



SUBJECT	TUITION BACHELOR OF APPLIED SCIENCE IN MANUFACTURING ENGINEERING
MEETING DATE	JUNE 14, 2018

Forwarded to the Board of Governors on the Recommendation of the President

APPROVED FOR SUBMISSION

Santa J. Ono, President and Vice-Chancellor

DECISION REQUESTED	IT IS HEREBY REQUESTED that the UBC Board of Governors approve proposed tuition of \$176.45 per credit (year 1) and \$188.35 per credit (years 2-4) for domestic students and \$1,270.37 per credit for international students, for the new Bachelor of Applied Science in Manufacturing Engineering (MANU) program, which will commence in September 2019.
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Report Date	May 11, 2018
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Presented By Andrew Szeri, Provost & Vice-President Academic
 Hugh Brock, Associate Provost, Academic Innovation
 James Olson, Dean, Faculty of Applied Science

EXECUTIVE SUMMARY

The proposal defines a new program for Bachelor of Applied Science students to pursue in Manufacturing Engineering at both the Vancouver and Okanagan campuses. The program is designed to be accredited by the Canadian Engineering Accreditation Board (CEAB). The program will be offered synchronously across both the Okanagan and Vancouver campuses of the university, and will adopt integrated classrooms to link the two campuses. The curriculum offers in-depth training of engineering fundamentals, in addition to the acquisition of the practical skills (including business management, hardware, software and data analytics) required to succeed in rapidly changing advanced manufacturing environments. For the first three years of the program, students will pursue the same curriculum. In the final year, students at UBC Okanagan will focus on production management, while students at the Vancouver campus will focus on technical elements of production.

The proposed program will be offered and administered by the Faculty of Applied Science across both campuses, and will be managed in the same manner as all other undergraduate engineering programs. A Director and Associate Director will be appointed at both campuses, and a joint curriculum committee will be formed with members from both campuses.

At present there is a high demand for engineering programs across both campuses, UBC Vancouver receives five applications for every available first-year space, and UBC Okanagan receives three applications for every available first-year space. At UBC Vancouver additional constraints exist for high-demand programs including Mechanical Engineering, Electrical Engineering and Computer Engineering where only a limited number of students are accepted into the program in year 2.

Current APSC students expressed support for the proposed Manufacturing Engineering program and viewed the program as being a “valuable addition to the engineering programs” offered by UBC, and felt that the Manufacturing program would offer an additional attractive option for students interested in our high-demand programs.

Subject to Board and Ministry approval, the proposed program aims to admit students into the second year of the program in September 2019. Resources to support the program have been allocated to APSC through the recent “tech expansion” opportunity.

INSTITUTIONAL STRATEGIC PRIORITIES SUPPORTED

- Learning
 Research
 Innovation
 Engagement (Internal / External)
 International
 or Operational

DESCRIPTION & RATIONALE

The Manufacturing sector is a high-tech sector currently undergoing a dramatic transition to what is commonly referred to as Industry 4.0 with an emphasis on the integration of classical manufacturing processes with robotics, automation, cybernetics, cloud computing, big data analytics and digital technology.

This sector accounts for 11% of Canada’s GDP, and 7% of BC’s GDP, employing 1.7M people nationally, and 161,000 people annually in BC. On a national scale manufacturing represents \$200B in annual exports, in BC the annual exports average \$9B. Importantly manufacturing represents 80% of national private sector R&D, and 42% of BC private sector R&D. In Canada, Advanced Manufacturing became a *Science Technology and Innovation Council* priority area in 2014, and this positioning was confirmed in the 2017 federal budget, which announced nearly \$1bn in innovation funding support for strategic sectors of the Canadian economy, including advanced manufacturing and digital technologies. Advanced Manufacturing is one of the key pillars in the BC led Digital Technology Supercluster.

The 2016 *Deloitte’s Survey of Global Manufacturing Competitiveness* puts talent as the number 1 source of manufacturing competitiveness. In Canada, over half of the members of the *Association of Canadian Manufacturers & Exporters* report labour shortages. Canada’s manufacturing workforce is also ageing. Over 20% of Canada’s manufacturing workforce is over 55, up from 10% in 1990.

