191,618**	$	178,844	$	12,774
EXPENSES						
Salaries and benefits	**$**	**111,231**	$	103,306		7,925
Student aid, financial assistance and awards		**11,894**		11,061		833
Supplies and expenses		**28,351**		26,547		1,804
Purchased Services		**11,366**		10,025		1,341
Professional fees		**1,673**		861		812
Interest expense - debt obligations		**8,214**		9,029		(815)
Interest expense - other		**218**		178		40
Amortization of capital assets		**17,255**		16,638		617
Unrealized loss on interest rate swap		**1,202**		89		1,113
Loss on other investments		**1,191**		1,409		(218)
	$	**192,595**	$	179,144	$	13,452
Excess of expenses over revenue	**$**	**(977)**	$	(299)	$	(678)

ONTARIO TECH UNIVERSITY
Consolidated Statement of Cash Flows
As at December 31, 2024 (in '000s)

	Dec 2024	Dec 2023
NET INFLOW (OUTFLOW) OF CASH RELATED TO THE FOLLOWING ACTIVITIES		
OPERATING		
Excess of expenses over revenue	(977)	(299)
Items not affecting cash:		
Amortization of capital assets	17,255	16,638
Amortization of deferred capital contributions	(6,349)	(6,058)
Unrealized loss on interest rate swap	1,202	89
Unrealized gain on investments	(1,678)	(470)
Loss on other investments/gain on disposal of assets	1,192	1,381
	10,646	11,282
Working Capital		
Grant and other accounts receivable	(48,720)	(47,192)
Prepaid expenses, deposits and inventories	243	24
Accounts payable and accrued liabilities	(2,217)	(4,407)
Deferred revenue	48,221	44,481
	8,173	4,188
INVESTING		
Purchase of capital assets	(23,456)	(7,151)
Investments	(18,586)	15,598
Other assets	(1,042)	(2,270)
Endowment contributions	2,260	923
	(40,824)	7,100
FINANCING		
Repayment of interest rate swap	(548)	(532)
Repayment of long term debt	(8,914)	(8,756)
Repayment of obligations under capital leases	(374)	(322)
Deferred capital contributions	8,348	4,544
	(1,488)	(5,065)
NET CASH (OUTFLOW)/INFLOW	(34,139)	6,223
CASH BALANCE, BEGINNING OF YEAR	82,502	62,176
CASH BALANCE, END OF PERIOD	**$ 48,363**	**$ 68,399**

BOARD REPORT

SESSION:		**ACTION REQUESTED:**	
Public	☒	**Decision**	☒
Non-Public	☐	**Discussion/Direction**	☐
		Information	☐

TO: **Board of Directors**

DATE: **February 20, 2025**

PRESENTED BY: **Carla Carmichael, Chair Audit and Finance Committee**

SUBJECT: **2025-26 Tuition and Co-op Fees**

BACKGROUND/CONTEXT & RATIONALE:
The tuition fee framework, released by the provincial government in December 2018, regulates all publicly funded programs and allows for tuition fee differentiation based on program and program year. The framework initially had all domestic tuition rates decrease by 10% in 2019-20, then remain frozen since. The Ministry released the new framework for ***2025-26 which continues the tuition freeze for domestic students*** and allows for a 5% increase on out-of-province students.

As a reminder, MCU allowed for domestic tuition fee anomaly adjustments for three of our undergraduate degree programs in 2023-24. The tuition anomaly approval allows for annual increase adjustments of up to 7.5% for these programs until we reach the fee level approved by MCU for these programs. Our BCom and BSC and BSc Management Computer Science programs are increasing by 7.5% for 2025-26 and our Engineering undergraduate program is increasing to 3.4% to align with the tuition anomaly policy. The other domestic increase allowable is the 5% proposed increase for our Graduate diploma in Accounting as it is outside of the tuition fee framework.

The Ministry has allowed 5% increase to domestic out-of-province rates and the rates proposed below are within this framework. The university is proposing the maximum allowable for out-of-province fee increase for 2025-26.

International tuition or cost recovery programs are not included in the limits imposed by the provincial framework. Recommended international tuition fees for programs were informed by comparative analysis of international fees within the sector for similar programs. Tuition fees for the majority of Ontario Tech programs remain below the system average. Recommended adjustments bring Ontario Tech tuition fee levels closer to the average of

competing programs. Undergraduate international fee increases of 3% for most programs with 5% for BIT have been proposed for the first year of undergraduate programs with a commitment to capping further tuition fee increases in years 2, 3 and 4 (for undergraduate programs) to no more than 5% per year. The 5% increase for BIT is a market-based increase which still has the tuition fee at less than the average of our competitor.

The University is proposing 0% international tuition increase for research based Masters programs and PhD programs and 5% increase to Professional/course-based Masters and graduate diplomas.

Undergraduate Co-op and Internship fees are being adjusted for inflation and have a 2% increase to the current fee recommended for approval. These fees fall outside of the tuition fee framework and are being adjusted by the same percentage as ancillary fees.

Recognizing the need to address financial challenges of our students, the University continues to significantly invest in student financial supports by increasing the amount of entrance scholarships, in-course scholarships and bursaries available for students.

IMPLICATIONS:
The tuition rates proposed in this document remain compliant with the current provincial government's tuition framework. Revenue projections for the 2025-26 Budget include the anomalies increase and 0% increase on domestic tuition levels. If there are any reductions to the tuition fee rates we would need to explore further reductions to expenses to offset the change. Co-op fees are not part of the tuition fee policy and the fee increase proposed is in line with the ancillary fee inflationary increase proposed for the upcoming year.

ALIGNMENT WITH MISSION, VISION, VALUES & STRATEGIC PLAN:
The fees recommended will allow Ontario Tech to continue to provide quality undergraduate and graduate programs.

ALTERNATIVES CONSIDERED:
The tuition fees presented below bring Ontario Tech fee levels closer to the average of competing programs in the sector.

CONSULTATION:
These rates were presented to Academic Council at the January 28, 2025 meeting. Discussion centered around clarification of the tuition anomalies calculations and concerns for international student tuition fee increases and impact on students. The fees were approved by Board Audit and Finance at its February 13, 2025 meeting.

COMPLIANCE WITH POLICY/LEGISLATION:
The proposed tuition fees are in compliance with the province's tuition fee framework.

NEXT STEPS:
Update tuition within Ontario Tech's student information system and website after Board approval has been provided.

MOTION FOR CONSIDERATION:

That pursuant to the recommendation of the Audit and Finance Committee, the Board of Governors hereby approves the 2025-2026 tuition and co-op fees, as presented.

SUPPORTING REFERENCE MATERIALS:

- Appendix 1: Recommendations for Ontario Tech 2025-26 tuition fees

Appendix 1: Recommendations for Ontario Tech 2025-2026 tuition fees

Undergraduate Domestic

Highlights reflect approved MCU Tuition Anomalies Review to increase domestic tuition up to 7.5% annually until fee has reached newly approved tuition maximum (applies to BCom, BEng and BSc Computer Science). Shaded cells highlight the tuition paid in 2024-25 and how tuition fee anomaly increase applies to student moving into the next year of study in 2025-26.

	2024-2025	2025-2026	2025-26 Increase
BA, BASc, BAS, BEd, BHSc, BSc, BSc & Mgt, UG Diploma			
First Year	$5,982.80	$5,982.80	0%
Second Year	$5,956.38	$5,956.38	0%
Third Year	$5,926.62	$5,926.62	0%
Fourth Year	$5,920.76	$5,920.76	0%
Fifth Year	$5,914.98	$5,914.98	0%
BCom			
First Year	$9,347.00	$10,048.02	7.5%
Second Year	$9,347.00	$10,048.02	7.5%
Third Year	$8,011.44	$10,048.02	7.5%
Fourth Year	$8,003.52	$8,003.52	0%
BIT			
First Year	$9,031.18	$9,031.18	0%
Second Year	$9,022.42	$9,022.42	0%
Third Year	$9,013.68	$9,013.68	0%
Fourth Year	$8,991.78	$8,991.78	0%
BEng, BEng & Mgmt			
First Year	$10,851.52	$11,219.00	3.4%
Second Year	$10,851.52	$11,219.00	3.4%
Third Year	$9,372.30	$11,219.00	3.4%
Fourth Year	$9,283.04	$9,283.04	0%
Fifth Year	$9,159.26	$9,159.26	0%
BSc & BSc & Mgmt (Comp Sci, Integrated Math & Comp Sci)			
First Year	$7,326.54	$7,876.01	7.5%
Second Year	$7,326.54	$7,876.01	7.5%
Third Year	$6,327.84	$7,876.01	7.5%
Fourth Year	$6,321.78	$6,321.78	0%
Fifth Year	$6,321.64	$6,321.64	0%
BScN, BHA			
First Year	$6,100.68	$6,100.68	0%
Second Year	$6,094.76	$6,094.76	0%
Third Year	$6,088.84	$6,088.84	0%
Fourth Year	$6,082.92	$6,082.92	0%

Undergraduate Out of Province

Current framework allows up to 5% increase in tuition fees for out-of-province students (or application of tuition anomaly adjustment of up to 7.5% annually). *Note: Shaded cells show how the tuition anomalies policy applies to students (shading highlights the tuition paid in 2024-25 and how tuition fee anomaly increase applies to student moving into the next year of study in 2025-26).*

	2024-2025	2025-2026	2025-26 Increase*
BA, BASc, BAS, BEd, BHSc, BSc, BSc & Mgt, UG Diploma			
First Year	$6,596.02	$6,925.82	5%
Second Year	$6,566.88	$6,895.22	5%
Third Year	$6,534.08	$6,860.78	5%
Fourth Year	$6,527.60	$6,853.98	5%
Fifth Year	$6,521.24	$6,847.30	5%
BCom			
First Year	$9,347.00	$10,048.02	7.5%
Second Year	$9,347.00	$10,048.02	7.5%
Third Year	$8,832.60	$10,048.02	7.5%
Fourth Year	$8,823.86	$9,265.04	5%
BIT			
First Year	$9,956.84	$10,454.68	5%
Second Year	$9,947.20	$10,444.56	5%
Third Year	$9,937.56	$10,434.42	5%
Fourth Year	$9,913.42	$10,409.08	5%
BEng, BEng & Mgmt			
First Year	$10,851.52	$11,219.00	3.4%
Second Year	$10,851.52	$11,219.00	3.4%
Third Year	$10,332.94	$11,219.00	3.4%
Fourth Year	$10,234.52	$10,746.24	5%
Fifth Year	$10,098.08	$10,602.98	5%
Note: BEng and BEng & Mgmt First Year to Third Year follow tuition anomalies increase policy, Fourth and Fifth Year follow Out-of-Province tuition increase policy.			
BSc & BSc & Mgmt (Comp Sci, Integrated Math & Comp Sci)			
First Year	$7,326.54	$7,876.02	7.5%
Second Year	$7,326.54	$7,876.02	7.5%
Third Year	$6,976.42	$7,876.02	7.5%
Fourth Year	$6,969.74	$7,318.22	5%
Fifth Year	$6,969.60	$7,318.08	5%
BScN, BHA			
First Year	$6,725.98	$7,062.26	5%
Second Year	$6,719.44	$7,055.40	5%
Third Year	$6,712.94	$7,048.58	5%
Fourth Year	$6,706.40	$7,041.72	5%

*Out-province tuition increase may change.

Undergraduate International

Note: Shaded cells show how the tuition increases applies to international students (shading highlights the tuition paid in 2024-25 and how tuition fee increase applies to student moving into the next year of study in 2025-26).

	2024-2025	2025-2026	2025-26 Increase **
BA, BASc, BAS, BEd, BHSc, BSc & Mgt			
First Year	$32,188.02	$33,153.66	3%
Second Year	$32,188.02	$33,153.66	3%
Third Year	$32,188.02	$33,153.66	3%
Fourth Year	$26,722.70	$33,153.66	3%
Fifth Year	$26,604.84	$27,524.38	3%
BCom			
First Year	$35,703.16	$36,774.24	3%
Second Year	$35,703.16	$36,774.24	3%
Third Year	$35,703.16	$36,774.24	3%
Fourth Year	$34,080.28	$36,774.24	3%
BIT			
First Year	$38,967.30	$40,915.66	5%
Second Year	$38,967.30	$40,915.66	5%
Third Year	$38,967.30	$40,915.66	5%
Fourth Year	$35,578.82	$40,915.66	5%
BEng, BEng & Mgmt			
First Year	$43,888.52	$45,205.16	3%
Second Year	$43,888.52	$45,205.16	3%
Third Year	$43,888.52	$45,205.16	3%
Fourth Year	$40,072.12	$45,205.16	3%
Fifth Year	$34,852.36	$41,274.28	3%
BSc & BSc & Mgmt (Comp Sci, Integrated Math & Comp Sci)			
First Year	$35,659.76	$36,729.54	3%
Second Year	$35,659.76	$36,729.54	3%
Third Year	$35,659.76	$36,729.54	3%
Fourth Year	$32,558.90	$36,729.54	3%
Fifth Year	$28,317.80	$33,535.66	3%
BScN, BHA			
First Year	$32,822.26	$33,806.93	3%
Second Year	$32,822.26	$33,806.93	3%
Third Year	$32,822.26	$33,806.93	3%
Fourth Year	$31,330.34	$33,806.93	3%

**Commitment to cap future tuition fee increases to no more than a 5% increase per year for international students.

Undergraduate Co-op and Internship

	2024-2025	2025-2026	2025-26 Increase
Mandatory Co-op and Career Readiness Workshop Series	$720.00	$734.40	2%
Co-op Work Term (per term)	$720.00	$734.40	2%
Internship Work Term (FBIT/FEAS only; per term)	$900.00	$918.00	2%

In order to receive the co-op designation, the following fees are required; mandatory co-op registration, the Co-operative Education Preparatory Course, and three work terms. Any additional work terms beyond the required three will be charged at the applicable co-op work term rate.

