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SEPTEMBER 2020



DISCUSSION PAPER

# Polytechnic University Areas of Teaching and Research Specialization

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English

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French

Kĭspin ki nitawih̄tĭn ē nĭhĭyawih̄k ōma ācimōwin, tipwāsĭnān.

Cree

TŁĪCHQ̄ YATI K'ĒĒ. DI WEGODI NEWQ̄ DÈ, GOTS'O GONEDE.

Tłıchq̄

ᖅERIHTE'ÍS DĒNE SÚLINÉ YATI T'A HUTS'ELKĒR  
XA BEYÁYATI THEᖅA ᖅAT'E, NUWE TS'ĒN YÓLTI.

Chipewyan

EDI GONDI DEHGÁH GOT'ĪE ZHATĪE K'ĒĒ EDATĒ'ĒH  
ENAHDDHĒ NIDE NAXETS'Ē ED AHLĪ

South Slavey

K'ÁHSHÓ GOT'ĪNE XƏDÓ K'É HEDERI  
ᖅEDĪHTL'É YERINIWE NÍDÉ DÚLE.

North Slavey

Jii gwandak izhii gin̄jik vat'atr'ij̄ahch'uu zhit  
yinothan j̄i', diits'at ginohkh̄ii.

Gwich'in

UVANITTUAQ ILITCHURISUKUPKU INUVIALUKTUN, QUQUAQLUTA.

Inuvialuktun

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Inuktitut

Hapkua titiqqat pijumagupkit Inuinnaqtun, uvaptinnut hivajarlutit.

Inuinnaqtun

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# 1. INTRODUCTION

This discussion paper outlines proposed initial areas of teaching and research specialization for the polytechnic university. The four proposed areas are based on a set of measures that guide their development. Specializations at any post-secondary education (PSE) institution naturally evolve, and what is presented here is a proposed starting point of areas of teaching and research specialization for the polytechnic university. Over time, the polytechnic university will refine and expand these areas of specialization.

Aurora College is currently focused on making foundational changes to ensure academic excellence. Part of that work will include development of a formal Academic Plan for Aurora College to support broader shifts in the strategies, processes and culture underlying academic excellence. While areas of specialization are a basis for planning for the new polytechnic university, they will increasingly become apparent in many of the improvements to Aurora College made through the transformation process. It is important to also note that, while areas of specialization will guide programming decisions and shape their design and delivery, they do not explicitly dictate what programs will be offered. Programming decisions require further engagement and analysis.

As highlighted in the Government Response to the Findings and Recommendations of the Aurora College Foundational Review (Government Response), the transformation of Aurora College into a polytechnic university represents a significant organizational change that will create a new range of opportunities for prospective students and the territory as a whole. Although the term “teaching” is used throughout this paper, the transformation is really about a renewed focus on teaching and learning. Understanding and responding to the learning needs of students will remain the core business of the polytechnic university, and the growth of research programs at the institution will enhance the learning experience. Campuses and community learning centres will continue to meet students where they are in their education journey, including academic upgrading and access programs.

In the past, striving to be “everything to everybody” has limited Aurora College’s potential. The polytechnic university must focus its planning and resources around clearly understood areas of specialization, or it will struggle to increase access to quality programming for students and support cutting-edge applied research programs. Establishing areas of specialization will help the polytechnic university be effective, efficient and sustainable.

In presenting the proposed initial areas of specialization for the polytechnic university, this paper includes examples of teaching, careers and research. The examples establish a common understanding of what could be achieved under the proposed areas of specialization and provide a basis for wide-ranging engagements that will shape programming decisions. As part of the transformation, Aurora College is developing a clear set of policies and processes to guide programming decisions.

The four goals of the discussion paper are to:

1. Explain how the proposed initial areas of specialization have been identified;
2. Propose a focused set of robust and clearly defined areas of specialization;
3. Help key partners and stakeholders understand the potential for growth within the proposed areas of specialization; and
4. Receive feedback from partners and key stakeholders on the proposed areas of specialization.

## **What are areas of specialization?**

Areas of specialization are at the core of a PSE institution's identity. They signal the institution's teaching and research focus to current and prospective students, educators, researchers, funders and partners.

Every post-secondary institution is unique. Areas of specialization help distinguish institutions, their contributions to knowledge, and their scope of learning opportunities. These may be explicitly stated in the vision and mission of an institution, or may be embedded in other strategic documents. They should always exist for the overall institution, but may also exist at other levels, including for different campuses.

It is normal for PSE institutions to regularly undergo a strategic planning process that reviews areas of specialization, and Aurora College is nearing completion of its own three-year strategic plan. However, as part of the broader transformation of Aurora College into a polytechnic university, the process of deciding on initial areas of specialization has particular importance and is being addressed directly in its own document that is expected to be released in fall 2020. Input received in response to this discussion paper will inform that document and the continued refinement of areas of specialization.

Changes to the organizational structure will be informed by the areas of specialization, but the two should not be confused. Areas of specialization are not silos; there is great potential for teaching and research programs that intersect one or more areas of specialization.

