



SUBJECT	TUITION AND FIELD TRIP/ACTIVITY FEE GRADUATE CERTIFICATE IN GLOBAL MINE WASTE MANAGEMENT
----------------	---

MEETING DATE	NOVEMBER 26, 2018
---------------------	--------------------------

Forwarded on the Recommendation of the President

**APPROVED FOR
SUBMISSION**

Santa J. Ono, President and Vice-Chancellor

DECISION REQUESTED	<p>IT IS HEREBY REQUESTED that <i>approval be granted for:</i></p> <p><i>i. Tuition fees for the Graduate Certificate in Global Mine Waste Management: Domestic per credit tuition of \$1670.00 and International per-credit tuition of \$1670.00 for four new courses:</i></p> <ul style="list-style-type: none"> • <i>MINE 586 (3): Advanced Mine Waste Management</i> • <i>MINE 587 (3) Advanced Mine Site Management</i> • <i>MINE 588 (3) Risk Assessment for Mine Waste Management</i> • <i>MINE 589 (3) Mine Waste Management Case Studies</i> <p><i>Total tuition fees for Graduate Certificate in Mine Waste Management will be \$20,040.00 for domestic students and \$20,040.00 for international students.</i></p> <p><i>ii. Field trip/activity fee for the Graduate Certificate in Global Mine Waste Management: up to \$3000, which will cover the following activities: 2-3 days, 1-2 nights, field trip (including accommodation, transportation and meals), networking activity and program swag. The amount will vary depending on the costs of the field trip and cohort activities that are planned. The amount of this activity/ field trip fee will be listed in the admission letter each year.</i></p>
-------------------------------	--

Report Date	October 4, 2018
--------------------	------------------------

Presented By Andrew Szeri, Provost and Vice-President Academic
 Simon Bates, Associate-Provost Teaching and Learning
 James Olson, Dean, Faculty of Applied Science

EXECUTIVE SUMMARY

The Graduate Certificate in Global Mine Waste Management (GCGMWM) is designed to meet the growing need for professional development of mining industry professionals focusing on tailings and mine waste management. Interest in Mine Waste Management is growing rapidly. The recent attention to tailings management initiated by the Mount Polley Tailings Dam Failure and the subsequent catastrophic failure in Brazil at Samarco has created a demand for more advanced course work for professionals in Mine Waste Management. This is an ideal topic for a Graduate Certificate Program as it is an opportunity for working professionals to upgrade their education and training to be able to address the more stringent requirements that are being put in place for tailings management globally. Currently, there are no programs or certificates available that address this topic and this proposed Certificate would be unique in the world.

The program consists of a blended model, offering the flexibility of online course delivery and an intense face to face two week campus session, for each pair of the four core courses, 12 credits in total offered over two consecutive years. Students have the opportunity to ladder the course work from the certificate into a Master of Engineering or Master of Applied Science Degree in Mining Engineering. Tuition for both domestic and international students is equitable as the majority of students will be working globally although likely employed by a company based in another country which would possibly make differential tuition decisions inequitable.

Attachments:

1. Student Consultation on Tuition Report
2. FAQ response to queries from student consultation

INSTITUTIONAL STRATEGIC PRIORITIES SUPPORTED

Learning

Research

Innovation

Engagement
(Internal / External)

International

or Operational

DESCRIPTION & RATIONALE

Description

The Graduate Certificate in Global Mine Waste Management (GCGMWM) is a 12-credit specialized program designed to meet the growing need for professional development of mining industry professionals focusing on tailings and mine waste management. Students will receive technical training in mine waste management by completing four mandatory three-credit courses.

Year one, students will complete:

- MINE 586 (3) - Advanced Mine Waste Management
- MINE 587(3) - Advanced Mine Site Management

Year two, students will complete:

- MINE 588 (3) - Risk Assessment for Mine Waste Management
- MINE 589 (3) - Mine Waste Management Case Studies

Each course will be offered in a blended format with three parts:

- Part 1: online/distance learning: 2 months
- Part 2: 2 weeks intensive campus session at UBC
- Part 3: final project online/ distance learning: 6 weeks

Completion of the certificate will require a minimum of two years and maximum of four years, with students attending four courses. The year one courses must be completed before the year two courses.

After completing the certificate program, students have the option to ladder the course work into a master of engineering or master of applied science in mining engineering assuming that the student meets the admission requirements for the program. Both masters are offered by the Mining Engineering Department.

Rationale

Currently there are no accredited graduate-level degree or certificate courses of study available that address the topic of Mine Waste Management in the world. This proposed Certificate would be unique in the world. This program allows a working professional to engage in credit course work while working full time in locations all over the world. Engineering Certificates like this one will make UBC a solution for companies to needing to educate and upgrade the qualifications of their engineering staff. Students/employees will benefit from an education model in which they can directly apply the certificate courses in their daily engineering practice.