Graduate Domestic

Program Based Tuition

	2024-2025	2025-2026	2025-26 Increase
Graduate Degree - Research Based Programs			
MA (Crim, SPI), MHSc, MSc	$7,579.30	$7,579.30	0%
MSc (Computer Science)	$7,579.30	$7,579.30	0%
MASc	$7,859.94	$7,859.94	0%
PhD	$7,579.30	$7,579.30	0%
Graduate Degree – Course Based Programs			
MScN	$8,761.50	$8,761.50	0%
EdD	$10,097.00	$10,097.00	0%
Graduate Diploma			
Diploma in Accounting	$9,380.28	$9,849.28	5%
Diploma in Nuclear Technology	$5,906.62	$5,906.62	0%
Diploma in Nuclear Design Engineering	$5,906.62	$5,906.62	0%
Diploma in Engineering Management	$5,906.62	$5,906.62	0%

Credit Based Tuition (per 3-credit course)

	2024-2025	2025-2026	2025-26 Increase
Graduate Degree (Per 3-credit course)			
MEd***	$1,576.47	$1,576.47	0%
MA in Education***	$1,576.47	$1,576.47	0%
MITS***	$1,257.52	$1,257.52	0%
MBAI, MFDA***	$2,709.00	$2,709.00	0%
MEng, MEngM***	$1,476.66	$1,476.66	0%
Graduate Diploma (Per 3-credit Course)			
Diploma in Ed & Digital Technology	$1,576.46	$1,576.46	0%
Police Leadership	$1,576.46	$1,576.46	0%
Work Disability Prevention	$1,576.46	$1,576.46	0%

***Program requires 30 credits hours total.

Graduate International

Program Based Tuition

	2024-2025	2025-2026	2025-25 Increase
Graduate Degree – Research Based Programs			
MA (Crim, SPI), MHSc, MSc	$20,124.30	$20,124.30	0%
MSc (Computer Science)	$20,124.30	$20,124.30	0%
MASc	$22,313.12	$22,313.12	0%
PhD	$19,166.00	$19,166.00	0%
Graduate Degree – Course Based Programs			
MScN	$25,618.58	$26,899.50	5%
EdD	$19,155.36	$20,113.14	5%
Graduate Diploma			
Diploma in Accounting	$14,704.47	$15,439.68	5%
Diploma in Nuclear Technology	$21,286.06	$22,350.36	5%
Diploma in Nuclear Design Engineering	$21,286.06	$22,350.36	5%
Diploma in Engineering Management	$21,286.06	$22,350.36	5%

Credit Based Tuition (per 3-credit course)

	2024-2025	2025-2026	2025-25 Increase
Graduate Degree (Per 3-credit course)			
MEd***	$2,869.24	$3,012.70	5%
MA in Education***	$2,869.24	$3,012.70	5%
MITS***	$4,385.06	$4,604.30	5%
MBAI, MFDA***	$4,961.25	$5,209.31	5%
MEng, MEngM***	$4,257.21	$4,470.07	5%
Graduate Diploma (Per 3-credit Course)			
Diploma in Ed & Digital Technology	$2,869.24	$3,012.70	5%
Police Leadership	$2,869.24	$3,012.70	5%
Work Disability Prevention	$2,869.24	$3,012.70	5%

***Program requires 30 credits hours total.

English for Academic Purposes (EAP) Program

	2024-2025	2025-2026	2025-26 Increase
All Levels	$3,041.29	$3,132.52	3%

BOARD REPORT

SESSION:		ACTION REQUESTED:	
Public	☒	Decision	☒
Non-Public	☐	Discussion/Direction	☐
		Information	☐

TO: Board of Governors

DATE: February 20, 2025

PRESENTED BY: Brad MacIsaac, VP Administration

SUBJECT: 2025-26 Ancillary Fees

COMMITTEE/BOARD MANDATE:

The Board is responsible for overseeing the financial affairs of the University including approval of the tuition and ancillary fees.

We are seeking the Board's approval of the proposed 2025-26 Ancillary Fees.

BACKGROUND/CONTEXT & RATIONALE:

Provincial policy requires that a negotiated Compulsory Ancillary Fees protocol exists between the board of governors of each university and their student association. For Ontario Tech our agreed upon protocol, signed June 2018, creates a committee that consists of three student and three administrative representatives.

The terms of the current Ontario Tech protocol outline that Consumer Price Index increases do not require committee approval. The university uses the Bank of Canada average in September each year. For clarity, CPI is an indicator of changes in consumer prices experienced by Canadians. It is obtained by comparing, over time, the cost of a fixed basket of goods and services purchased by consumers. Normally, the prices of certain CPI components can be particularly volatile; hence, the reason we use CPI-median as our tracker. This is a measure of core inflation corresponding to the price change located at the 50th percentile of the distribution. This measure helps filter out extreme price movements specific to certain components.

The September 2024 median CPI is 2.3%. Prior to March 2021 CPI was normally less than 2% so the university tried to keep fees more in line with that target. The recommended **average increase for full-time students in 2025-2026 is 2.2%.** Of note, we are saying average as this takes in all fees which may not apply to all students (ie specific society fees) nor some subsets (ie part-time students). This figure does not include course specific (ie nursing lab fee) or contractual increases (ie health insurance plan under OTSU purview). It is important to note that there were two new Student Life fees created this year; however, these fees were reallocations of existing Student Life fee amounts and, outside of the CPI increase, did not increase the

overall fees for Student Life. Looking through the lines you will see variations of increases with some larger increases (4.9% for UPASS) but, in aggregate, administration works to ensure the bottom-line average was under CPI.

Looking specifically at UPASS we are asking approval to increase it the max request. The Ontario Tech Student Union will be running a referendum in February to see if the students accept the service continues or if they vote against the increase and the fee will be removed for fall 2026.

As we know that every dollar counts to students we have been watching our combined tuition and ancillary rates carefully and make any adjustments with this in mind. Our rates are higher than other Ontario institutions due to our smaller size and the fact that we have two capital projects (~$350) approved through student referendum. Additionally, we have costs due to our dedication to providing a Technology Enhanced Learning Environment and Sustainable Campus. For many students this actually saves them money rather than having them go out and buy the materials independently.

IMPLICATIONS:

Altering the fees will alter our ability to provide specific services.

ALIGNMENT WITH MISSION, VISION, VALUES & STRATEGIC PLAN:

The fees recommended will allow Ontario Tech to continue to provide quality undergraduate and graduate services and experiences to its students.

ALTERNATIVES CONSIDERED:

Each fee change was reviewed by the Ancillary fee Committee.

CONSULTATION:

A request for fees was sent out to all unit leads and OTSU in November. The committee met to evaluate and decide on changes. Instead of applying the CPI to all fees the Student Union and management discussed, and agreed to, reallocating the increase across services.

COMPLIANCE WITH POLICY/LEGISLATION:

The increases are compliant with provincial policy and Ontario Tech's ancillary fee protocol.

MOTION FOR CONSIDERATION:

That pursuant to the recommendation of the Audit and Finance Committee, the Board of Governors hereby approves the 2025-26 Ancillary Fees, as presented.

Compulsory Ancillary Fees

Fee Classification/Description	2024-25	2025-26	% Increase
Flat Fees. FT and PT students.			
Career Readiness	75.16	46.82	-37.7%
Health Services (general)	29.26	29.85	2.0%
Mental Health Services	71.65	73.08	2.0%
Health and Wellness	16.37	16.70	2.0%
Sport and Recreation	98.05	100.50	2.5%
Campus Open Access	92.35	94.19	2.0%
Student Safety and Accessibility	36.22	36.95	2.0%
Student Success Support	33.97	34.65	2.0%
Physical and Virtual Infrastructure Enhancements	165.09	168.39	2.0%
Student ID	39.92	40.72	2.0%
Charged to FT each term			
U-Pass	305.70	320.68	4.9%
Flat Fees Paid half Fall and half Winter. FT and PT students.			
Campus Clubs	5.65	5.77	2.0%
Campus Life and Events	13.77	14.05	2.0%
Community and Social Programming	13.43	13.70	2.0%
Convocation	7.25	7.40	2.0%
Georgian Engagement Services	219.40	223.79	2.0%
Instructional Resource	151.83	154.87	2.0%
OUSA Membership Fee	3.58	3.65	2.0%
Student Life Admin		37.60	
Student Life Communications		41.35	
Student Engagement	73.75	60.72	-17.7%
Student Learning	126.94	94.88	-25.3%
Student Representation and Leadership	10.35	10.56	2.0%
Student Societies	3.58	3.66	2.0%
Student Society Fee FBIT	14.25	14.53	2.0%
Student Society Fee FEAS/FESNS	19.63	20.02	2.0%
Student Society Fee FHSc	10.51	10.72	2.0%
Student Society Fee FSCI	15.76	16.07	2.0%
Student Society Fee	7.73	7.88	2.0%
Technology-enriched Learning FBIT Non-Gaming	160.62	163.83	2.0%
Technology-enriched Learning FBIT -Gaming	355.78	362.89	2.0%
Technology-enriched Learning FEAS	208.80	212.97	2.0%
Technology-enriched Learning FESNS	208.80	212.97	2.0%
Technology-enriched Learning FEDU	235.44	240.15	2.0%

Technology-enriched Learning FEDU	116.52	118.86	2.0%
Technology-enriched Learning FHSc	167.84	171.19	2.0%
Technology-enriched Learning FSCI	162.79	166.05	2.0%
Technology-enriched Learning FSSH	138.96	141.73	2.0%
Technology-enriched Learning Undeclared	163.74	167.01	2.0%
Wellness and Support Services	12.26	12.50	2.0%
World University Services of Canada	2.96	3.02	2.0%
Flat Fees Paid half Fall and half Winter. FT only			
Benefit Plan Coordination	25.12	25.62	2.0%
USU Building	116.67	119.00	2.0%
Campus Recreation and Wellness Centre	183.58	185.42	1.0%
Varsity Sports	84.55	86.66	2.5%

Appendix A

Material/ Service Fees and Administrative fees are exempt from this protocol. These fees are set through agreements with vendors and service providers that do not produce net revenue for the university and are charged in full to all students in applicable courses and programs. These fees may cover the costs of:

i. Travel and accommodation of students on compulsory field trips;
ii. Learning materials and clothing that are retained by the student;
iii. Materials that are used to produce items that become the property of the student;
iv. Materials and services that are set by a vendor and the university acts as a broker on behalf of students.

Fee Classification/Description	2024-25	2025-26	% Increase
Education Placement Fee UPAF	150.00	153.00	2.0%

BOARD REPORT

SESSION:		**ACTION REQUESTED:**	
Public	☒	**Decision**	☐
Non-Public	☐	**Discussion/Direction**	☐
		Information	☒

TO: **Board of Governors**

DATE: **February 20, 2025**

FROM: **Brad MacIsaac, Vice President Administration**

SUBJECT: **Quarterly Risk Management Report**

COMMITTEE/ BOARD MANDATE:
The Audit and Finance Committee is responsible for overseeing risk management and other control functions at the University. This oversight includes approving the risk management process and ensuring appropriate mitigative actions are taken or planned in areas where material risk is identified.

This quarterly report is being provided to Board for information.

BACKGROUND/CONTEXT & RATIONALE:
The University provides a quarterly update on risk management initiatives since the last report, culminating in a comprehensive annual review each April. This past quarter, Risk Management has focused on supporting the University's growth strategy, identifying areas of opportunity and addressing emerging risks to align with strategic objectives. Key themes include operational scalability, resource allocation, and maintaining institutional reputation amid growth.

This report outlines key developments and planned actions in four areas: Operational Risks, Reputational Risks, Strategic Risks, and Financial Risks.

To guide the Board's strategic discussions, the following key questions are proposed:

1) How should the University prioritize investments in infrastructure and services verses future reserves to ensure operational scalability while maintaining education quality and student satisfaction amid rapid growth?

2) What strategies should the University adopt to mitigate financial and reputational risks associated with emerging external factors, such as caps on international student enrollments and shifts in immigration policies?

OPERATIONAL RISKS
Infrastructure Overload: Due to increased student enrollment, the University anticipates challenges with both physical and digital infrastructure. Scalable digital solutions and gradual physical expansion plans are being explored. Measures such as additional remote learning options and expanded scheduling (e.g., evening and weekend classes) are being evaluated for potential adoption.

Administrative Capacity: Current administrative processes are being streamlined through automation to accommodate higher workloads. Centralizing functions and implementing pan-institutional work plans are ongoing priorities. As we prepare for growth, all areas are encouraged to critically evaluate their priorities, identifying essential needs versus areas where adjustments or efficiencies may be feasible.

Class Size and Quality: Technology-enabled learning and additional part-time lecturers or guest professors employed to manage larger class sizes are under review. These potential measures aim to sustain education quality and student satisfaction.

Campus Services Strain: Due to increased demand, services such as counselling, healthcare, and career guidance may experience strain, potentially leading to lower service quality. To mitigate this, the University must consider enhancing services through additional staffing and/or adopting efficient service models. Front-facing services are encouraged to actively pursue additional funding opportunities through government and ministry grants. These efforts are critical to supplementing current financial resources and ensuring continued growth and sustainability.

Technological Integration: Investments in scalable technological platforms are enabling both operational and academic scalability. Enhanced data management systems ensure the secure handling of larger student datasets.

Cybersecurity measures are being strengthened to address increased risks associated with a growing user base. Regular audits, operational risk assessments, and proactive monitoring are being implemented to ensure resilience. Robust data management and privacy protection systems are being explored to securely handle the larger volume of student data. Plans for seamless integration of new technologies and systems are being developed to support operational and academic growth.

REPUTATIONAL RISKS
Student Experience: A key focus is on maintaining a high-quality student experience through continuous feedback mechanisms. Measurement tools are being explored to monitor and adjust strategies.

Brand and Institutional Reputation: Growth efforts are being balanced with the retention of core institutional values to maintain brand exclusivity. Alumni engagement programs are fostering advocacy and support for these values.

Community Engagement: Enhancing inclusivity and accessibility through innovative campus and virtual experiences strengthens the University’s connection to its stakeholders.

STRATEGIC RISKS:
Strategic Drift: Senior leadership is engaging in regular and ongoing discussions with management and other members of the University to ensure growth strategies remain aligned with the Institution's core objectives. These conversations focus on aligning growth with the turbulent dynamics of the post-secondary education sector, with the President maintaining transparency about institutional goals and addressing challenges posed by ongoing volatility in the higher education landscape.

Performance indicators and best practices are being developed collaboratively, and cross-departmental initiatives are being planned to prevent misalignment and foster strategic coherence.

Long-term Viability: Growth plans are aligned with long-term academic goals through phased timelines with defined milestones and performance indicators. Initiatives include differentiated program mixes, such as micro-credentials and stackable credentials.

Partnerships and Collaboration: Existing partnerships are being reassessed for alignment with growth objectives. Shared services agreements are under review to ensure cost-effectiveness and compatibility with future strategies. New collaborations aim to support research and community engagement.

The partnership with Durham College (DC) presents unique considerations that require targeted attention.

- Engage with DC to understand their growth strategy and assess compatibility with the University's objectives.
- Explore opportunities to strengthen shared services with DC by identifying areas where collaboration provides the greatest mutual benefit and determining how these can be enhanced to support both institutions' strategic goals.
- Analyze the cost implications of shared services in the context of the University's growth.
- Revisit Service Level Agreements (SLAs) to ensure alignment with evolving institutional needs.
- Explore additional technical and operational integration strategies to enhance efficiency and effectiveness.

FINANCIAL RISKS:

Optimizing financial resources to support the University's growth remains a key priority. While the institution is managing increased funding requirements for expansion, the focus is on ensuring efficient allocation and utilization of available resources. In the absence of external grants, it is critical to determine the optimal operational model and enrollment thresholds to sustain growth through tuition revenue alone. Robust financial planning tools and data-driven models are being developed to identify the "right number" while supporting strategic objectives.

Capital Expenditures: Large investments required for expanding facilities and infrastructure present challenges due to delayed returns. Public-private partnerships (PPPs) and grants continue to be actively explored as viable funding sources to support these expenditures while minimizing financial strain.

Performance-Based Funding and Strategic Allocation: The University is leveraging Ontario's performance-based funding model to align with government priorities. Continued investments in skills development, experiential learning, and research initiatives help stabilize funding streams and align with institutional goals.

Funding and Debt: The University is prioritizing the diversification of funding sources to reduce dependency on any single stream and to maintain a balanced debt-equity ratio. Efforts include engaging with government and ministry bodies to secure additional grants and financial support.

Enhanced Research Capacity: The University continues to pursue strategic initiatives, such as the Automotive Centre of Excellence, to attract private sector funding and strengthen financial stability. These initiatives also support increased grant opportunities and expanded research collaborations.