## **Why establish areas of specialization?**

Areas of specialization help guide decision-making and the allocation of resources within the institution to ensure it remains effective, efficient and sustainable. Areas of specialization guide programming decisions and shape the design and delivery of those programs. Having clearly understood areas of specialization also provides a frame for communicating successes within the institution.

Institutions that try to be everything to everybody do not excel in any particular area. This can result in a declining reputation and loss of confidence among prospective students, partners, stakeholders and funders.

Areas of specialization are continuously evolving. A successful PSE institution must regularly re-examine its focused investments in teaching and research to ensure it is responsive to opportunities and risks.

## Structure of the discussion paper

The overall structure of the discussion paper guides the reader through the development and benefits of the proposed initial areas of teaching and research specialization for the polytechnic university.

**Section 2** (Background) begins with a brief overview of Aurora College, the transformation process and how engagement to date informed this discussion paper and will continue to be a key element of the transformation.

**Section 3** (Guiding Principles) proposes principles to guide the selection of areas of specialization for the polytechnic university.

**Section 4** (Characteristics of Success) highlights characteristics of a successful PSE institution that will be priorities in the establishment of areas of specialization for the polytechnic university.

**Section 5** (Planning Areas of Specialization) provides information on the series of measures that have been used for the selection of initial proposed areas of specialization.

**Section 6** (Proposed Initial Areas of Specialization) details the proposed initial areas of specialization for the polytechnic university and provides a basis for further engagement.

**Section 7** (Student Pathways) reinforces that the polytechnic university will have a place for every resident who seeks an opportunity to further their skills, knowledge and abilities through PSE.

**Section 8** (Campus Areas of Specialization) explains how the initial proposed areas of specialization are for the polytechnic university as a whole; it is expected that eventually each campus will take a leadership role in the delivery of one or more areas of specialization.

**Section 9** (Next Steps) outlines the overall transformation process and how the development of initial areas of specialization will contribute to the process.

## 2. BACKGROUND

Aurora College is a public college in the Northwest Territories (NWT) and is mandated to deliver a broad spectrum of PSE programs to meet the needs of individuals, communities and the labour market. This includes the delivery of university-level programs, and granting of prescribed university degrees and applied bachelor degrees by university partners.

As the research division of Aurora College, the mandate of the Aurora Research Institute (ARI) is to improve the quality of life for NWT residents by applying scientific, technological and Indigenous knowledge to solve Northern problems and advance social and economic goals.

Aurora College programs and services are delivered through three campus locations and 21 community learning centres.

### **Aurora College Foundational Review**

Aurora College underwent a Foundational Review between 2017 and 2018 that concluded with the Government Response. The Government Response agreed with the recommendation that addressing current gaps in performance and addressing untapped opportunities requires the transformation of Aurora College into a polytechnic university. It proposed that such a transformation would lead to the delivery of world-class programming and transform the College into a destination university in the North and for the North. More Northerners will be able to develop skills needed for the Northern jobs of the future, and will be able to do so in the NWT.

Establishing a polytechnic university will have an added benefit of mitigating the economic loss that results from students leaving the NWT to study in other Canadian PSE institutions. As the new polytechnic university matures, students from other provinces and territories will be increasingly drawn to unique learning opportunities in the NWT, as it becomes recognized as “the place to be” for defined areas of specialization.

The path forward for Aurora College continues to be grounded in the commitments made in the Government Response, and the timelines and critical milestones in the transformation will be further articulated in an Implementation Plan that is anticipated for release in fall 2020.

### **What is a polytechnic university?**

Generally, a polytechnic university combines the practical approach of a college education and the depth of study usually associated with a university program. Polytechnic programs are skills-intensive and technology-based. Hands-on learning opportunities provide students with practical training for in-demand jobs. Program and curriculum decisions at polytechnic universities are also made in close collaboration with industry, ensuring graduates attain skills that are relevant to the current job market. It will also continue to offer adult basic education and access programs that help to ensure accessibility. The polytechnic university will have a place for every resident who seeks an opportunity to further their skills, knowledge and abilities through PSE.

The proposed initial areas of specialization for the polytechnic university build on the work done at Aurora College, but much change is needed to ensure long-term success in these areas.

The transformation of Aurora College into a polytechnic university represents a significant organizational change that will create a new range of opportunities for prospective students and the territory as whole.

Teaching at a polytechnic university is grounded in applied learning. Students start with a foundation in practical knowledge and then move beyond the theoretical to test what they have learned. The new institution would continue to focus mainly on applied and technical programs, as has been the case with Aurora College in the past, but with a wider range of credentials and qualifications available to students. At polytechnic institutions, students have the opportunity to bridge certificate and diploma credentials into bachelor's degrees, allowing for a great deal of flexibility within a defined range of academic programs. The teaching and research will be geared toward the evolving needs of regional, territorial, national and global employment markets.

Research at a polytechnic university is often described as “applied research”. This means using scientific processes and knowledge to achieve a practical or useful result. This approach guides decisions about how research is supported under each area of specialization.

## **Engagement to date**

The process of transforming Aurora College into a polytechnic university builds on four years of engagement with Indigenous governments, communities, post-secondary stakeholders, industry and other stakeholders. These engagements have been an essential part of the GNWT's wide-ranging work to strengthen the post-secondary education system and advance priorities such as establishing a polytechnic university.

