

POST COLLEGE PATHWAYS: BACHELOR OF TECHNOLOGY AS A GATEWAY TO P.ENG., MASTER’S DEGREES, MBA and OTHER DEGREES

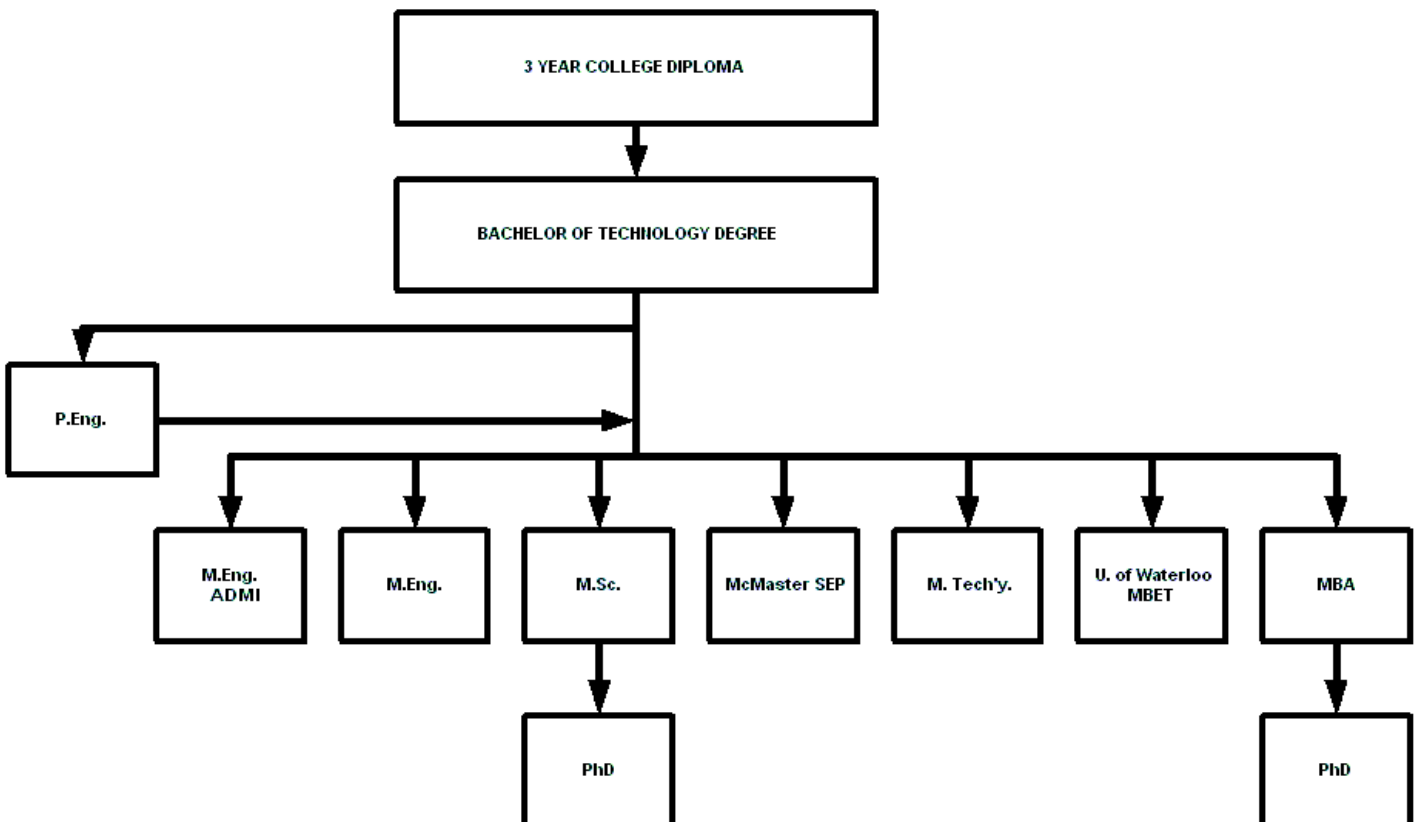
INTRODUCTION

Many Bachelor of Technology students and those applying to enter Bachelor of Technology programs enquire about study opportunities available to them after they complete their Bachelor level studies. Four academic career pathways come up regularly as being of interest to Bachelor of Technology graduates:

1. securing P.Eng. status
2. pursuing Master’s level studies (M.Eng., M.Sc.) in engineering
3. pursuing Master’s level studies in technology and entrepreneurship
4. pursuing MBAs

It should be noted that other master’s level opportunities exist through McMaster’s School of Engineering Practice (SEP). In addition, graduates are able to pursue Master’s level studies in programs various called Master’s of Technology. These tend to be U.S. based schools.