BENEFITS
Learning, Research,
Financial,
Sustainability &
Reputational

Learning

Over the last century, volumes of tailings being generated has grown dramatically, as the demand for minerals, metals and oil increases. Today there are individual mines producing in excess of 200,000 tons of tailings per day¹. Failure of tailing storage facilities can have disastrous consequences for nearby communities, the environment and for the mining companies. For example, a joint BHP Billiton and Vale mine tailing failure resulted in 19 fatalities, and the companies recognized \$1.9 billion USD provision for potential damages.²

There is a need to provide education and training to engineers and geoscientists so they are able to manage the new paradigm of mine waste management and address the more stringent requirements that are being put in place for tailings management globally. Currently there are no accredited graduate-level degrees or certificate programs in the world available to address this topic.

This program embraces flexible learning for the new realities of our world. A world where professionals are multi-tasking: balancing a full-time career, raising families, and life-long learning.

Research

The Certificate Program will foster a new generation of Mine Waste Management Researchers. Students will have the option to ladder the courses taken in the Certificate Program into a Masters degree. These will be the foundational courses in any research program seeking to address the issues of Mine Waste Management and develop innovative technologies for the field. The program will strengthen the Norman B. Keevil Institute of Mining Engineering as a centre for Mine Waste Management.

Reputational

Contributions to the Norman B. Keevil Institute of Mining Engineering Strategic Plan

The proposed Graduate Certificate will play a critical role in ensuring the Department's reputation as one of Canada's national assets when it comes to training leaders for the Canadian mining sector.

¹ <http://www.tailings.info/basics/tailings.htm>

² <http://www.mining.com/why-samarco-tailings-dam-failed/>

Professor Dirk van Zyl is arguably one of the world's leading experts in the Mine Waste Management Field. He is the academic lead for this program. The program will help us to embrace and share Dr. van Zyl's expertise, experience and technical knowledge with Mine Waste Management Professionals so that the best practices of mine waste management are available to all.

In addition to the above, the program will explicitly address key initiatives within UBC's Strategic Plan:

"Lead globally and locally in sustainability, wellbeing and safety across our campuses and communities"

Expanding technology and innovation has increased the world's appetite for the natural resources (minerals, metals and oil). The mining operations are large scale and significant amounts of tailings are being generated to meet the demands of society. The program will enable professionals to explore options for managing mine waste more sustainably while ensuring the safety of the surrounding communities. This program will attract research opportunities which address the challenges of global mine waste management.

"Significantly expand student access, alumni networks and institutional partnerships to reinforce global and local connections" and "Lead as a model public institution, fostering discourse, knowledge exchange and engagement"

Student access is significantly expanded as this program allows domestic or international working professionals to engage in academic coursework while working full time anywhere in the world. Only a two-week campus session per year is required. This program is the first Graduate Certificate Program offered by the Faculty of Applied Science that offers the option to ladder into a Masters degree. The blended course format will give access to working professionals and allow them to engage in graduate course work while continuing to work. They will be in a unique position of being a student and professional at the same time and will be able to directly apply and synthesize the content of the program to real world situations in Mine Waste Management.

Sustainability and Financial Benefit

The Certificate program is deemed to be financially sustainable and operate on a cost-recovery basis with support from the Faculty of Applied Science. The Mining Department will cover the budgeted shortfall from respective tuition revenues by transferring money from the Keevil Endowment. Ten-year projections and the program budget were developed in collaboration with the team from Strategy and Decision Support from the Office of the Provost. If any revenue is incurred, then it will be used to support updating the curriculum.

The program will also assist with succession planning as Professor Dirk van Zyl transitions to retirement over the next two years.

RISKS Financial	<p>Financial</p> <p>Finances and budgets for this program have been thoroughly reviewed and approved by the Faculty of Applied Science. The proposed tuition fees are less than the costs to deliver the Certificate for the first two years as we do not expect that we will have the targeted number of students. Once we reach our targeted number of students the tuition will fulfill a full cost recovery model. The department head of mining has agreed to cover an intentionally budgeted deficit from an endowment fund, the Keevil fund, which is available for setting up new initiatives in the department. There is no financial risk for this program.</p>
COSTS Capital & Lifecycle Operating	<p>Annual Costs</p> <p>By year three all courses will be offered.</p> <p>Program Costs of \$152,236 include:</p> <p style="padding-left: 40px;">Course Delivery \$93,969</p> <p style="padding-left: 40px;">Program Management \$58,267</p>
FINANCIAL Funding Sources, Impact on Liquidity	<p>The program is designed to be cost recovery. The total cost for the graduate certificate is \$20,040.00 plus up to an additional \$3000 for activity/ fieldtrip. The program will include one fieldtrip per certificate.</p> <p>The tuition fees will be subject to annual tuition increases as established by the University.</p> <p>Program tuition is comprised of four newly-designed three credit courses:</p> <ul style="list-style-type: none"> • MINE 586 (3) - Advanced Mine Waste Management • MINE 587(3) - Advanced Mine Site Management • MINE 588 (3) - Risk Assessment for Mine Waste Management • MINE 589 (3) - Mine Waste Management Case Studies
SCHEDULE Implementation Timeline	<p>Tuition Rationale</p> <p>The unique online flexible delivery method and the intense face to face two week campus session with high level industry expertise means our course development and instructional costs are higher than a typical graduate certificate program. We will be relying on both UBC faculty members and global expertise to deliver the course material.</p> <p>The targeted students are working professionals. Canadian Mining Engineers earn an average yearly salary of \$78,242. The median salary is \$81,057. We expect that many mining companies will sponsor their employees to attend this program. During our initial industry consultations, the following organizations expressed interest in supporting this program: Anglo American, Suncor, and Imperial Metals.</p>

