MINING ENGINEERING

About the Program

The Robert M. Buchan Department of Mining at Queen's has prepared global mining industry leaders for more than 120 years. It is today not only the largest mining department in Canada but among the largest in the world. In fact, Queen's mining engineers account for some 33 percent of all Canadian mining and mineral processing engineers who have graduated from Canadian universities.

As technology evolves and the global economy changes, our students and researchers play a key role in defining the state of the art in mining. In close collaboration with industry partners, our faculty and students work to make mining operations safer, more efficient, more productive, less impactful on the natural environment, and more cost effective.

Mining has close relationships with Mechanical and Geological Engineering through cross appointments of the Chair in Mine Mechanical Engineering and the Stollery Professorship in Mining and Geology. Graduate students benefit from courses in these departments, as well as courses in Civil, Chemical and Geological Engineering and Geography. The Department offers the degrees of Master of Applied Science (M.A.Sc.), Master of Engineering (M.Eng.) and Doctor of Philosophy (Ph.D.) with specializations in Mining Engineering and Mineral Extraction.

An engineering degree from The Robert M. Buchan Department of Mining at Queen's, with its excellent recognition internationally, equips graduates to become highly employable in the mining industry not only in Canada but worldwide.

Areas of Research

Faculty Member	Research Area
Laeeque Daneshmend	Machine Design, Equipment Maintenance, Maintenance Management, Reliability Analysis, Systems Modeling, Simulation and Control, Mining Automation, Telerobotics.
Ahmad Ghahreman	Hydrometallurgy and Biohydrometallurgy, Mineral Processing Wastes and their Remediation, Electrochemical Dissolution of Complex Minerals (fundamental studies), Flowsheet Design and Modeling.
Charlotte Gibson	Integration of mining and processing systems, machine learning applications in mineral processing and metallurgy, process development for minerals used in energy storage applications, oxide mineral flotation.
Anne Johnson	Management of Social Risk, Sustainability Reporting and Metrics, Mining Law and Policy, Community Relations.
Takis Katsabanis	Detonation Physics, Blasting, Fragmentation, Vibration.
Sadan Kelebek	Mineral Processing Technology, Process & Tailings Environment, Computer Assisted Process Analysis, Complex Sulphides and Pyrrhotite Rejection.
Julian Ortiz	Geostatistics, Stochastic Modeling of Ore Deposits, Sampling and QA QC, Geometallurgical Modelling.
Chris Pickles	Processes and the Environment, Advanced Pyrometallurgy, Process Engineering for Metals Extraction, Advanced Metals Extraction.
Asli Sari	Surface and Underground Mine Planning, Data Analysis, Machine Learning Applications in Mine Optimization, Fleet Management, Mine Automation.

Abbas Taheri	Engineering properties and Behaviors of Rocks, Backfill Material and Expansive Soils, Experimental Geomechanics, Modeling of surface and Underground Excavations, Soil stabilization and improvement methods, Deep and High-Stress Mining
Qian Zhang	GHG emission accounting and footprint analysis, Sustainable cities and infrastructure in life-cycle thinking, Transboundary air pollution and demand-side management, Integrated urban water management and water-energy-climate nexus, Valueadded-oriented resource efficiency for the circular economy, Trade-offs among Sustainable Development Goals (SDGs).

Departmental Facilities

The Robert M. Buchan Department of Mining is located in Goodwin Hall, which provides lecture, laboratory and study facilities. The on-campus laboratories include a Rock Mechanics laboratory, Mine Environment laboratory, Computer Planning facilities, and several Mineral Processing laboratories. The department also operates an Explosive Test Site in Hinchinbrooke Township, near Kingston. Laboratories are fully equipped for the programs offered. In addition, they include extensive equipment for advanced study and research in the various fields of major interest. The facilities allow undergraduate courses to be conducted in close proximity to graduate study and research. As a result, sound professional practice can be emphasized while the potential for future development is demonstrated.

Programs of Study

Applicants are accepted under the general regulations of the School of Graduate Studies and Postdoctoral Affairs. Applications to the M.Eng., M.A.Sc. and Ph.D. programs from other related engineering and science programs are encouraged. These would include, Mechanical Engineering, Geological Engineering, Civil Engineering and Physics programs for mining projects and Metallurgical Engineering, Chemical Engineering and Chemistry programs for mineral processing projects.

Funding

A minimum funding guarantee for eligible students at the Master's level of $ 25,000 and at the Ph.D. level of $ 25, 000 per year is available. M.Eng students are self-funded.

Teaching Assistantships may be offered to students throughout the academic year.

Registered full-time students who are in good academic standing with Queen's are eligible for a wide range of internal and external scholarship and bursary awards.