Review of the recent British Columbia Regional Outlook 2015 – 2024 report for the Engineers and Geoscientists, Technologists & Technicians in British Columbia, noted the following key findings for BC:

- Even factoring in moderate growth there is a projected skills shortage across BC for Industrial and Manufacturing Engineers for the majority of the forecast period 2018 - 2023. Specific areas where periods of “tightness” (predicted demand exceeds the limited supply) are expected include:
 - Lower Mainland beginning 2018 – extending to 2023
 - Northern BC periods 2017 – 2019, and 2024
 - Vancouver Island Coast 2018 – 2024

- The number of positions for Industrial & Manufacturing Engineers is projected to increase by 14% over the 10-year period
- Attrition of current labor supply is a major issue within this occupational group with over 20% of the current labor supply expected to leave the workforce before the end of the forecast period. In some regions (Victoria) this number is expected to be as high as 25%.
- The recent study found that overall Industrial and Manufacturing engineers in BC have between 10-20 years left in their working lives.
- Importantly, within this occupational group the changes in numbers of jobs and workers is strongly coupled to overall economic health.

The proposed MANU program will address future demand and is consistent with the province of BC's commitment to substantially increase the number of graduates from new engineering programs in the Province.

The Manufacturing Engineering program will:

- Create a talent pool of uniquely educated engineers satisfying provincial, national and international priorities in the manufacturing sector.
- Prepare students for careers in industry and for advanced education.
- Reinforce UBC's leading position in manufacturing engineering education.

At the end of the program, students will be able to:

- **Design, operate, and optimize** advanced manufacturing environments to create high-value products.
- **Develop digital models** for manufacturing processes based on the principles of mathematics, physics, thermodynamics, chemistry and materials engineering.
- **Design, innovate and control manufacturing machinery** by applying principles of kinematics, structural mechanics and dynamics, and control methods complemented with knowledge in instrumentation, software engineering and automation.
- **Manage the manufacturing environment** by applying the principles of production scheduling, inventory and quality control, cost analysis and shop floor automation.
- **Communicate effectively in a professional environment** through technical reports and presentations. Articulate and justify technical solutions to diverse audiences.
- **Recognize and evaluate the societal benefits of manufacturing engineering.** Appreciate and evaluate the environmental and societal impact of manufacturing operations. Recognize the importance of professional and ethical responsibilities, the evolving nature of manufacturing engineering and the importance of lifelong learning.

BENEFITS
Learning,
Research,
Financial,
Sustainability &
Reputational

Learning

The program will build on the existing core expertise in Advanced Manufacturing across both campuses to offer an exceptional learning environment for students. The proposed program has been developed in collaboration with industry partners, and aligns with the transitioning needs of the evolving sector. The curriculum has been modeled on the curriculum developed by the International Academy for Production Engineering (CIRP).

In July 2016, Avcorp Industries and the University of British Columbia agreed to explore the establishment of a Learning Factory at UBC's Okanagan campus. The Learning Factory will integrate industrial production with learning and research and provide UBC students and faculty with new opportunities for research, knowledge translation, and hands-on experiential learning and will also provide technical and skills training opportunities for students in the Manufacturing Engineering Program.

The program will be linked to the proposed Learning Factory in Kelowna, and the Digital Learning Factory in Vancouver to provide students the opportunity to visualize and experiment with cyber-physical (CP) factory/process design and will enable rapid prototyping and real world scenario based learning. Students will learn how to integrate data and cyber infrastructure with state-of-the-art virtual design and automation tools. Students graduating from the program will be experts in “smart manufacturing” and will be competitive in the growing design and manufacturing job market.

Engagement

The parallel program will improve internal engagement across the two campuses, and demonstrate the value of co-curricular programming.

The program will provide a valuable opportunity for the University to engage with new external industrial partners through co-op placements, international exchanges and other integrated learning opportunities.

Reputational Research & Innovation

The Manufacturing program will provide an opportunity for both the Vancouver and Okanagan campuses to attract additional top Faculty in the area of Advanced Manufacturing, to build on the already strong Advanced Manufacturing research cluster within Applied Science. The current cluster of over 30 researchers has garnered over \$122M in research funding over the last decade, formed over 150 collaborative academic partnerships with key partners in aerospace, automotive, energy and resource sectors, with demonstrated impact to industry and society.