- CONSULTATION** UBC's Norman B. Keevil Institute of Mining Engineering employed a number of strategies to create an industry-relevant program, including:
- Relevant Units,
Internal & External
Constituencies
- As per UBC Senate Curriculum Committee policy curriculum consultations were conducted with all impacted and relevant units.
 - Proposal materials were shared with the Industry Advisory Committee (an advisory group of alumni who are in leadership positions at local mining companies in January 2018).
 - A survey seeking feedback on the proposed program was sent to alumni from Mining and Civil Engineering.
 - An email was sent to industry leaders in mine waste management at global mining companies sharing the proposed program. Feedback was very supportive for our initiative.

Student consultation on tuition with Alma Mater Society (AMS), Graduate Student Society (GSS), International Students' Association (ISA), took place over the period between September 17 and October 17, 2018. The final consultation report is attached.

Appendix 1 – Program Tuition and Fee Assessment Details

Program Description: Graduate Certificate in Global Mine Waste Management

Start Date of the Program: 2019 Summer Session

	Domestic	International
Proposed Tuition Fees per Credit – Note 1	\$1670.00	\$1670.00
Minimum No. of Instalments	Not applicable	Not applicable
Amount per Instalment	Not applicable	Not applicable
Continuing Fees per Instalment	Not applicable	Not applicable
Application Fee – Note 2	\$104.00	\$168.25
Non-Refundable Acceptance Deposit	Not applicable	Not applicable
Other Faculty and Course Fees	Not applicable	Not applicable
Fieldtrip/ Activity Fee- Note 3	Up to \$3000	Up to \$3000

Note 1. The tuition for each course and fieldtrip/activity fee will be subject to annual tuition increases as established by the University.

Note 2. This is the current fee for the 2019S application cycle for graduate programs and is subject to annual increases.

Note 3: Fieldtrip/ Activity fee will be communicated in the admission letter each year. It is subject to change because of transportation and accommodation costs. It is listed as “up to \$3000”. We expect the amount to be close to \$1000 for the first few years. The actual amount will be determined and communicated to students upon the offer of program admission. The fee will cover the following activities:

- Welcome lunch for all certificate students.
- SWAG bag/ folder
- Networking Event
- 2-3 day fieldtrip to visit a mine waste facility (transportation, accommodation and meals for this trip)

GRADUATE CERTIFICATE IN GLOBAL MINE WASTE MANAGEMENT

STUDENT TUITION CONSULTATION REPORT

The Vice-President, Students Office, in partnership with the Faculty of Applied Science, conducted a student consultation regarding the tuition proposal for the Graduate Certificate in Global Mine Waste Management. This report outlines the consultation process and summarizes student feedback including the student representatives' submissions in Appendix 2.

Student Representative Bodies Invited to the Consultation:

- Alma Mater Society (AMS)
- Graduate Student Society (GSS)
- Engineering Students Society (ESS)

Mode of Consultation: The consultation consisted of an e-consultation and an optional face-to-face meeting. Student representative groups were invited to the consultation through email, and asked to distribute the invitation to their constituents as they felt appropriate. Student representative groups were also offered a face-to-face meeting to discuss the tuition proposal. A meeting was not requested by student representatives.

Basis of Consultation: The consultation was based on a tuition proposal and rationale document created by the Faculty of Applied Science. Please see Appendix 1 for the invitation and tuition rationale document.

Timelines: The e-consultation was conducted over the period of September 17th to October 17th.

Summary of Student Feedback: Submissions were received from the AMS and GSS. Submissions are provided in full in Appendix 2.