EMERGING RISKS
The University acknowledges external factors could significantly influence enrolment and operational planning. Recent federal government discussions regarding caps on international student enrollments highlight a shift in policies that will impact admissions and revenue streams.

Similarly, geopolitical and economic shifts, including evolving immigration policies in the United States, could influence international student preferences and the competitive positioning of Canadian institutions. Monitoring these external factors and adapting recruitment strategies accordingly is imperative to maintaining enrolment targets and financial sustainability.

NEXT STEPS:
The Office of Risk Management will continue to collaborate with stakeholders across the University to address emerging risks and support the growth strategy. The annual risk register review is underway with a push on risk strategies associated with growth in enrollment.

Attachments

BOARD REPORT

SESSION:		**ACTION REQUESTED:**	
Public	☒	**Decision** **Discussion/Direction** **Information**	☐ ☐ ☒

TO: **Board of Governors**

DATE: **February 20, 2025**

FROM: **Governance, Nominations and Human Resources Committee (GNHR)**

PRESENTED BY: **Andrew Sunstrum, Director, Human Rights Office**

SUBJECT: **Annual Human Rights Report 2023-2024**

COMMITTEE MANDATE:

- GNHR's Terms of Reference state that the Committee's mandate includes the establishment of human resources policy instruments.
- The Human Rights Office has oversight over the University's Human Rights and Student Sexual Violence Programs, which includes handling human rights and student sexual violence issues in accordance with these policies.

This Report is provided as information to the Board of Governors following its presentation at the GNHR meeting on January 30, 2025 and to apprise the Board of the University's fulfilment of its compliance obligations in this regard.

BACKGROUND/CONTEXT & RATIONALE:

The Human Rights Office plays a significant role in advancing the strategic objective of creating a sticky campus. This work is done with a focus on initiatives to improve the culture within which students learn and employees work. The Human Rights Office focusses on how the university improves its culture by increasing its capacity to manage conflict and promote respect. The purpose of the Annual Report is to communicate dispute statistics in order to track progress and to support continuous improvement.

ALIGNMENT WITH MISSION, VISION, VALUES & STRATEGIC PLAN:

- The Annual Report supports the University's values of integrity and respect by demonstrating the University's commitment to establishing a safe, inclusive, and equitable culture at the Institution.
- By demonstrating the seriousness in which the University places on safeguarding human rights, this report also supports the strategic pillar of creating a "sticky campus". If we want to encourage the University community to spend time on campus, they must feel protected and confident that human rights issue are being dealt with appropriately.

Annual Report

2023-2024

Human Rights

Ontario Tech University

TABLE OF CONTENTS

PART I OVERVIEW

As outlined in the University's Respectful Campus Policy and Student Sexual Violence Policy and Procedures, Ontario Tech University is committed to providing an annual report to the Board of Governors on certain information and statistics regarding the implementation of the University's human rights program and data related to human rights-based complaints and consultations. This includes data concerning the University's student sexual violence program, including a compilation of data and information from internal partners that share responsibility for addressing and responding to sexual violence at the University. This is done to assist the Board of Governors and other University Members to understand the state of the University's human rights and student sexual violence programs and identify progress and trends from year to year.

This annual report covers the period between April 1, 2023, and March 31, 2024. The report will be posted to the University's website and submitted to the Ministry of Colleges and Universities.

PART II STATUS UPDATE

1. ROLE OF THE HUMAN RIGHTS OFFICE

Ontario Tech University's Human Rights Office (HRO) serves as the cornerstone for overseeing the University's human rights and student sexual violence programs. Through its oversight, it ensures a consistent and equitable approach to addressing human rights issues raised by all members of the University community, including faculty, staff, students, and visitors and plays a pivotal role in upholding and fostering a culture of respect and inclusivity across the campus.

In alignment with the University's commitment to a "Sticky Campus" the HRO administers a comprehensive and accessible dispute resolution program that is designed to effectively address concerns related to harassment, discrimination, sexual violence, micro-aggressions, and related conflict/disputes.

The HRO plays a crucial role in prompting institutional capacity to identify, address, and resolve human rights-related disputes and conflict. It provides confidential advice and guidance to any university member to better understand their rights, obligations or responsibilities related to human rights.

The services offered by the HRO range from de-escalation and facilitated dialogue to formal investigations and tailored training/education programs. This wide array of services is designed to respond to the unique needs of individuals and the University community, fostering an environment where human rights are upheld and respected. Through its

work, the HRO promotes a culture of understanding, accountability, and mutual respect; ultimately contributing to a more inclusive and harmonious campus atmosphere.

2. INITATIVES AND PROGRAMMING HIGHLIGHTS

Throughout the 2023-2024 period, the HRO placed a strong emphasis on expanding the reach and impact of its services across the University community. With an overarching focus on enhancing awareness, the HRO implemented several key initiatives aimed at educating and empowering students, faculty, and staff on critical human rights and sexual violence issues. These initiatives not only sought to raise visibility for the HRO's services but also addressed the evolving needs of the University community.

One of the most prominent achievements was the launch of mandatory educational modules on gender-based violence, which were made available to the entire University community. This comprehensive educational initiative marked a pivotal step in equipping students and staff with essential knowledge to recognize and respond to gender-based violence, fostering a culture of respect and accountability on campus. These modules were designed to raise awareness about the dynamics of gender-based violence, providing key resources and support systems to those who may be affected.

In addition to the educational modules, the HRO introduced a new communications initiative aimed at informing students about the role and services of the HRO. Through this initiative, the HRO worked to ensure that students are aware of the supports available to them and how to access them.

As part of its ongoing commitment to addressing issues of student sexual violence, the HRO undertook updates to its website content, specifically related to Student Sexual Violence. These updates were carefully crafted to provide up-to-date, accessible information on resources, support services, and policies, ensuring that students have clear and direct access to crucial information regarding sexual violence prevention and response. Additional information can be found about the University's Student Sexual Violence Programming in 'Appendix A.'

In further support of sexual violence awareness and prevention, the HRO launched broad consultations to review and enhance the Student Sexual Violence Policy and Procedures. These consultations involved engaging key stakeholders, including students, staff, and external experts, to gather feedback and ensure that the policies are aligned with best practices and are responsive to the needs of the University community. This collaborative approach to policy review reflects the HRO's commitment to inclusivity and continuous improvement.

To streamline access to support services, the HRO developed and launched an innovative online tool that allows students and staff to easily book consultations with the Human Rights Office. This user-friendly tool simplifies the process of scheduling

appointments, ensuring that individuals can receive timely and confidential support for any human rights-related concerns.

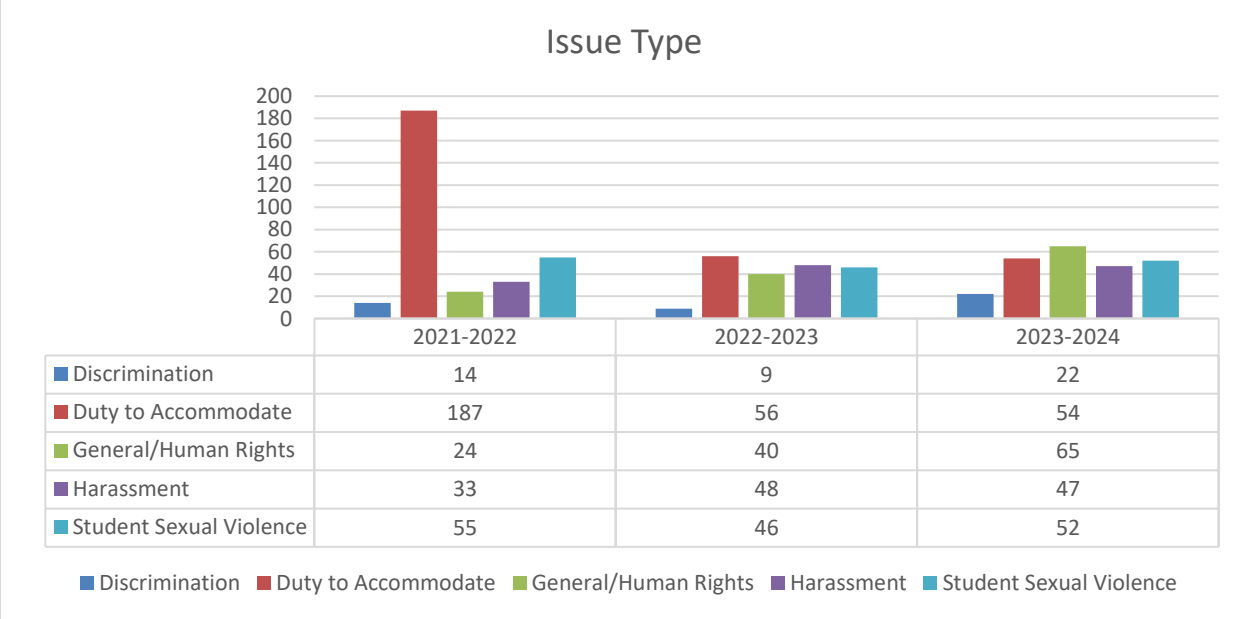
Together, these initiatives and programming highlights from the 2023-2024 period illustrate the HRO's proactive approach to fostering an inclusive, informed, and supportive environment at Ontario Tech University. Through strategic education, communication, and resource development, the HRO continues to play a critical role in promoting human rights and addressing sexual violence within the campus community.

3. DATA & TRENDS

Aggregate data on the resolution of issues is a key component of this report as it provides an annual snapshot of the human rights issues and concerns brought forward by University Members for resolution. In total there were 240 issues dealt with by the HRO in the last year, a 21% increase over the last reporting period, and likely due to increased education and communications initiatives. This remains below the exceptionally high volume in 2021-2022 attributable to COVID-19 Vaccine issues.

a. Issue Type

There are five (5) issue types that fall under the HRO's accountability: Discrimination, Duty to Accommodate, Harassment, Student Sexual Violence, and issues of a general nature involving Human Rights.[1]



	2021-2022	2022-2023	2023-2024
Discrimination	14	9	22
Duty to Accommodate	187	56	54
General/Human Rights	24	40	65
Harassment	33	48	47
Student Sexual Violence	55	46	52

Table: 1

[1] The "General" category broadly includes consultations regarding human rights principles or inquiries of a programmatic nature, e.g. requests to review policy instruments or training materials to ensure human rights compliance, questions about legislative and policy interpretation, procedural inquiries, etc.

There were 52 disclosures and reports of student sexual violence in 2023-2024; an increase from the previous year which saw a total of 46, but a decrease from the 2021-2022 reporting period. An increase was expected due to the actions taken by the HRO to increase education and awareness regarding sexual violence during the year.

The disclosures and reports[2] were addressed as follows:

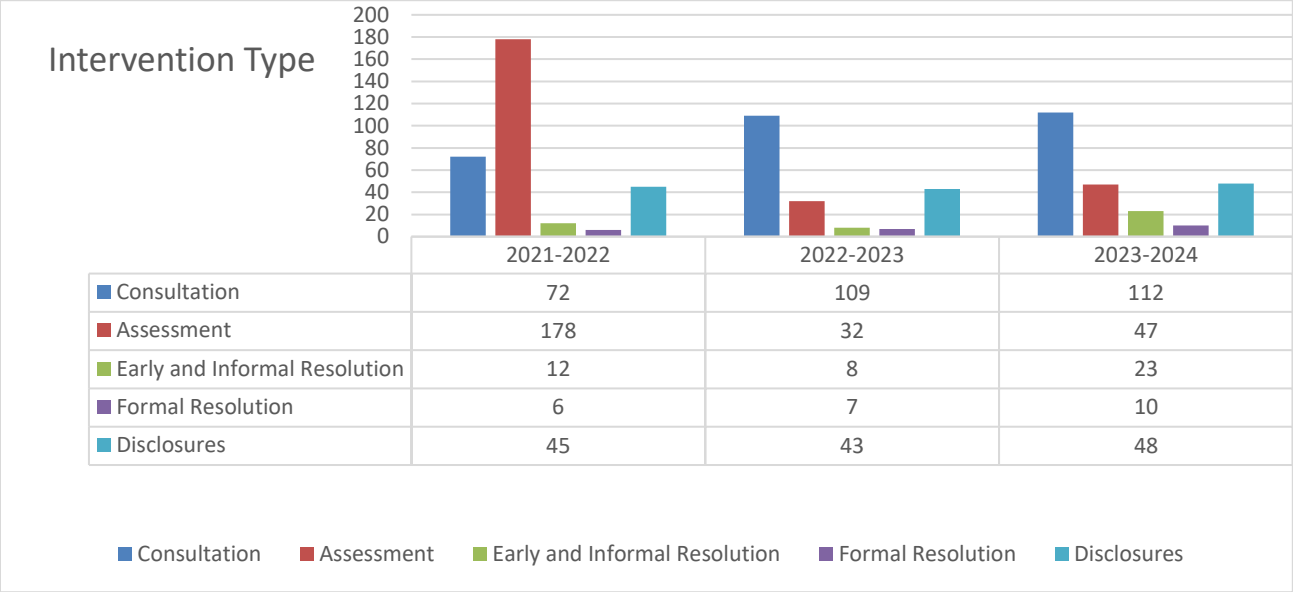
- Mental Health Services in Student Life received 41 disclosures. 11 of these incidents were classified as occurring in the last 12 months; 30 were classified as historical. 5 incidents occurred on campus; 36 incidents occurred off campus.
- The HRO received 6 disclosures (1 anonymous) and 4 reports of student sexual violence. Each of the reports were investigated and three of the investigations into alleged sexual harassment found evidence of a breach of policy.
- Residence received 1 disclosure of student sexual violence.

b. Intervention Type

The HRO records six main types of interventions applied to matters received by the office:

1. Consultation: the act of reaching out to the HRO for advice or information.
2. Assessment: An HRO analysis of an issue to determine whether the matter triggers human rights obligations and/or requires intervention.
3. Early Resolution: when the HRO works with parties to resolve complaints prior to a formal complaint, or to assist persons of authority address incidents/concerns in a manner consistent with human rights obligations.
4. Informal Resolution: when the HRO employs a structured process, such as a mediation or restorative justice process, to resolve a complaint to the satisfaction of the parties in dispute.
5. Formal Resolution: when the HRO ensures an investigation to determine whether a policy violation has occurred.
6. Disclosures: incidents of student sexual violence disclosed to obtain supports and resources.

[2] The University's Student Sexual Violence Policy and Procedures distinguish between a "disclosure," which is telling a trusted individual about an incident of sexual violence to access support services; and a "report," which is a request that the University intervene to resolve a complaint.



	2021-2022	2022-2023	2023-2024
Consultation	72	109	112
Assessment	178	32	47
Early and Informal Resolution	12	8	23
Formal Resolution	6	7	10
Disclosures	45	43	48

Table: 2

The number of consultations undertaken by the HRO remained consistently high as a percentage of total interventions, indicating the important role the HRO plays in providing support to the university community. This is also reflected in the substantial increase in early and informal resolutions which collectively have seen a year over year increase of 75%. Combined, these trends are reflective of the HRO's focus on efforts to prevent and resolve issues prior to dispute escalation.

c. Issue Source

The HRO provides services to all members of the University community, including faculty, staff, students, and visitors. The following table shows the source of issues that were brought forward in the reporting year. As a percentage of the total, inquires from the four groups stayed relatively consistent year over year.

