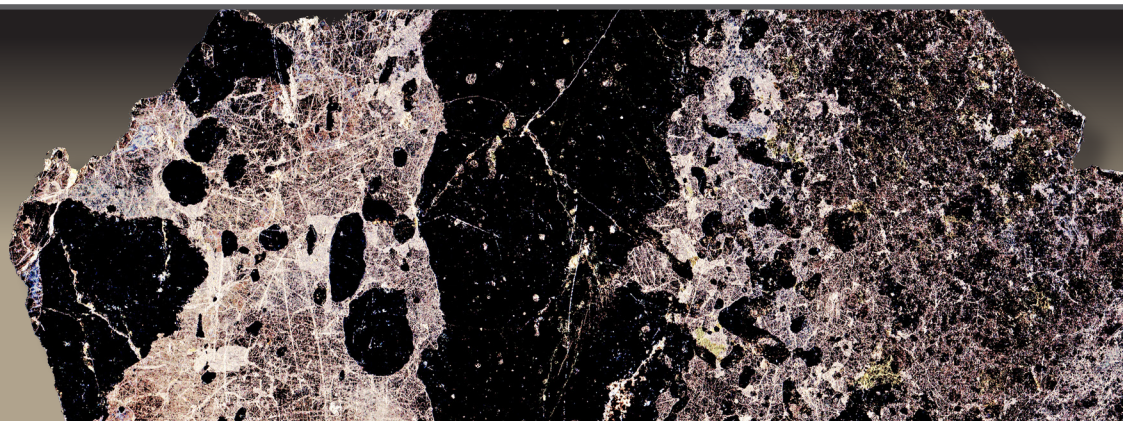


Modular Course in Exploration for Magmatic Ore Deposits



GEOL 5606

**MARCH 31-
APRIL 9, 2020**

10-day intensive course in magmatic Ni-Cu-(PGE), PGE, Cr, and Ti-V deposits including 3 days of theoretical material, 5 days of case studies, and 2 days of exploration methods.

Topics include: S and Cr solubility and metal partitioning in mafic-ultramafic magmas; generation of fertile magmas; applications of stable and radiogenic isotopes (including mass-independent S isotopes) in identifying S and metal sources; sulfide transport and localization mechanisms; textures and deformation of Fe-Ni-Cu sulfide ores, sulfide recalculation and plotting methods; geology/genesis of and exploration for Ni-Cu-(PGE) deposits in mafic-ultramafic lava channels, feeder sills/dikes, and magma conduits; geology/genesis of and exploration for PGE deposits in mafic-ultramafic layered intrusions; geology/genesis of and exploration for stratiform and podiform Cr deposits and Ti-V deposits in anorthosites and mafic-ultramafic intrusions (including those in the "Ring of Fire" district of northern Ontario).

Case studies and laboratory practicals will include: Alexo (Ontario), Duke Island (Alaska), Duluth (Minnesota), Kambalda (Western Australia), Noril'sk-Talnakh and Pechenga (Russia), Jinchuan and other deposits in China, Thompson (Manitoba), Raglan (Nunavik), Voisey's Bay (Labrador), and Sudbury (Ontario) Ni-Cu-PGE; and Bushveld (South Africa) and Stillwater (Montana) PGE and Cr; and 'Ring of Fire' (Ontario) Cr.

Exploration methods include geological, mineralogical, lithogeochemical, and geophysical applications to greenfields, regional, and brownfields targeting.

Prerequisites

Advanced undergraduate-level courses in Geochemistry, Igneous Petrology, and Ore Deposits.

Course Format

Lectures (multiple instructors) and laboratory exercises (combination of spreadsheet calculation and modelling, and hands-on sample examination and interpretation).

Webcast Option

Available to industry professionals/non-students via live webcast from our state-of-the-art Executive Learning Centre, which provides an immersive experience for remote participants. Contact Prof. Michael Leshner at mlesher@laurentian.ca for details.

Course Credit

3 credits, applicable toward thesis-based or coursework-based MSc and PhD programs; applicable toward continuing education and professional development requirements for Professional Registration.

Grading

Laboratory practicals and problem sets 100%.

Computer Software

Laboratory exercises will be submitted by e-mail as Microsoft Excel® and Word® documents. Participants must

bring a laptop with these programs installed and know how to use them.

Course notes

Notes will be provided as colour PDFs at no cost to all registered participants. The notes for this course remain the intellectual property of the presenter and may contain unpublished and/or confidential information and copyrighted figures. They must not be copied or given to anyone else under any circumstances.

Course Costs for Currently Enrolled University Students

\$1,272 (CDN) for Canadian residents, \$3,304 (CDN) for non-residents (see laurentian.ca/graduate-fees under Part-Time).