Over the past four years, direct and indirect input supporting transformation has come from engagements during the development of the Aurora College Foundational Review Report, the Government Response and the NWT Post-Secondary Education Strategic Framework 2019-2029, as well as during the legislative process leading to completion of the *Post-Secondary Education Act*. Aurora College is near completion of a new three-year strategic plan that incorporates input from Aurora College employees, Indigenous and community leadership, and stakeholders.

These engagements have included town hall meetings in campus communities, in-person and telephone interviews, and online surveys. A speaker series on PSE hosted in conjunction with the development of the Post-Secondary Education Strategic Framework allowed stakeholders and members of the public the chance to share their vision and ideas for the future. The need for areas of specialization was identified in these prior engagements, along with how they will contribute to the success of the institution and its students.

Engagement is ongoing and will continue to shape various aspects of the polytechnic university. Sharing this discussion paper is another engagement opportunity and supports informed feedback on the initial areas of specialization for the polytechnic university.

### 3. GUIDING PRINCIPLES

Establishing areas of specialization signals the institution's teaching and research focus to current and prospective students, educators, researchers, funders and partners. In the context of transformational change, the process of deciding on one or more areas of specialization is particularly significant as it will, in turn, help to shape broader changes to the institution's strategy, operations and culture.

In determining a process of selecting proposed initial areas of specialization it is helpful to consider the principles guiding the selection of these areas. The following principles are universal, but identifying them in the context of the Aurora College transformation can establish a common understanding of what areas of specialization mean to the polytechnic university.

#### ***Effectiveness***

The polytechnic university should strive to be effective in meeting the needs of those it serves. Effectiveness is about achieving positive outcomes, but also about successfully meeting or exceeding expectations. This may be achieved by focusing on teaching and research excellence within defined areas of specialization.

#### ***Efficiency***

Increased focus on clearly defined areas of specialization should ensure the overall efficiency of the polytechnic university. This includes increased capacity to make operational decisions in line with the areas of specialization that maximize benefits from a limited supply of resources.

#### ***Sustainability***

Increased focus on clearly defined areas of specialization should ensure the sustainability of continuous improvements to the polytechnic university. This includes the capacity to assess and respond to the opportunities and risks facing PSE institutions.

#### ***Transparency***

Clearly defined areas of specialization provide a basis for monitoring and reporting on the institution's success. This increases transparency and results in relevant and timely information being made available to the public.

#### ***Accountability***

Clearly defined areas of specialization will draw support from funders and co-investment partners, and set expectations among students and staff. As such, they should become a means of evaluating the leadership at the polytechnic university by linking decision making with success in the defined areas of specialization.

#### ***Responsiveness***

Increased focus on clearly defined areas of specialization should increase the responsiveness of the polytechnic university to emerging opportunities and challenges. This includes the capacity to monitor and respond quickly to changing social and economic circumstances across the territory. Such responses could, in turn, include a strategic change to the areas of specialization.

## 4. CHARACTERISTICS OF SUCCESS

There are a wide range of characteristics of an effective, efficient and sustainable PSE institution. The following are common features of successful PSE institutions across Canada and internationally.

### ***Sense of identity***

Areas of specialization enrich the character of an institution by strengthening its identity. The polytechnic university's areas of specialization will apply across the institution including each of the three campuses and network of community learning centres.

### ***Continuous Quality Improvement***

The capacity for continuous quality improvement (CQI) is an essential feature of any modern PSE institution. It is a quality management philosophy that encourages all employees to continuously reflect on what can be done to improve efficiency, effectiveness and the ability to remain responsive and sustainable. It emphasizes incremental and continuous steps toward improvement rather than big changes.

Clear areas of specialization are essential to CQI. Areas of specialization inform decisions around the allocation of resources and help set targets for the development and growth of the institution; for instance, the relative importance of specific academic and research programs that align with the areas of specialization.

### ***Increased student enrolment***

As the new polytechnic university matures, more students from the NWT and from across Canada and the world will be increasingly drawn to the unique learning opportunities as it becomes recognized as "the place to be" for defined areas of specialization.

Being competitive in attracting students requires a strong sense of identity that will demonstrate the benefits of attending a polytechnic university in the NWT. Graduates of the polytechnic university, having gained a life-long association with the institution, will forever share in that identity and carry it with them throughout their careers.

### ***Qualified faculty***

The polytechnic university must continuously attract new faculty. Qualified and career-minded faculty will look for teaching and research opportunities that they can identify with and that create opportunities to demonstrate excellence in their chosen fields.

### ***Increase the range of qualifications offered***

Focusing on areas of specialization will enable the polytechnic university to offer a greater range of certifications and qualifications to prospective students. Consistent investments in a small number of areas will provide a strong foundation for the growth of programming. Growth is not sustainable if the institution is constantly shifting its teaching and research priorities and investments.

Within an area of specialization, the polytechnic university will be able to build up a base of infrastructure, faculty and resources. This base will support a range of access, upgrading,

certificate, diploma, undergraduate degree, graduate degree and potentially post-graduate degree programs in an effective, efficient and sustainable manner.

