

Centre for Northern Innovation in Mining



Yukon
University

CNIM update

May 2024

YukonU.ca/CNIM



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CNIM update - May 2024

Heavy Equipment Technician

The HET pre-apprentice cohort of 7 students all successfully completed the 2023/24 program, challenging the Yukon Level 1 exam on March 1st. Major projects included a frame & gravel box rebuild of a transferred YG truck, PMVI & brake job of a lowboy trailer belonging to a local contractor, and the field recovery of a loader for future repair. Overall, 2 students passed their exams and 4 of the graduates are now working in the field.

A level 2 offering commenced on March 18 with 11 apprentices signing up, of which 9 completed either Level 1 or a pre-apprenticeship at Yukon University. We are extremely proud that this many apprentices are choosing YukonU for their training needs!

Heavy Equipment Operator Simulator Training Programs

The HEO Simulator training was well underway in early March 2024. CNIM had 13 individuals from various companies complete the HEO Simulator Train the Trainer course. This training was completed to level up their training skills for industry needs. CNIM staff then mobilized the HEO Simulator in Carmacks for two and a half weeks and had 12 students registered for training. Overall, 8 students completed and graduated the simulator training course in Carmacks; with the help of Carmacks Development Corporation and Little Salmon Carmacks First Nation.

Class 3, Class 1 and Air Brakes

January through April at CNIM was a busy time for our Commercial Driving Program. CNIM was able to run 10 Air Brakes courses in collaboration with Instructor John Hale, as well as newly trained Air Brakes instructor Doug Burgis. In total, we had around 85 students pass and receive their Air Brakes Endorsements. CNIM staff were also busy helping students progress through Class 3 Theory, Simulator training and In-Cab experience. CNIM staff are working hard to keep the courses rolling out through the new fiscal year, with Class 3 courses running April - September, and Class 1 courses starting in June.

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Since January 2024, the Air Brakes course was offered in Haines Junction, Burwash Landing, Carcross, Mayo and Whitehorse for a total of nine course runnings.

As funding for the Commercial Driving program came to an end on March 31st, CNIM continued to see an influx of students interested in obtaining their Air Brakes Endorsements. Despite no longer having the funding available, seven students in Class 3 Theory passed their written exams at the local DMV, as of early April.

CNIM staff has applied for a new funding opportunity with CANNOR, to assist in continuing the development of the commercial driving program.



*Commercial driving student passing his
Class 3 Road Test*

Workforce Readiness Program

Readiness for Employment and Lifeskills programs in Old Crow and Pelly Crossing ran from January through to the end of March. In early January, two additional programs began in Ross River and Mayo. Graduation ceremonies were well attended and students were excited to be completing their programs. Workforce Readiness programs are organized by community campus staff, and CNIM provides support in funding, program and fleet logistics, student registrations and instructor/coaching support when available. The workforce readiness program encouraged students to learn new skills and obtain real life experience.

Housing Maintainer

Students in the Housing Maintainer program completed the exterior finishings, installed electrical devices and the final touches such as crown moulding trim, cabinet and countertop installation. All six students completed the program as of March 28th. One student is registered for his pre-apprenticeship in carpentry here at Yukon University, while the others plan to find work for the summer months.



Students, instructor and coach with their finished house project

The Earth Sciences Program has finished a fantastic winter semester. Faculty, including Dr. Joel Cubley, Mary Samolczyk, and Dr. Chad Morgan, taught seven courses in both the first and second year of the diploma program. These courses include:

- Geological Field Methods and Mapping II (GEOL 216); taught by Dr. Joel Cubley (3 YukonU students; 8 VIU students) [Taught on Quadra Island, BC]
- Geochemistry (GEOL 211); lecture and lab taught by Dr. Joel Cubley (3 students)
- Hydrogeology (GEOL 301); lecture and lab taught by Mary Samolczyk (6 students)
- Historical Geology (GEOL 106); lecture and lab taught by Dr. Chad Morgan (5 students)
- Earth Through Time (GEOL 108); online course (lecture only) taught by Dr. Chad Morgan (19 students)
- Introduction to the Mineral Exploration and Mining Industries (GEOL 112); hybrid course (lecture only) taught by Dr. Chad Morgan (19 students)
- Earth Systems: Landscapes and Natural Hazards (GEOG 102); lecture taught by Mary Samolczyk (5 students)