RISKS
Financial,
Operational &
Reputational

Working with the Strategic Decision Support team we have prepared a 10-year projection for the Manufacturing Engineering program for the Vancouver campus which aims to ensure the program can be delivered through a financially viable model. The School of Engineering has completed their own projections for the program at the Kelowna campus. While we have made every effort to capture our expected costs in the model, financial risk is inherent to the projection of revenues and expenses.

Revenue

Revenue projections for both campuses are based on the number of funded seats, expected program enrollment, expected tuition increases (2% per annum for domestic tuition and 3% ISI tuition for 2019/2020) and current ISI ratio of 30% for Vancouver and 20% for the Okanagan. Risks include a lower than expected program enrollment and a drop in the percentage of ISI students in APSC. We project this risk to be low, since BASc programs at UBC receive 4 times more qualified applicants than available spaces in Vancouver, and 3 times more qualified applicants than spaces in the Okanagan. At both campuses our BASc programs continue to attract strong ISI interest. At present our ISI percentage for BASc programs is approximately 32% in Vancouver and 20% in Okanagan suggesting our estimates of 30% and 20% respectively are reasonable.

Expenses

Risks include higher than projected faculty and staff salary increases, we project this risk to be low.

Operational

The operational risks for this program include lack of sufficient operational support, faculty and space to deliver the program. These risks will be mitigated by:

In Vancouver, the program will be administered by one of the existing Departments within APSC, and will hire faculty and staff needed to deliver the program, in collaboration with Heads across multiple Departments. At UBCO, the program will be administered in the same way as the other three BASc programs. Bridging funds allocated to the program as part of the “tech expansion” will be used to initiate the first few hires necessary to ensure the program can be launched in Fall 2019.

At present we have one classroom within the APSC precinct to deliver cross-site teaching. Additional rooms may need to be identified and renovated if the existing space becomes over subscribed or booking becomes challenging. APSC and the School of Engineering are currently working with Campus and Community Planning at both sites to address both short and long-term needs of our faculty wide growth.

Reputational

Start up Reputational risk is low given the existing reputation and track record for APSC in delivering high quality CEAB accredited Engineering undergraduate programs. The support from existing Departments of Mechanical and Materials Engineering, along with the current Advanced Manufacturing Research core will provide further support to ensure quality and profile of the program meet the expected standards.

The Ministry of Advanced Education Skills and Training (AEST) is expecting that UBC admit the first cohort of students to the Manufacturing program in September 2019, and graduate the first cohort of students in 2023. While we feel we are on track for these targets, there is some risk that a delay in program approval by AEST may cause unexpected delays. We feel that the risk is low given our common first year for all BASc programs, where we can admit an additional 20 students to first year engineering in 2019 without requiring specific approval from AEST of the program.

COSTS The proposed program will result in ongoing operational costs for the Faculty of Applied Science at both the Vancouver and Okanagan campuses. Operational costs will be largely driven by faculty and staff salaries.

Capital & Lifecycle Operating

The Manufacturing program will aim to hire approximately 15 faculty members across both campuses to support the delivery of the core program. The faculty will be a mix of both research and teaching faculty. The program will aim to augment the salary costs for faculty by applying for an NSERC Chair in Design Engineering in the Okanagan, and a Tier I CRC Chair in Advanced Manufacturing at the Vancouver campus. The projections include provisions for cross-site teaching to reduce program costs at each site, and to reduce redundancy in hiring and overlap of expertise. Hiring of both faculty and staff will be done in accordance to the scale up of the program.

The program may incur additional one time costs associated with conversion of classrooms to videolinked classrooms to support cross-site teaching may be needed. It is anticipated this would not be required until 2020/2021.

There are no additional laboratory fees or special fees associated with the Manufacturing Engineering program.

FINANCIAL Under the recent “tech expansion”, the Manufacturing program was allocated a total of 135 domestic seats across both campuses, with 80 seats allocated to the Okanagan campus, and 55 seats allocated to the Vancouver campus. The Provost Office has agreed to identify resources for an additional 25 seats at the Vancouver campus, to ensure both sites have a total of 80 funded seats, for all four years of the program. The program is expected to enroll approximately 30% (Vancouver) and 20% (Okanagan) international students, and may enroll additional domestic students and derive additional revenue from tuition.