***Attract co-investment partners***

Potential co-investment partners include any organization interested in working with the polytechnic university to advance its own priorities related to teaching and research. Co-investment partners may be federal, territorial, Indigenous or community governments, industry or businesses, or other PSE institutions.

Potential co-investment partners are drawn to institutions that have clear areas of specialization and are able to demonstrate excellence in these areas. Co-investment partnerships that advance teaching and research at the polytechnic university contribute knowledge, expertise, human resources, facilities, equipment or funding.

## 5. PLANNING AREAS OF SPECIALIZATION

Through multiple engagements over the past four years, it has become clear that there are wide-ranging views on what should be the teaching and research priorities for the polytechnic university. In order to establish a strong starting point for the polytechnic university, the transformation process is integrating input from the GNWT, Indigenous governments, industry and the public into a structured approach to planning the proposed initial areas of specialization.

A series of measures for the selection of areas of specialization have helped the GNWT navigate this aspect of the transformation process. These measures are divided into two groups: (1) ensuring an effective, efficient and sustainable institution; and (2) supporting Northern social and economic development.

### **Ensuring an effective, efficient and sustainable institution**

Collectively, this first set of measures looks inward to the existing assets and structures of the institution that are needed to support proposed initial areas of specialization. Success means the polytechnic university has the financial and human resources, partnerships and infrastructure to sustain the development and growth of teaching and research in the areas of specialization.

The polytechnic university will continue to develop and grow after the transformation process is complete. However, the starting point for the polytechnic university is Aurora College. As such, the existing assets and structures of Aurora College are key considerations in developing areas of specialization. More specifically, when considering the acceptability of prospective areas of specialization, consideration must be given to the following.

***Interdisciplinary teaching and research*** - The long-term growth and development of the polytechnic university will benefit from teaching and research that embodies an interdisciplinary approach. This requires areas of teaching and research specialization that are, to some extent, complementary or overlapping.

Students will specialize in a subject area, but will learn that subject from a number of different academic disciplines that integrate various perspectives into their knowledge base. Similarly, research collaboration across areas of specialization will strengthen and enhance projects by fostering innovation and creating more robust knowledge.

***Current and anticipated financial support*** - The polytechnic university requires the appropriate level of funding to provide quality post-secondary education. This includes the availability and applicability of GNWT base funding allocated to the institution. External funding opportunities are also a consideration and include past, current or prospective teaching, research and infrastructure contributions.

It is important to emphasize that increases in funding will depend on the institution's ability to meet the needs or requirements of co-investment partners, be they federal, territorial, Indigenous or community governments, industry or other organizations. As such, areas of specialization should remain broadly responsive to the priorities of these partners.

***Existing and anticipated infrastructure*** – In order to be sustainable, the polytechnic university will need to have the facilities and infrastructure to support the operational requirements of teaching and research programs. This means that the institution will need to have classrooms, labs, shops, social engagement areas, research and field research spaces, and libraries appropriate to the areas of specialization.

***Human resource capacity*** – The polytechnic university must attract, develop and retain faculty and staff with the necessary qualifications, knowledge and experience. Aurora College’s current staff will continue as an important and valued part of the polytechnic university. The institution will, of course, establish new kinds of positions and some positions will change. However, there are realistic limits to the rates of human resource change and growth that can be achieved. The transformation process must take these into account when planning areas of specialization.

***Partnerships*** – The institution has or anticipates partnerships with the federal, territorial, Indigenous or community governments, industry and PSE institutions that will shape opportunities for growth.

## **Supporting Northern social and economic development**

Collectively, this second set of measures looks outward to local, regional and territorial needs. Success means the polytechnic university is equipped to recognize and respond to these needs. When areas of specialization are in alignment with these needs, the institution can engage federal, territorial or Indigenous governments, communities, industry and other stakeholders in meaningful dialogue around potential teaching and research programs and co-investment opportunities.

***NWT labour market demand*** – In order to support economic growth and diversification, the polytechnic university must contribute to the evolving labour needs of NWT employers. In 2015, the GNWT released the Labour Market Forecast and Needs Assessment. This document provides a socio-economic profile of the NWT along with an economic outlook and occupational demand forecast for workers up to the year 2030.

***NWT knowledge economy*** – In a very basic sense, growing the knowledge economy is about leveraging the long-term economic gains from creating, storing and disseminating knowledge. As the only public post-secondary education institution based in the NWT, the polytechnic university will become a central part of the NWT’s knowledge economy. Areas of specialization will provide a basis for broader partnerships, increasing the opportunities for growth of the knowledge economy and complementing other GNWT investments.

***GNWT Knowledge Agenda*** – The Knowledge Agenda: Northern Research for Northern Priorities provides overarching guidance for science funders and researchers on the research priorities of the GNWT. It is used by the GNWT to promote and initiate collaboration with researchers for the mobilization of scientific, traditional and local knowledge. As a whole-government document, the Agenda articulates GNWT research needs across departments and focuses efforts and directs research in the Northern interest.

***Northern knowledge transfer*** – By focusing on particular areas of specialization, the polytechnic university will capitalize on the many forms of knowledge and ways of knowing in the NWT. It must be prepared to use that to strengthen communities and benefit economic and social development at the territorial, regional and community levels.