We have stayed in touch with our first cohort of Earth Sciences graduates. Courses from the program have transferred well to other institutions, with students completing their studies at: the University of British Columbia, Mount Royal, Vancouver Island University, and Acadia University. We are excited to congratulate one student at convocation this year, with an expected group of six students next year.

The program continues to benefit from community and industry connections. We are grateful for course involvement and visits from Archer Cathro & Associates (Heather Burrell), Snowline Gold Corp (Scott Berdahl), GroundTruth Exploration (Erin Bros), the Yukon Geological Survey (Maurice Colpron), and the Faro Mine Remediation Project (Courtney Dean). Also, a multi-year collaboration with Yukon Government's Water Resources Branch continued this year. Students in the Hydrogeology course completed a semester-long project characterizing groundwater conditions around Army Beach, Marsh Lake, to support flood hazard assessment.

Earth Sciences Faculty have been focusing on geology outreach through The Virtual Geology Project (www.yukonu.ca/virtual-geology), a project funded by NRCan's GEM GeoNorth Program.

In addition to the existing Whitehorse Copper Belt and Yukon Triassic Reefs virtual field experiences, new fieldtrips have been added that focus on the Alligator Lake and Fort Selkirk Volcanic complexes. The project team is excited to release 'Geoscience in Action' experiences that detail geoscience researchers and projects in the territory.

This summer, fieldwork and data collection will focus on the icefields in Kluane National Park. Faculty will also spend much of the summer working on various research projects. One notable project is the continued investigation of metal(oid) contamination in the Whitehorse area. This project is proving timely with the current public interest in groundwater and radon in Whitehorse. This project supports students at the undergraduate and graduate levels. Collaborators include Yukon University, University of Saskatchewan, Carleton University, the City of Whitehorse, Ta'an Kwäch'än Council, and Yukon Government.

Other research projects include the examination of trilobite fossils in the northwest territories, and the characterization of manganese (Mn) and barium (Ba)-rich chert units within southern Yukon Tanana terrane, and their potential linkages with volcanogenic massive sulfide (VMS) deposits.



Student mapping highly deformed rocks exposed along the coast of Quadra Island, B.C.



Students collecting groundwater monitoring data at Army Beach, Yukon, in partnership with Yukon Government's Water Resources Branch

Environmental Monitoring Certificate

The Environmental Monitoring program started the new year with 'catch up' courses for students. In January, current students spent three days in the computer lab at Ayamdigut campus working towards completion of some of the six of the noncredit online courses required to graduate from the Environmental Monitoring Program. Overall, three students took advantage of the opportunity to come to the university and four more worked on the courses online from home; with support from both the student coach and the instructor of the program in person (for those at the university) and by phone, text or email (for those working from home).

In February, the Environmental Monitoring Certificate program delivered the ENVM 095 Terrestrial Monitoring I – Earth Sciences course at the Ayamdigut Campus. This course was attended by the current cohort and a few students from previous cohorts, and focused on the mine life cycle, Acid Rock Drainage and Metal Leaching, and associated impacts and monitoring. Students also visited Horizon Helicopters for an orientation to helicopter use and safety, and spent time with YG's Water Resources Lab staff to orient themselves on monitoring initiatives in the placer mining sector. Students finished the week with training in snow surveys and winter stream discharge measurement methods.



*Student practicing winter discharge measurement training
using salt dilution and conductivity measurements*

In early April, CNIM received confirmation from CIRNAC that the proposal to continue and expand funding for the Environmental Monitoring Certification Program was approved, and Yukon University is now awaiting funding agreements for review and signature. This secures core funding for the program expenses for instruction, materials/supplies, and coaching staff through March 2027.

