

**Bachelor of Science in Music & Technology**  
**Concept Paper**  
**November 3, 2015**

- I. Proposed by:** Department of Performing Arts and Visual Culture  
**Department Chair:** Carl J. Atkins, D.M.A.  
**Degree Committee:** Carl J. Atkins, D.M.A., Tina Lent, Ph.D., Michael Ruhling, Ph.D.,  
 Jonathan Kruger, D.M.A.; Jay Alan Jackson, Ph.D.; SungYoung Kim,  
 Ph.D.; Mark Indelicato, M.S.; David Sluberski, B.A.

**II. Abstract**

**Music & Technology** has become one of the most exciting new professional and academic fields in the last decade. With rapidly changing technology in the fields of audio and sound transmission in areas such as virtual acoustics, digital gaming and music for the entertainment industry, degrees that combine the study of music and current technologies in sound production and transmission are highly desirable. The Department of Performing Arts and Visual Culture in the College of Liberal Arts is proposing the degree **Bachelor of Science in Music & Technology**. This concept paper will serve to provide an overview of the history and the current state of the music program, the rationale for offering this degree, the goals for the program and the degree, and how the degree will fit within RIT's stated mission, strategic plans, and existing programs and degrees across the institute. The Music & Technology degree will build upon the success of the music program, the existing Music & Technology minor, and offer opportunities for interdisciplinary explorations for students and faculty in several colleges of the institute.

**III. Description of the Program**

**(a) Overview and justification**

The Rochester Institute of Technology has gained a national and international reputation as one of the leading institutions in the fields of engineering, science, and technology innovation. As the institute moves toward its stated goal of becoming a major, comprehensive university, and in the spirit of merging the liberal arts and fine arts with existing traditional, career-focused programs in creative and innovative ways, this proposal is designed to allow students the opportunity to obtain a degree in Music & Technology. Currently, the Music Program in the Department of Performing Arts and Visual Culture offers minors in Music Performance and Music & Technology. Within the program, a broad range of courses in music history, music theory, jazz studies, and world music are offered, along with performance opportunities in large and small choral ensembles (the RIT Singers, the RIT Gospel Ensemble, and various *a cappella* groups), traditional instrumental ensembles (Orchestra, Concert Band, Jazz Ensembles), and non-traditional ensembles (West African Percussion and Dance Ensemble). In addition, courses in audio engineering and acoustics in the College of Applied Science and Technology and courses in computing sciences and digital music production for games are available to minors in the Golisano College of Computing and Information Sciences. Currently, faculty members from the Music Program are collaborating with students and faculty in the BFA degree program in Film, offered by the College of Imaging Arts and Science

**(b) Summary of new program curriculum**

The field of music has experienced tremendous changes and growth in technology over the past two decades. New methods of production, recording, and transmission of music, the integration of audio and video media, the creation of music for games and other interactive media are central to the need for programs in music and technology. In addition, the development of new instrument designs and technologies, the study of historical instrument designs and technologies, and the development of new concepts in space design and virtual acoustics have created exciting new opportunities for graduates with strong technical, scientific, and musical backgrounds. RIT's reputation as a leading technological and scientific institution, coupled with its offerings in the performing and applied arts, places it in a unique

position to provide a course of study designed to bring these components together under one program. The proposed degree will provide students with the necessary music and technical skills to pursue careers in such fields as digital recording and other technologies for sound distribution and transmission, sound design for gaming and interactive applications, acoustics, instrument design, room/space design, and audio engineering. Nationally, most programs in music and technology focus on audio engineering and recording technology. Because RIT is composed of several colleges that offer training in a wide range of technical disciplines, this degree will offer students opportunities to pursue a broad-range of areas and disciplines within the broader scope of music and technology. In collaboration with several departments and colleges, the RIT degree in Music & Technology will offer students two “tracks,” or courses of study, initially:

- 1) **Audio Engineering:** Recording Technology and Sound Transmission/Reinforcement
- 2) **Music for Media:** Composing Music for Film, Video, Animation, and Interactive Media

Future plans include possible collaborations with the RIT Architectural Program, the College of Applied Science and Technology, the College of Engineering, and the College of Science to develop a track in **Acoustics** to explore technology and design of musical instruments (both modern and historical) and performance spaces. In addition, future plans may include collaborating with the National Technical Institute for the Deaf to develop programs that assist in teaching, learning, and experiencing music by the deaf and hard-of-hearing. Another possible future expansion would be the development of a graduate degree (M.S.) in one or more tracks in music and technology.