Organization	Summary
AMS	<p>TUITION TOO HIGH "...in our view, the proposed tuition of \$20,040 is set too high. This is evidenced by the fact that 80-90% of alumni from UBC's Civil Engineering and Mining Engineering departments that were consulted on the proposed certificate expressed that they would expect to pay less than \$15,000 for such a program."</p> <p>FINANCIAL AID COMMITMENTS – WITH REGIONAL FOCUS "Even with the lower tuition proposed by the AMS, the cost of the GCGMWM would still be high for many who are not sponsored by a private firm. For this reason, the AMS hopes that UBC will commit to significant financial aid for this program to ensure the program is accessible to people of all income levels. Scholarships or bursaries for the graduate certificate should be reserved to students that are not sponsored by their employers or other companies. Moreover, the AMS suggests that some of the available scholarships be reserved for students of the global South, where mining standards, environmental laws, and enforcement are often considerably weaker than in Canada."</p>
GSS	<p>TUITION TOO HIGH "The fee does seem a bit higher than what other comparable institutions are offering, and it is a bit worrisome that "The large majority (80-90%) of both employees and upper-level managers would expect to pay less than \$15,000 for a program of this kind", which is about \$5000 less of what you would like to charge."</p> <p>COSTS GIVEN DELIVERY MODEL "We were also wondering why the "the unique online flexible delivery method" would not bring the costs of the program down, but raise them as you seem to imply."</p>

No individual student submissions were received.

APPENDIX 1: INVITATION TO CONSULTATION AND TUITION RATIONALE DOCUMENT

Good morning,

There is a proposal by the Faculty of Applied Science to create a Graduate Certificate in Global Mine Waste Management (GCGMWM). In order to inform the program leads and the Board of Governors with regards to the **tuition proposed** for this program, the University is undertaking a consultative process to get your comments as student representatives, and an opportunity for students to provide individual comments on the tuition proposal if they wish. **Please note: the scope of this consultation process is limited to the tuition proposal.**

The consultation will consist of:

1. e-consultation

Please find attached a document which outlines the details of the tuition proposal, including:

- an overview of the program,
- the student consultation that has happened to date,
- the tuition rationale for the program, and
- the proposed proposal.

Please share the document and this email as you see appropriate. **Comments on the tuition proposal and student organization submissions can be provided confidentially to Natasha Moore – Planning and Evaluation Advisor (natasha.moore@ubc.ca).**

2. Face to Face meeting

If requested by student representatives, we can arrange a face-to-face meeting with the program leads regarding this tuition proposal. Please advise as soon as possible if you would like us to arrange a meeting.

THE CONSULTATION PROCESS WILL END ON WEDNESDAY 17TH OCTOBER, 2018

Confidentiality

Comments will be collected by the Vice-President Students Office, and only analysts within that office will know the identity of individual students submitting comments. At no time will anyone outside of the Vice President Students Office know the identity of individual students who submit comments to this consultation. Your comments will only be used for the purposes of the tuition consultation.

Comments from individual students will be stripped of any identifying information to ensure confidentiality, but otherwise will be provided to the responsible program leads and Board of Governors verbatim.

Comments received from student organizations will be reported as coming from those organizations, and provided to the responsible faculty and Board of Governors as received. There will also be a summary report of the consultation developed for the Faculty and Board of Governors.

If you have any questions about this process, please contact Natasha Moore (natasha.moore@ubc.ca). Please let me know if you have any questions about the process.

Thank you

Natasha

GRADUATE CERTIFICATE IN GLOBAL MINE WASTE MANAGEMENT
STUDENT TUITION CONSULTATION PROPOSAL

CERTIFICATE OVERVIEW

Executive Summary

The Graduate Certificate in Global Mine Waste Management (GCGMWM) is designed to meet the growing need for professional development of mining industry professionals focusing on tailings and mine waste management. Interest in Mine Waste Management is growing rapidly. The recent attention to tailings management initiated by the Mount Polley Tailings Dam Failure and the subsequent catastrophic failure in Brazil at Samarco has created a demand for more advanced course work for professionals in Mine Waste Management. This is an ideal topic for a Graduate Certificate Program as it is an opportunity for working professionals to upgrade their education and training to be able to address the more stringent requirements that are being put in place for tailings management globally. Currently, there are no programs or certificates available that address this topic and this proposed Certificate would be unique in the world.

The program consists of a total of four core courses, 12 credits in total. The courses will be offered over two consecutive years. The targeted students are working professionals. We expect that many mining companies will sponsor their employees to attend this program. Students have the opportunity to ladder the course work from the certificate into a Master of Engineering or Master of Applied Science Degree in Mining Engineering.

Certificate Details

Students will complete twelve credits of coursework. Six credits in year one and six credits in year two. Year one courses, including MINE 586 (3) and MINE 587 (3), will focus on advanced mine waste management and site management. Between the class periods, students will apply the design aspects of these courses to their work in mine waste management. Year two courses, including MINE 588 (3) and MINE 589 (3), will focus on Risk Assessment and Mine Waste Management Case Studies. Upon completion of program, students will be better prepared to design, evaluate and manage mine waste projects.

Each course will be offered in a blended format with three parts:

- Part 1: online/ distance learning (2 months)
- Part 2: intensive campus session at UBC (2 weeks)
- Part 3: final project online/ distance learning (6 weeks)

All the courses have an online component with evaluation through weekly discussion and online assignments. The on-campus component includes assignments and quizzes. The final online portion for each course will include a final project.