Environmental Monitoring Certificate

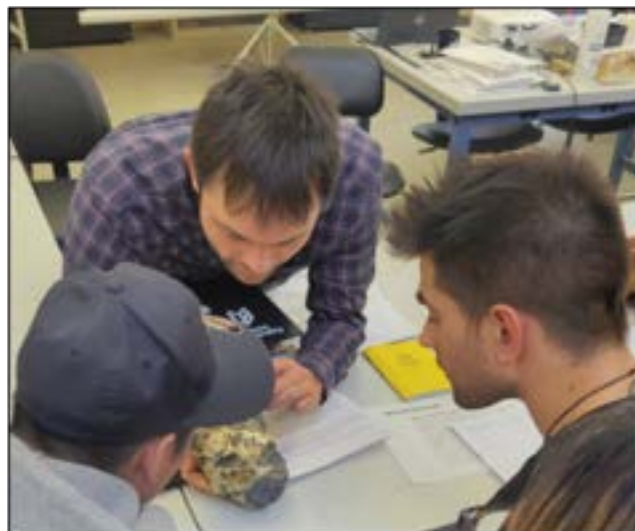
Instructional and coaching staff are currently preparing for ENVM 093 Aquatic Monitoring I course delivery in Atlin BC in late May, and also for delivering a condensed version of ENVM 093 for Tr'ondëk Hwëch'in Lands Department Staff May 13 – 16th through the Dawson Campus. This will also serve as an opportunity to promote the core ENVM Certificate Program to Tr'ondëk Hwëch'in citizens and Lands Staff, who have expressed interest in the new intake in the fall of 2024.

Summer courses for the current cohort will be delivered in the following months at these locations:

- June – ENVM 096 Contaminated Sites (Faro Mine Site)
- July – ENVM 096 Terrestrial Monitoring II (Eagle Gold Project - VGCX, pending confirmation)
- August – ENVM 094 Aquatic Monitoring II (Dalton Trail Lodge/Klukshu)



Identification of acid generating and buffering mineralization with CoreGeo scientists



Practicing proper note-taking during winter field activities

Northern Mine Remediation

The YukonU STEAM and trades outreach team worked with Dr. Vladimir Kabanov from January to March 2024 to help deliver an eight module Northern Mine Remediation course in both Pelly and Mayo for 10-15 students ranging from grade 8 to 12. The course was originally developed in 2021 by Dr. Guillaume Nielsen and the YukonU Research Centre in collaboration with Eliza VanBibber school in Pelly to give high school credit for Citizens for Science 11. Dr. Nielsen obtained funding through CICan to run the program in winter of 2024.

The intention of the course is to highlight the growing need for mine remediation work in the Yukon and the importance of engaging First Nations communities in research projects. The course also presented possible career and training opportunities available at YukonU and other institutions in the environmental, remediation and mining sectors. Over the three months, students at both schools also monitored the effectiveness of different nutrition sources for contaminant-removing bacteria that are currently being researched at YukonU. The course included a tour of the YukonU campus, and concluded with a mine visit to Vic Gold's Eagle Gold Mine with youth from both schools. Current funding sources only allowed for the course to be delivered in two communities; however, there is much interest in determining how further iterations of this course could be run in other Yukon communities impacted by the mining cycle.



Visit to YRC Labs



Water treatment plant at Eagle Gold Mine



Students and VicGold staff overlooking the Pit at Eagle Gold Mine



Students at J.V. Clark preparing bacteria "food"