Indeed, the combining of in-depth music study with the various engineering and technical disciplines has led to some interesting new careers over the past couple of decades, and will surely open up new paths in the near future. However, it should be emphasized that the centrality of music and the performing arts as humanist endeavors are primarily intended for, and in their highest forms best experienced in *live* contexts, with the performers and receivers of the performances in the same physical space at the same time. Strong institutional support for the music and performing arts curricula, facilities, equipment, events, and scholarly activities is a crucial prerequisite to creating and maintaining the solid academic base in the performing arts these career-oriented degree programs require for success. It is this preparation in the highest preparation in technical and performance abilities of students that will give them an advantage over those who only have the training in technology.

#### **IV. Fit with RIT Mission and Strategy**

A broad-based degree in Music & Technology is consistent with RIT’s mission and goal to be a comprehensive university that provides students with a career-oriented education supported by grounding in the humanities. The exciting and expanding field of **Music and Technology** presents a myriad of opportunities for careers in general audio engineering, digital recording, sound reinforcement and transmission, music and sound for film, animation and interactive media, acoustics, instrument design and technology, and performance space design, among others. A survey of programs nationally indicates an emphasis on audio engineering and recording technology. Because of the mission of RIT, and the wide-range of academic and technical resources available, training for a career in a number of areas of music and technology can be combined with research, innovation, and scholarship (see III., above). This has the potential for advancements and developments in the field, not possible in programs with a more narrow focus or fewer academic and technical resources.

#### **V. Synergy with Other Programs**

Presently, the College of Liberal Arts Music Program offers a successful minor in Music & Technology in collaboration with the College of Applied Science and Technology, and the Golisano College of Computing and Information Sciences. A course in sound for film and animation in collaboration with the College of Imaging Arts and Science was added to this minor, for the 2014-15AY. As described above,

course-work in the various proposed tracks of the Music & Technology degree will extend across several RIT colleges and programs, and will be a true multi-disciplinary program. It is proposed that the College of Applied Science and Technology, the College of Imaging Arts and Science, the Golisano College of Computing and Information Sciences, the Gosnell College of Science, the Gleason College of Engineering, the Saunders College of Business, the MAGIC Initiative, and the School of Individualized Study will serve as collaborators with the College of Liberal Arts to offer students a number of options and opportunities to fashion a degree program that will suit their individual interests and talents. Currently, the CLA Music Program is offering classes in “Composing Music for Media” in collaboration with CIAS and the Golisano College as well as collaborating with CAST in offering sound engineering courses.

#### **VI. Administrative Structure**

The Bachelor of Science in Music & Technology will be offered by the Music Program of the Department of Performing Arts and Visual Culture, in the College of Liberal Arts. The day-to-day administration of the degree will be the responsibility of the Director of Performing Arts. The program director, in consultation with the chair of the department, will monitor the curriculum, major tracks, minors, faculty (both tenure and non-tenure track), and coordination of courses and activities with other colleges, within and outside of RIT.