MINE 586 (Advanced Mine Waste Management)

As a result of this course, students will be able to develop material characterization programs for mine waste materials;

design an appropriate mine waste management program for a mine; and outline the basics of a water management system for mine waste management facilities.

MINE 587 (Advanced Mine Site Management)

As a result of this course, students will be able to: develop a corporate governance and stewardship program for mine waste management; develop and implement work scopes and responsibilities for the Engineer of Record for a tailings management facility; compile characterization and mitigation measures of acid drainage and metal leaching based on appreciation of the geochemistry of mine waste facilities; and develop and implement mine closure plans for mine waste management facilities.

MINE 588 (Risk Management for Mine Waste Management)

As a result of this course, students will be able to: identify risks associated with mine waste facilities; develop risk assessments for mine waste facilities; and develop risk management plans for mine waste facilities.

MINE 589 (Mine Waste Management Case Studies)

As a result of this course, students will be able to: develop an understanding of the complexities of the mine waste management field; develop skills in integrated management skills; and develop a better understanding of successes and failures in the industry.

KEY FEATURES OF THE CERTIFICATE
--

Mine Waste is a big challenge for mining sectors all over the world. Professionals in roles that manage mine waste often have come to it without any specific technical course work on mine waste management. This program allows the mine waste management professional to increase their knowledge and understanding and begin to apply and design using the technical coursework immediately. There is no other educational program in the world that addresses the academic needs of industry professionals in this field.

The program integrates instruction with application by the fact that the online portion can be completed while working and that the course work is spread over a two year period with only one two week on campus session required each year. Students returning for the second on-campus session in year two have an opportunity to reinforce their learning, check their understanding and further develop their technical skills.

The on campus sessions will bring together industry professionals from all over the world and the opportunity for students to share best practices and experiences from all mining sectors. During these on campus sessions there will also be site visits to local mining operations. The limited on-campus period and the flexibility of the on line program delivery will provide access to individuals working at remote mining operations from around the world.

The program fosters life long learning and further education in mining engineering. Students have the option to ladder these courses into a master of engineering degree or master of applied science degree in mining engineering. Students can strive for the credential of the certificate and they can also ladder the courses towards a masters degree. This program gives a unique opportunity for a student to explore the option of further graduate education without committing to a 30 credit masters program.

The target learners are:

1. Working professionals sponsored by mining companies to attend this program.
2. Engineers and geoscientists in the mining industry who are involved or seek to be involved in the mine waste and tailings management.
3. Students who already have a master's degree in a related field who are interested in incorporating mine waste and tailings management into their careers.
4. Students who want to pursue further studies leading to a possible Master of Engineering or Master of Applied Science Degree in Mining Engineering.
5. Students who want to pursue further studies leading to a possible Master's of Engineering in Tailings Management when it becomes available.

CONSULTATION DURING THE PROGRAM DEVELOPMENT PROCESS

December 2017- APSC DHD Meeting

Program proposal was presented at the Applied Science Department Head and Directors Meeting. Other departments were interested and supportive.

January 2018- Mining IAC Meeting

Program proposal was presented at the Mining Department Industry Advisory Council Meeting. Industry advisory council members were extremely receptive to the flexibility of the program and the topic.

May- June 2018- Industry Consultation (Students and Sponsors)

A survey was sent to alumni from the Mining Engineering and Civil Engineering departments at UBC. The survey was open from May to June 2018. Of the 215 who responded, 147 indicated that they were working or interested in working in technical, government or regulatory areas of Mine Waste Management including tailings, mine waste rock and or active and closed heap leach facilities. Of these around 30% self-identified themselves as working in upper management.

We included a question regarding upper level management because we felt that they would be the decision makers about training for their staff. 80% of the upper level management group indicated some degree of interest in sponsoring their staff members to take the program. Just under half of the upper-management respondents (47.2%) would consider taking the program themselves. Focus area and instructor expertise are the program characteristics that mattered most to upper-level management respondents. As the comments indicate, respondents are looking for a practical, operational program that is "not too theoretical or academic." Time away from work is the single biggest barrier/concern for upper-management respondents. Out of the 32 responses, 15 (47%) listed factors relating to time away from work.

Of the 70% of respondents who did not classify themselves as working in upper-management, 70% indicated some level of interest in taking the program. This is less interest than was shown by the upper-management group but it could be that they are more price-conscious or less aware of funding opportunities. Like upper-management respondents, time away from work is the single biggest barrier/concern for employee respondents. Out of the 43 responses, 20 (46.5%)

listed factors relating to time away from work. Like the upper-level managers, the employee respondents also appear to value technical, applied learning

The large majority (80-90%) of both employees and upper-level managers would expect to pay less than \$15,000 for a program of this kind.