General Updates

- The NMR course for communities was successfully delivered in Mayo and Pelly Crossing. This 9-module in person course was well received by students and teachers. Selkirk First Nation and First Nation of Nacho Nyak Dun students concluded the course with a field trip to the Eagle Gold Mine, YT.
- Submission of peer reviewed paper titled: Semi-passive pilot scale bioreactors metal(loid) removal performance response to seasonal freeze-thaw cycle to Journal Mine Water and the Environment. The paper was accepted with minor revisions.
- Writing in process of peer reviewed paper Semi-passive treatment columns for multi-element removal from synthetic mine-impacted groundwater under cold conditions. This paper includes synchrotron analysis.
- Taylor Belansky, Master's candidate at INRS and YukonU (in NMR team) submitted her thesis for review in May 2024. She will graduate at YukonU on June 1st.
- Taylor and Inderjeet participated in a YukonU student research showcase. In the showcase, they presented their work and what it meant to them to a delegation from University Canada.
- CNIM staff members Dan Anton, Ginny Coyne and Chantelle Butler attended the graduation ceremony of the Mining and Petroleum Training Service program in Delta Junction, Alaska. This included a tour of the underground mine site where the students were trained and obtained skills to acquire employment in the mining industry. This was a great opportunity for CNIM staff to connect with the various community members apart of this project and see how the training runs at their facility.
- The University hosted its inaugural Crocus Ball on April 27th. This is a Gala event bringing the business and industry community together to learn more about Yukon University. The CNIM staff had a very active role in the event with the expanding trades trailer on display, Michael Atkins and Tomo Uemura running demonstrations with the Commercial Driver Simulator; as well as Earth Sciences Faculty, Mary Samolczyk and Dr Joel Cubley demonstrating the Virtual Geology project. These were well received and generated a lot of dialogue about the CNIM activities.

General Updates



Guillaume presented to the water board on January 25th, 2024, Yukon Science Institute on March 26th and to Yukon Government and Selkirk First Nation on March 27th



Two site visits in February and April at Minto mine site were conducted to monitor revegetation study, perform snow survey, and performing maintenance work on research equipment.



Dan Anton working hard at the MAPTS mine site



Michael Atkins assisting community members on the simulator

Meagan Christie
Instructor
Carpentry



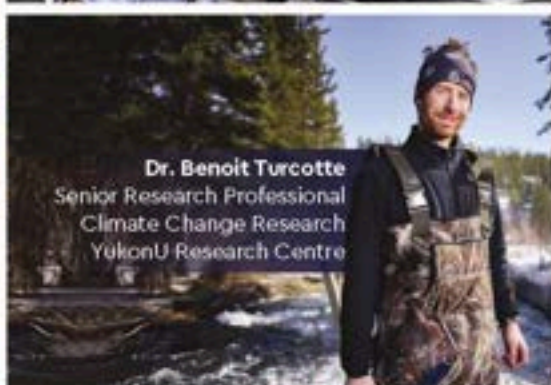
Dr. Guillaume Nielsen
Industrial Research Chair
Northern Mine Remediation
YukonU Research Centre



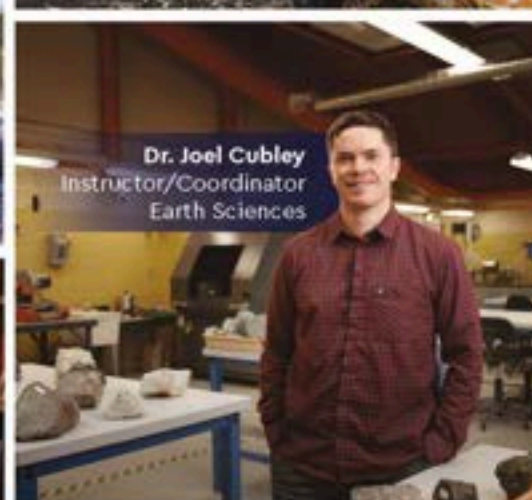
Elizabeth Moses
Elder on Campus



Dr. Benoit Turcotte
Senior Research Professional
Climate Change Research
YukonU Research Centre



Dr. Joel Cubley
Instructor/Coordinator
Earth Sciences



Samantha Piper
Instructor
Health Care Assistant



Dr. Victoria Castillo
Instructor, Anthropology
School of Liberal Arts



Doug McRae
Instructor
Heavy Equipment Technician



Dr. Sara McPhee-Knowles
Instructor
Bachelor of Business
Administration



Dr. Katie Aitken
Instructor/Coordinator
Northern Environmental
and Conservation Sciences



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