***Geographic advantage*** – The value of place includes consideration for the specific geographic and environmental conditions that contribute to unique learning and research opportunities.

***Cultural responsiveness*** – The value of culture includes consideration of local cultures and traditional histories that contribute to unique learning and research opportunities.

***Student attraction*** – This is a form of “competitive advantage”, where the polytechnic university must consider how it can attract prospective students who are considering where they wish to study. There must be a strong potential to attract students locally, nationally and globally to ensure that the polytechnic university can maintain enrolment.

## 6. PROPOSED INITIAL AREAS OF SPECIALIZATION

The following are proposed initial areas of specialization for the polytechnic university. These suggest a starting point and provide a basis for further and ongoing engagement for programming decisions.

Examples of teaching, careers and research related to each proposed initial area of specialization define each area's scope and suggest the potential for growth of the institution. Decisions around programming for the polytechnic university will require further engagement and analysis.

### Skilled Trades and Technology

This area of specialization focuses on skilled trades, with a particular focus on the application of new and emerging technology. There are more than 300 designated trades in Canada, including trades related to construction, transportation, manufacturing and the service industry. In the NWT, trades make up an important segment of the labour market, and training must target areas where there is a high potential for employment. This is also an area of specialization with great potential for research programs that seek innovative solutions to issues around construction and maintenance of Northern infrastructure, including housing and transportation.

The Interprovincial Standards Red Seal Program (known as the “Red Seal”) creates national standards for certain trades. In order to practice many trades in the NWT a Red Seal is required. Other trades may require a certificate and/or license to practice. The GNWT administers the NWT Apprenticeship, Trades and Occupational Certification (ATOC) program. As is currently the case with Aurora College, the polytechnic university will be the primary partner in the delivery of the ATOC program and the first choice for training.

The trades are increasingly evolving into technologically advanced jobs and careers. For example, there is now a requirement in many fields to combine advanced math and computer programming skills with manual skills. Responding to this trend and keeping pace with changing labour market demands requires close and ongoing collaboration with NWT employers, with the overarching aim of preparing students for the jobs of today and the future. For this reason, the area of specialization references both trades and technology.

### Teaching

Skilled trades and certified occupations typically require a combination of formal post-secondary education and on-the-job training. It takes three to four years to achieve certification, with an average of 32 weeks of PSE. Aurora College already provides a range of relevant training opportunities, including:

- Apprenticeship Carpenter;
- Apprenticeship Electrician;
- Apprenticeship Heavy Equipment Technician;
- Apprenticeship Housing Maintainer;
- Apprenticeship Oil Heat Systems Technician;
- Apprenticeship Plumber/Gasfitter Program;
- Building Trades Helper;
- Camp Cook;

- Heavy Equipment Operator; and
- Observer/Communicator Training Program.

The polytechnic university will offer a more diverse range of credentials, and may offer additional certificate, diploma and degree programs that open up a broader range of career pathways for NWT residents, including management level positions in the public and private sectors.

## Careers

Between 2015 and 2030 there are expected to be more than 2,000 trades-related job openings in the NWT. This will represent more than 8% of total NWT job openings. Examples of NWT in-demand jobs related to this area of specialization include:

- Carpenters;
- Electricians;
- Automotive service technicians, truck and bus mechanics and mechanical repairers;
- Heavy-duty equipment mechanics;
- Plumbers;
- Welders and related machine operators;
- Contractors and supervisors, heavy equipment operator crews;
- Contractors and supervisors, electrical trades and telecommunications occupations;
- Industrial electricians;
- Oil and solid fuel heating mechanics;
- Telecommunications installation and repair workers;
- Electrical power line and cable workers;
- Construction managers;
- Facility operation and maintenance managers;
- Senior managers - construction, transportation, production and utilities;
- Heavy equipment operator;
- Transport truck drivers;
- Managers in transportation; and
- Home building and renovation managers.

## Research

There is significant potential for establishing applied research programs related to trades and technology. Applied research, conducted for and with businesses, builds innovation skills that advance student ingenuity and industry-level commercialization.

The North faces a wide range of unique opportunities and challenges, and the polytechnic university is well positioned to develop and deliver solutions in collaboration with stakeholders. The potential for collaboration in trades and technology extends beyond industry. The federal, territorial, Indigenous governments, and communities have an important role to play in supporting applied research that advances community resiliency and resourcefulness through investment in applied technology research.

Climate change is affecting infrastructure such as buildings, bridges, roads, water and wastewater systems, energy transmission and transit. The growing deterioration of some infrastructure, as well as the associated hazards to the well-being of residents in small communities, is driving an increasing need to adapt and build resilience.

Cold weather testing fits within this area of specialization and is of interest to a wide range of manufacturers. Northern industry and governments demand products that perform well in all-weather situations and there is a strong need to test these products in real-world settings.

## **Mineral Resource and Environmental Management**

This area of specialization encompasses mineral resource extraction and environmental management as interconnected themes that can be addressed through a common set of teaching and research programs. Within this area of specialization students would gain theoretical and applied knowledge in environmental analysis and problem solving. Teaching and research would advance efforts to manage the natural environment and learn about local climate change.