Funding Sources, Impact on Liquidity

In addition to the ongoing funding for new seats the Province has approved additional onetime start-up funding to help bridge early hires required to deliver the program. The program is expecting to receive a total of \$550,000 in start-up costs over three years which will be shared between the two campuses.

SCHEDULE The program will be submitted to the Ministry of Advanced Education, Skills and Training pending approval from the board.

Implementation Timeline

Pending approval, the program aims to enroll the first cohort of 2nd year students in September 2019, at both campuses.

CONSULTATION The proposal was reviewed, discussed and approved by the following internal units within the Faculty of Applied Science:

Relevant Units, Internal & External Constituencies

- Chemical & Biological Engineering
- Electrical & Computer Engineering
- Materials Engineering

- Mechanical Engineering
- Engineering Physics
- School of Engineering – UBCO
- Engineering Undergraduate Society (EUS)

Students across all undergraduate engineering disciplines were offered an opportunity to come to two open forums to ask questions and provide additional feedback as part of the formal and informal consultation process. The open forums were organized with the assistance of the EUS and included students from the following Departments: Civil, Materials, Mechanical, Electrical & Computer Engineering

The following UBC units reviewed, discussed and provided support for the proposal:

- Faculty of Science - UBCV
- Faculty of Forestry - UBCV
- Vantage College - UBCV
- UBC Library – UBVC/UBCO
- Faculty of Education – UBCO

The following UBCO units reviewed, discussed and provided comments which were considered during the preparation of the proposal:

- Faculty of Management – UBCO
- Irving K. Barber School of Arts and Science – UBCO

In addition to consultation with UBC academic units and faculties the curriculum committee prepared a short industry sector briefing and consulted with the following industry partners:

- ASCO Aerospace Canada Ltd.
 - Ayya
 - Honeywell Process Solutions
 - Festo, Didactic Ltd
 - MTU Canada
 - Nemak Canada
 - Vertex Precision Manufacturing
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Appendix 1 – Tuition and Fee Assessment Details

Program Description: Bachelor of Applied Science in Manufacturing Engineering

Anticipated Start Date: September 2019

The proposed tuition for the program on the Vancouver and Okanagan campuses is \$176.45/credit for Year 1 & \$188.35/credit for Years 2-4 for domestic students and \$1,270.37/credit for international students.

	Domestic	International
Tuition Fees per Credit in Year 1- Note 1	\$176.45	\$1,270.37
Tuition Fees per Credit in Years 2-4	\$188.35	<i>(all years)</i>
Application Fee – Note 2	\$69.25	\$116.25
Non-Refundable Acceptance Deposit – Note 3	\$500.00	\$1,000.00
Faculty and Course Fees – Note 4	\$114.00	\$114.00

Note 1 – Program intends to accept the first cohort of students for September 2019. Per credit tuition fee is subject to general tuition increases as approved by the University. The international per credit tuition fee follows the current standard rate set by the University.

Note 2 - This is the current standard rate for the 2019W and 2020S application cycle and is subject to annual increases.

Note 3 - The non-refundable acceptance deposits will be applied towards the first tuition instalment.

Note 4 – B.A.Sc Annual Professional Activities fee payable each year enrolled in B.A.Sc program at UBC.

Additional fees may apply if students wish to register in co-op, or the Go Global program. These fees are not part of the standard fees for the program and therefore were not included.

BACHELOR OF APPLIED SCIENCE IN MANUFACTURING ENGINEERING

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 new Bachelor of Applied Science in Manufacturing Engineering. This report outlines the consultation process and summarizes student feedback including the student representatives' submission verbatim in Appendix 2.

Student Representative Bodies Invited to the Consultation

- Alma Mater Society (AMS)
- UBC Students' Union Okanagan (SUO)
- Engineering Undergraduate Society (EUS)

Mode of Consultation

The consultation consisted of an e-consultation and a 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 requested by student representatives on the Vancouver campus and was held on February 26, 2018.

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

Timelines: The e-consultation was conducted over the period of February 7, 2018 to March 15, 2018 in Vancouver and over the period of April 23, 2018 to May 10, 2018 in the Okanagan.

Summary of Student Feedback: Submissions were received from the AMS and the EUS. The verbatim submission is in Appendix 2.