Diagrammatically, the options can be shown as follows:



This note is intended to outline some of the opportunities which exist for such advanced study and how these opportunities relate to particular professional or career objectives. While details and links to some programs, particularly those offered at McMaster University, are provided, it is not the purpose of this note to be a compendium or compilation of available graduate programs.

Taking the Bachelor of Technology Program at McMaster University provides students with an opportunity to continue their studies after college, with the option of graduate level studies at some later date. In addition, the Bachelor of Technology prepares students to obtain a professional engineering designation (P.Eng.). Thus, the Bachelor of Technology fills a gap in the educational chain making it easier for college graduates to secure professional status and continue on to graduate school.

Another important aspect to note is that Bachelor of Technology degrees are not common in Canada and not well understood by university graduate schools. As a consequence, applicants to the various programs identified in this document may need to provide additional documentation concerning the nature and content of the Bachelor of Technology program. The Bachelor of Technology web site might assist schools evaluating an application to make a better judgment as to the degree of alignment between our Program and their Graduate Programs. The site is: <http://btech.mcmastermohawk.ca>.

On occasion, graduate schools may request interviews with candidates to assess their potential. In order to prepare for such interviews, it may be useful for candidates to speak to Bachelor of Technology graduates who have been accepted into the program to which they are applying. A listing of some of the graduate programs which have accepted Bachelor of Technology graduates is provided at the end of this document. Should you wish to contact such past graduates, call the Bachelor of Technology Office (905.525.9140 ext. 27056) for contact information.

PROFESSIONAL ENGINEERING STATUS (P.ENG.)

A number of Bachelor of Technology graduates have continued their studies and obtained their P.Eng. status. Typically, Bachelor of Technology graduates must:

- 1 write a number of examinations (usually 5) as specified by the PEO
- 2 write an engineering and ethics examination
- 3 fulfill a technical report requirement
- 4 satisfy an internship period where candidates work directly for a P.Eng. (this is typically 2-3 years)

[There is a Prescribed PEO Examination Program for B.Tech. graduates in Manufacturing Engineering Technology.](#)

In preparation for these examinations, students often study either on their own or take preparatory courses through such institutions as EPIC (<http://www.epic-edu.com/>). Past experience suggests that Bachelor of Technology graduates are able to complete personal study and be successful while others prefer to be tutored. Either way, Bachelor of Technology graduates have shown that they can satisfy PEO requirements.

Formal application with complete transcripts must be made through the Professional Engineers of Ontario. Candidates should be poised to participate in an interview process particularly where candidates wish to negotiate a reduction in final examination requirements.

M.Eng. (ADMI)

The Advance Design and Manufacturing Institute, ADMI, is a master's level degree program created through a partnership offered through five Ontario universities. Students study a selection of technical and management courses culminating in the degree of Master of Engineering in Design and Manufacturing. In many ways, this program is an ideal continuation of the Bachelor of Technology graduate's studies.

The M.Eng. degree program in Mechanical Engineering is an ADMI (Advanced Design and Manufacturing Institute) master's degree in design and manufacturing which is offered in collaboration with the University of Toronto, the University of Waterloo, the University of Western Ontario, Queen's University and McMaster University. A number of Bachelor of Technology graduates have successfully completed this program. Information on ADMI and this innovative program is available at www.admicanada.com.

PROFESSIONAL MASTER'S DEGREES (M.Eng.)