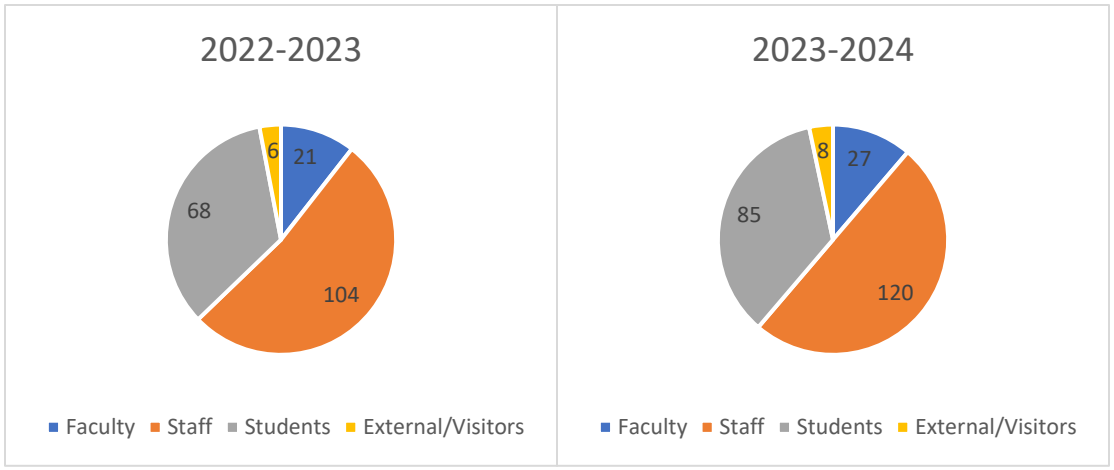


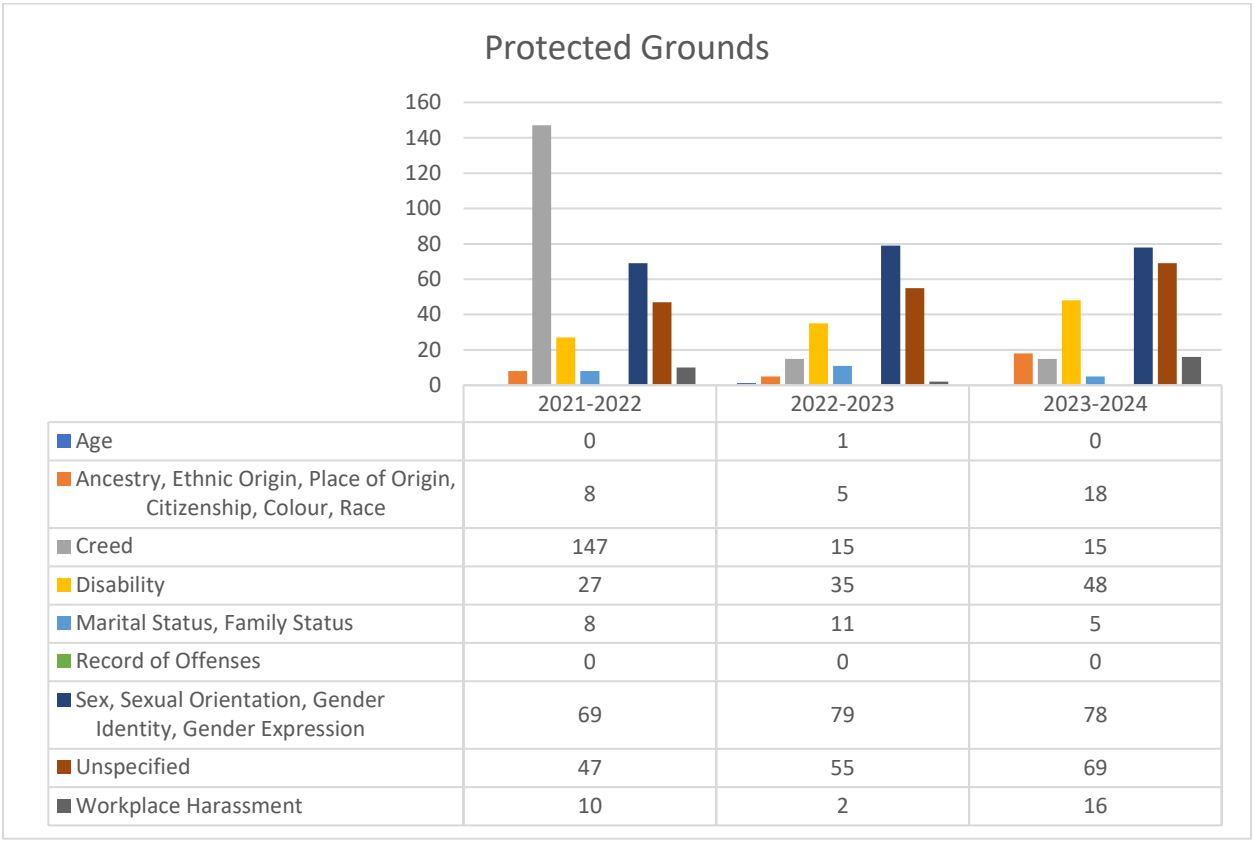
Table: 3

d. Protected Grounds

Protected Grounds are the grounds contained in the *Ontario Human Rights Code* (OHRC) under which individuals are protected against discrimination and harassment. Most, but not all, of the complaints and concerns raised to the HRO cite one or more protected grounds. Additionally, the HRO intervenes to address incidents and complaints that fall under other legislation, but overlap with the OHRC, including the *Occupational Health and Safety Act* (Workplace Sexual Harassment) and the *Ministry of Training, Colleges and Universities Act* (Student Sexual Violence).

A number of consultations completed by the HRO are of a general human rights nature in which no specific protected ground is cited – these are captured in the following table under the "unspecified" column. The HRO is also accountable for addressing incidents of workplace harassment, in which a connection to a protected ground is not required.

It should be noted that the number of protected grounds cited may not correspond directly to the number of cases received. This is because multiple protected grounds may be cited by individuals who come forward in respect of a case.



	2021-2022	2022-2023	2023-2024
Age	0	1	0
Ancestry, Ethnic Origin, Place of Origin, Citizenship, Colour, Race	8	5	18
Creed	147	15	15
Disability	27	35	48
Marital Status, Family Status	8	11	5
Record of Offenses	0	0	0
Sex, Sexual Orientation, Gender Identity, Gender Expression	69	79	78
Unspecified	47	55	69
Workplace Harassment	10	2	16

Table: 4

The spike in creed-based issues in the 2021-2022 year relate to COVID-19 and should be looked at as an anomaly. The increases seen in the protected ground of ancestry and race from last year to this year is partially reflective of the overall increase in racial tensions resulting from world conflicts. There is a steady increase in issues involving disability as a protected ground which is largely resulting from increased awareness and diagnosis of differing neuro-divergent abilities, as well as the related challenges of assessing and accommodating individuals who increasingly present with complex needs. The 3-year increase trend in the category unspecified is reflective of the positive role the HRO plays in providing general advice and guidance to the University community. The HRO will continue to monitor these tends and will direct education supports as needed.

5. CONCLUSION

We conclude by acknowledging the numerous University Members who assist the HRO in our goal to create and reinforce an inclusive campus for all. Preventing harassment, discrimination, and gender-based violence is a collective effort, and everyone at the University has a role to play. We continue to encourage all University Members to act with respect and to call out inappropriate behaviour if it occurs. Together, we can continue to ensure a positive campus environment.

APPENDIX A – STUDENT SEXUAL VIOLENCE SUPPORTS, SERVICES & PROGRAMMING[3]

1. Advisory Committee on Implementation and effectiveness of the Policy & Supports

The Advisory Committee on Student Sexual Violence Prevention and Support, established in December 2017, is mandated to ensure that the university's Policy, and the support services, programming and training that sustain these policies, are reviewed on a regular basis and continuously improved upon. This year, the Committee was composed of 6 students, 1 representative from the Ontario Tech Student Union, 8 staff from across the university, 1 community partner and 1 alumnus.

2. Supports, services and accommodations:

Support Workers, through the university's Student Mental Health Services, support students who have experienced sexual violence. All counsellors participate in ongoing training in trauma-informed therapy and have experience working with survivors of sexual assault. In addition, an Outreach Worker in the residence works very closely with the Support Workers in providing onsite support for students living in residence.

3. Awareness and programming

In 2023-2024, efforts to raise awareness and educate students about the Policy, supports and services were largely driven by the Student Engagement and Equity team in Student Life. Initiatives to raise awareness and educate on sexual violence included:

- **#WeGetConsent Awareness Week:** Once per semester in the Fall and Winter terms, Student Engagement and Equity hosts our #WeGetConsent Awareness Week which focuses on educating our campus community about sexual violence prevention and our institution's sexual violence policy. This year, 107 students interacted at the booths.
- **#WeGetConsent Online Campaign:** The #WeGetConsent online campaign continued this year with several initiatives throughout the year aimed at educating students about consent and sexual violence prevention. Programming included social media posts aimed at continuing the consent conversation online and encouraging students to share their own understanding of consent and ways they can be upstanders should they observe anyone causing harm.
- **16 Days of Activism Against Gender-Based Violence – Digital Campaign:** From November 25 to December 10, 2023, Ontario Tech hosted a digital campaign for 16 Days of Activism. The campaign helped students, staff and faculty learn more about gender-based violence prevention. The program included an online event and engaging social media content where they asked members of the university community to share what they will do to contribute to ending gender-based violence.
- **Afternoons with SEE: #WeGetConsent edition:** Afternoons with SEE is a weekly event where the Student Engagement & Equity (SEE) office opens it doors to any

[3] Sections 17 (7) and (7.1) of the Ministry of Training, Colleges and Universities Act note that universities are to provide their Board of Governors with an annual report including information about their student sexual violence initiatives and programs.

students who wish to drop in and use the space to hand out throughout the fall and winter semesters. On February 13, 204, this session was dedicated to promoting the #WeGetConsent campaign. A total of 7 students participated.

- **Women's Abuse Awareness Month:** Student Engagement and Equity is a member of the Women's Committee of Durham Region which is a group of community organizations that work together to bring awareness to women's issues. This year, the committee held an event on campus to educate students about women's issues such as human trafficking, gender-based violence and victim's services. Attendance was not taken.
- **#LetsTalkSex Workshop Series**: A series of sex-positive and sexual health workshops were offered by Student Life to help students feel more comfortable having conversations about consent. These workshops were provided through a collaboration with the AIDS Committee of Durham Region, Durham College and Trent University and included topics such as consent, sexual health and sexuality. A total of 14 students participated throughout the 2 semesters (September - November 2023 and March 2024).
- **Staff and Faculty Training:** Online training modules are available for faculty members and staff to provide information about the sexual violence policies and procedures, and the supports for employees and students who experience, or witness, sexual violence. This training was updated in 2022-2023 and was launched to all employees in May 2023, and all students in September 2023 – the training is mandatory for all University Members.
- **RISE: Sexual Violence Prevention**: The RISE (Respect Inclusivity and Support Equity) program, offered by the Student Engagement and Equity Team, is a series of workshops focusing on the development of by-stander intervention strategies. Students are encouraged to attend these workshops to earn a RISE Certificate officialised by the University. RISE Topics include: two mandatory workshops- RISE: Let's Talk Equity and RISE: First Peoples. As well, seven elective workshops- RISE: Anti-Ableism, RISE: Anti-Racism, RISE: Consent and Sexual Violence Prevention, RISE: Feminism, RISE: Health Equity, RISE: Sexual Orientation, and RISE: Trans Identities. A total of 147 students participated in the RISE workshops in 2023-2024.
- **Trans/Non-Binary Space:** A place where trans and non-binary students can meet one another to have open discussions in a space and build a sense of community at Ontario Tech. This space was offered in September and November of 2023, 27 students participated.
- **Pride Space:** In collaboration with the Ontario Tech Pride Club, Pride Space is a place for all 2SLGBTQ+ students and allies to come together and create a space of belonging within the university community. This space was offered in both Fall 2023 and Winter 2024, a total of 181 students participated.

BOARD REPORT

SESSION:		**ACTION REQUESTED:**	
Public	☒	**Decision**	☐
Non-Public	☐	**Discussion/Direction**	☒
		Information	☒

TO: **Board of Governors**

DATE: **February 20, 2025**

PRESENTED BY: **Eric Agius, Chair, Strategy and Planning Committee**
Dr. Lori Livingston, Provost and Vice-President, Academic
Dr. Joe Stokes, Assistant Vice-President, International and Registrar

SUBJECT: **Student Recruitment and Success**

BACKGROUND/CONTEXT & RATIONALE:
The 2023-208 Integrated Academic-Research Plan is explicit in its call for a strategic commitment to a "differentiated growth" agenda. More specifically, going forward, Ontario Tech needs to continue to grow its reputation as a unique and innovative post-secondary institution with a commitment to excellence in all that we do (i.e., teaching, research, service, and community outreach). Overall reputational excellence is key to enabling us to growing our enrolments year over year by attracting new students. At the same time we need to retain those who have already opted to study at Ontario Tech. Both are important to the overall goal of maintaining robust enrolments.

Enrolments necessarily rely on the constant addition of new students and the retention of the existing student base. Once we recruit and admit a student into an academic program, we have an ethical obligation to support them to succeed along the course of their academic journey. We must constantly remind ourselves of this obligation and routinely challenge ourselves to adapt as needed to support their success.

The purpose of this briefing note is to update the Committee on our strategic approaches to supporting student recruitment and retention, including a brief summary of some of our efforts over the past year.

RECRUITMENT

Ontario Tech's **domestic recruitment strategy** focuses on connecting members of our recruitment team with established high affinity schools while also developing new relationships with schools and in areas where our footprint is still developing. During the current recruitment

cycle, recruiters have visited over 540 high schools in Ontario, and have conducted over 600 virtual discussions with students and parents. These activities aim to build relationships with students as well as push them to the second phase of our recruitment life cycle which is to get students to attend an on campus event. These efforts have also generated over 100,000 prospective student leads, each of which is subsequently assigned to an individual recruiter for personal follow up.

During the current academic year, on campus event attendance has increased with over 3,000 students and parents attending the Fall Open House and the completion of 636 group tours. These represent year-over-year increases of 20% and 5%, respectively, in comparison to the same events in 2023-2024. Our student-staffed conversion call centre is now up and operational, and all applicants will receive a call from a student in their program of intended study, with conversations aimed at getting students to campus for our experience days in March.

Data from the Ontario Universities Application Centre (OUAC) shows that at the recent January secondary school application deadline, Ontario Tech has had a small 2% decrease in overall applications in comparison to last year's numbers but the university is still maintaining an increased market share from previous years. Since 2021 we have experienced the largest growth in overall applications amongst Ontario universities with a 69% cumulative increase in secondary school applications.

On the **international recruitment** front, we continue to be strategically focused on the development of six priority markets – China, South Asia, South East Asia, the Middle East, West Africa and Latin America/Caribbean. Ontario Tech has offshore recruiters working in all of these regions and continues to deploy complementary market development strategies such as media and government relations, partnership development, and direct student recruitment.