#### **VII. Enrollment Management Expectations and Sustainability**

The RIT Office of Enrollment Management and Career Services (EMCS) has reviewed the proposal for the Music & Technology degree, and has offered the following analysis and assumptions to provide a context for the proposed program to attract, enroll, and retain students. It is expected that the program will attract new students from both freshman and transfer markets with the majority of new students entering in the fall of the first year the program is offered. It is EMCS’s opinion that most of the students will come from the Middle Atlantic States – the traditional market base for the College of Liberal Arts. However, taking into consideration the cross/multi-disciplinary (music, technology, science, and business) nature of the proposed degree, it is the opinion of the RIT music faculty and others in the field, that students will be attracted to this type of program from a wider geographic and international pool than those that make up the traditional market base for the College of Liberal Arts. The program will attract internal transfers from other RIT colleges, the School of Individualized Study, as well as other programs in the College of Liberal Arts. For purposes of this analysis, however, only students who are new to RIT are included. The Office of Undergraduate Admissions will work with the college to determine appropriate academic profile parameters for entering students, with final authority for admission decisions resting in the Office of Undergraduate Admissions.

The Department of Performing Arts & Visual Culture will create and maintain relationships with two-year schools in the area offering similar programs to promote the new program and develop articulation agreements to facilitate the recruitment and enrollment of transfer students. According to EMCS’s analysis, based on PSAT data from the College Board for the class entering college in 2016, there is identifiable prospective student interest in this type of program, albeit relatively small - approximately 2,000 students nationally. However, further analysis and research into programs by members of this committee and others involved in the field would suggest there is considerably more interest in this field, nationally and internationally, than EMCS’s analysis would indicate. There is significant competition for the program from two-year, as well as four-year institutions. For example, similar programs exist at NYU, Carnegie Mellon, and Virginia Tech. However, as stated earlier, most programs in Music & Technology focus on audio engineering and recording technology. Because RIT comprises several colleges that offer training in a wide range of technical disciplines, this degree will offer students opportunities to pursue a broad range of areas and disciplines that can be combined with music to create interesting and innovative curricular possibilities. Locally, while the U of R, the Eastman School of Music, Nazareth College, Monroe Community College and Finger Lakes Community College present

sources of competition, they also present possible sources for new transfer students. Based on the assumptions and analysis of the information gathered, and dependent on RIT's marketing effort on behalf of this degree, and the creation and up-grading of the required facilities, it is believed that the degree could reach a steady state of student enrollments of 15 to 20 majors, after four years. However, one should not discount the impact that internal transfers will have on enrollment numbers, especially in the first years of the degree's existence. Commitment to create and upgrade facilities as will significantly impact the competitiveness of the degree in the prospective student market.

### VIII. Budget Analysis

A state-of-the-art recording studio and performance space, an upgraded music computer lab, a keyboard lab, and upgraded and additional classrooms will be required to offer this degree adequately. Some of the potential feeder associates programs in the area (e.g., FLCC) have state-of-the-art facilities and performance spaces. Thus, to attract these students RIT should at least match their facilities quality. These needs include adding small and large ensemble performance and rehearsal spaces, assigning new spaces for instrument storage, and improving and increasing individual music practice rooms.

Faculty in PAVC's music program currently consists of three tenured faculty and ten to twelve adjunct faculty teaching a range of theory, practice, and technology courses. Although the current faculty have or are developing expertise in areas such as scoring for film and animation, acoustics, historical instrument design, and recording and production, it is clear that new hires will be necessary to sustain this program. **Depending on the number of incoming students in the first three years, the program will need to hire at least one new faculty member in the first year of the program, and possibly one or two by year three. These numbers depend on projections from the budget office, and anticipation of double majors or internal transfers that will place pressure on upper-level degree courses.**

### IX. Conclusion

As stated earlier, the majority of the programs in Music & Technology offered around the country focus on audio engineering and recording. While this is an important and obvious area of training for many students, there are other areas and skills, as outlined above, that can be addressed. RIT is uniquely positioned to offer a degree that not only can offer world-class training in audio engineering and recording, but also in areas like acoustics, virtual acoustics, space design, film and animation, music for interactive learning, and the technologies of historical instruments and their influences on performance. All of this grounded in a strong liberal arts curriculum and high-level music training. This degree is applied and career-oriented, multidisciplinary, and student-centered. RIT's strong commitment to innovation also creates a vibrant environment for research, innovation, and scholarship. Because of the academic, musical, and technological resources that are integral to the profile of RIT, this degree can make it a major player, and assist it in becoming a leader in the field, nationally and internationally.

