



WBOOTH SCHOOL OF ENGINEERING
PRACTICE AND TECHNOLOGY

McMaster-Mohawk Bachelor of Technology Partnership

**McMaster-Mohawk Graduate School
Pathway Project**

Project 2016-31

Final Report – March 1, 2017

Participants and Partner Institutions

| | | |
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1. Executive Summary

The McMaster-Mohawk Graduate School Pathways Project (GSPP) sought to create a clear and unambiguous pathway, for working technologists, as well as high school and recent college graduates, to the B.Tech. program, and onwards to graduate level studies in Engineering.

The project focused on the following:

- Gauging student demand and desire for graduate studies pathways via the Bachelor of Technology (B.Tech.) programs
- Based on this student demand, establishing:
 - o A) an advanced entry (2 courses or 6 units credit) pathway to graduate studies (completed) within the W Booth School of Engineering Practice and Technology at McMaster University;
 - o B) a specialized new M.Eng. degree in the W Booth School, designed to be aligned to B.Tech. program specializations, with options to complete the full degree as well as a shorter post-graduate diploma (in progress);
 - o C) the creation of new partnerships and pathways through the Combined Degree/Diploma program through bilateral articulation agreements, where students would then be eligible for option A) above – in this case, with Lambton College (completed).

The graduate studies advanced entry option (A, above) will be added to more than 125 existing pathways into the McMaster-Mohawk B.Tech. Degree Completion Program effective immediately. It will also be included in the new Lambton College → B.Tech. program pathway once entered into the ONTransfer database.

The research and analysis conducted in conjunction with these pathway development projects made it abundantly clear that students – even at the college level – have graduate studies (M.Eng., MBA, Ph.D., etc.) on their radar. They would like to have information on graduate level pathways made available to them early, with close to half stating that it would have been useful information for planning purposes prior to university level studies. As one survey respondent aptly put it:

“The thought of a reputable university such as McMaster acknowledging my college studies and giving me the opportunity to receive a bachelor's degree without starting from the bottom of the ladder (so to speak) is too good to pass

up. And now with the inclusion of an internal graduate studies option, the potential to build my academic level in an efficient and timely manner is immense. I believe this will have the most impact if advertised together with the B.Tech degree completion program. In my eyes it is the best option for a college student who wishes to continue their education while being acknowledged for obtaining a diploma.”

We believe this pathway will be of significant value to students moving through the Post-Secondary Education system as we continue to seek new opportunities to advance the careers of B.Tech. students.

2. Project Purpose and Goals

When polled, the majority of respondents in the McMaster-Mohawk Bachelor of Technology (B.Tech.) Combined Degree/Diploma and Degree Completion Programs indicated they would like to extend their learning to graduate level studies. The McMaster-Mohawk Graduate School Pathways Project (GSPP) sought to create a clear and unambiguous pathway, for working technologists, as well as high school and recent college graduates, to the B.Tech. program, and onwards to graduate level studies in Engineering. A subsequent survey conducted as part of this pathway development project (see Appendix A) revealed that even those still in college level studies have had graduate studies in mind; specifically, 81% of respondents enrolled in college level studies responded “Yes” to the question “Have you previously considered pursuing a graduate degree (e.g. M.Eng., M.A.Sc., MBA, and/or Ph.D.)?”

In July, 2016, The *School of Engineering Technology*, home to the McMaster-Mohawk B.Tech. Programs, and the *School of Engineering Practice* at McMaster University became a single unit, called the *W Booth School of Engineering Practice and Technology* (SEPT). With this unification of departments, it was an opportune time to consider how to build on the already established demand for graduate studies amongst B.Tech. students and graduates. The GSPP created streamlined pathways for high school students to proceed to graduate school through our Combined Degree/Diploma program or through any of our already established Degree Completion pathways at the college level (over 125 listed on ONTransfer.ca), then onward to our degree completion program for college graduates.

Over the years, many B.Tech. students have expressed an interest in pursuing graduate studies. In fact, over 100 students have gone on to grad school and the demand is growing. A November 2015 student survey to B.Tech. students revealed that 68% plan to continue on to graduate level schooling. Of the students that replied “Yes,” 71 are from our degree completion program for college graduates.

| Q: I plan to obtain a graduate degree, such as an M.Eng., MASc., MBA, or PhD. | | | | | |
|---|-----|--------|-----|--------|-------|
| | Yes | | No | | Total |
| Degree Completion Program | 71 | 77.17% | 21 | 22.83% | 92 |
| Combined Degree/Diploma | 166 | 64.84% | 90 | 35.16% | 256 |
| Total | 237 | 68.10% | 111 | 31.90% | 348 |

Table 1. November 2015 B.Tech. Student Survey

Project Goal: Ultimately, the GSPP created clear and unambiguous requirements for advanced admission to Master’s level engineering programs within the current *School of Engineering Practice*, through the already existing innovative Bachelor of Technology collaborative program model.