Organization	Summary
AMS Submission	<p>STUDENT FINANCIAL AID</p> <p>"The AMS hopes that UBC will be able to commit significant aid and scholarships for this program to ensure these opportunities are accessible to all financial backgrounds."</p>
EUS Submission	<p>TUITION PROPOSAL</p> <p>"The EUS is satisfied with this proposal as students partaking in this program will pay fees comparable to other students enrolled in an engineering program at UBC Vancouver."</p> <p>INFRASTRUCTURE</p> <p>"The EUS acknowledges that proper infrastructure for this program still needs to be developed... We expect that no student fees will contribute to the development of this infrastructure."</p>

No individual student submissions were received.

APPENDIX 1: INVITATION TO CONSULTATION AND TUITION RATIONALE DOCUMENT

Good afternoon,

There is a submission by the Faculty of Applied Science to create the Bachelor of Applied Science in Manufacturing Engineering.

In order to inform the program leads and the Board of Governors with regards to the **tuition proposal** for this program, the University is undertaking a consultative process to get your comments as student representatives, and provide 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 outline 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 tuition.

Please share the document and this email as you see appropriate. **Comments on the tuition proposal and student submissions can be provided confidentially to: jenna.omassi@ubc.ca (Jenna Omassi, Advisor, Vice President Students Office).**

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 MARCH 15, 2018 (VANCOUVER CAMPUS).

THE CONSULTATION WILL END ON MAY 10, 2018 (OKANAGAN CAMPUS).

Confidentiality

Comments will be collected by the Vice-President Students Office, and only staff 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.

Please let me know if you have any questions about the process.

Thank you.

Jenna Omassi

Advisor, Strategic Support Team
Vice-President Students' Office
University of British Columbia | Vancouver
jenna.omassi@ubc.ca

TUITION PROPOSAL: BACHELOR OF APPLIED SCIENCE (B.A.SC.) IN MANUFACTURING ENGINEERING

PROGRAM OVERVIEW

Executive Summary of Program

Manufacturing is the fourth largest industry in BC, supporting roughly 161,000 jobs and accounting for 7% of the provincial GDP. It has been a focus area for the Science Technology and Innovation Council and the Government of Canada. Engineers with the skills required for advanced manufacturing are critical to the growth and maintenance of the sector in Canada. Currently, BC has no manufacturing engineering programs to support this evolving sector and there are very few programs in Canada addressing its evolving needs.

The Bachelor of Applied Science in Manufacturing Engineering (B.A.Sc.) degree program offers students the opportunity to pursue a rigorous and innovative Canadian Engineering Accreditation Board (CAEB) accredited Manufacturing Engineering degree in Vancouver. Additionally, a parallel program is being proposed at UBC's Okanagan campus.

The Manufacturing Engineering B.A.Sc. degree will develop engineers specializing in modern manufacturing environments, who will be in demand in both industry and research. It is based on a Manufacturing Engineering curriculum proposed by the International Academy for Production Engineering (CIRP). The UBCV program will run in parallel and in cooperation with a separately proposed UBCO program. This will provide opportunities for inter-institutional collaborative teaching, and open up opportunities for students to direct their studies to either technical aspects of production or production management in their final year.

Students will apply to the common engineering first year, and specialize in Manufacturing Engineering starting in the second year. Steady-state annual intake will be 50 students. Students will study foundational engineering disciplines, manufacturing processes and platforms, production management and modern and emerging manufacturing practices. The confluence of these key domain areas will provide learners with the knowledge base to support careers in manufacturing optimization, design and process management that will support the growth and creation of new manufacturing opportunities in BC and in Canada. The program will establish UBC as a leader in manufacturing engineering education.

Program Details

The full-time, 160 credit Vancouver program will enroll 50 new students annually. Students will attend eight academic semesters and 16 months of Co-op work placement, leading to a CEAB accredited Engineering B.A.Sc. degree in under five years. As in existing APSC undergraduate programs, the curriculum includes the usual common first year engineering experience, and Manufacturing Engineering specialization in the subsequent years. Transfers into second and third year between the Okanagan and Vancouver campuses will be handled through our standard transfer program. Up to 10 students each year from UBCV will be allowed to attend fourth year classes at UBCO, in order to specialize in Production Management. Similarly, up to 10 students from UBCO will be allowed to attend fourth year classes at UBCV, in order to specialize in the technical aspects of manufacturing.