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## Karel Shapiro

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**From:** Edward A Lincoln  
**Sent:** Monday, January 25, 2016 5:28 PM  
**To:** Babak Elahi  
**Cc:** Daniel Shelley; James G. Miller (EMCS VP)  
**Subject:** Proposed BS in Music and Technology Enrollment Projection

### EMCS Expectations and Sustainment Proposed BS degree in music & technology

The following assumptions and observations provide a context for the proposed program's ability to attract, enroll, and retain new students:

- 1) The program will attract new students from both freshman and transfer markets with the majority of new students entering in the fall.
- 2) Most of the students will come from the Middle Atlantic States the traditional market base for the College of Liberal Arts.
- 3) The program will attract internal transfers from other RIT colleges, the University Studies program, as well as other programs in the College of Liberal Arts. For purposes of this analysis, however, only students who are new to RIT are included in the projection.
- 4) The Office of Undergraduate Admissions will work with the college to determine appropriate academic profile parameters for entering students with final authority for admission decisions resting in the Office of Undergraduate Admissions.
- 5) The Department of Performing Arts and Visual Culture will create and maintain relationships with two-year schools offering similar programs to promote the new program and develop articulation agreements to facilitate the recruitment and enrollment of transfer students.
- 6) The ability of the department to secure the resources for the creation and/or upgrading of facilities (as outlined in the concept paper) will significantly impact the competitiveness of the program in the prospective student market.
- 7) Based on PSAT data from the College Board for the class entering college in 2017, the current identifiable prospective student interest in this type of program is small.
- 8) There is significant competition for the program from two-year as well as four-year institutions. For example, similar and more established programs can be found at competitor institutions such as NYU, Carnegie Mellon, and Virginia Tech. Additionally, MCC and FLCC locally present sources of competition, as well as sources for new transfer students (see #5 above).

	Year 1	Year 2	Year 3	Year 4	FTE
2017	3	1	2	0	6

2018	3	3	3	2	11
2019	3	3	4	3	13
2020	3	3	4	4	14
2021	3	3	4	4	14

Please let me know if you have any questions.

Ed Lincoln

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## **EMCS Expectations and Sustainment – Proposed BS degree in music & technology**

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	<b>Year 1</b>	<b>Year 2</b>	<b>Year 3</b>	<b>Year 4</b>	<b>FTE</b>
<b>2017</b>	<b>3</b>	<b>1</b>	<b>2</b>	<b>0</b>	<b>6</b>
<b>2018</b>	<b>3</b>	<b>3</b>	<b>3</b>	<b>2</b>	<b>11</b>
<b>2019</b>	<b>3</b>	<b>3</b>	<b>4</b>	<b>3</b>	<b>13</b>
<b>2020</b>	<b>3</b>	<b>3</b>	<b>4</b>	<b>4</b>	<b>14</b>
<b>2021</b>	<b>3</b>	<b>3</b>	<b>4</b>	<b>4</b>	<b>14</b>

Please let me know if you have any questions.

**Ed Lincoln**

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**Music & Technology, BS  
SUMMARY REPORT**

Fiscal Year	2017-2018	2018-2019	2019-2020	2020-2021	2021-2022	5 Year Total
Avg Enrollment: Students (FT + PT)	6	11	13	14	14	58
Revenue (Net of Aid)	\$ 152,890	\$ 290,109	\$ 354,856	\$ 395,528	\$ 409,371	\$ 1,602,753
Faculty Expense	\$ 34,031	\$ 63,950	\$ 77,466	\$ 85,511	\$ 87,649	\$ 348,607
Total Expense	\$ 114,469	\$ 210,847	\$ 254,388	\$ 280,302	\$ 287,188	\$ 1,147,194
Contribution Margin Surplus/(Deficit)	\$ 38,421	\$ 79,262	\$ 100,468	\$ 115,226	\$ 122,183	\$ 455,559