Now that the pathway is established, it can be expanded indefinitely, to include additional articulation agreements for students from other institution through the B.Tech. program. For example, as part of the project, a brand new articulation agreement has been established with Lambton College from two of their unique advanced diploma programs (Instrumentation & Control Engineering Technology and Chemical Production & Power Engineering) into the B.Tech. Combined Degree/Diploma program. This pathway from Lambton, to B.Tech., can now extend further into graduate level studies at McMaster. This added option makes the B.Tech. program extremely unique as a springboard for Master’s level studies.

3. Pathway Development

A) COMPETITIVE SCAN:

To begin with, research was conducted via comprehensive competitor analyses to determine what other pathways from diploma to degree, to graduate level studies might exist. This analysis revealed some indirect advanced entry pathways programs similar to B.Tech. into MBA programs, nothing clearly defined or specific to entry into Master of Engineering programs was revealed. Research was conducted online through university and college websites.

B) GATHERING STUDENT PERSPECTIVES:

Next, we endeavoured to obtain some student perspectives on demand for graduate studies via B.Tech. program pathways. Specifically, we were interested in the points at which students would be interested in considering graduate school options and how to best deliver this information to them. Approval from both the McMaster University and Mohawk College Research Ethics Boards was obtained for this survey. This research revealed a wealth of useful information (see Appendix A for a small sampling of responses), including the following:

- Close to 85% of respondents have considered continuing on to graduate level studies. This did not vary significantly amongst respondents currently enrolled at the college vs university level, telling us that providing a clear and direct route for students prior to their undergraduate studies would be a worthwhile endeavour.
- Further to this, close to half of students (46%) would have liked to find out about graduate studies pathways prior to undergraduate studies.
- The rationale for pursuing graduate school is career-centred for 51% of respondents.
- The most popular format for graduate studies was full-time, partially online.

C) ESTABLISHING A B.TECH. TO M.ENG. PATHWAY:

As a first step, the W Booth School sought senate approval to convert eight 400 level undergraduate courses into combined 400/600 level courses. These 8 courses are available as of January 2017. An additional eight have been put forward for approval, effective September 2017 (see Appendix C).

What is a 400/600 level course? These are courses in the B.Tech. program that are cross-listed at the graduate level. The 600 level version of the course is essentially the same as the undergraduate course, but with additional coursework, commonly extra assignments or a course project, beyond the requirements for undergraduate students taking the corresponding 400 level course. The 600 level course can be taken by undergraduate students (with permission from the course Professor) or by current graduate students. If you wish to complete a 400 level course, with 600 level credit, students must speak with their instructor at the start of the term.

B.Tech. students in either the Degree Completion Program (coming most commonly from an Ontario College) or the Combined Degree/Diploma program (coming most commonly from High School) can take these 400 level courses and gain 600 level credit for up to two courses (6 units) once they enter gradu-

ate studies in the W Booth School of Engineering Practice and Technology. Applicable Master's programs include:

- Engineering Design
- Engineering Entrepreneurship and Innovation
- Engineering and Public Policy
- Manufacturing Engineering

Based on feedback from students, as well as a comprehensive market and employer demand analysis, a proposal is being put forward to create a new M.Eng. program in Systems and Technology (intended to replace the Manufacturing Engineering program above), with streams that would more closely stem from those in the B.Tech. suite of undergraduate programs. This program would include the possibility for students to complete shorter Graduate Diplomas (4 courses), rather than a full Master's degree (6 courses + 8 month internship or 9 courses + 1 semester project). Advanced entry (i.e. 6 units of coursework completed at the undergraduate level) would apply to both the Graduate Diploma and Degree options. An accelerated (12 month) and extended (24 month) option will be available to students and where appropriate. Courses will also be made available in an online format. The following streams will be offered by the program¹; the possible undergraduate B.Tech. feeder-programs are indicated in parentheses.

- Automation and smart systems (Manufacturing, Process Automation, Automotive)
- Software Systems and Technology (Software, Process Automation)
- Advanced manufacturing (Manufacturing, Process Automation, Automotive)
- Automotive (Manufacturing, Automotive)
- Biotechnology systems (Biotechnology)
- Energy systems (Energy)
- Process systems (Process Automation, Biotechnology)
- Sustainable infrastructure systems (Civil Infrastructure)

In the future, consideration may be given to offering guaranteed entry to B.Tech. students who meet a minimum academic threshold. This would further allow students to chart their pathways well in advance.

Students wishing to acquire advanced capabilities in specific areas, but do not want to commit to completing the entire M.Eng. program can enroll in a Graduate Diploma. In order to receive a Graduate Diploma a student will need to complete 4 graduate level courses relevant to the subject area. The possible undergraduate B.Tech. feeder-programs are indicated in parentheses; the alignment is clear.