Environmental management involves decisions, strategies, programs and projects to sustainably use the environment in line with broader social values and objectives. Environmental managers work in the public, private and non-governmental sectors and are responsible for lessening environmental impacts and ensuring that all applicable legislative requirements are fulfilled.

Overlapping substantially with environmental management is teaching and research related to mineral resource extraction. From exploration to extraction, remediation and reclamation, the labour demands and research opportunities related to the mineral resource sector are significant and reflect a critical part of the NWT economy. As one of the largest users of high-technology equipment and applications, the mineral resource sector requires practitioners who have the skills necessary to keep up with these advances. Technical and management positions within mining and mineral exploration increasingly require some form of post-secondary education and it is important that NWT residents are first in line for these employment opportunities.

Increased participation of NWT residents in the mineral resource sector and environmental management will depend on the accessibility of high-quality and relevant education opportunities. To be effective, programs must be grounded in the realities of the NWT. The diverse lands, cultures and ways of life in the NWT intertwine the legislation, policies, practices and partnerships that shape the mineral resource sector and guide environmental management. Incorporating this strength in teaching and research at the polytechnic university will support the people, cultures and communities that rely on a strong economy and healthy environment.

### **Teaching**

Current or recent programming at Aurora College includes:

- Environment and Natural Resources Technology Diploma;
- Introduction to the Mining Industry;
- Underground Miner Training Program; and
- Heavy Equipment Operator (note that this program is being linked with two areas of specialization).

Programs like the existing Environment and Natural Resources Technology (ENRT) Diploma will be central to this area of specialization. ENRT links experience in the field with academic coursework in the classroom and skills training in the laboratory. Graduates become technicians and

officers in natural resource and environmental management careers including wildlife, forestry, marine and freshwater fisheries, planning, water resources, environmental protection, parks, land resource management, oil and gas, and mining.

The polytechnic university will offer a more diverse range of credentials in this area of specialization. In addition to a diploma-level program, the polytechnic university may offer additional certificate programming that is more accessible to prospective students and provides an opportunity to complete a qualification and enter the labour force more quickly. The addition of degree programs in this area of specialization would open up a broader range of career pathways for NWT residents, including preparing them for management-level positions in the public and private sectors.

## Careers

Examples of NWT in-demand jobs related to this areas of specialization include:

- Biologists and related scientists;
- Senior government managers and officials;
- Natural and applied science policy researchers, consultants and program officers;
- Underground production and development miners;
- Supervisors, mining and quarrying;
- Managers in natural resources production and fishing (includes mining); and
- Heavy equipment operators (note that this career is being linked with two areas of specialization).

## Research

Negotiations and implementation of land, resources and self-government agreements with Indigenous governments continue to shape the present and future of the NWT. Since the devolution of responsibility for land and resources to the GNWT in 2014, the GNWT has been acquiring new responsibilities and authorities and there has been broad engagement on Northern lands, stewardship and leadership. The territory encompasses a diverse array of land management systems and agreements, many of which explicitly recognize Indigenous peoples' authorities over lands and environmental resources.

The potential for research opportunities and co-investment in this area of specialization is significant – the Government of Canada is funding a great number of remediation and reclamation projects in the NWT, Indigenous and community governments seek to increase their capacity to manage their lands, and the mineral resource sector is constantly innovating and working to ensure that innovations can be effectively integrated into Northern mining operations. Applied research in this area of specialization will both contribute to economic growth in the NWT and significantly increase the quality of education for students at the polytechnic university.

The development of Indigenous Guardians and environmental management programs to enhance opportunities for Indigenous people to develop and establish land management and monitoring systems are supported and funded by the GNWT and the Government of Canada. This has resulted in an array of programs led by Indigenous governments, communities or organizations, including community-based monitoring programs, environmental monitoring programs, Guardian training

programs and traditional knowledge monitoring programs. There is an opportunity for researchers at the polytechnic university to collaborate with these organizations to support an applied research program focused on systems, tools and methods of implementation for environmental management.

There is already an active research community in the NWT focused on studying different aspects of climate change and adaptation. Much of this work contributes to national and international efforts in documenting, monitoring and modelling climate change in the physical environment, and there is a significant demand for applied adaptive research to support information and community needs within the NWT.

Research that intersects environmental and social research priorities benefits NWT communities. Research related to this area of specialization may also complement work around cultural sustainability, which includes efforts to improve understanding of the impacts of development and climate change on Northern cultures, and to improve the preservation and use of cultural practices and traditional knowledge.

The use of geographic information systems (GIS) and remote sensing tools has been a feature of many Northern research projects and will be increasingly important under this area of specialization. This includes work to enhance Northern capacity and empower Northern communities in culturally appropriate and relevant ways to inform decision-making. Examples include the Tuktoyaktuk Community Climate Resilience Project that aims to increase the awareness and knowledge of Tuktoyaktuk residents on the effects of climate-driven changes on their community and a project to create digital hazard maps of landslides along the Caribou Hills, East Channel of the Mackenzie River near Inuvik. Aurora College has also recently held an Indigenous Mapping Workshop, which provided over 100 Western Arctic community members with innovative training and opportunities to use GIS methods and tools for community-based activities.