Strategically we continue to look at market diversification so as not to be too reliant on any one source country. This is important as geopolitical tensions (e.g., between Canada and India and Canada and China) and government policies (e.g., imposition of caps on student visas for undergraduate and graduate students) continue to create challenges for Canada's reputation as a desired study destination. In an effort to mitigate these challenges, recruiters will be increasingly in-market to build trust and control potential fallout. In addition, we continue to leverage our partnership with a company called Border Pass which allows international students to access the services of an immigration lawyer for the purposes of obtaining a study permit. This new measure should help the university cement more enrolments despite the imposed immigration caps on international students.

In terms of **digital recruitment** activities, the overall market for digital advertising was fierce this year with more universities going after the same market share of applicants. Ad saturation was high and cost per impression was much more expensive due to many universities greatly increasing their advertising spends. This increased competition for the same online ad space which resulted in doubling the cost of many keyword bids (e.g., cost to buy keywords like "engineering" increased by 200%).

Despite the significant competition in the market, we were still able to meet our preset goals for ad impressions, beating out industry benchmarks with impactful digital ad creativity. Some of the highlights of our digital efforts included:

- Realizing our most successful Spotify campaign to date with 350k impressions, up 45.6% from our next highest performing campaign;
- Increasing the number of visits to our tours page by 300 views per day, therefore increasing our tour bookings by 40% per day;
- Increasing the number of live chat conversations with potential applicants, therefore providing opportunities to nurture more applicant leads;
- Implementing a new geo-targeted ad campaign specifically for students at the high schools we were visiting. This gained 1.02 million impressions

SUCCESS (RETENTION) INITIATIVES

The barriers to success (e.g., cost, mental health needs) are far greater today than they were in the past. Moreover, some of the unique demographics of Ontario Tech's student population (e.g., high proportion of first generation students, commuters) have to be taken into account when defining our strategies.

There are multiple units on campus which contribute to the sense of community and provide supports for our students. These are situated in various offices across campus including the Office of the Registrar (e.g., Student Awards and Financial Aid, International Office, English Language Centre), Office of the Deputy Provost (e.g., Student Accessibility Services, Student Learning Centre, Test Centre, Student Mental Health Services, Career Services, Academic Advising, Teaching and Learning Centre, etc.), and the School of Graduate and Post-Doctoral Studies.

The following provides an overview of some (but by no means all) of the major initiatives that we undertake to support student success.

STUDENT FINANCIAL AID[1]

In 2023-2024, the Student Awards and Financial Aid Office processed and issued 1,633 Awards and Scholarships totaling $2,278,168 to our students as follows:

- $197,168 (n=23) in Admissions Scholarships
- $891,000 (n=531) First Year Entrance Scholarships
- $922,000 (n=770) In-Course Scholarships
- $268,000 (n=79) Athletic Scholarships

Ontario Tech students (N=8,113) also readily access OSAP funding at both the undergraduate (n=7,870) and graduate (n=243) levels. In total, $69,412,340 in funding was issued in the form of loans (i.e., $36,936,464 or 53%) or grants (i.e., 32,474,876 or 47%).

NEW TO ONTARIO TECH STUDENT UNDERGRADUATE ORIENTATION

A key to retaining new students is ensuring that they develop a sense of connection to the university in the first few weeks of arrival on our campuses. In September, 2024 we introduced

[1] These numbers are for the 2023-2024 academic year. This summary does not include the financial supports provided to graduate students via guaranteed funding packages, supervisor and Dean top-up funding, the Graduate International Tuition Scholarships (GITS), or other internal and external scholarship programs.

new and improved orientation programming to seamlessly link together a variety of activities including residence move-ins, meeting new classmates, tours of Oshawa, and Faculty-based academic orientations, to name a few. This programming is differentiated based, for example, on the needs of new from high school versus mature student groups or residence-based versus commuter students. Information sessions for our students' parents and supporters were also introduced this past fall with great success.

MENTAL HEALTH, STUDENT ACCESSIBILITY SERVICES, AND TEST CENTRE SUPPORTS
As the number of students seeking these support services continues to rise, a great deal of effort has gone into better integrating the services within and between all three of these units. For example, students requesting academic accommodations also often require the specialized services offered by the Test Centre. Key to this integration is the use of software and IT systems and real time visual dashboards to coordinate student registrations, requests for these services, and the scheduling and completion of tests and exams throughout the academic year. Recently, our Test Centre has been recognized as a best practice site by its peers in Ontario.

Ontario Tech's Student Mental Health Services team offers a robust set of mental health supports which is supported by a Stepped Care model. This model was introduced to reduce wait times for service, and to increase the likelihood that students receive a service that matches their needs. As demand for these services continues to grow, we apply for numerous grants and work with Advancement to secure additional funds to expand these services.

STUDENT-CENTRIC ACADEMIC ADVISING
In March, 2021 the university implemented a new approach to undergraduate student advising, moving from services that were managed on a Faculty-by-Faculty basis to a centrally-led overseen by a Director of Advising and three dedicated Managers of Advising. This has created a student-centric approach to academic advising, as well as a more consistent and accessible service model.

With the adoption of a continuous improvement mindset, our Academic Advising unit has introduced multiple new initiatives to both improve its services for students, but also to roll with the accessibility challenges of the COVID-19 pandemic.

A key accomplishment this year was the introduction of software and IT systems, supported by a grant from the Telus Innovation Fund, to introduce an early alert system for at risk students.

PROGRAMMING FOR AT RISK STUDENTS
Enrolment into the Learner Engagement Academic Program (LEAP) is offered to first year students who, at the end of an academic term, are destined for suspension from their degree program due to poor academic performance (i.e., GPA less than 2.0). Students who enroll sign a learning contract which stipulates that they may proceed with a reduced workload in their current academic program while concurrently attending all of the LEAP program's weekly information and coaching sessions. They must also complete all required assignments. Failure to adhere to these conditions results in removal from the LEAP program and the re-imposition of their probation or suspension status.

The program is supported by the Registrar's Office and the Teaching and Learning Centre (TLC). Weekly in-class sessions focus on topics such as effective learning habits, goal setting, personal accountability, short-term planning strategies, time management, and other core skills to support

individual success.

Since the inception of this program in the Fall, 2020 term, a total of 663 undergraduate students from the six cognate Faculties have enrolled in the program. As of December, 2023 7.1% (n=46) have graduated while 56.2% (n=376) continue to be actively enrolled in their programs of study.

IN SUMMARY
To understand the effectiveness of our efforts, a commitment to routine program evaluation is a must. We must also commit to continuous improvement in all that we do including challenging ourselves to think about what other existing resources might be leveraged or adapted to support our students.

In terms of student retention, Consortium for Student Retention Data Exchange (CSRDE) data show that our Year 1 to Year 2 retention rate[2] has improved from 81% in 2019 to 84% in 2023. CSRDE Year 2 to Year 3 retention rates also improved from 91% to 95% from 2018 to 2022, respectively. Our efforts are producing positive results.

NEXT STEPS
From a strategic perspective, our efforts to recruit and retain students must continue to be:

1. Multi-pronged in nature and responsive to the needs of the Ontario Tech student population.

2. Guided by a commitment to excellence and continuous improvement year-over-year, including effective integration of common activities across the multiple units contributing to such initiatives.

3. Committed to a student-centric approach and the use of data to drive our decision making. Most importantly, this includes gathering input and direction from our students.

The grand challenge for the coming year is:

> How do we identify and strategically manage the rapid adoption and use of AI tools for the purposes of recruiting and retaining students?
>
> How do we strive for seamless integration of these AI tools across these multiple, often interrelated, activities?

[2] CSRDE Year 1 to Year 2 retention rates are based on first-time, full-time undergraduate students who commenced studies in the previous year and have continued to study at the same institution in the reporting year.

BOARD OF GOVERNORS' 135th REGULAR MEETING

Minutes of the Public Session of the Meeting of November 28, 2024
12:10 p.m. to 1:15 p.m.
Hybrid

GOVERNORS IN ATTENDANCE:
Laura Elliott, Board Chair
Eric Agius, Vice-Chair and Chair of Strategy & Planning Committee
Ahmad Barari
Nolan Bederman
Carla Carmichael, Chair of Audit & Finance Committee
Frank Carnevale
Mitch Frazer, Chancellor
Neeraj Grotra
Matthew Mackenzie
Peter Marchut
Lisa McBride
Laura Money
Steven Murphy, President and Vice-Chancellor
Mike Rencheck
Hannah Scott
Dwight Thompson
Emily Whetung-MacInnes
Susanna Zagar

REGRETS:
Gaurav Singh, Chair of Governance, Nominations & Human Resources
Kim Slade

BOARD SECRETARY:
Nicola Crow, University Secretary

STAFF:
Kirstie Ayotte, *Assistant University Secretary*
James Barnett, *Vice-President, Advancement*
Jamie Bruno, *Vice-President, People and Transformation*
Krista Hester, *Chief of Staff*
Les Jacobs, *Vice-President Research and Innovation*
Lori Livingston, *Provost and Vice-President, Academic*

Jennifer MacInnis, *General Counsel*
Brad MacIsaac, *Vice-President, Administration*
Joe Stokes, *University Registrar, AVP International & Interim Dean SGPS*

GUESTS:
Mikael Eklund
Angelique Dack
Kevin Farlie
Karla Gomez
Kimberley McCartney
Shannon Thornton
Tega Ubor
Quinton Weyrich

1. Call to Order

The Chair called the public session to order at 12:10 p.m. and outlined the hybrid meeting format, reminding attendees to direct their questions through the Chair. She reminded attendess that the public session is open to both internal and external individuals, guests are strictly observers and are not permitted to participate in the discussion. She provided a thoughtful Land Acknowledgement, and read the University's official Land Acknowledgement.

2. Agenda

Upon a Motion duly made by M. Mackenzie and seconded by H. Scott the Agenda and Consent Agenda, including its contents, were approved as presented.

3. Conflict of Interest Declaration

None declared.

4. Chair's Remarks

The Chair acknowledged upcoming exams and the conclusion of the Fall term, expressing gratitude to faculty and staff for their efforts in supporting new and returning students. She highlighted the vibrant campus activities and expressed her appreciation to the Governors for their time and contributions to Board Meetings and University events.

Looking ahead to the holiday season, she wished everyone restful time and encouraged donations to the University's Tech with a Conscience campaign, emphasizing the importance of supporting student awards and aiding those in need.

5. President's Report

The President welcomed attendees and highlighted significant achievements this semester. The University's Institute for Disability and Rehabilitation Research was named the first World Health Organization (WHO) Collaboration Centre for Rehabilitation and Musculoskeletal Health. The Men's soccer team won the Ontario University Athletics (OUA) Championship and competed at the USPORTS national champsionships, that were successfully hosted at Ontairo Tech this year. Other teams like lacrosse and rowing are also excelling this year. He emphasized that strong attendance and student-athletes' community involvement reflect a growing culture of pride and excellence, enhancing the University's reputation.

He announced that the University ranked first in Maclean's reputation rankings and highlighted key partnerships, including those with Lakeridge Health to advance AI-driven healthcare and with Trafalgar Castle School to support women in STEM. Other accomplishments included the creation of new Research Excellence Chairs and the launch of the $250 million Tech with a Conscience campaign to promote ethical innovation and research.

He also addressed public concerns about the value, bias, and funding of universities, emphasizing the importance of aligning with government priorities and showcasing contributions, which have been positively received by government partners.

A fulsome discussion highlighted the University's unique blend of academic strength and professional applications, distinguishing it from other institutions. The discussion also addressed students' concerns about rising living costs despite frozen tuition fees, emphasizing the value of university education through job-relevant competencies. The conversation noted successful government policies in other countries fostering industry-academia partnerships, particularly in tech, and explored how the University could influence similar policies in Ontario and Canada.

6. Academic Council Report*

T. Ubor presented the Academic Council report for June, September, and October 2024, highlighting the approval of a partnership with the Oxford Digital Institute to help international students meet admission requirements. She also noted an increase in domestic applications and the appointment of Denina Simmons as Vice-Chair of the Academic Council for the 2024-2025 academic year.

D. Thompson expressed appreciation for the new Bachelor's and PhD program proposals, emphasizing the thought, effort, and dedication behind them. He highlighted the importance of the programs, particularly the PhD in Cybersecurity, aligning with key industries like cybersecurity in the Greater Toronto Area (GTA), which supports local and provincial economies. The Chair also noted that the new proposed programming reflected the University's forward thinking and response to students' interests.

6.1 New Program Proposal – Faculty of Social Science and Humanities: BA-Sociology, Technology and Innovation*

i. Upon a Motion duly made by F. Carnevale and seconded by E. Agius, pursuant to the recommendation of Academic Council, the Board of Governors hereby approves the establishment of a Bachelor of Arts in Sociology, Technology and Innovation, as presented.

6.2 New Program Proposal – Faculty of Business and IT: PhD in Cybersecurity*

C. McGregor highlighted the program's strong industry integration, which builds on a foundational Master's program. She emphasized the importance of collaboration with the cybersecurity sector, noting the growing government and business interest driven by geopolitical tensions. She also pointed out that the program offers flexible entry pathways, allowing both individuals with a Master's degree and experienced professionals to participate. She suggested that, with its focus on future jobs and policies, the program could be a highly effective marketing tool.

ii. Upon a Motion duly made by M. Mackenzie and seconded by S. Zagar, pursuant to the recommendation of Academic Council, the Board of Governors hereby approves the establishment of a Doctor of Philosophy in Cybersecurity, as presented.

The Board applauded both faculties and their teams on these new programs.

7. Audit and Finance Committee (A&F) Report

C. Carmichael presented the A&F report from November 21, 2024, highlighting the strategic discussion on Environmental, Social, and Governance (ESG) and Responsible Investing, focusing on the University's approach to fulfilling its fiduciary duties and investment objectives. She noted that the Committee learned about the University's adoption of responsible investing practices and enhancement of accountability to stakeholders. The Committee also reviewed and approved KPMG's engagement for non-audit services related to an efficiency and accountability review, funded by the Ministry's Efficiency and Accountability Fund, aimed at improving administrative processes, using resources more effectively, while providing opportunities for employees to participate in higher-impact activities. Additionally, the Committee received an update on the Auditor General's (AG) Value-for-Money Audit, including the progress made to date by the University for the AG's two year review and how leadership is working on responding to areas idenified for more work.

7.1 2025-2026 Budget Assumptions*

B. MacIsaac presented the 2025-2026 budget assumptions, noting a freeze on domestic tuition and an average 3% increase for international tuition. He highlighted that the University expects a $1.6 million increase in provincial funding

for 2024-2025, rising to $2.8 million next year, but no commitment beyond year three. Total revenue is projected at $260 million, a $15 million increase, primarily due to higher enrollment.

B. MacIsaac noted, that the enrollment model presented as part of the budget assumptions, is based on Ontario's population growth, retention rates, and program capacity optimization, with scenario planning ranging from aggressive growth to more conservative projections, amid uncertainties around international student caps. Expenses are estimated at $252 million, which includes a $12.5 million increase in labour costs. After accounting for international student uncertainties, approximately $4.5 to $5 million remains for allocation, with a goal to maintain $3 million in reserves for future capital projects and strategic initiatives. He emphasized the importance of reserves to manage unexpected expenses and potential government changes, while prioritizing investments to support the University's differentiated growth agenda and integrate AI to streamline operations and focus on core activities.