The following Graduate Diplomas will be offered:

- Automation and smart systems (Manufacturing, Process Automation, Automotive)
- Software Systems and Technology (Software, Process Automation)
- Advanced manufacturing (Manufacturing, Process Automation, Automotive)
- Automotive (Manufacturing, Automotive)
- Biotechnology systems (Biotechnology)
- Energy systems (Energy)
- Process systems (Process Automation, Biotechnology)
- Sustainable infrastructure systems (Civil Infrastructure)
- Digital manufacturing (Software, Manufacturing, Process Automation, Automotive)
- Quality Assurance (Process Automation, Automotive, Manufacturing)

The last two are offered since the courses recommended for the Program include capabilities required to specialize in the corresponding areas, even though there are no streams corresponding to them.¹

Reference:

¹*NEW PROGRAM PROPOSAL - M.Eng. in Systems and Technology, Jan 30, 2017. [Internal McMaster Document]*

D) COMMUNICATING THE PATHWAY TO CURRENT AND PROSPECTIVE STUDENTS:

The communications plan will include online and written materials targeted to the feeder colleges for the Degree Completion Program. The additional pathway option will also be included in the ONTransfer.ca website for >125 existing pathways. Should the M.Eng. Systems and Technology program proceed as planned, material specific to B.Tech. students will be created to promote this Graduate Diploma or Degree option.

Pending approval of the new M.Eng. Program within the School of Engineering Practice and Technology, a large infographic is planned to assist with the communicating this new pathway to the current students. This would be on display in the Engineering Technology Building, as well as on the B.Tech. website.

Also pending approval of the new M.Eng. Program, a one day seminar centered around the idea of communicating pathways to graduate programs for B.Tech. students has been discussed. This proposed Seminar would follow a format similar to the very successful C2U (College to University) Conference held in the Fall of 2013. Attendees would include representatives from Colleges and Universities involved with student advisement, Faculty, government, prospective students, existing undergraduate students and alumni. For reference, a sample of the 2013 C2U Conference Program is included in Appendix C. The proposed Seminar would follow a similar format to the C2U Conference which included Faculty presentations, guest speakers, and panel discussions.

E) EXPANDING PATHWAYS OPTIONS TO THE COMBINED DEGREE/DIPLOMA PROGRAM:

Though the creation of new pathways from college level studies has been a priority (indeed, the essence) of the Degree Completion Program, the same is not true of the Combined Degree/Diploma Program. For the first time, ever, as part of this project, a pathway into this full-time, day-time program has been created with a partner institution other than Mohawk College – Lambton College. Specifically, graduating students from Lambton College’s Instrumentation & Control Engineering Technology Program (ICET) and Chemical Production and Power Engineering Technology (CPET) will be able to enter directly into year 3 of the 4 year degree program. Once in the program, these students will have the option to take courses at the 600 level, for advanced credit at the graduate level.

Thus, it is possible to provide students with a clear graduate level pathway via the Degree Completion Program which offers block transfer via multi-lateral institutional agreements, as well as the Combined Degree/Diploma Program with specifically designed bi-lateral articulation agreements.

Highschool → College → B.Tech. → M.Eng. Pathway

| Action | Details | Timeline |
|---|--|---|
| Create framework for advanced entry through 400/600 level courses | 8 courses designed and approved in undergraduate/graduate calendars | Effective January 2017 |
| Begin marketing pathway to existing B.Tech. students | In class presentations & email communication | Winter 2017 |
| Create framework for advanced entry through 400/600 level courses | Additional 8 courses designed and approved in undergraduate/graduate calendars | Submitted Fall 2016, effective September 2017 |
| Begin marketing pathway to future B.Tech. students | Add to ONTransfer.ca, communicate with colleges, add to McMaster B.Tech. website | Winter 2017 |

Lambton College → B.Tech. → M.Eng. Pathway

| Action | Details | Timeline |
|---|--|---------------------------|
| Initial discussions with Lambton College begin | Curriculum is reviewed, gap analysis is conducted | January to September 2016 |
| Formal articulation is complete | Transfer credit is determined and details of pathway finalized | January 2017 |
| Pathway is marketed to current Lambton College students | Print material is created, in class and out of class presentations conducted | March – April 2017 |

F) ADDITIONAL PATHWAY INCENTIVES FOR B.TECH. STUDENTS:

Three additional considerations related to pathways into graduate programs are: the attractiveness of on-line programs and courses; an improved pathway to Professional Licensure (P.Eng.); and the potential to receive the Iron Ring.

I) On-Line Program and Course Conversions

Since 2015, the Software stream within the Bachelor of Technology Degree Completion Program has been in the process of converting to a fully online program. All 24 courses in the program will be fully converted by the Fall of 2017. Only Final Exams will be written in-person at McMaster University, or written at remote testing locations.