## Northern Health, Education and Community Services

This area of specialization focuses on empowering people to help and support others in Northern communities. This would include teaching and research that supports physical, mental and emotional health in a manner that fosters personal and community resilience. It would also include training for educators that will, in turn, provide care, mentorship and support to generations of Northerners. Teaching and research in this area of specialization requires an understanding of the people, cultures and land that define Northern communities.

### Teaching

Current or recent academic programming at Aurora College related to this area of specialization includes:

- Bachelor of Science in Nursing;
- Licensed Practical Nurse;
- Community Health Representative;
- Personal Support Worker;

- Social Work Diploma;
- Bachelor of Education;
- Aboriginal Language and Culture Instructor Program;
- Certificate in Adult Education;
- Early Childhood Development Diploma;
- Early Learning and Child Care Diploma; and
- Introduction to Early Childhood.

Nursing will be a central component of this area of specialization, in particular a Bachelor of Science in Nursing Program. The Post-Graduate Certificate in Remote Nursing, Licensed Practical Nurse and Personal Support Worker programs will also be important offerings within this area. Pending the results of a review currently underway, a social work program at the polytechnic university would fit within this area of specialization.

Education will be another central component of this area of specialization. This is anticipated to include programming related to early childhood development and language education. NWT JK-12 schools provide Indigenous language learning through first language instruction, immersion and second language instruction, in either an Indigenous language or French. The level of language programming is dependent, in part, on sufficient availability of qualified teachers. Pending the results of a review currently underway at Aurora College, a Bachelor of Education program at the polytechnic university would fit within this area of specialization.

## **Careers**

Examples of NWT in-demand jobs related to this areas of specialization include:

- Registered nurses and registered psychiatric nurses;
- Licensed practical nurses;
- Health policy researchers, consultants and program officers;
- Inspectors in public and environmental health and occupational health and safety;
- Social workers;
- Social and community service workers;
- Social policy researchers, consultants and program officers;
- Senior managers - health, education, social and community services;
- Managers in social, community and correctional services;
- Senior government managers and officials;
- Early childhood educators and assistants;
- Elementary school and kindergarten teachers;
- Secondary school teachers;
- School principals and administrators of elementary and secondary education;
- Education policy researchers, consultants and program officers; and
- College and other vocational instructors.

## **Research**

Aurora College has partnered on a diverse set of health research programs and maintains a presence in a broad array of national networks. The full list is extensive, but there are some

notable examples of applied research underway or recently completed, either at Aurora College or in partnership with other institutions. This research takes different forms, including participatory action research, which seeks to understand the world by trying to change it, collaboratively and following reflection. This typically involves researchers and community members working together to understand a problem and changing it for the better.

Past research around breastfeeding in the NWT has sought to generate knowledge to support health promotion efforts targeting territorial mothers, being inclusive of grandmothers and the traditional knowledge they hold about infant feeding and mothering practices.

Intimate partner violence is a significant issue in the NWT. This includes high rates of shelter utilization, sexual assault and intimate partner homicide. Despite sustained research into intimate partner violence, little data is available about rural and Northern communities' incidence of intimate partner violence. Aurora College has conducted important research on this topic in partnership with other academic institutions and front-line organizations, including representatives from justice, social services, and shelters.

Digital literacy, or an individual's ability to find and interact with information on digital platforms, is an important skill in modern society. Research is underway at Aurora College to explore ways of strengthening digital literacy across remote communities in the NWT. This involves training specialists to deliver tailor-made courses in their home communities. Each year, a new course of increasing complexity will be offered, covering topics like online security, social media, and connections between technology and traditional ways.

Aurora College has also worked with researchers across the country to look at different approaches to decolonizing education. Researchers synthesized findings, tackled tough questions, and equipped teachers, schools, academic institutions and communities with the knowledge to make broad-sweeping changes.

## **Business and Leadership**

Being a leader is not a position, it is about a person's ability to guide and support others. Leaders face a range of challenges that can impact the culture within their team, the development of their team members and the future of their organizations.

The federal, territorial, Indigenous and community governments, and non-governmental organizations and businesses require employees with business and leadership training. More specifically, they require business and leadership training that can help their employees succeed in a Northern social and economic context.

## **Teaching**

Building capacity of territorial, Indigenous and community governments through increased education opportunities is critical. This may include programming supporting new entrants to the labour market as well as professional development programs to support career advancement.

Aurora College already offers courses related to leadership and management and continuing education programs. Examples of current or recent programming at Aurora College related to this

area of specialization include:

- Business Administration
- Office Administration Certificate
- Office Administration Mining Co-op Certificate Program
- Community Office Procedures Program
- Computers in the Workplace
- Northern Leadership Development Program

## Careers

Examples of NWT in-demand jobs related to this area of specialization include:

- Financial auditors and accountants;
- Professional occupations in advertising, marketing and public relations;
- Professional occupations in business management consulting;
- Administrative officers;
- Administrative assistants;
- Accounting technicians and bookkeepers;
- Property administrators;
- Retail sales supervisors;
- Retail and wholesale trade managers;
- Financial managers;
- Senior government managers and officials;
- Accommodation service managers
- Executive assistants;
- Purchasing agents and officers; and
- Legal administrative assistants.