C. Carmichael acknowledged a suggestion from a Board member to highlight savings from discontinuing programs to demonstrate the effectiveness of the University's management systems to the public and policymakers. She noted that the University would address program or course changes in an upcoming presentation.

7.2 Second Quarter Financial Reports*

C. Carmichael presented the Second Quarter Financial Reports for the year ending March 31, showing a forecasted net surplus of $5.9 million, $0.5 million above budget. Revenue exceeded expectations by $9.3 million, driven mainly by increased domestic enrollment, particularly in Education and Health Sciences, with enrollment 4.6% above target. With the increase in projected enrolment and revenues, the Committee heard that funds have been allocated to support academic growth and invested in strategic initiatives to support student experience and the future of technology at the University. Operating expenses were $2.8 million over budget, mainly due to lincreased Teaching Assistants and Sessional instructors, and more administrative contracts. Additionally, expenses rose due to higher consulting costs for capital projects which were mainly offset by grants and increased entrance scholarships that corresponded to increased enrolment. C. Carmichael also shared that the University also completed the purchase of 50% of the Campus Corners property, now sharing 50% of the net rental revenues.

7.3 Interim Risk Management Update*

C. Carmichael presented the Interim Risk Management update noting that the Committee received the quarterly risk update that highlighted progress on integrating risk considerations into the University's processes to increase

efficiencies. Key updates included strengthening insurance coverage to reduce premiums and increase overall coverage, as well as the development of new risk resources involving stakeholder consultation for consistent application, training, and compliance across the University. Additionally, she noted that a comprehensive business continuity plan toolkit is also under development. The Office of Risk Management was praised for significantly advancing enterprise risk management within the University.

7.4 Risk Management Policy*

C. Carmichael presented the updated Risk Management Policy, noting the last amendment was in 2019 and the applicable consultation had been completed. She explained that the current changes include clarifications, updates, and the integration of content from the Compliance Policy. With compliance now part of the Office of Risk Management, this updated policy will replace the previous Compliance Policy, offering a more comprehensive risk management framework.

In response to a question about workload and the impact of proposed changes, B. MacIsaac explained that the policy consolidates three separate policies into one, streamlining the process and increasing efficiency. He highlighted that the clarifications define risk management responsibilities more clearly, with risk leads taking ownership. The updated policy simplifies implementation by providing clearer guidance on roles, ultimately enhancing efficiency in risk management.

i. Upon a Motion duly made by S. Zagar and seconded by F. Carnevale, pursuant to the recommendation of the A&F Committee, the Board of Governors hereby approves the revisions to the Risk Management Policy as presented.

8. Governance, Nominations and Human Resources (GNHR) Report

Nothing to report.

9. Strategy and Planning (S&P) Report

E. Agius presented the S&P report from the Committee's November 14, 2024 meeting, focusing on the University's Strategic Enrollment Plan, which seeks to enhance the student experience through a broad community effort. He emphasized the Plan's complexity, its alignment with the Integrated Academic-Research plan, and the challenges encountered and being responded to, such as expanding enrollment and attracting students in the context of tuition freezes and international student caps. The Committee also received an update on preliminary fall enrollment numbers and the Integrated Academic-Research Plan (IARP), including its alignment with the provincial Strategic Mandate Agreement (SMA).

10. Consent Agenda

The Chair confirmed that the Consent Agenda and its contents were approved and received under Agenda Item #2.

10.1 Minutes of Public Session of Board Meeting on September 26, 2024* (M)
10.2 Minutes of Public Session of A&F Meeting of June 13, 2024* (I)
10.3 Minutes of Public Session of GNHR Meeting of May 30, 2024* (I)
10.4 Minutes of Public Session of S&P Meeting of June 20,2024*(I)

11. Adjournment

Upon a Motion duly made by H. Scott, the public session adjourned at 1:15 p.m.

Nicola Crow, University Secretary

BOARD OF GOVERNORS

Audit & Finance Committee (A&F)

Minutes of the Public Session of the Meeting of November 21, 2024
2:00 p.m. to 3:35 p.m., Videoconference

Members: Carla Carmichael, (Chair), Laura Elliott, Laura Money, Steven Murphy, Kim Slade, Susanna Zagar

Regrets: Nolan Bederman, Mitch Frazer,

Staff: Kirstie Ayotte (Secretary), Nicola Crow, Jacquelyn Dupuis, Krista Hester, Lori Livingston, Jennifer MacInnis, Brad MacIsaac, Pamela Onsiong, Sarah Thrush

Guests: Chelsea Bauer, Michelle de Cordova (ESG Global Advisors), Mikael Eklund, Matthew Mackenzie (guest governor), Dwight Thompson (guest governor)

1. Call to Order

The Chair called the meeting to order at 2:00 p.m. and read aloud the land acknowledgment.

2. Agenda

Upon a motion duly made by L. Money and seconded by S. Zagar, the Agenda including the Consent Agenda items were approved as presented.

3. Conflict of Interest Declaration

None.

4. Chair's Remarks

The Chair welcomed attendees to the meeting, remarking on the busy agenda and expressing appreciation for the engagement of new members. She thanked S. Zagar for accepting the role of Vice-Chair, acknowledging their shared work and future collaboration. She highlighted the importance of the Committee's work in providing oversight on critical issues and welcomed the contributions of all members.

5. President's Remarks

The President welcomed the Committee and noted the historic success of the Men's soccer team winning the Ontario University Athletics (OUA) championship securing a space at the USPORTS National Championships, hosted this year by Ontario Tech, marking a milestone for the University. In addition, he highlighted the University's strong performance in the latest Maclean's rankings, where Ontario Tech achieved the top spot in reputation among universities. He highlighted key strategic partnerships, including the Partnership for Advanced Technology in Heath Care (PATH) initiative with Lakeridge Health, which focuses on advanced healthcare technologies, especially in AI, and furthering the University's healthcare capabilities.

6. Finance

6.1. Strategic Discussion: ESG and Responsible Investing* (D)

B. MacIsaac introduced Michelle de Cordova from ESG Global Advisors, to lead a discussion on responsible investing, particularly in the context of environmental, social, and governance (ESG) factors. She began by providing an overview of responsible investing, explaining the growing importance of ESG integration in the university investment landscape and noted that Ontario Tech was committed to ensuring that its investments align with responsible practices that balance financial returns with societal impact. She walked the Committee through key aspects of responsible investing, including the need for transparency in investment decisions, the distinction between ESG and corporate responsibility, and the emerging global trends in sustainable investing. She also addressed the University's current ESG policy, which mandates that external asset managers integrate ESG factors into their decision-making processes.

The discussion emphasized Ontario Tech's commitment to meeting its fiduciary responsibilities while addressing growing stakeholder expectations for leadership in responsible investing, particularly from students, faculty, and alumni. The importance of monitoring ESG-related issues within investment portfolios was highlighted, with an emphasis on the role of external asset managers in flagging significant concerns through their reporting. M. de Cordova noted that boards and committees depend on portfolio monitoring reports to identify emerging issues and ensure alignment with ESG standards. B. MacIsaac explained that Ontario Tech receives quarterly reports from its investment manager, Phillips, Hager & North (PH&N), which include an attestation of ESG compliance. He also proposed enhancing transparency by incorporating updates on emerging issues directly into Board reports.

S. Murphy highlighted the importance of balancing transparency in investment practices with education, particularly for stakeholders who may be less familiar with the complexities of investment processes. He noted that without a proper understanding of the intricate structures and decision-making chains involved, people may arrive at conclusions that conflict with the values or objectives of the organization and stressed the need to continue educating stakeholders to ensure informed

discussions and decisions, concurrent with aligning transparency efforts with broader institutional goals.

6.2. Second Quarter Financial Reports* (U)

P. Onsiong presented the second-quarter financial reports, projecting a year-end surplus of $5.9 million, aligning closely with the budgeted $5.4 million. The surplus is earmarked for future strategic initiatives and/or operating contingencies as part of the University's due diligence in the current fiscal context.

She attributed the surplus to tuition revenue increases largely due to higher than budgeted domestic under-graduate student enrollment reflective of the differentiated growth strategy; and, provincial funding also exceeding budgetary expectations, including a $3.6 million sustainability grant and $500,000 earmarked for a third-party efficiency review of the University's structure and operational policies.
She noted that international enrollment saw a modest increase and cautioned that future caps could pose challenges.

On the expense side, P. Onsiong noted that increased enrollment raised operational costs, including expanded sessional hires, teaching assistant support, and scholarships.

With the increase in projected enrolment and associated revenues, funds have been allocated to support academic growth and invested in strategic initiatives to improve the student experience and upgrade campus technology. She highlighted the University's $12 million acquisition of a 50% stake in the Campus Corners building, approved by the Board of Governors in June 2024. Aligned with the Campus Master Plan (CMP), this move further reduces reliance on leases, with tenant rental revenues used to service any debt arising from the acquisition. In response to a question about the CMP status, B. MacIsaac supported presenting a refresher on the CMP at a future meeting.

6.3. 2025-2026 Budget Assumptions* (D)

B. MacIsaac commenced the presentation on the 2025-2026 Budget Assumptions.

B. MacIsaac noted that the projected total revenue for the 2025-2026 fiscal year was $260 million, a $15 million increase from the previous year, with half of the growth driven by enrollment. Key budgetary factors under consideration include: a provincial freeze on domestic tuition; a 3% increase in international tuition; a 3% increase in provincial funding for 2024-2025 and an additional 2% the following year; and ancillary fees are expected to rise by $2 million. He emphasized that much of the revenue, especially from government grants, is designated for specific purposes and cannot be freely allocated to broader strategic priorities.

S. Thrush outlined the enrolment assumptions underlying the budget for both domestic and international students, projecting moderate growth of 1.5 to 1.75% for un-capped domestic programs through 2025-2026. She highlighted separate targets for nursing and modest growth in Master's and PhD students, excluding new programs like Sociology and the PhD in Cybersecurity that are not launched yet. For international enrollment, she noted uncertainty due to new Immigration, Refugees and Citizenship Canada (IRCC) rules, with the assumption of steady intake for the next two years and a 5% increase thereafter. She presented three enrollment scenarios: a base scenario with moderate growth, a constrained scenario with lower international enrollment, and a growth scenario with 10% annual increase in undergraduates and 5% in international students, particularly in STEM.

B. MacIsaac explained that t, with $252 million in projected expenses the university is left with $8 million for allocation. As noted in the enrolment section there is an uncertainty on the international cap which could reduce the tuition revenue by about $3.2 million next year. He highlighted the University's conservative budgeting and the strategic plans to set aside $3 to $5 million annually for future needs. Despite a 1.5% revenue increase, rising labour (6%) and operating costs (4%) are creating a budget gap.

L. Livingston acknowledged that the University is in a strong financial position compared to others, but faces challenges from external factors like geopolitical unrest, inflation, and uncertainty around international student policies. She emphasized the need for caution and stressed that the University will continue to focus on differentiated growth including expanding programs and adding new ones.

When asked how many years it would take before the University faces a deficit based on current projections, B. MacIsaac explained that with essentially no new operating funded hires a deficit would likely occur in year three if the current assumptions continue. He also noted that the April budget presentation will include projections for the following two years, providing a clearer view of the University’s future financial outlook.

In response to a question about the University's efforts to obtain answers from the Federal government regarding international student policies, S. Thrush noted despite meetings with other institutions in Ottawa, the Government has not provided clear answers, so creating uncertainty. The University is proceeding with assumptions based on past policies but remains concerned about the volatility and lack of urgency from the Government.

7. Compliance and Policy

7.1 Risk Management Update* (U)

J. Dupuis highlighted significant progress in advancing the University's risk management practices. Key achievements include strengthening insurance coverage while reducing premiums, streamlining insurance processes to improve user experience, and creating concise, user-friendly bulletins on common operational risks.

She noted that the development of risk-specific resources ensures alignment with institutional risk activities, with plans to finalize continuity planning by 2025 and to propose ten thematic risk categories to risk owners this winter.

Additionally, she advised that the office is preparing to launch resources on cyber and international travel risks and has transitioned inspection forms to digital platforms, enhancing efficiency and cross-departmental workflows. Future efforts will focus on providing training and webinars to familiarize members with these tools. J. Dupuis expressed appreciation and kudos to the hard-working Office of Risk Management team.

7.2 Risk Management Policy* (M)

J. Dupuis presented the updated Risk Management Policy, highlighting its alignment with current practices through clarified responsibilities, enhanced definitions, and the integration of the compliance policy to streamline governance processes. Feedback from consultations was instrumental in refining the changes, and B. MacIsaac commended the consolidation of three documents into one as a significant step toward greater efficiency.

Upon a motion duly made by L. Money and seconded by L. Elliott, the Audit & Finance Committee hereby recommends the Risk Management Policy, as presented, for approval by the Board of Governors.

7.3 MCU Efficiency and Accountability Fund Proposal* (M)

B. MacIsaac noted that the University has secured a one-time government grant for efficiency reviews and selected KPMG after a Request for Proposal (RFP) process. He advised that approval is being sought from the Committee to engage KPMG for up to $350,000, as required by policy for using external auditors for non-audited services. Additionally, he noted that $150,000 of the $500,000 grant is allocated for a land monetization review. KPMG has signed an attestation confirming its independence from the auditors, and A&F approval is now sought.

Upon a motion duly made by S. Zagar and seconded by K. Slade, the Audit and Finance Committee approves the engagement of KPMG LLP to provide non-audit services to Ontario Tech estimated at Three Hundred and Fifty Thousand Dollars ($350,000) in respect of an efficiency and accountability review.

7.4 Auditor General Value for Money Audit Status Update* (U)

B. MacIsaac provided an update on the Auditor General's upcoming 2 year review report, noting that Ontario Tech has completed 48% of the 2022 audit

recommendations. Key actions outstanding include presenting the costing model at the program level scheduled for April 2025 and addressing data collection through an Ontario Tech-specific exit survey, now set for summer 2025 after the external consortium confirmed it could not do this with the current system.

In response to a question, B. MacIsaac confirmed that Ontario Tech is held to the same standards as other universities audited, with similar recommendations. He explained that the Auditor General requested more detail on both short- and long-term presidential succession, as well as internal succession and that the University emphasized its open, international searches while also offering leadership training for internal candidates. He expressed confidence that, barring any major issues, all recommendations will be addressed within the 5 year timeline set by the AGO.

8. Consent Agenda

8.1. Minutes of Public Session of A&F Meeting of June 13, 2024* (M)
8.2. Annual Statement of Investment Policies* (I)
8.3. Internal Audit Update* (I)
8.4. Review of Audit and Finance Terms of Reference* (I)

The Chair confirmed that the contents of the Consent Agenda were approved and received under Agenda Item #2.

9. Adjournment

There being no other business, upon a motion duly made, by L. Elliott, the public A & F meeting adjourned at 3:35 p.m.

Kirstie Ayotte, Assistant University Secretary

BOARD OF GOVERNORS
Governance, Nominations and Human Resources Committee (GNHR)

Minutes of the Public Session of the Meeting of October 24, 2024
2:02 p.m. to 2:17 p.m. Videoconference

Attendees: Gaurav Singh (Chair), Frank Carnevale (Vice-Chair), Laura Elliott, Mitch Frazer, Steven Murphy, Kim Slade, Dwight Thompson,

Regrets: Neeraj Grotra

Staff: Kirstie Ayotte (Secretary), Jamie Bruno, Nicola Crow, Krista Hester

Guests: Chelsea Bauer

1. Call to Order

The Chair called the meeting to order at 2:02 p.m. and read aloud the land acknowledgement.