In 2015, the announcement of this change in format has sparked an increase in applications and enrollment in the program. Even though the students entering the Program in 2015, 2016 (and thus far in 2017) have had a ‘mix’ of online and face-to-face courses, the prospect of having an increased number of online courses seems attractive to the majority of the Software stream Degree Completion Students. Acceptance numbers for the Software stream are shown in the Table below.

| <i>Calendar Year</i> | <i>Intake</i> |
|----------------------|---------------|
| 2013 | 18 |
| 2014 | 20 |
| 2015 | 37 |
| 2016 | 19 |

Table 2. Applicants and Final Intake Numbers for 2013-2016 for the Software Stream

The spike in enrollment in 2015 is clear from the data above, however, the enrollment in 2016 seems to have returned to the pre-2015 numbers. It should also be noted that the program name was changed in 2015 from “Computing and IT” to “Software”; this may have also had an effect on the enrollment numbers. Early indications for 2017 point to another strong enrollment year, perhaps similar to 2015.

The conversion of the Software Program to a fully online format has had a spin-off effect for the other Degree Completion Streams. Seven of the required 24 courses in the Software curriculum are Management Courses, are shared with the other 3 DCP Streams (Manufacturing, Energy, and Civil). This means that the students in the other 3 streams have also been taking several online courses. The preliminary feedback from students indicates that the majority prefer the online format. The main advantage cited by students is the reduced commute-time to and from the University. This is particularly appealing for students working full-time, and/or commuting to Hamilton from the GTA.

The design of the B.Tech. Degree Completion Programs provides a pathway to obtaining a Bachelor’s Degree for College Graduates who are also working full-time or part-time; hence the evening and weekend class times. Offering online courses seems to further smooth the transition to University for the target demographic. This observation has been taken into consideration in the development of the new

M.Eng. Programs described previously, thus online courses will be offered whenever feasible at the graduate level.

The School of Engineering Practice and Technology has been actively experimenting and developing tools and technology to improve the student experience within online courses. This work will continue within the School and best-practices will be shared between the Undergraduate and Graduate level courses.

II) Pathway to Professional Licensure (P.Eng.)

Completion of a Master's Degree in Engineering also facilitates the pathway to professional licensure for graduates of the Bachelor of Technology programs. The pathway to professional licensure that is created by the new M.Eng. program is shown in Fig. 1. In comparison to the pathway for a student graduating from a traditional accredited Bachelor of Engineering program.

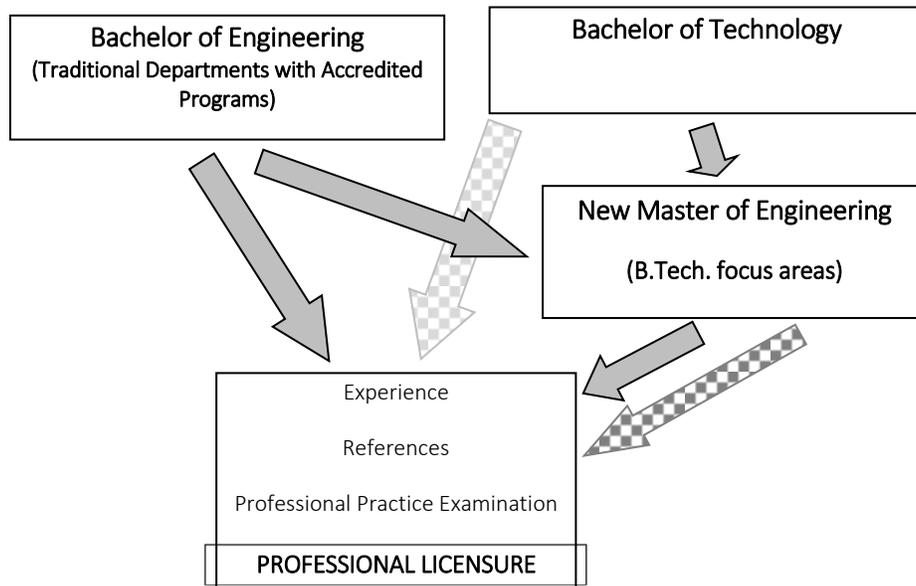


Fig. 1. Pathways

It should be noted that graduates of the Bachelor of Technology undergraduate program already have

an existing pathway to professional licensure (shown by the light-grey patterned arrow in Fig. 1) but this involves a series of technical challenge exams administered by the Professional Engineers Ontario (PEO). The number of exams can range from as few as four, to as many as ten depending on the year of graduation. More recent graduates are assigned fewer exams thanks to the evolution of the curriculum towards content that is more favorable to the licensing body. Completion of an M.Eng. degree after the B.Tech. degree can significantly reduce or in some special cases even eliminate the need to complete any challenge exams (represented by the dark-grey patterned arrow). Additionally, the time spent in the M.Eng. program may also count towards the amount of work experience required for licensure. Typically, the M.Eng. program will count as 1-year of the required 4-years of work experience.