These degrees are usually designated Master of Engineering (M.Eng.) degrees (as distinct from Master of Science or Master of Applied Science degrees, which are designations normally used for research master's degrees). M.Eng. degrees, also sometimes referred to as project master's degrees, usually comprise a combination of course work and a project. The nature of the project is usually "professional" rather than "research" (e.g. dealing with design or manufacturing problems.)

These kinds of programs are considered to be an excellent fit for graduates of Bachelor of Technology programs because Bachelor of Technology programs concentrate on developing advanced technological skills in an environment which is more concerned with applications than with research. The advanced coursework in the master's degree program and the experience in developing, conducting and completing a major applications-oriented project would provide a good educational base for technologically-focused positions in industry.

Most of the Engineering Departments at McMaster University offer M.Eng. degree programs; the details of these can be found in the calendar of the McMaster University's School of Graduate Studies or on departmental web pages (<http://www.eng.mcmaster.ca/depts/intro.htm>).

RESEARCH MASTER'S DEGREES (M.Sc.)

Research master's degree programs in engineering at McMaster University lead to the degree Master's of Applied Science (M.A.Sc.). Typically, these programs require a relatively small number of courses and a major research project culminating in a thesis. Usually, but not always, individuals who pursue a M.A.Sc. intend to move on to doctoral studies.

Research master's programs would be suitable for Bachelor of Technology graduates who have a very definite career objective in fundamental and/or applied research. However, the coursework and research components of these programs normally require mathematical and analytical skills which are beyond those included in the Bachelor of Technology Programs. Bachelor of Technology graduates interested in these programs should have a very strong ability in mathematics and may well need to do additional preparatory studies in mathematics to be eligible for admission to such programs.

All Engineering departments at McMaster University offer M.Eng. degree programs; the details of these can be found in the calendar of the McMaster University's School of Graduate Studies or on departmental web pages (<http://www.eng.mcmaster.ca/depts/intro.htm>). Bachelor of Technology students or graduates wanting to pursue a research master's program at McMaster University are advised to contact the relevant department and arrange for an interview with a faculty member. A useful approach is to do some preliminary and preparatory investigation to identify professors whose research program aligns well with the interests and skills of the student. The same advice would apply to those seeking admission to programs at other universities.

Individuals interested in seeking acceptance to professional or research master's degree programs should assemble all transcripts, referee documentation and other related materials for presentation to

the school in question as per the entrance procedure. Bachelor of Technology candidates have also found it useful to investigate the graduate school's research program and speak to professors whose research interests the candidate. In preparation for such a discussion, it would be advisable to look up the professor's publications to make the student/professor meeting productive. It is suggested that such a discussion take place prior to proceeding through the formal application process.

McMASTER UNIVERSITY'S SCHOOL OF ENGINEERING PRACTICE (M.Eng.)

Professional masters degrees at McMaster University are also offered through the McMaster University School of Engineering Practice (SEP). Three different degrees are offered through the SEP Centres: Master of Engineering Entrepreneurship and Innovation, Master of Engineering and Public Policy and Master of Engineering Design; the last of these has three specific thrusts: a) process systems design and operation, b) sustainable infrastructure and c) product design. Information on MSEP and these programs can be found at <http://msep.mcmaster.ca>.

Bachelor of Technology students or graduates who are interested in any of the professional masters programs at McMaster University are advised to contact the relevant department or SEP centre and arrange for an interview to discuss their interests and qualifications for a particular program. The same advice would apply to those seeking admission to programs at other universities.

The McMaster University School of Engineering Practice (SEP) understands the objects of and the skills conferred by the Bachelor of Technology Programs. They invite applicants from McMaster's Bachelor of Technology Program to apply to their programs. The Director of the School of Engineering Practice has indicated that B.Tech. graduates with relatively high grade point averages and a reasonable GRE score would be admitted to their programs.

U. OF WATERLOO'S MASTER OF BUSINESS ENTREPRENEURSHIP & TECHNOLOGY (MBET)

The University of Waterloo offers a graduate level program that might be of interest to Bachelor of Technology graduates. The Program attempts to build on both technology and management skills to enable individuals to develop and commercialize a product or service idea. B.Tech. administration has been in contact with this School to find out about whether B.Techs. would be admitted to the Program. Correspondence with this School indicates that graduates of the B.Tech. Program should be eligible to apply to the MBET program with applications addressed on a case by case basis. Advanced standing for coursework at other institutions is not recognized under any circumstances. Graduates from MBA programs must complete all of the required coursework.

