UNIVERSITY OF TORONTO
FACULTY OF APPLIED SCIENCE & ENGINEERING

Report No. 3569

MEMORANDUM

To: Executive Committee of Faculty Council (November 20, 2017)
Faculty Council (December 12, 2017)

From: Prof. Evan Bentz
Chair, Undergraduate Curriculum Committee

Date: November 8, 2017

Re: **Proposed Undergraduate Certificate in Music Technology**

REPORT CLASSIFICATION

This is a major policy matter that will be considered by the Executive Committee for endorsing and forwarding to Faculty Council for vote as a regular motion (requiring a simple majority of members present and voting to carry).

BACKGROUND

Many students within the Faculty of Applied Science & Engineering have a strong interest and background in various musical disciplines, as evidenced through the Skule Orchestra, Choir, Stage Band and other musical clubs, not to mention notable alumni such as Isabel Bayrakdarian.

Our aim with the Music Technology Certificate is to provide an opportunity for students to pursue their musical interests in a way that contributes to their degree program requirements and explores the ties between the two fields.

We have worked closely with the Faculty of Music to create these opportunities for our students, which will also further develop academic and research connections between the two Faculties.

The certificate will provide engineering students with knowledge in an area outside of traditional engineering disciplines. Students will gain an understanding of the study of music and the applications and areas of intersection between music and engineering. The core course provides an introduction to current music related programming applications. Students can then apply this knowledge to either music theory or engineering applications. Further electives in the Faculty of Music will reinforce their knowledge outside of their degree field. Students

completing the certificate will be able to apply their knowledge of music, music theory, sound and technology to future engineering design projects.

PROCESS

This proposal has been reviewed and approved by the Undergraduate Curriculum Committee. The Undergraduate Curriculum Committee is composed of representatives from each program, the Vice-Dean, Undergraduate, the Vice-Dean, First Year Engineering, the Associate Dean, Cross-Disciplinary Programs, and the Registrar. The Committee meets regularly to review changes to the curriculum.

This proposal has also been reviewed by the Faculty of Music Undergraduate Education Committee.

PROGRAMS

All programs are involved in these changes, and the impact on students in the various programs has been considered.

MOTION FOR FACULTY COUNCIL:

> THAT the Certificate in Music Technology be approved, effective September 2018, as described in the attached proposal.

University of Toronto
Faculty of Applied Science & Engineering

Proposal to Create a Certificate in Conjunction with an Undergraduate Program

Proposed certificate name:	Certificate in Music Technology
Undergraduate degree(s) the certificate will be offered in conjuction with:	Any BASc or BAScE degree program
Faculty/academic division:	Applied Science & Engineering
Dean's office contacts:	Caroline Ziegler, Faculty Governance and Programs Officer Sharon Brown, Manager and Student Counsellor, Cross-Disciplinary Programs Office
Version date:	November 6, 2017

1. Summary

Many students within Faculty of Applied Science & Engineering have a strong interest and background in various musical disciplines, as evidenced through the Skule Orchestra, Choir, Stage Band and other musical clubs, not to mention notable alumni such as Isabel Bayrakdarian.

Our aim with our Music Technology Certificate and the Music Performance Minor, also under development, is to provide an opportunity for our students to pursue their musical interests in a way that contributes to their degree program requirements and explores the ties between the two fields.

We have worked closely with the Faculty of Music to create these opportunities for our students, which will also help develop further academic and research connections between the two faculties.

2. Effective Date

September 1, 2018

3. Academic Rationale

The certificate provides an opportunity for students to be recognized for pursuing a smaller focus in music than the minor, and provides an opportunity for them to examine the connections between music and engineering.

Engineering students have a prescribed set of program requirements for their undergraduate degrees, as set out by the Canadian Engineering Accreditation Board. Within these requirements, there are opportunities for technical electives, humanities electives and "free" electives. Minor and certificate programs provide an opportunity for students to focus their electives in a particular field, which will be recognized by a notation on their transcript. They also provide an opportunity to reflect a student's personal interests in their studies.

The certificate will provide engineering students with a depth and breadth of knowledge in an area outside of traditional engineering disciplines. Students will gain an understanding of the study of music and the applications and areas of intersection between music and engineering. The core course provides an introduction to current music related programming applications. Students can then apply this knowledge to either music theory or engineering applications. Further electives in the Faculty of Music will reinforce their knowledge outside of their degree field. Students completing the certificate will be able to apply their knowledge of music, music theory, sound and technology to future engineering design projects.

4. Need and Demand

This certificate provides an opportunity for students to be recognized for pursuing three half courses related to the intersection of music and technology. Many engineering students have demonstrated interest in the pursuit of music in their extra-curricular activities and also through their choice of Music electives (MUS) for their Humanities electives, indicating the potential for significant interest. The program will require students in programs without free electives to take at least one of the courses as an Extra course (beyond their degree requirements), thus we anticipate that the interest in this certificate will be focused on a smaller number of students who have a particular interest in music technology connections.