III) Potential to Receive the Iron Ring

A tradition in Canada is for graduates of Engineering Programs to participate in a ceremony referred to as: “The Ritual of the Calling of an Engineer”. This ceremony is commonly referred to as “Kipling”; a reference to Rudyard Kipling who authored the ceremony in 1922 at the request of seven past-presidents of the Engineering Institute of Canada. The ceremony is meant to instill a sense of social responsibility among newly qualified engineers. These new engineers recite an oath and then receive the so-called “Iron Ring” (now made of stainless-steel) which they wear on the pinky-finger of their working-hand. The ceremony is administered by ‘The Corporation of the Seven Wardens Inc.’ which is represented regionally by so-called ‘Camps’ consisting of a group of ‘Camp Wardens’. Each Camp is loosely-affiliated with a degree-granting University, or in some cities, with several degree-granting Universities. The ring is strongly associated with the engineering profession in Canada.

Since the beginning of the B.Tech. Program in 1997 (Manufacturing), many graduates have participated in the Iron Ring Ceremony. Over the past decade, there have been inconsistencies in terms of the exact academic and work-related requirements necessary to qualify to receive the Ring. Some ‘Camps’ have been accepting of B.Tech. graduates while others (including Camp XIII – affiliated with McMaster) have required students to obtain a Masters Degree in Engineering before being admitted to the Ring Ceremony.

Recently, the National Organization of Camp Wardens has concluded that all applicants from non-accredited Engineering and Technical Programs (i.e. – B.Tech.) will be required to apply to the PEO (or another equivalent Provincial Body) and complete any assigned challenge exams prior to receiving admittance to the Iron Ring Ceremony. This requirement potentially increases the attractiveness of an

M.Eng. Program (and other graduate programs) since the completion of these programs will reduce the number of PEO Challenge Exams and improve the student pathway to receiving the Iron Ring.

4. Concluding Remarks

We wish to extend our sincerest thanks to ONCAT for the financial support that made this project possible. Though pathways to graduate studies have not traditionally been the focus on ONCAT, we believe that our past experience with students moving through the B.Tech. programs and research conducted as part of this studies both indicate that it is something that is very much on the radar of those moving through the PSE system.

Appendix A – Student/Alumni Survey Results

If you are currently enrolled in school, please indicate the level of your studies. If you are not currently enrolled anywhere, please select "Not Enrolled in School":

| | |
|---------------------------------|------------|
| College Diploma | 21 |
| Not Enrolled in School | 22 |
| University Graduate Degree | 9 |
| University Undergraduate Degree | 114 |
| Grand Total | 166 |

Have you previously considered pursuing a graduate degree (e.g. M.Eng., M.A.Sc., MBA, and/or Ph.D.)?

| | No | Yes |
|---------------------------------|---------------|---------------|
| College Diploma | 19.05% | 80.95% |
| Not Enrolled in School | 16.67% | 83.33% |
| University Undergraduate Degree | 15.04% | 84.96% |
| Grand Total | 15.79% | 84.21% |

Have not enrolled in graduate studies (college or undergrad studies only):

What are your reasons for not previously considering pursuing a graduate level degree?

| | |
|---|-----------|
| Do not know enough about what it would entail | 5 |
| Doesn't seem worth my time or money | 7 |
| I'm already employed in my field | 3 |
| My grades are not high enough | 6 |
| Other | 2 |
| Grand Total | 23 |

What are your reasons for wishing to pursue a graduate level degree?

| | |
|---|----|
| I want to advance my career | 65 |
| I want to become an academic (researcher or faculty member) | 13 |
| I want to make more money in my career | 14 |
| I want to shorten the pathway towards obtaining my P.Eng. license | 26 |
| My employer is recommending that I pursue graduate level studies | 1 |
| Other | 9 |

| | |
|--------------------|------------|
| Grand Total | 128 |
|--------------------|------------|

| What format would you prefer to complete your graduate level studies in? | | | |
|---|-------------------|-------------------|-------------|
| | Full-time studies | Part-time studies | Grand Total |
| In class only | 23 | 10 | 33 |
| Fully online | 4 | 20 | 24 |
| Partially online | 51 | 35 | 86 |
| Grand Total | 78 | 65 | 143 |

| What time of day would best suit you for graduate course work? | | | |
|---|-------------------|-------------------|-------------|
| | Full-time studies | Part-time studies | Grand Total |
| Coursework in a condensed format (e.g. Monday to Friday for 2-3 weeks straight for a single course) | 18 | 13 | 31 |
| Daytime during the week | 44 | 6 | 50 |
| Evenings during the week | 14 | 36 | 50 |
| Weekends | 3 | 10 | 13 |
| Grand Total | 79 | 65 | 144 |