Length	4 years
Total credits	160
Credits of required programming	UBC Requirements: 21 - Within the proposed curriculum, students must fulfil all Complementary Studies before graduation. Foundational (YR 1): 37 Advanced (YR 2/ YR 3/ YR 4): 43 / 40 / 40
Technical Elective credits	9 credits

FUTURE OF MANUFACTURING ENGINEERING & PROGRAM DEVELOPMENT PROCESS

A review of labour market, industry association reports and recent government reports supports the large and growing need for manufacturing engineering graduates ready to take on the new challenges facing the manufacturing industry in BC, Canada and the world. Specifically, recent surveys have indicated that in general, most industrial and manufacturing growth in Canada to 2024 is expected to arise from productivity improvements and value-added services exploiting advanced and emerging technologies. Manufacturing Engineering graduate skills relating to these areas will place them in an especially strong employment position regardless of their field of specialization.

At present BC has no manufacturing engineering program to support this important and evolving sector. Moreover, there are currently very few programs in Canada which aim to address the evolving needs of the manufacturing sector outlined in these recent reports.

The curriculum for the proposed program was well received by industry advisors across a range of different industries, many of whom would serve as potential employers for graduates from the Manufacturing Engineering program. Key insights around current trends in manufacturing from industry advisors have been incorporated into the program, including courses that provide learners with the necessary background, experience and skill to determine best solutions for the following:

- Process and factory automation
- Use of robotics in manufacturing, including industrial, mobile and collaborative robotics
- Integrated vision and systems sensors
- Motion control systems
- Additive manufacturing including 3D printing for prototyping
- Programming, networking and data analysis to support move to Industry 4.0
- Efficiency
- Ensuring safety in manufacturing processes

The proposed program aligns with the feedback of industry and market projections. Importantly, it aligns with federal government priorities for revitalization of the manufacturing sector in Canada. The courses (core and elective) were determined based on market and industry insights and the CIRP curriculum for Manufacturing Engineering. Students will develop robust core engineering skills in industrial automation, computer aided manufacturing, production management, logistics and control in addition to the business and economic evaluation skills desired by employers. Our co-op work experience is designed and timed to align with the need of industry to have students in who have had specific experiences prior to the work placement and can stay in the position for extended periods of time.

TUITION AND FEES RATIONALE

Proposed tuition follows the standard tuition model for all BAsC Engineering programs at UBC.

Expected annual tuition, based on credits (Vancouver campus) – Please note these are the September 2018W rates and are updated appropriately to reflect September 2019 rates in the tuition section below.

Required credits per year	Tuition \$CAD	
	Domestic Y1: \$172.99/credit Y2-4: \$184.66/credit	International \$1,163.76/credit
Year 1 – 37 credits	\$6,400.63	\$43,059.12
Year 2 – 43 credits	\$7,940.38	\$50,041.68
Year 3 – 40 credits	\$7,386.40	\$46,550.40
Year 4 – 40 credits	\$7,386.40	\$46,550.40

**Per credit tuition fee is subject to general tuition increases as approved by the University. The international per credit tuition fee follows the current standard rate set by the University.*

Tuition Rationale & Benchmarking

This program will follow the same tuition model as all other existing B.A.Sc. programs. These programs assess tuition on a per-credit basis. Current rates are published on the central UBC website.

This program will share the common first year of existing UBCV and UBCO engineering programs. Additionally, a number of the courses for the program, both core and elective, are pre-existing courses. In total, we propose the creation of fourteen new courses.

New funding to support the development and launch of the Manufacturing Engineering program has been secured from provincial funding already announced in support of the “tech expansion” across the province.

PROPOSED TUITION AND FEES

Tuition

The proposed tuition for the program on the Vancouver campus is \$172.99/credit for Year 1 & \$184.66/credit for Years 2-4 for domestic students and \$1163.76/credit for international students. This consultation rate was based on the tuition for 2018W session and will be aligned to the expected start date of the program September 2019 with the tuition rates as below.