2. Agenda

Upon a motion duly made by F. Carnevale and seconded by L. Elliott, the October 24,2024 GNHR Agenda, including the contents of the Consent Agenda, were approved as presented.

3. Conflict of Interest Declaration

There was none.

4. Chair's Remarks

The Chair welcomed attendees to the first GNHR Committee meeting of the year and conducted a roundtable of introductions.

5. President's Remarks

The President welcomed new Board members to the Committee and thanked the Chair for assuming a leadership role this year. He highlighted Ontario Tech's strong start to the academic year, including a successful orientation and high interest at the recent Ontario Universities' Fair, where booth attendance was high, reflecting strong domestic interest. He also noted the upcoming fall Open House across both campuses, which offers prospective students a firsthand experience

of Ontario Tech's unique culture. He concluded by commending the varsity teams' successes and the excitement of the fall sports season.

6. Governance

6.1 Review of GNHR Terms of Reference* (D)

N. Crow presented the GNHR Terms of Reference, noting that an annual review is a standard governance practice that helps Board committees align with their roles and responsibilities in supporting the Board of Governors. She mentioned that the last revision, in June 2021, involved editorial updates and the addition of a Vice-Chair role. She highlighted that the Committee's focus includes governance, nominations, and human resources, with each area scheduled for discussion throughout the year, and invited members to suggest edits or ask questions as part of this review process.

There were no questions and the Committee had no suggested amendments to the Terms of Reference.

7. Consent Agenda (M)

7.1 Minutes of the Public Session of the Meeting of May 30, 2024 (M)
7.2 2024-2025 REVISED Board of Governors Dates – 2024/2025; 2025/2026 (I)

The Chair confirmed that the contents of the Consent Agenda were approved and received under Agenda Item #2.

8. Adjournment

There being no other business, upon a motion duly made by F. Carnevale, the public session adjourned at 2:17 p.m.

Kirstie Ayotte, Assistant University Secretary

BOARD OF GOVERNORS

Strategy & Planning Committee (S&P)

Minutes of the Public Session of the Meeting of November 14, 2024
2:00 p.m. to 3:14 p.m. Videoconference

Members: Eric Agius (Chair), Laura Elliott, Matthew Mackenzie, Peter Marchut, Michael Rencheck, Hannah Scott, Emily Whetung-MacInnes

Regrets: Ahmad Barari, Mitch Frazer, Lisa McBride, Steven Murphy

Staff: Kirstie Ayotte, James Barnett, Nicola Crow, Krista Hester, Les Jacobs, Lori Livingston, Jennifer MacInnis, Brad MacIsaac, Sarah Thrush

1. Call to Order

The Chair called the public session of the S&P meeting to order at 2:02 p.m. and read aloud the land acknowledgment.

2. Agenda

Upon a motion duly made by M. Mackenzie and seconded by M. Rencheck, the Agenda including the Consent Agenda items were approved as presented.

3. Conflict of Interest Declaration

No conflicts were declared.

4. Chair's Remarks

The Chair welcomed attendees to the first meeting of the academic year, expressing gratitude to the outgoing Chair, Lynn Zucker, for her leadership. He noted the Committee's expansive role and key agenda items, including strategic enrollment and planning. Additionally, he highlighted the successful launch of the 'Tech with a Conscience' fundraising campaign, which aims to raise $250 million to support students and the University's vision.

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5. Review of Strategy and Planning Terms of Reference* (D)

N. Crow presented the S&P Terms of Reference for annual review, noting their last comprehensive update in 2021, which introduced the Vice-Chair role. She emphasized that the review helps clarify the Committee's responsibilities and underscores its broad mandate.

In response to a question raised, N. Crow confirmed that the Chair and Vice-Chair position appointment process is detailed within By-law No. 1.

6. Strategy

6.1. Strategic Discussion: Strategic Enrollment Management (SEM) Plan (D)

L. Livingston highlighted the challenges and significance of strategic enrollment planning, noting Ontario Tech's growing reliance on enrollment revenue amid unpredictable externally imposed factors such as provincially legislated tuition freezes and recently imposed federal caps on international student study permits. To address these issues, the University launched efforts to expand enrollments through differentiated growth, a central priority of the 2023-2028 Integrated Academic-Research Plan, supported by interconnected strategies, including the Strategic Enrollment Management Plan.

S. Thrush explained that the Strategic Enrollment Management (SEM) plan is a dynamic process, aligning Ontario Tech’s academic and research goals with program offerings, student mix, and outcomes like degree completion and career readiness. SEM covers the entire student life cycle, from recruitment to retention, and involves a community-wide effort to enhance the student experience. She highlighted the importance of graduation and alumni mentorship, as well as enrollment plans that support differentiated growth strategies, and balancing undergraduate and graduate programs. She also discussed expanding learning options, such as micro-credentials and pilot programs, and initiatives like the Early Alert System and Learning Engagement Academic Program (LEAP) program to support student success. She noted that enrollment planning focuses on projections and budget impact, factoring in scenarios related to domestic and international students, while aiming for flexible, long-term growth.

She continued by explaining that the University uses conservative projections to prevent financial over-extension and that the reduced growth outlook stems from difficulties in filling the gap left by limited international student intake. Efforts are underway to increase the University’s market share of domestic students through innovative program options and new programs. She noted that government funding for domestic growth remains limited and domestic tuition alone is not financially sustainable. B. MacIsaac added that scenarios are carefully monitored, and some fund allocations may be delayed until actual student enrollments are realized.

In response to a question regarding changes to programs or courses that are no longer yielding the number of students required, S. Thrush explained that the University gathers input from various sources, such as recruitment events, student surveys and feedback from students who leave programs to assess what students want and identify potential mismatches. She noted when an enrollment issue arises, or a program is not meeting targets, discussions are held with the Deans and faculty members to understand challenges, including factors like prerequisites or course difficulties. The data received from these discussions helps inform decisions to modify or discontinue programs. L. Livingston noted that the ultimate decision to add or discontinue academic programs falls within the purview of Academic Council.

S. Thrush acknowledged concerns raised that highlighted the challenges for the downtown campus, including travel burdens and student disconnection. She suggested that ideas from Student Life and other areas help improve engagement and bridge the geographical divide.

7. Planning

7.1 Enrollment Update* (U)

L. Livingston invited S. Thrush to present the Enrollment Update based on Day 10 numbers, highlighting that these preliminary numbers are accurate but subject to change as they are earlier than the fall official count and students drop out during the early weeks of the fall term.

S. Thrush provided an update on undergraduate and graduate admissions, highlighting positive outcomes despite challenges. Undergraduate applications rose by 8.6% year-over-year, with strong domestic interest, though international student registrations declined due to federal policy changes and delays. This resulted in a 2.9% overall increase in fall registrations, though the target was not fully met. Graduate registrations increased, but the University fell short of intake targets for some programs, particularly research and course-based masters, due to impacts from Immigration, Refugees and Citizenship Canada (IRCC) policies. Enrollment projections, including conservative assumptions for international students, were integrated into the budget, with retention tracked using a three-year average. She also noted that Ontario Tech rated No. 1 in the Mitacs program.

7.2 Integrated Academic-Research Plan Timelines and Milestones* (U)

S. Thrush outlined the University's progress towards its goals, emphasizing the Committee's role in evaluating this progress. She highlighted the importance of the Integrated Academic-Research Plan (IARP), which focuses on tech with a conscience, reimagining the campus, and partnerships. She detailed the planning process, which includes multiple strategic documents, such as the IARP, the Strategic Research Plan, and the government's strategic mandate agreement (SMA3) which is in its final annual

evaluation phase. She explained that departmental strategies drive implementation, guide budgeting and resource allocation. S. Thrush further advised the Committee that they will review a summarized qualitative report on strategy outcomes, including successes, challenges, and funding implications, as well as a quantitative dashboard linked to the IARP and SMA3 performance at year-end.

7.3 Board Retreat Planning

N. Crow updated the committee on the upcoming board retreat planned for April 2025, focusing on the University's AI strategic priority. The retreat will address AI's potential, its governance and ethical considerations, helping the Board understand its role in AI governance. She highlighted that the format will promote strategic discussion to support informed decision-making and governance responsibilities.

Further updates and feedback will be provided as planning progresses.

8. Significant Project and Contract Oversight

The Chair noted that there were no items for discussion.

9. Consent Agenda* (M)

9.1 Minutes of Public Session of Meeting June 20, 2024* (M)

The Chair confirmed that the contents of the Consent Agenda were approved and received under Agenda Item #2.

10. Adjournment

There being no other business, and upon a motion duly made by M. Rencheck, the public S&P meeting adjourned at 3:14 p.m.

Kirstie Ayotte, Assistant University Secretary

BOARD REPORT

SESSION:		**ACTION REQUESTED:**	
Public	☒	**Decision**	☐
Non-Public	☐	**Discussion/Direction**	☐
		Information	☒

TO: **Board of Governors**

DATE: **February 20, 2025**

FROM: **Governance, Nominations and Human Resources Committee (GNHR)**

PRESENTED BY: **Nicola Crow, University Secretary**

SUBJECT: **Board of Governors 2025 Election Process and Key Dates**

COMMITTEE MANDATE:

- Section ii) of the GNHR's Terms of Reference provides that GNHR is responsible for "overseeing the process of recruiting, selecting and electing new governors and recommending their appointment to the Board, in accordance with the University's Act and By-laws"

This Report is provided as information to the Board of Governors following its presentation for approval at the GNHR meeting on January 30, 2025.

KEY CONSIDERATIONS:

- A timeline for the 2025 election was presented to GNHR for approval on January 30, 2025
- A list of elected position(s) to be filled by the 2025 election was presented for information
- The Board of Governors election will run concurrently with the election for Academic Council and its Committees

BACKGROUND/CONTEXT:

- Further to GNHR's approval of the 2025 election process at its January 30, 2025 meeting, the 2025 Board of Governors Election will take place from February 10 to March 28, 2025 in accordance with the Election Timeline provided
- As of August 31, 2025 the following positions will be vacant; it is expected that they will be filled for a September 1, 2025 appointment via the election:

- 1 student Governor
  - Current Governor, Peter Marchut, is eligible for re-election should he choose to run again

2025 ELECTION TIMELINE/PROCESS:

- February 10, 2025: Nominations Open
- March 7, 2025: Nominations Close
- March 10-12, 2025: Review Nomination Eligibility
- March 14, 2025: Mandatory Student Candidate Information Meetings (if required)
- March 17-26, 2025: Campaign Period (if required)
- March 26-28, 2025: Online voting (if required)
- May 29, 2025: Results presented to GNHR for recommendation to the Board of Governors
  - Note that if any seat is acclaimed, the result(s) may be presented to GNHR on March 20, 2025 instead
- June 26, 2025: Board of Governors approval of GNHR recommendation
  - Note that this will take place on April 17, 2025 if all seats acclaimed

NEXT STEPS:

- Further to GNHR's approval of the 2025 election process, the University Secretariat has commenced the election process.

BOARD REPORT

SESSION:		**ACTION REQUESTED:**	
Public	☒	**Decision**	☐
Non-Public	☐	**Discussion/Direction**	☐
		Information	☒

TO: **Board of Governors**

DATE: **February 20, 2025**

FROM: **Governance, Nominations and Human Resources Committee (GNHR)**

PRESENTED BY: **Nicola Crow, University Secretary**

SUBJECT: **Revised 2024-2025 Board and Committee Schedule**

COMMITTEE MANDATE:

- In accordance with the GNHR Terms of Reference the Governance, Nominations and Human Resources Committee (GNHR) "is responsible for providing advice to the Board on its governance structure and processes".

This Report is provided as information to the Board of Governors following its inclusion in the Public Consent Agenda at the GNHR meeting on January 30, 2025.

KEY CONSIDERATIONS:

- There is 1 further revision to the 2024-2025 Board and Committee Schedule
- The revision relates to another change to the A&F Committee's June meeting date

BACKGROUND/CONTEXT & RATIONALE:

- The Board and Committee schedule for 2024-2025 was presented to the GNHR Committee on February 1, 2024 and the Board of Governors on February 22, 2024, respectively.

Audit and Finance Committee Meeting Dates:

- Due to time pressures related to the audited financial statements, the schedule was revised and further presented to the GNHR Committee on May 30, 2024 and the Board of Governors on June 27, 2024.
- A conflict with the June 2025 Audit and Finance Committee (A&F) meeting date was identified to the Interim Secretariat and was changed from June 18, 2025 to June 17, 2025. GNHR was informed of this change at its October 24, 2024 meeting.
- Subsequently another conflict was identified with the June 17, 2025 A&F Meeting date and now the date has changed from June 17, 2025 to June 19, 2025

NEXT STEPS:

- The University Secretary has updated the 2024-2025 Board and Committee Schedule and revised meeting invites sent to the A&F members.

SUPPORTING REFERENCE MATERIALS:

- Revised Board Schedule 2024-2025

BOARD SCHEDULE 2024-2025

COMMITTEE	2024-2025	TIME
Audit & Finance Committee	November 21, 2024	2:00 - 5:00 p.m.
Audit & Finance Committee	February 13, 2025	2:00 - 5:00 p.m.
Audit & Finance Committee	April 10, 2025	2:00 - 5:00 p.m.
Audit & Finance Committee	June 19, 2025	2:00 - 5:00 p.m.
Board of Governors Retreat	April 3, 2025	9:00 a.m. - 12:00 noon
Board of Governors - Orientation	September 26, 2024	9:00 a.m. - 12:00 p.m.
Board of Governors	September 26, 2024	12:00 - 2:00 p.m.
Board of Governors	November 28, 2024	12:00 - 5:00 p.m.
Board of Governors	February 20, 2025	12:00 - 5:00 p.m.
Board of Governors	April 17, 2025	12:00 - 5:00 p.m.
Board of Governors - AGM	June 26, 2025	9:00 a.m. - 3:00 p.m.
Governance, Nominations & Human Resources Committee	October 24, 2024	2:00 - 5:00 p.m.
Governance, Nominations & Human Resources Committee	January 30, 2025	2:00 - 5:00 p.m.
Governance, Nominations & Human Resources Committee	March 20, 2025	2:00 - 5:00 p.m.
Governance, Nominations & Human Resources Committee	May 29, 2025	2:00 - 5:00 p.m.
Strategy & Planning Committee	November 14, 2024	2:00 - 5:00 p.m.
Strategy & Planning Committee	February 6, 2025	2:00 - 5:00 p.m.
Strategy & Planning Committee	April 3, 2025	2:00 - 5:00 p.m.
Strategy & Planning Committee	June 12, 2025	2:00 - 5:00 p.m.
OTHER DATES		
Fall Convocation	October 17, 2024	To be confirmed
Convocation	June 4 - 6, 2025	To be confirmed

DRAFT BOARD SCHEDULE 2025-2026

COMMITTEE	2025-2026	TIME
Audit & Finance Committee	November 20, 2025	2:00 - 5:00 p.m.
Audit & Finance Committee	February 12, 2026	2:00 - 5:00 p.m.
Audit & Finance Committee	April 9, 2026	2:00 - 5:00 p.m.
Audit & Finance Committee	June 11, 2026	2:00 - 5:00 p.m.
Board of Governors Retreat	April 2, 2026	9:00 a.m. - 12:00 noon
Board of Govenors Orientation	October 1, 2026	
Board of Governors	October 1, 2026	12:00 - 2:00 p.m.
Board of Governors	November 27, 2025	12:00 - 5:00 p.m.
Board of Governors	February 19, 2026	12:00 - 5:00 p.m.
Board of Governors	April 16, 2026	12:00 - 5:00 p.m.
Board of Governors - AGM	June 25, 2026	9:00 a.m. - 3:00 p.m.
Governance, Nominations & Human Resources Committee	October 23, 2025	2:00 - 5:00 p.m.
Governance, Nominations & Human Resources Committee	January 29, 2026	2:00 - 5:00 p.m.
Governance, Nominations & Human Resources Committee	March 19, 2026	2:00 - 5:00 p.m.
Governance, Nominations & Human Resources Committee	May 28, 2026	2:00 - 5:00 p.m.
Strategy & Planning Committee	November 13, 2025	2:00 - 5:00 p.m.
Strategy & Planning Committee	February 5, 2026	2:00 - 5:00 p.m.
Strategy & Planning Committee	April 2, 2026	2:00 - 5:00 p.m.
Strategy & Planning Committee	June 18, 2026	2:00 - 5:00 p.m.
OTHER DATES		
Fall Convocation	October 15, 2026	To be confirmed
Convocation	June 3 - 5, 2026	To be confirmed

BOARD REPORT

SESSION:		**ACTION REQUESTED:**	
Public	☒	**Decision**	☐
Non-Public	☐	**Discussion/Direction**	☐
		Information	☒

TO: **Board of Governors**

DATE: **February 20, 2025**

FROM: **Strategy & Planning Committee (S&P)**

PRESENTED BY: **Brad MacIsaac, Vice-President, Administration**

SUBJECT: **Campus Master Plan (CMP) Update**

COMMITTEE MANDATE:
The Strategy and Planning Committee (S&P) is responsible for overseeing the strategic planning for all aspects of the University and assessment of the plans in the context of the University's Vision, Mission and Values.