| What would you consider to be most appealing as an incentive to consider an internal Master's degree option? Rank most important to least important. | | | | |
|---|------------|------------|------------|------------|
| | #1 | #2 | #3 | #4 |
| Guaranteed admission to a graduate program | 39 | 39 | 27 | 21 |
| Option to continue learning under faculty from the B.Tech. program | 20 | 29 | 24 | 50 |
| Possibility for advanced credit | 30 | 24 | 41 | 28 |
| Tuition break/scholarship in a graduate program | 42 | 35 | 32 | 19 |
| Grand Total | 131 | 127 | 124 | 118 |

| If such an internal Master's program existed, at what point would you like to find out about it? | |
|---|--------|
| College | 15.11% |
| High school | 31.65% |

| | |
|--------------------|----------------|
| University | 53.24% |
| Grand Total | 100.00% |

Have already enrolled in graduate studies (in progress or completed):

| Count of If there was an internal Master's program, directly related to B.Tech., would you have considered it? | |
|--|-----------|
| No | 2 |
| Yes | 9 |
| Grand Total | 11 |

| What would you consider to be most appealing as an incentive to consider an internal Master's degree option? Rank most important to least important. | | | | |
|--|-----------|----------|----------|----------|
| | #1 | #2 | #3 | #4 |
| Guaranteed admission to a graduate program | 1 | 3 | 2 | 3 |
| Option to continue learning under faculty from the B.Tech. program | 5 | 1 | 1 | 3 |
| Possibility for advanced credit | 1 | 4 | 2 | 2 |
| Tuition break/scholarship in a graduate program | 3 | 1 | 4 | 1 |
| Grand Total | 10 | 9 | 9 | 9 |

Appendix B – Courses Available for Advanced Credit

As of January 2017, the following courses are available for undergraduate students in B.Tech. to gain advanced credit for graduate programs within the W Booth School of Engineering Practice and Technology:

1. 6AS3 Advanced System Components and Integration
2. 6AT3 Conceptual Design of Electric and Hybrid Electric Vehicles
3. 6BC3 Building Science
4. 6DM3 Data Mining
5. 6PD3 Power Distribution II
6. 6TB3 Biotechnology III/Advanced Biotechnology
7. 6PM3 Project Management
8. 6RM3 Robot Mechanics and Mechatronics

The following additional courses will also be available for advanced credit, as of September 2017:

9. 6DA3 Data Analytics and Big Data
10. 6ES3 Real-Time Systems
11. 6PQ3 Power Quality
12. 6SS3 System Specification and Design

The following additional courses will be available for advanced credit, in future years in the M.Eng in Systems and Technology

13. 6BI3 Bioinformatics
14. 6BL3 Biomaterials and Biocompatibility
15. 6BM3 Biopharmaceuticals
16. 6BS3 Biotechnology Regulations

College to University: Engineering Success Project

Wednesday, October 23, 2013

McMaster Innovation Park, Hamilton, ON

Welcome Note from Alan Murray:

On behalf of the McMaster-Mohawk Bachelor of Technology, I am pleased to welcome you to the 2013 College to University Engineering Success Conference!

We are very excited to bring together representatives from 15 colleges and 12 universities to share the B.Tech. story as one of the oldest multi-lateral block transfer credit programs of its kind. It is our sincerest hope that through an honest and open dialogue, we can encourage a feedback loop between sending and receiving institutions that is centred on one common goal – student success!

With your participation, I'm sure that this event will be both productive and insightful.

With thanks,



Alan Murray, Executive Director
McMaster-Mohawk Bachelor of Technology Partnership

Schedule:

| | | |
|---------------|---|--|
| 9:00 – 9:30 | Welcome & Breakfast | Opening remarks by Cheryl Jensen, VP Academic, Mohawk College |
| 9:30 – 10:45 | Session 1 – B.Tech. Success Project Analysis/Results | |
| 10:45 – 11:00 | Coffee Break | |
| 11:00 – 12:15 | Session 2 – Facilitating the Transfer Process: Voices from Feeder Colleges | |
| 12:15 – 1:30 | Lunch - Keynote | Fiona Deller, Executive Director, Policy and Partnerships, HEQCO |
| 1:30 – 2:45 | Session 3 - Student/Alumni Q&A Panel | |
| 2:45 – 3:00 | Wrap-up & Discussion | Dr. Carlos Filipe, Acting Associate Dean (Academic), Faculty of Engineering, |



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3:00 Refreshments (Wine & Cheese)

Session 1: About the B.Tech. Program/Results of Success Project

9:30 - Profile of the B.Tech. Student

Lindsay Bolan, M.A., Business Manager

A close look at the B.Tech. student body from 2006 – 2012 reveals a diverse range of educational backgrounds and individual success stories. For many, the decision to pursue university education was not made until years after college graduation, while for others it has been a primary goal since high school. This presentation will identify the various routes taken by students into the B.Tech. program and provide an analysis of student demographics and motivations for enrolling.