	Domestic	International
Tuition Fees per Credit in Year 1- Note 1	\$176.45	\$1,270.37
Tuition Fees per Credit in Years 2-4	\$188.35	(all years)
Application Fee – Note 2	\$69.25	\$116.25
Student Fees	\$1,203.20	\$1,203.20
Non-Refundable Acceptance Deposit – Note 3	\$500	\$1,000
Faculty and Course Fees – Note 4	\$112	\$112

Note 1 – Program intends to accept the first cohort of students for September 2019. Per credit tuition fee is subject to general tuition increases as approved by the University. The international per credit tuition fee follows the current standard rate set by the University.

Note 2 - This is the current standard rate for the 2018W and 2019S application cycle and is subject to annual increases.

Note 3 - The non-refundable acceptance deposits will be applied towards the first tuition instalment.

Note 4 – B.A.Sc Annual Professional Activities fee payable each year enrolled in B.A.Sc program at UBC.

Additional fees may apply if students wish to register in co-op, or the Go Global program. These fees are not part of the standard fees for the program and therefore were not included.

APPENDIX 2: STUDENT SUBMISSIONS

There was a submission from the AMS.



Submission to the UBC Board of Governors regarding the Tuition for the New Bachelor of Applied Science in Manufacturing Engineering March 15th, 2018

Dear Board of Governors,

This submission is being made on behalf of the Alma Mater Society (AMS) of UBC Vancouver in response to the request for feedback from the Vice President Students Office sent on February 7th, 2018 on the tuition for the Bachelor of Applied Science in Manufacturing Engineering

The proposed domestic tuition is \$6,400.63 in year 1, \$7,940.38 in year 2, and \$7,386.40 in year 3 and 4. The proposed international tuition is \$43,059.12 in year 1, \$50,041.68 in year 2, and \$46,550.40 in year 3 and 4.

This program will address multiple national priorities by increasing the number of accredited manufacturing programs in Canada and skilled manufacturing engineers in the work force. Furthermore, it will enhance UBC's commitment to cross-campus collaboration between Vancouver and the Okanagan.

The AMS appreciates that these opportunities are made available to both international and domestic students with parity to similar programs in Canada and around the world, while acknowledging the unique strengths of the program. The AMS hopes that UBC will be able to commit significant aid and scholarships for this program to ensure these opportunities are accessible to all financial backgrounds. The AMS would appreciate an update from the development office on what awards and scholarships are acquired.

The AMS supports the creation of this new program and we are grateful to the University for including student input in this process. We look forward to the creation of this program and the great work that will be accomplished by those students who enroll in it.

Sincerely,

A handwritten signature in black ink, appearing to read "Alan Ehrenholz", written in a cursive style.

Alan Ehrenholz
President
AMS Student Society of UBC Vancouver
president@ams.ubc.ca

A handwritten signature in black ink, appearing to read "Max Holmes", written in a cursive style with a long horizontal stroke extending to the right.

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

There was a submission from the EUS.



Engineering Undergraduate Society
5000 — 2332 Main Mall
Vancouver, BC V6T 1Z4
ubcengineers.ca

Submission to the UBC Board of Governors Regarding the Tuition Consultation for the Program in Manufacturing Engineering

**On Behalf of
UBC Engineering Undergraduate Society
March 14th, 2018**

Dear Board of Governors:

This submission is being made in response to the request for feedback from the Vice President Students Office regarding the Manufacturing Engineering program tuition proposal.

The domestic and international tuition fees are the same as all other engineering programs in the Faculty of Applied Science. No additional fees are being considered. The EUS is satisfied with this proposal as students partaking in this program will pay fees comparable to other students enrolled in an engineering program at UBC Vancouver.

The EUS acknowledges that proper infrastructure for this program still needs to be developed and trusts that timely communication with students will occur during this process. We expect that no student fees will contribute to the development of this infrastructure.

We are happy to see that proper consultation with students was followed regarding this program. We will continue to collaborate on any future initiatives championed by the University of British Columbia and the Faculty of Applied Science.

Sincerely,

A handwritten signature in black ink, appearing to read 'Daniel Luo', written over a horizontal line.

Daniel Luo
President
president@ubcengineers.ca

A handwritten signature in black ink, appearing to read 'Quentin Golsteyn', written over a horizontal line.

Quentin Golsteyn
Vice President Academic Affairs
vpacademic@ubcengineers.ca