June 2018- Industry Leaders Consultation

An email was sent to key industry leaders about the proposed program. So far we have received supportive responses from: Newmont, Suncor, Anglo American, TCS Tailings Consultants, BHP Billiton and Barrick.

TUITION AND FEES RATIONALE

The total cost of the program is \$20,040 for domestic and international students, or \$1,670.00 per credit. This tuition fee will be paid over two years. The program will start its offering in May 2019.

Tuition Rationale & Benchmarking

The unique online flexible delivery method and the intense face to face two week campus session with high level industry expertise means our course development and instructional costs are higher than a typical graduate certificate program. We will be relying on both UBC faculty members and global expertise to deliver the course material.

Costs of comparable programs

UBC professional degrees targeted at industry professionals were used as comparators.

Program	Domestic per-3 credit tuition	International per-3 credit tuition
All MBA Programs	\$2,055 \$47,499 (most MBA programs are 50 credits) \$2,849.94 for a 3 credit course.	\$73,415.18 (most MBA programs are 50 credits) \$4,404.97 for a 3 credit course.
UBC Prof MBA	\$47,499 (42 credits) \$3,392.79 for a 3 credit course	73,416.18 (42 credits) \$5,244.01 for a 3 credit course
Masters of Engineering (Full-time)	\$592.32 for a 3 credit course	\$1,946.81 for a 3 credit course
Masters of Engineering (part-time)	\$1,052.48 for a 3 credit course	Not available
Master of Engineering in Clean Energy Engineering (full-time)	\$1,785.47 for a 3 credit course	\$3,067.85 for a 3 credit course
Master of Engineering in Naval Architecture and Marine Engineering (full-time)	\$2,706.08 for a 3 credit course	\$4,458.33 for a 3 credit course
Master of Engineering Leadership Programs	\$2,865.26 for a 3 credit course	\$5,026.54 for a 3 credit course
Master of Global Surgical Care (blended online and practical)	Min Program Fee: \$27,540 \$2754 for a 3 credit course	Min Program Fee: \$46,350 \$4,635
Master of Geomatics for Environmental Management	Min Program Fee: \$17,340 \$1,734 for a 3 credit course	Min Program Fee: \$32,960 \$5,030 for a 3 credit course.

The closest match of the North American program offerings is the Colorado School of Mines.

University	Program	Domestic per-3 credit course	International per 3-credit course
Queens	Social Performance Management in Extractive Industries (12 unit program, 4 courses in the program.)	\$3,351.90 for a 3 unit course	\$3,472.86 for a 3 unit course
McGill	Graduate Diploma Mining Engineering (30 credits)	\$245.55 for a 3 credit course for a Quebec student. \$763.17 for a 3 credit course for non-Quebec Canadian.	\$1,681.56 for a 3 credit course
Colorado School of Mines	Certificate in Advance Manufacturing (12 credit program with four 3 credit courses)	\$2,694 USD for a 3 credit course for in-state students (if the exchange rate is \$1.28 it would be \$3,448.32 CAD for a 3 credit course).	\$5,874 USD for a 3 credit course for out-of-state students (if the exchange rate is \$1.28 it would be \$7,518.72 CAD for a 3 credit course).
University of New South Wales	Graduate Certificate in Mining Engineering (each course is 6 units of credit and a Graduate Certificate is 24 units of credit)	\$690 AUD per credit (if the exchange rate is 0.96 it would be \$662.40 CAD per credit).	\$905 AUD per credit (if the exchange rate is 0.96 it would be \$868.80 CAD per credit).
Curtin University	Graduate Certificate in Mineral and Energy Economics (It's a 100 credit program, which is made up of four 25 credit courses.)	\$15,500 AUD for the program (if the exchange rate is 0.96 it would be \$14,880 CAD for the program).	\$16,800 AUD for the program (if the exchange rate is 0.96 it would be \$16,128 CAD for the program).

We also compared professional development course offerings commonly accessed by professional engineers and geoscientists in the mining industry through Edumine. These courses can be found here:

<http://www.edumine.com/courses/short-courses/>. They are not university credit courses so they have less value in that they cannot be used for credit towards a graduate degree. The average cost of a 40 hr in person course through Edumine works out to \$4,812.

The instructional hours for the courses in the proposed Certificate are summarized here.

Course	Part 1 Online (2 months)	Part 2 On Campus (2 weeks)	Part 3 Online (6 weeks)	Total Online	Total On Campus
MINE 586	10	40	10	20	40
MINE 587	10	40	10	20	40
MINE 588	10	40	10	20	40
MINE 589	10	40	10	20	40

For all four courses, the facetime instruction is 2/3 of the instructional time while the online portion is 1/3 of the time.

Of the \$5,000 per 3 credit course, 2/3 or \$3,333 will be allocated to the in person instructional time while 1/3 or \$1,667

will be allocated to the online instructional time. Our allocation for the in-person instruction time is less than Edumine’s (\$4,812) at \$3,333 for the 40 hrs of instructional time.