Course Costs for Professional* Participants

\$3,734 (CDN) (includes HST) for entire course (including PDFs of course notes) or

\$339 (CDN) (includes HST) per day for individual course days (including relevant course notes).

Discount for MERC members (Foundation: 20%, Tier 1: 10%, Tier 2: 5%).

**contact us for cost sharing options for multiple participants of the same company.*

All participants are responsible for their own travel, lodging, and meals.

Confirmed Speakers

Prof. Sarah-Jane Barnes (UQAC), Dr. Sarah Dare (UQAC), Dr. Pedro Jugo (MERC/HES), Dr. Danielle Giovenazzo (Salda Geosciences), Dr. Michel Houllé (GSC/HES), Alan King (Geoscience North), Prof. Michael Leshner (MERC/HES), Prof. Edward Ripley (Indiana University), Dr. Rebecca Sproule (Tascan Geosciences) and Dr. Martin Tuchscherer (Azimut Exploration)



Laurentian University
Université Laurentienne

HARQUAIL School of Earth Sciences
École des sciences de la Terre

MERC

Mineral Exploration Research Centre
at the HARQUAIL School of Earth Sciences

Updated course Syllabus and Schedule will be provided to registered participants closer to the event date and will be posted online at hes.laurentian.ca/modular-courses.



Logistics

Timing

Sessions run daily from 9 a.m. to 5 p.m. with two 30 minute breaks and a 1 hour lunch.

Location

Executive Learning Centre (ELC)
Room FA-386, Fraser Building
Laurentian University Campus

Parking

Parking lot A at a cost of \$8 per day.

Coffee

Tim Hortons and Starbucks outlets located on campus.

Lunches

Not provided. Marché-style Dining Hall open Monday to Friday; Tim Hortons and Starbucks also open weekends.

For campus food locations and hours, visit Chartwells' website at:

dineoncampus.ca/laurentian

What to Bring

Laptop computer running current versions of Microsoft Word and Excel, Adobe Acrobat PDF Reader, and an e-mail client for receiving note and submitting lab exercises.

A tablet computer is handy for viewing notes while working on the computer.

Travel and Accommodations

Travel and accommodations are at the participants' discretion.

Nearest accommodations to campus include:

- Travelway Inn and Travelodge, both located on Paris Street
- Holiday Inn on Regent Street



Laurentian University
Canada's Mining University

Mineral Exploration Research Centre
Harquail School of Earth Sciences

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All enrolled students are subject to the Laurentian's Academic Integrity Policy.
Please reference the following website: **laurentian.ca/policies-accountability/policies.**

Registration

Ms. Roxane Mehes, Harquail School of Earth Sciences, Laurentian University
935 Ramsey Lake Road, Sudbury, ON P3E 2C6 Canada
Tel: +1 705-673-6575 • Fax: +1 705-675-4898 • E-mail: rmehes@laurentian.ca

Further information may be found at **hes.laurentian.ca** under Modular Courses.
For other information about GEOL 5606, please contact: **mlesher@laurentian.ca**



Zone 1

- 1 Vale Living with Lakes Centre
- 1a Watershed Centre
- 2 Willet Green Miller Centre
- 3 Maintenance and Security Building
- 4 Fraser Building and Auditorium
- 5 Cliff Fielding Building
- 6 Science II Building and Doran Planetarium
- 7 Science I Building
- 8 J.N. Desmarais Library
- 9 Classroom Building
- 10 Arts Building
- 11 Dining Hall

- 12 R.D. Parker Building / Welcome Centre / myLaurentian Hub
- 13 Indigenous Sharing and Learning Centre

Zone 2

- 14 Student Centre
- 15 West Residence
- 16 Mature Student Residence
- 17 Single Student Residence
- 18 University College Residence
- 19 East Residence

Zone 3

- 20 University of Sudbury
- 20a University of Sudbury Residence
- 21 Huntington University and Residence
- 22 Thorneloe University and Residence

Zone 4

- 23 Alphonse Raymond Pavilion
- 24 Laurentian Child and Family Centre/ La garderie Touche-à-Tout
- 25 Education Building
- 26 Cardiovascular and Metabolic Research Lab
- 27 Health Sciences Education Resource Centre
- 28 Northern Ontario School of Medicine
- 29 Student Recreation Centre
- 30 B.F. Avery Physical Education Centre and Jenő Tihanyi Pool
- 31 Sports Stadium

Downtown

- 32 McEwen School of Architecture
- 33 Telegraph Building
- 34 Workshop Building

P1 - P12, P14 and P16: Reserved parking

P15: General parking

A-B-C-D-E: Pay and Display parking

F: Half-hour complimentary parking

G: Metered parking

H-S-T: Affiliated university parking