9:50 - Connecting the Dots: Academic Performance Based on Sending College

Dr. Jeff Fortuna, Computing and Information Technology Program Chair

This presentation seeks to answer the question “are there significant differences in the performance of students from different colleges?” Looking specifically at Ontario Published College Standard Programs in Mechanical Engineering Technology, Civil Engineering Technology, and Electrical Engineering Technology, we will discuss how students from various colleges perform academically in the B.Tech. program.

10:10 - Collaborative Research between Colleges and Universities: A Success Story

Dr. Nafia Al-Mutawaly, Energy Engineering Technologies Program Chair

Collaborative applied research delivers tangible benefits to both students and institutions by providing students with pathways, broadening skill sets at both institutions, solving real world problems, enhancing lab facilities, and strengthening faculty research resources. This presentation will discuss how the strategic selection of research topics, combined with multi-institution and industry partnerships, has strengthened education in energy engineering at both McMaster and Mohawk.

10:30 - Life After B.Tech.: Pathways After the Undergraduate Degree

Mike Piczak, MBA, Management Program Chair

Among the aims of the Bachelor of Technology program is encouraging graduates to pursue lifelong learning along the road to realizing their full potential. Graduates assume related employment, pursue professional licensing and increasingly go on to do masters and Ph.D. studies. This presentation will share the spectrum of post B.Tech. options that are available to graduates of the program.

Session 2 – Facilitating the Transfer Process: Voices from Feeder Colleges



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11:00 - Forging New Pathways to Improve Student Mobility in the Province of Ontario

Glenn Craney, Executive Director, ONCAT

The presentation will cover ONCAT's activities over its first year of operation and the next steps required to build a comprehensive, transparent and consistently applied system of credit transfer in Ontario.

11:20 - 2013 Humber College Student Survey on Post-diploma Planning

Barbara Martin, Manager, Pathway Development, Humber College

In Spring 2013, the School of Applied Technology at Humber College administered a survey to all final semester diploma students to gauge student interest in pursuing degrees following graduation, as well as to understand which factors mattered most in their decision to do so. Barbara Martin, Manager of Pathway Development, will report on the outcomes of this survey as well as some of the initiatives that are being implemented as a result of the findings.

11:40 - The Voyage of College to University Transfer Students: The Student Voice

Terry Hickey, Professor and Program Coordinator, Loyalist College

This presentation will share the findings of this qualitative study in the areas of motivation, academic surprise, fitting in and seamless education. Some additional discussion focused on supporting future student success will be included for consideration in the college, university and student domains.

12:00 - C & U in a Blender

Tony Thoma, Dean, Engineering Technology, Mohawk College

Mohawk College is a leader in the establishment of student pathways across institutions. This presentation will discuss how Mohawk has advanced traditional College to University pathway models, as well as University to College and combined Degree/Diploma options for students of all backgrounds. With a focus on professional licensing and career advancement, the discussion will centre on how new collaborative education models are serving the needs of the engineering industry today.

Lunchtime Keynote:

12:45 - Learning Outcomes, Credit Transfer and the Student Experience: A Snap Shot of HEQCO Research.

Fiona Deller, HEQCO



Fiona Deller is the Executive Director, Policy & Partnerships at HEQCO where she focuses on knowledge mobilization, research impact and partnership building. Prior to coming to HEQCO, Fiona worked as the postsecondary education coordinator at the Council of Ministers of Education, Canada where she focused on federal/provincial/territorial relations in postsecondary, quality assurance, government funding of PSE, student financial assistance and credit transfer, among others. Fiona also teaches program evaluation at the School of Politics and Public Administration at Ryerson.

Session 3: Q&A Panel with B.Tech. Students/Alumni

1:30 - Stories of Success from C2U Students and Alumni

In this session, we bring together 10 current students and graduates of the Bachelor of Technology program. What motivated these college graduates to pursue university education? How smooth was the transition and what obstacles did they face? What opportunities have opened up as a result of their decision to pursue further education?