Scholarships

We plan to allocate a minimum of 7-10 % our net tuition for entrance scholarships.

PROPOSED TUITION AND FEES

The total cost of the program is \$20,040 for domestic and international students. This tuition fee will be paid over two years.

Program Description: Graduate Certificate in Global Mine Waste Management

Start Date of the Program: 2019 Summer Session 1

	Domestic	International
Proposed Tuition Fees – Note 1	\$1,670.00 per credit	\$1,670.00 per credit
MINE 586, 587, 588, 589		
Application Fees – Note 2	\$104.00	\$168.25
Fieldtrip/Activity Fee— Note 3	Up to \$3,000	Up to \$3,000

Note 1. The tuition for each course and fieldtrip/activity fee will be subject to annual tuition increases as established by the University.

Note 2. This is the current fee for the 2019W application cycle for graduate programs and is subject to annual increases.

Note 3: Fieldtrip/ Activity fee will be communicated in the admission letter each year. It is subject to change because of transportation and accommodation costs. It is lists as “up to \$3000”. We expect the amount to be close to \$1000 for the first few years. The actual amount will be determined and communicated to students upon the offer of program admission. The fee will cover the following activities:

- Welcome lunch for all certificate students.
- SWAG bag/ folder
- Networking Event
- 2-3 day fieldtrip to visit a mine waste facility (transportation, accommodation and meals for this trip)

APPENDIX 2: STUDENT SUBMISSIONS

There was an email submission from the GSS, included verbatim below.

--

Dear Natasha,

It is with a great interest that I and my colleague VP Students, Pouya Rezaeinia, read about the GRADUATE CERTIFICATE IN GLOBAL MINE WASTE MANAGEMENT STUDENT TUITION CONSULTATION PROPOSAL

It seems like you have done a very exhaustive research of potential course takers, such as mining companies, UBC alumni, working professionals, graduate students, etc. and that you have thoroughly studied comparative programs and their course rates.

The fee does seem a bit higher than what other comparable institutions are offering, and it is a bit worrisome that “The large majority (80-90%) of both employees and upper-level managers would expect to pay less than \$15,000 for a program of this kind”, which is about \$5000 less of what you would like to charge.

We were also wondering why the “the unique online flexible delivery method” would not bring the costs of the program down, but raise them as you seem to imply.

Of course there is the fact that “We expect that many mining companies will sponsor their employees to attend this program.” Given that the target group is working professionals, who have flexibility to take this specially designed program and given that “80% of the upper level management group indicated some degree of interest in sponsoring their staff members to take the program”, we hope that the program would elicit high interest and attendance.

You know the specifics of the program, the cost breakdown, the target number of students you expect to have, the overall pool of students, so you are ultimately the best arbiters in setting up the tuition fee. We were simply wondering if it could be brought down a bit because of the thoughts we shared.

Best,

Sara

There was a submission from the AMS.



Submission to the UBC Board of Governors regarding the Tuition for the new Graduate Certificate in Global Mine Waste Management (GWGMWM) October 18, 2018

Dear UBC Board of Governors,

This submission is made on behalf of the Alma Mater Society of UBC Vancouver (AMS) in response to the request for feedback from the Vice President Students Office on the tuition for the Graduate Certificate in Global Mine Waste Management.

The AMS appreciates the need for a Graduate Certificate in Global Mine Waste Management, and we hope that those who earn the certificate will be better equipped to prevent the kinds of mine waste disasters highlighted in the consultation proposal.

However, in our view, the proposed tuition of \$20,040 is set too high. This is evidenced by the fact that 80-90% of alumni from UBC's Civil Engineering and Mining Engineering departments that were consulted on the proposed certificate expressed that they would expect to pay less than \$15,000 for such a program. It is also considerably more expensive than its closest Canadian comparator – McGill's Graduate Diploma in Mining Engineering (\$7632 for non-Quebec Canadians, or \$16,816 for international students, for a total of 30 credits). Thus, the AMS recommends that the cost of the program be reduced by around 25%. On the other hand, we are pleased to see that the cost of tuition is the same for domestic and international students.

Even with the lower tuition proposed by the AMS, the cost of the GCGMWM would still be high for many who are not sponsored by a private firm. For this reason, the AMS hopes that UBC will commit to significant financial aid for this program to ensure the program is accessible to people of all income levels. Scholarships or bursaries for the graduate certificate should be reserved to students that are not sponsored by their employers or other companies. Moreover, the AMS suggests that some of the available scholarships be reserved for students of the global South, where mining standards, environmental laws, and enforcement are often considerably weaker than in Canada.

The AMS thanks the University for soliciting student input into this process. We look forward to the creation of this program and the improvements in mine waste management that will hopefully follow.