5. Admission Requirements

There are no admission requirements for engineering certificate programs. If an eligible student completes the course requirements, they will be awarded the certificate program at the time of graduation. The certificate is open to undergraduate students in any engineering discipline.

If a student chooses to take Music Theory 1 (TMU130H1) as part of the certificate, they will require RCM Rudiments II or equivalent.

6. Program Requirements

Students in the Certificate in Music Technology must successfully complete a minimum of three courses (1.5 FCE) as follows. Some courses within this program are only eligible for Free Elective (FE) or Extra course status (EXT), thus students wishing to pursue this minor must be prepared to take on a small amount of course work above and beyond their degree

requirements. ECE446 and Technical courses from the Faculty of Music may be requested as Technical Elective Substitutions (TES) for a student's degree program, subject to the approval of the student's home department. ECE446 is currently an approved Technical Elective (TE) for students in Electrical and Computer Engineering programs and two Engineering Science majors. The course is open to students in any engineering discipline. Courses designated as HSS will count towards a student's Humanities and Social Sciences electives.

Course Title	Course Code	Weight	DE Classification
1. Introduction to Computer Application in Music	TMU111H	0.5	FE/EXT
2. Music Theory 1	TMU130H1	0.5	FE/EXT
OR Sensory Communication	ECE446H1	0.5	TE/TES/FE/EXT

3. One Elective from the following list:

Course Title	Course Code	Weight	DE Classification
Electroacoustic Music I	TMU319H1	0.5	TES/FE/EXT
Electroacoustic Music II	TMU320H1	0.5	TES/FE/EXT
Introduction to Music Recording	TMU313H1	0.5	TES/FE/EXT
Live Coding: Digital Audio in Real Time	TMU330H1	0.5	TES/FE/EXT
Max/MSP	TMU406H1	0.5	TES/FE/EXT
Introduction to Music & Society	HMU111H1	0.5	HSS
Music Theory 2	TMU131H1	0.5	FE/EXT
Introduction to Music History and Cultur	MUS110H1	0.5	HSS
Historical Survey of Western Music	MUS111H1	0.5	HSS
Music of the World's Peoples	MUS200H1	0.5	HSS
The Age of Bach and Handel	MUS204H1	0.5	HSS
Performing Arts of South Asia	MUS209H1	0.5	HSS
The World of Popular Music	MUS211H1	0.5	HSS
Music, Sound & Power in the Middle Eas	MUS212H1	0.5	HSS
Heavy Music	MUS240H1	0.5	HSS
Symphony	MUS302H1	0.5	HSS
Popular Music in North America	MUS306H1	0.5	HSS
Handel	MUS308H1	0.5	HSS
A Social History of the Piano	MUS335H1	0.5	HSS

7. Consultation

Over the last year, the Cross-Disciplinary Programs Office has had many discussions with the Faculty of Music, culminating in the creation of this proposal and one for a Minor in Engineering Music Performance.

The proposal was co-developed with the Associate Dean, Academic and Student Affairs at the Faculty of Music, and the Associate Dean, Graduate Studies at the Faculty of Music. It will be considered for approval by the Faculty of Music's Curriculum Committee, and concurrently through the Councils of the Faculty of Music and the Faculty of Applied Science & Engineering.

The proposal has also been circulated for comment by the Skule Orchestra, Skule Choir, Skule Stageband, engineering students in the UofT Music Clubs Initiative and the students in the Tales of Harmonia club.

8. Resources

Resource costs for the certificate will ultimately be covered through the University's new Interdivisional Teaching framework. The Faculty of Music will receive "per student" compensation when engineering students are enrolled in their courses, similar to the existing agreement between FASE and FAS.

9. Oversight and Accountability

In the Faculty of Applied Science & Engineering, undergraduate minors and certificates that cut across the Faculty – with the exception of the majors/options provided by the Division of Engineering Science – are initiated, administered and overseen by the Cross-Disciplinary Programs Office (CDPO), which was created with the approval of Faculty Council in 2009.

The CDPO is led by an Associate Dean, Cross-Disciplinary Programs, who reports to the Dean. Program Directors are identified to provide academic advice on the minors and certificates administered by the office. In addition, an Advisory Committee meets regularly to advise the Associate Dean on program modifications, evolution, etc.

Approvals for and changes to minors and certificates are introduced to Faculty Council through the appropriate standing committees (e.g. Undergraduate Curriculum Committee) in consultation with the appropriate department(s).

Minors and certificates are subject to periodic review in conjunction with the review of the CDPO.

10. Process Steps and Approvals

Step	**Date**
Development and consultation within Cross-Disciplinary Programs Office	Jan-Oct 2017
Approval by the Faculty of Applied Science & Engineering's Undergraduate Curriculum Committee	Oct 31, 2017
Approval by the Faculty of Music's Undergraduate Education Committee	Nov 2017

Step	Date
Approval of the Faculty of Applied Science & Engineering Council	Dec 12, 2017
Submission to Provost's office for information and for reporting to the Provost and Committee on Academic Policy & Programs	Dec 12, 2017
Periodic fine tuning of courses and program requirements	On-going