## Research

Research in business and leadership is likely to complement the other areas of specialization. Being a leader in positions related to Northern technology and innovation; mineral resource and environmental management; and Northern health, education and community service requires the knowledge and ability to identify and respond to local economic, social and political conditions.

Innovation and entrepreneurship go hand-in-hand and will benefit from a Northern perspective. This includes social entrepreneurship, an approach that focuses on the development, funding and implementation of solutions to social, cultural or environmental issues.

Aurora College's Arts, Crafts and Technology Micro-Manufacturing Centre (ACTMC) has demonstrated the demand for programs that support entrepreneurship through the empowerment of Northern residents. Located in Inuvik, the ACTMC provides residents with access to technology that enables innovation, particularly among artists. Merging traditional arts and crafts with new modern technologies and production techniques creates economic opportunities for artists and other creative individuals in the Western Arctic.

Like all other areas of specialization at the polytechnic university, research in the area of business and leadership will rely on collaboration with industry and partners. The role for Northerners as future leaders in private, public and non-governmental organizations increasingly requires an understanding of what is required of our leaders now and into the future.

## **7. STUDENT PATHWAYS**

The polytechnic university will have a place for every resident who seeks an opportunity to further their skills, knowledge and abilities through PSE. This means meeting students where they are in their educational journey and being supportive through the entire journey, from applying to a PSE program offered by a community learning centre or campus right through to employment success. This requires a learning-centred approach that broadly aligns institutional success with student success.

The discussion paper addresses proposed initial areas of teaching and research specialization, an important step in developing student pathways. It is essential that students can pursue an education in a way that makes sense for them and that leads to meaningful outcomes. In developing student pathways, the transformation process will examine where and how individual courses and entire programs are delivered, be it through community learning centres, campuses, distance learning or partner institutions including specialized NWT-based organizations.

The polytechnic university will continue to offer academic upgrading and access programs to increase access to the ever-growing range of certificate, diploma and degree programs. The polytechnic university can also serve as a bridge to programs at other PSE institutions across Canada and around the world.

## **8. CAMPUS AREAS OF SPECIALIZATION**

The discussion paper stops short of proposing initial areas of specialization for each of the three campuses. These will be developed following the measures outlined above and in alignment with the overall initial areas of specialization once finalized, with each campus taking a leadership role in the delivery of one or more areas of specialization. However, the polytechnic university will function as a cohesive institution with three campuses and a network of community learning centres. An area of specialization may have its foundation in one of the three campuses, but this should not limit opportunities at other campuses, community learning centres or research centres. Clear areas of specialization that have a strong base at one of the campuses will support the sustainable delivery of teaching and research programs across the entire NWT.

## 9. NEXT STEPS

The defined initial areas of specialization are about setting focused targets for the polytechnic university in terms of teaching and research programs. This will take time.

Each area will support the establishment of new programs for the polytechnic university and coincide with work being undertaken to ensure academic and research excellence. However, decisions about programming will require continued engagement with key stakeholders and potential co-investment partners, including federal, territorial and Indigenous governments, and industry.

### **Phased approach to transformation**

The overall process of transforming Aurora College into a polytechnic university will be carried out in three phases to help ensure change occurs in the right order and at the right time.

#### ***Phase 1: Strengthening the Foundation and Planning for Change***

The transformation process is currently in this first phase and work has been underway since the commitment to transform was made by the GNWT in October 2018.

Phase 1 includes strengthening the foundation by developing up-to-date policies and procedures to ensure Aurora College is effective and efficient. Planning for change means understanding what changes will take place and when.

An important feature of this phase will be wide-ranging engagements with Indigenous governments, communities, industry and other key stakeholders. Their input will shape many aspects of the transformation process.

A critical milestone prior to concluding Phase 1 will be planning areas of specialization for the polytechnic university. It is important that Phase 2 can begin with a clear understanding of how the polytechnic university will be structured and that ongoing engagements will support planning for future teaching and research programs.

#### ***Phase 2: Transformational Change***

During this phase changes will be made to the College's organizational structure to reflect a polytechnic university model, including the implementation of new supports to enhance the quality of teaching and research.

Aurora College will also undergo an institutional quality assurance review by a quality assurance body. Establishing new supports for teaching and research are important steps in preparing for the quality assurance review, which will confirm the ability of the institution to support the kinds of teaching and research programs within the areas of specialization. The final step under phase 2 will be to complete a *Polytechnic University Act* that formally recognizes the new polytechnic university.

#### ***Phase 3: Polytechnic University Launched***

Operating as a polytechnic university, the institution will continue to develop and expand programming, human resources and infrastructure. Phase 3 will end when all commitments have been met and all major projects under the transformation initiative have concluded.

## APPENDIX A: ADDITIONAL RESOURCES

**Government Response to the Findings and Recommendations of the Aurora College Foundational Review**

<https://www.ece.gov.nt.ca/en/node/1745>

**NWT Post-Secondary Education Strategic Framework, 2019-2029**

<https://www.ece.gov.nt.ca/en/node/2071>

**Discussion Paper - Aurora College and Polytechnic University Governance**

<https://www.ece.gov.nt.ca/en/node/2336>

***NWT Jobs in Demand: 15-Year Forecast***

<https://www.ece.gov.nt.ca/en/node/842>





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