Sincerely,



Marium Hamid
President
AMS Student Society of UBC Vancouver
president@ams.ubc.ca



Max Holmes
Vice President Academic and University Affairs
AMS Student Society of UBC Vancouver
vpacademic@ams.ubc.ca

FAQ: Certificate in Global Mine Waste Management (in response to student Tuition Consultation Report Comments)

Is there a limit to the program's cohort size and why?

There is a limit to our cohort size of 20 to 25 students per cohort. The program aims to develop a community of learners who are specialized in the mine waste management field. This community will exist long after students finish the program. Students will be part of a professional network of mine waste management experts and they will continue to share best practices and technical expertise throughout their careers. Twenty to twenty-five is the limit because we want all members of a cohort to be able to know each other. From an industry perspective, the students gain the best learning outcomes with a maximum number of 25 students. Mines will not accept groups of more than 25. This is the specialist nature of the program that gives the students the unique opportunity for mentoring from industry experts and UBC Academics, focused for practical application in this field.

Can the three newly created courses be accessed by other students in the Department of Mining Engineering?

Yes, but priority will be given to students in the certificate program. If there are available seats then graduate students in mining engineering could access the courses.

Describe the unique online flexible delivery method.

During the first two months online, we will engage students with the material by using video clips, discussion groups and design activities. Industry experts will contribute to student learning giving interactive live video sessions as well as recorded sessions accessible to students on their own schedule. We intend to engage students in the learning process from wherever they may be. Learners will be expected to contribute to discussions and engage with material. Connections with their site of work will be encouraged in the assignments and discussion. Our industry experts will not only contribute by providing live video sessions and material but also will facilitate discussions and debates. They will redirect questions and motivate students to deliberate alternative solutions. This learner-centred program will meet the needs of these students who are industry professionals looking to advance global responsibility for mine waste management. In order to meet the needs of the students, course content will need to constantly reflect the current issues in mine waste management.

The tuition for this program is very high. How will students afford it?

As this is a professional program, we expect that many of our cohort will already have a Masters or MBA Degree. This program is designed for students who have already been working in mine waste management for a few years. The median salary for salaries for Mining Engineers is \$83,000 per year. Senior Tailings Engineers earn salaries of more than \$100,000 per year. We expect students will have at least 4-6 years of work experience in industry. It will be attractive to mine waste management professionals striving for leadership positions in their field.

We are partnering with some of the top tailings engineers from industry to assist with providing content for this course. Our intent is to also develop a professional network where tailings engineers can problem solve and share best practices. Due to the specialist learning needs of the cohort, industry and global mine waste management, we are offering this program at a deficit with break-even expected at year three and full cohort size at year 6.

FAQ: Certificate in Global Mine Waste Management (in response to student Tuition Consultation Report Comments)

The results of the survey sent to alumni from the Mining and Civil Engineering departments indicated that 80 to 90% of the respondents would expect to pay less than \$15,000 for a program of this kind. Is the tuition of \$20,040 set too high?

We feel that if we could have provided more detail then they would have indicated they would be willing to pay more. At the time of the survey, the Senate had not yet approved our proposed courses. We were not able to give much detail about the courses.

The only information we could provide was:

“The Mining Engineering Department at the University of British Columbia is considering offering a Graduate Certificate in Global Mine Waste Management designed to meet the professional development needs in tailings and mine waste management. Students will complete four 3-credit courses over two years. The courses will be offered in a blended format with online learning and two weeks/ per summer on UBC Campus.”

The comments from respondents indicated that it is difficult to make a decision not knowing the content of the courses or the instructor’s expertise. There is definite affirmation that a quality program on this topic is needed. We believe that respondents would have indicated they would be willing to pay more if we were able to provide detail about the course content and industry expertise involved in the delivery of the program.

Some comments include:

- “The financial support will depend on the perceived quality and relevance of the course. If of high quality, and well-recognized as a method of differentiation (or accelerated learning) from industry professionals without the course, something similar to a PMP certificate. I assume the higher prices could be justified.”
- “The program would have to demonstrate value above other available courses and programs. Significant industry focus would be of value but should not be based on individual company focus. A fundamental approach of "lessons" learned would perhaps be a good foundation as most of the advancements in mine waste management has come from lessons learned.”
- “Balancing quality, impact and certification is important. My major questions would be around the vision for the program and its leadership and attendees. This clarity of vision needs to be established and reflected in the instructors, course structure, delivery and certification.”
- “Program could focus on main industry challenges. Case studies would help students apply concepts to real life engineering problems. This is something that is missing from engineering programs in..., but which UBC can address properly, given their close relationship with the industry. It may help to add speakers from mines, consultancy firms and regulators, who can provide insight into current issues in mine waste management.”

Is there Student Financial Aid available for this program?

We plan to allocate 7 to 10% of our net tuition for entrance scholarships in line with Faculty Policy. The AMS has suggested that scholarships be reserved for individuals who are not supported by their employers or other companies. We will incorporate this suggestion in our scholarship allocation policy.