More information can be found at: <http://gradcalendar.uwaterloo.ca/?pageID=8448>

MASTER OF BUSINESS ADMINISTRATION (MBA)

MBA programs offered at McMaster University and other universities provide an opportunity to develop a broad set of advanced business administration skills for university degree graduates in a variety of fields. Typically these programs are predominantly coursework (possibly with a small project) and may include a co-op component (e.g. the MBA program offered by McMaster's DeGroote School of Business). MBA programs are quite suitable for Bachelor of Technology graduates who wish to broaden their career opportunities to include leadership positions which require both technological and management education.

The new degree completion Bachelor of Technology programs which began in September 2006 (and the new Four-year Bachelor of Technology programs which are to begin in September 2008) include a mandatory seven-course component of management studies. These courses are offered at a high level

and it is possible that MBA programs at McMaster University and other institutions would give some advanced credit to Bachelor of Technology graduates who have taken those courses. It is planned to have the content of these courses evaluated by the McMaster University MBA program.

While many Bachelor of Technology students express a desire to compliment their technical studies with an MBA, no graduate to date has applied for or been accepted into an MBA Program that we are aware of.

Successful completion of an MBA could position the student for PhD studies in business.

TECHNOLOGY MASTER'S DEGREES

Technology master's programs are those designed specifically to provide advanced technical skills and know-how for Bachelor of Technology graduates. Since Bachelor of Technology degrees are relatively uncommon in Canada, there are at present (to our knowledge) no technology master's programs offered by Canadian Universities. Bachelor of Technology programs are available at a number of U.S. universities and some of these also offer master's programs in technology.

For example, the Purdue University College of Technology offers the Master of Science degree (http://www.tech.purdue.edu/academics/graduate/grad_options.cfm) with several options available. Also, the Purdue School of Engineering and Technology at IUPUI (Indiana University and Purdue University in Indianapolis) offers a multi-disciplinary Master of Science in Technology. This program requires a number of courses and a directed project; details available at <http://www.engr.iupui.edu/gradprogs/tech.shtml/>.

DOCTORAL DEGREE PROGRAMS

Careers in university teaching and/or research normally require a doctorate in the discipline of a given specialty. Bachelor of Technology graduates who wish to pursue this avenue of advanced study are advised to pursue a research master's degree initially. See the previous section on research master's degrees.

OTHER ADVANCED STUDY PROGRAMS

The categories of advanced study listed above are the most common in Canada and the U.S. There are many other categories (e.g. graduate diplomas) which could be pursued; it would be impossible to list of all of these in this document. Bachelor of Technology students or graduates who are investigating other options can certainly discuss these with one of the Bachelor of Technology Program Chairs to seek advice or further information. In all cases it is important to check out the value of the particular credential in relation to the individual's personal career objectives. It is also important to ensure that the program leading to the particular credential is offered by an institution with recognized standards in higher education.

GRADUATE PROGRAMS WHICH HAVE ACCEPTED BACHELOR OF TECHNOLOGY GRADUATES

Master of Engineering, Mechanical Engineering, University of Toronto Master of Engineering, Aerospace Engineering, Ryerson University Master of Engineering, Mechanical Engineering, University of Western Ontario Master of Science in Engineering, Mechanical Engineering, Michigan State

University Master of Engineering, ADMI, McMaster University

Bachelor of Technology graduates who pursue studies beyond our program apparently do quite well at the master's level. Two graduates have successfully completed their University of Toronto studies with 'A' averages while one graduate achieved a 3.3/4.0 average at Michigan State University and is now eligible for PhD studies.

It should be mentioned that Bachelor of Technology applicants have been accepted by the institutions above and have successfully completed their studies. Bachelor of Technology students interested in speaking to graduates, who have pursued graduate level studies, could contact Michael Piczak (pchair.mgmt@mcmastermohawk.ca).