This Report is provided as information to the Board of Governors following its presentation at the S&P meeting on February 6, 2025 and to assist in providing a refresher to the Board on the CMP as Ontario Tech and Durham College conduct a review of the 2015 Joint Campus Master Plan.

CONTEXT:
Ontario Tech is currently working with DC to update the Joint CMP 2015. We have engaged Urban Land Advisors, who provide strategic land-use planning advice to help the institutions achieve their development goals and support their core mission in ways that also builds community - leveraging public land for public good. This team worked with the University on the Real Estate Strategy and the selection of the new Residence plan. The design work has been subcontracted to Brook McIlroy which is a planning practice fusing the fields of architecture, landscape and Indigenous place-making to create a holistic contemporary practice that advances the potential of Canada's lands, peoples and communities. The CMP Update will be prepared in three phases:

Phase 1: Background, Analysis, and Framework Development: November 2024 – April 2025.
Phase 1 will set the foundation for the CMP Update and will develop a thorough understanding of Durham College and Ontario Tech University's campus context through extensive background review, analysis, and through meetings with the College and University. Team members will prepare campus opportunities and constraints and a draft design framework which will inform updates to the campus vision and guiding principles.

Phase 1 Activities and Milestones:

- Project kick-off meeting with Ontario Tech University and Durham College
- Site visit
- Background and policy review
- Summary of campus changes and updates since the 2015 CMP
- Campus opportunities and constraints
- Draft campus design framework and strategies

Phase 2: Vision, Master Plan Development, and Implementation Plan: April 2025 – August 2025.
The primary objectives of Phase 2 are to refine the campus framework, design strategies, vision and will be informed by the outcomes from Phase 1 and meetings. Phase 2 will include a campus implementation and phasing plan, design strategies, illustrative diagrams, and other relevant material. This CMP Update will incorporate the work currently underway on the non-core lands to ensure that the updated CMP addresses both campuses.

Phase 2 Activities and Milestones:

- Development and refinement of campus design framework and strategies
- Development and refinement of campus and non-core land plans
- Development and refinement of campus phasing and strategic implementation plan
- Assumes up to four renderings and visualizations (2D base mapping and 3D model preparation)

Phase 3: CMP Finalization: September 2025 – November 2025.
This time will be used for final consultation with the campus community and a final report for both institutions' Board of Governors.

BACKGROUND:
Ontario Tech and DC share a campus in north Oshawa as well as many campus spaces and facilities. In 2013 MMM Group Limited, in association with Greenberg Consultants Inc. and Educational Consulting Services, was retained to undertake the development of a CMP. The CMP intended to proactively address land use and infrastructure development to meet evolving academic and student needs. Most important, the CMP was to be realistic and implementable. It describes the steps that will translate the joint vision into a vibrant institutional area that appropriately integrates with Durham Region, City of Oshawa and Town of Whitby.

To address the future expansion and needs of both institutions, the University and College completed a joint CMP that includes a land use plan for the shared Oshawa campus.

The CMP is a visionary, forward thinking document that provides the framework, strategy and collection of tools needed to guide campus development in keeping with space requirements established to meet the projected enrolment growth. The CMP is a coordinated development solution that will guide the character, scale, facilities and layout of the shared Oshawa campus to address the academic, research, student life, athletic and community partnership needs as both institutions evolve and grow. The Campus Master Plan:

- Creates a mixed-use hub for activity that encourages appropriate integration of the two academic institutions with the surrounding community;
- Sets the framework for transition to a compact, well-connected and walkable campus that will accommodate future growth and expansion and provide opportunities for greater integration with the surrounding community, local industries and strategic partners;
- Leverages the critical mass generated by both institutions in order to support ongoing development of north Oshawa as a complete community with enhanced transit opportunities, natural heritage linkages and the infrastructure needed to accommodate sustainable development;

- Sets the vision and associated guidelines for the future campus and provide more detailed, area-specific guidelines as established through a combination of built form, architecture, land uses, landscaping, open spaces, pedestrian connections and movement patterns; and
- Provides implementation and monitoring guidelines that include the steps needed to translate the joint vision into a vibrant institutional precinct that addresses the future academic, research, student life, athletic and community partnership needs;
- Incorporates sustainability in terms of building design but also walkability, active transportation and respect for the natural environment and the rich cultural heritage; and
- Utilizes efficient and innovative use of assets and resources in order to ensure a business case that can support implementation.

CMP VISION & PRINCIPLES

In addition to sharing a campus Ontario Tech and DC share a commitment to provide students with innovative and rewarding post-secondary education.

The CMP Vision and principles were the foundation of the CMP. The CMP Vision was established during Phase 1 of the 2015 planning cycle and outlines the future aspirations for the campus to 2030 and beyond. The CMP Vision Statement is:

The joint Campus Master Plan for Durham College and the University of Ontario Institute of Technology addresses land use and infrastructure development with a realistic, solutions-oriented implementation plan. The Master Plan acknowledges space needs across all institutional categories and the desire for a vibrant, integrated and sustainable campus community. A compelling Master Plan concept to promote a compact, walkable, mixed-use and green campus that offers opportunity for appropriate collaboration with the community, business partners, and all levels of government.

The CMP includes guidelines and recommendations that are aligned with and will implement the Vision and ensure that the campus is a vibrant space for faculty, students and the community, into the future. The Vision is further supported by seventeen (17) Master Plan principles. The principles were established through consultation with the CMP Core Team, Senior Management Teams, Board of Governors, students, faculty, staff and the community. The Master Plan principles that were established are:

1	Student Focused Institutions	The Master Plan will address the needs of students and enhance the student's experience of the campus environment as an integral part of their life while enrolled in the College and/or the University.
2	Research, Experiential Learning and Scholarship	The Master Plan will take full account of the distinctive infrastructure needs to support research, experiential learning and scholarship and the application thereof.
3	Contemporary Planning	Campus design, built form, student services, pedestrian connectivity and parking cannot continue to be planned and developed as they are currently. A contemporary approach to campus planning and design that shifts the current paradigm is required. The paradigm shift will enhance the existing campus and develop the future campus spaces in a way that encourages walkability, the creation of vibrate streetscapes, establishes strong connections, and responds to the needs of students and faculty.
4	Vision based in Practicality	The Master Plan will create an implementable and practical vision for the campuses. Phasing will address the immediate facility needs while being flexible to respond to the evolving nature of the academic environment and funding opportunities.
5	Walkability	The Master Plan will prioritize pedestrians and create strong links both through

		and surrounding the campus. Especially important are the links across Simcoe Street North and Conlin Road for future campus expansion into the Windfields Farm north of Conlin Road and to enhance integration between the campus and the broader community.
6	Transportation and Transit	Pedestrians and cyclists as well as public transit will be given priority in terms of long-term planning and facilities. The provision of public transit to and from campus will improve over time, and will, in turn, reduce reliance on personal vehicles. The Master Plan will be positioned to leverage future transit investment.
7	Green Connections	The surrounding natural landscape should be considered as key to the future Master Plan. Buildings and pedestrian walkways will address and interact with natural spaces and provide walking and cycling connections to the broader community.
8	Interactions and Long-Term Connections	The Master Plan will promote interaction and integration with the surrounding community and land uses. New campus facilities should include spaces that can be used by a broad range of people within and outside of the academic community.
9	Identity	The Master Plan will strengthen the physical relationship between Durham College and UOIT whilst providing a means for both institutions to reinforce their own identities. The shared Oshawa campus will be defined as a place that is unique and distinguishable from the surrounding areas, but that is integrated with and inviting to the broader community.
10	Use Land Efficiently	The Master Plan development concept will be structured to meet the future academic, faculty, athletic and student space needs of the institutions while providing the tools and framework to be adaptable to leverage funding opportunities as well as development opportunities with the private sector.
11	Partnerships	The Master Plan will provide guidance to the institutions on how they should position themselves, in terms of organization and design to take advantage of partnership opportunities (government and non-government).
12	Enrolment Growth and Diverse Student Needs	The Master Plan will accommodate the future academic space needs for both the University of Ontario Institute of Technology and Durham College. The Master Plan will acknowledge the demographic profile and needs of the student population as being unique from other colleges and universities and will address residence, housing, activity, social and cultural needs.
13	Sustainability	The Master Plan will incorporate sustainability principles that are measurable, holistic and applicable at different scales (building to neighbourhood). Where possible, sustainability features will form key areas of interest within the campus, such as the existing stormwater ponds and green roofs.
14	Innovation and Technology	The Master Plan will accommodate spaces for innovative start-ups, technology and manufacturing. The innovation and technology park space will provide spaces that can be used by both institutions and that can be integrated with academic spaces.
15	Decision Making Processes	The Master Plan will articulate and directly inform a decision-making process with respect to physical form, space utilization and partnership with moving forward for both institutions, ensuring the continued success and growth of both.
16	Cultural Heritage and Diversity	The campus has a rich history and a bright future as well as a diverse student population which should be reflected in the Master Plan. The legacy of E.P Taylor, Windfields Farm and the horse racing history associated with the lands north of Conlin Road, as well as the Aboriginal heritage, should be expressed in the Master Plan in an innovative and relevant way.

17	A Plan that works for the Short, Medium and Long term	The Master Plan will be adaptable over the short, medium and long term, as opportunities arise.

SPACE NEEDS ANALYSIS

In the 2015 plan, a high-level space needs analysis was completed for the shared Oshawa campus, Ontario Tech's downtown Oshawa location and DC's Whitby campus to determine the space needs until 2030 for both institutions. To fulfil their strategic objectives and meet commitments ranging from academic and social space to opportunities for community and business partnerships, additional buildings and infrastructure will be required to keep pace with projected student enrolment. The following recommendations were provided:

- Future student enrolment at the shared Oshawa campus was projected to be nearly 28,000 FTEs by the year 2030; 14,058 (4,428 downtown) for Ontario Tech and 13,251 (2,624 Whitby) for DC.
- The CMP was built to accommodate the space to meet the projected total shortfall of 2.4 million gsf and provide residences at a rate of 0.1 bed to every FTE.

As we look to refresh the 2015 CMP Ontario Tech continues to grow, expand and mature into the promise its founders envisioned when it was established in 2002. The 2023-2028 Integrated Academic-Research Plan (IARP) charts our course towards our goal of being a preeminent institution. It works in tandem with the existing Strategic Research Plan 2020-2025 and it drives our year-over-year budgeting and capital planning processes. As the University moves forward with the implementation of these plans it is anticipated that the bold transformation set out will result in significant differentiated enrolment growth to 18,000 students by 2030, to meet the needs of the growing Greater Toronto Area university-aged population and international demand for STEM and professional programs offered by Ontario Tech. We will see corresponding expansion in our research and support services.

There are several different strategic enrolment plans that could get us to 18,000 students. Each of these could have multiple space scenarios depending on the type of program (i.e. engineering verse business), course offerings (i.e. lab based verses executive style on weekends), the type of researcher hired and even the location of the building as one may connect well with existing utilities while another may consume a large portion of the building if it needs to service the full future location. Using simple averages to start the high-level planning process, if we had 15,000 traditional students and 3,000 continuing learning students who could fit more into online, nights and weekends, we would need 300,000 gross square feet (gsf) to maintain our current ratios of space.

Using 2023 construction costs for a general academic building (i.e. classrooms, offices, light labs) a 100,000 gsf building would be above $70 million. Unless another large-scale government infrastructure fund was released and/or major increases to our donations it is not prudent to tie infrastructure phases just to enrolment. We will use that as a guide but realize the buildings will likely come later.

In February 2021 management opened consultations on a Re-imagining Space Paper: **The proposed grand challenge discussed was: how can we work together to reduce our total office and traditional lecture theatre space to allow us to reallocate more space for dynamic learning and research activities, whilst at the same time reduce our reliance on leased spaces?**

Ontario Tech currently has about 75% of the Council of Ontario Universities (COU) guideline for space so we are already running very efficiently. We are going to look at how we can maximize this; but as we grow, we know we will need to invest more in space and technology.

SUMMARY:

The IARP is the anchoring planning document that guides the initiatives in place or underway at the University to drive us towards being a preeminent global institution. As we aspire to grow to 18,000

students there is a corresponding need to outline the enabling plans. The Campus Master Plan is a visionary, forward thinking document that provides the framework, strategy and collection of tools needed to guide campus development in keeping with space requirements.

To deliver on the strategic academic objectives, Ontario Tech is facing increased pressures to provide dynamic on-campus space. The University also needs to balance reductions in public funding and concerns about overall affordability with the need for high-quality facilities. For this reason, we must be laser focused on what the most efficient and effective use of our limited resources might be.

Using current metrics, the University aims to add at least 300,000 gsf of core teaching, research, study space to support our growth plans. This varies depending on the type of program, the type of researcher hired and even the location of the building. In 2023 dollars this equates to over $210 million dollars in construction. In addition, with this core space we will need ancillary services such as student housing. For that reason, we know we will need to implement a phased in approach that corresponds with our offerings.

We will need to examine how we can do things differently now to accommodate growth in the space we have while looking to the future offerings. It is with our collective efforts that we will succeed and build on the solid foundation that we have already created and push Ontario Tech towards a bright, sustainable future.