Panel Participants:

- **Matt Colby**
 - Specialization: Civil Engineering Infrastructure Technology
 - Story: Matt graduated from Mohawk College in 2007 with an advanced diploma in Architectural Technology. He began in the B.Tech. program immediately, enrolling full-time in evening and weekend courses. After a successful co-op experience, which led to full-time employment, Matt switched to part-time schooling in B.Tech. He even received tuition assistance from his new employer for the remainder of his degree.
- **Asmaa Al-Hashimi**
 - Specialization: Civil Engineering Infrastructure Technology
 - Story: Asmaa graduated from Mohawk College in 2008 with an advanced diploma in Architectural Technology and later that year she started a successful career with the City of Hamilton, Building Services Division. In 2010, she started her studies in the B.Tech. program at McMaster University studying full-time by taking courses during the evenings and weekends. Asmaa is now enrolled in the Master of Engineering, Civil Engineering program at McMaster University.
- **Juste Fanou**
 - Specialization: Civil Engineering Infrastructure Technology
 - Story: Juste completed an advanced diploma in Architectural Technology in 2010 as an international student at Sheridan College. He began working right away as a Specification Writer for Parkin Architects, an architectural firm based in Toronto. He then started the B.Tech. program in 2012, enrolling part-time in evening and weekend study. Juste hopes to obtain his degree in 2014 and plans to pursue graduate studies in the field of Building Science and Engineering.
- **Ashley Osika**
 - Specialization: Computing and Information Technology
 - Story: Ashley completed an advanced diploma in Computer Systems Technology - Software Engineering from Mohawk College in 2005. After graduating, she worked as began a career as a Business Analyst, enrolling 3 years later in the B.Tech. program for part-time in evening and weekend study. Ashley graduated with distinction in 2013 and now works at Desire2Learn as an Implementation Consultant.

- **Utsav Banerji**
 - Specialization: Computing and Information Technology
 - Story: Utsav completed an advanced diploma in Computer Engineering Technology from Seneca College in 2010. After graduating, he completed an internship with Mercedes-Benz Canada Inc., before enrolling in full-time studies with the B.Tech. program. Utsav finished his degree in just 2 years, graduating with distinction. Utsav is now working as a Systems Integration Consulting Analyst at Accenture Inc.
- **Ernie Vidovic**
 - Specialization: Energy Engineering Technologies
 - Story: Ernie has a Bachelor of Arts from the University of Waterloo ('85) and an advanced diploma in Electronics Engineering Technology from Mohawk College ('89). After more than 20 years in the electronics, telecommunications and power industry and numerous professional development and project management courses, Ernie decided to pursue further university education in his field with the goal of becoming a Professional Engineer. He began the B.Tech. program in 2012, enrolling in part-time study in evening and weekend courses, while continuing to work as Operations Manager for Norfolk Power. He will be half way through the program by Christmas 2013.
- **Phillip Picassinos**
 - Specialization: Energy Engineering Technologies
 - Story: Phillip graduated in 2009 from Conestoga College with an advanced diploma in Electrical Engineering Technology. He transitioned straight into the B.Tech. program, finishing in 2012 with a degree in Energy Engineering Technologies. Phillip now works as an Electrical Designer for a company that specializes in the design and manufacturing of Power Transformers. In the future, Phillip intends to get his Master's in Business Administration, and with the help of his experience in engineering design, would like to excel in a career that demands overseeing and managing large projects.
- **Roberto Ribeiro**
 - Specialization: Manufacturing Engineering Technology
 - Story: Roberto graduated from Conestoga College in 2009 with a diploma in Mechanical Engineering Technology in Design and Analysis. After his diploma, Roberto began a Bachelor of Engineering program at McMaster University. During his first term in level 1 of the traditional 4 year engineering program, Roberto realized that the program simply wasn't a good fit, and that the best route towards obtaining a Ph.D. would be the B.Tech. program at McMaster. Roberto finished the program through full-time studies in just 24 months with a cumulative average at the top of his class. Roberto has moved on to a M.A.Sc. in Mechanical and Mechatronics Engineering at the University of Waterloo, with an Ontario Graduate Scholarship for his research.
- **Royston Rebello**
 - Specialization: Manufacturing Engineering Technology
 - Story: Royston graduated from Humber College with an advanced diploma in Mechanical Engineering Technology in 2008. He began right away in the B.Tech. program, enrolling full-time in evening and weekend courses and graduating with a

degree only 2 years later. Royston is now working towards a Master of Science in Management and Systems from New York University and works as an Account Manager in Toronto.

- **Jason Wight**

- Specialization: Manufacturing Engineering Technology
- Story: Jason graduated from Sheridan College in 2003 with an advanced diploma in Mechanical Engineering Technology. He immediately began his career, working for Ontario Power Generation, but strived for advancement and knew that acquiring a degree would open avenues that were once closed. He began the B.Tech. program in 2006, enrolling as a part-time student in evening and weekend courses and graduated in 2011 with his degree. Immediately following, Jason was accepted to the Masters of Engineering, Mechanical Engineering and Mechatronics program at the University of Waterloo. He completed his M.Eng. in 2012, is continuing with a successful career at Ontario Power Generation, and is now working towards obtaining his Professional Engineering License.

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