Routing for On-Campus Approval of the Letter of Intent for a New Degree Program

Proposed Program Title: Music Technology
Degree Type (circle one): Bachelor's / Master's / Doctoral
Proposed Effective Date: Fall 2020
Program Contact: Dr. Daniel Monet

Routing Action: Indicate date when the following occurs

**Completed Letter of Intent and 1-page Concept Paper**

<table>
<thead>
<tr>
<th>Date</th>
<th>Action</th>
</tr>
</thead>
<tbody>
<tr>
<td>6/10/2019</td>
<td>Department Head endorses*</td>
</tr>
<tr>
<td>3/18/2019</td>
<td>College Curriculum Committee (undergraduate or graduate) recommends*</td>
</tr>
<tr>
<td>3/19/2019</td>
<td>College Dean endorses*</td>
</tr>
</tbody>
</table>

*(See original signature sheet)*

**Letter of Intent moves to Undergraduate or Graduate office for routing**

<table>
<thead>
<tr>
<th>Date</th>
<th>Action</th>
</tr>
</thead>
<tbody>
<tr>
<td>N/A</td>
<td>Recommended by Vice Provost, DELTA, if applicable*</td>
</tr>
<tr>
<td>4/18/2019</td>
<td>Associate Deans Council or Graduate Operations Council informed</td>
</tr>
<tr>
<td>4/18/2019</td>
<td>Dean (Graduate School or DASA) approves*</td>
</tr>
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</table>

*(See original signature sheet)*

**Letter of Intent moves to the Executive Vice Chancellor Provost's office for routing**

<table>
<thead>
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<th>Date</th>
<th>Action</th>
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<tbody>
<tr>
<td>4/25/2019</td>
<td>Substantive Change Review Team (SCRT) makes initial determination of likelihood of SACSCOC notification</td>
</tr>
<tr>
<td>7/25/2019</td>
<td>Council of Deans recommends*</td>
</tr>
<tr>
<td>6/19/2019</td>
<td>Vice Provosts informed</td>
</tr>
<tr>
<td>TBD 8/19</td>
<td>University Council informed</td>
</tr>
<tr>
<td>8/28/19</td>
<td>Executive Vice Chancellor and Provost approves*</td>
</tr>
<tr>
<td>approved 9/16/19</td>
<td>Submitted to UNC System Office by Provost's Office</td>
</tr>
</tbody>
</table>

* Signature is required on the signature page for the action

Updated 04/11/2019
Request to Plan has been approved

uncprep@northcarolina.edu <uncprep@northcarolina.edu>  Tue, Sep 10, 2019 at 8:22 AM
To: lmdavis@ncsu.edu, bbschamb@ncsu.edu, mnanima@ncsu.edu, flcrawfo@ncsu.edu, pjharrie@ncsu.edu, dklarick@ncsu.edu, lamarcus@ncsu.edu

Request to Plan has been approved for the following degree program from NC State University:

Bachelor's in Music Technology

Request to Establish should be submitted within four months.

https://prep.northcarolina.edu/arp/dashboard/dashboard.php
Letter of Intent to Develop  
New Academic Degree Program

The following approvals must be obtained prior to sending the Letter of Intent to Develop a New Academic Degree Program to the UNC System Office.

Institution ______ North Carolina State University ____________________________

Degree Program Title (e.g. M.A. in Biology) ______ B.S. in Music Technology ______

Reviewed and Approved By (Title)

Provost: __________________________

Faculty Senate Chair (if applicable): __________________________

Undergraduate or Graduate Dean (if applicable): __________________________

Academic College Dean: __________________________

Department Chair: __________________________

Program Director/Coordinator: __________________________

New Academic Proposal Process

New academic programs are initiated and developed by the faculty members. Approval of the Letter of Intent to Develop a New Academic Degree Program must be obtained from department chairs and college deans or equivalent administrators before submission to the UNC System Office review.

Directions: Please provide a succinct, yet thorough response to each section. Obtain the Provost's signature and submit the proposal via the PREP system to the UNC System Vice President for Academic Programs, Faculty, and Research, for review and approval by the UNC System Office. Once the Letter of Intent to Develop is approved, the institution can begin work on the formal Request to Establish a New Degree Program.
Letter of Intent to Develop a New Academic Degree Program

<table>
<thead>
<tr>
<th>Institution</th>
<th>North Carolina State University</th>
</tr>
</thead>
<tbody>
<tr>
<td>Joint Degree Program (Yes or No)? If so, list partner campus.</td>
<td>No</td>
</tr>
<tr>
<td>Degree Program Title (e.g. M.A. in Biology)</td>
<td>Bachelor of Science in Music Technology</td>
</tr>
<tr>
<td>CIP Code and CIP Title (May be found at National Center for Education Statistics)</td>
<td>50.0913- Music Technology</td>
</tr>
<tr>
<td>Require UNC Teacher Licensure Specialty Area Code (Yes or No). If yes, list suggested UNC Specialty Area Code(s).</td>
<td>NO</td>
</tr>
<tr>
<td>Proposed Delivery Mode (campus, online, or site-based distance education). Add maximum % online, if applicable.</td>
<td>Campus</td>
</tr>
<tr>
<td>Proposed Term to Enroll First Students (e.g. Spring 2019)</td>
<td>Fall 2020</td>
</tr>
<tr>
<td>List other programs in the UNC System (may be found at UNC System website)</td>
<td>UNC-Asheville: Bachelor of Science in Music Technology</td>
</tr>
</tbody>
</table>

SACSCOC Liaison Statement: *(Provide a brief statement from the University SACSCOC liaison regarding whether the new program is or is not a substantive change.)*

Program Summary: *(Briefly describe the proposed program and summarize the overall rationale.)*

Include the following in your narrative:
- Ways in which the proposed program is distinct from others already offered in the UNC System (use the 4-digit CIP as a guide). Information on other programs may be found on the UNC System website.
- How this program supports specific university and UNC System missions.
- Collaborative opportunities with other UNC institutions as appropriate. (maximum length 500 words)

The North Carolina State University Department of Music proposes planning a new Bachelor of Science
in Music Technology that will foster and support music-based entrepreneurial initiatives at the intersection of technological innovation and creative expression. It is evident that careers combining music and technology will continue to grow in number and variety as technology continues to revolutionize the multi-faceted music industry. In order to strategically address this growing employment area and the needs of those currently working in the music industry, the Music Technology program will have several practical outcomes:

1) Contributing to the economic development of North Carolina and the region
2) Providing meaningful and gainful employment for graduates
3) Meeting the needs of employers and industry
4) Developing services and/or intellectual property that will benefit our institution, state, and society as a whole.

This distinctive and interdisciplinary program, which embraces and bolsters a quickly-emerging discipline, will engage students through a pairing of rigorous professional training in music with intensive interdisciplinary study of topics in electrical engineering, computer engineering, design, and arts entrepreneurship. Drawing on a variety of existing strengths at NC State, students will build a foundation of theoretical and practical skills in music, build practical skills with current music technologies, gain practical skills within the related fields of electrical engineering or computer engineering, and develop supporting skills and knowledge in industrial design and entrepreneurship. The program will integrate a broad range of musical styles, performance practices, and creative projects with the design, development, and implementation of advanced music technologies. This structure will provide a degree of flexibility through tracks of study that could result in students gaining substantive theoretical and practical skills in performance, computer music, sound synthesis, music production, software development, digital signal processing, music information retrieval, human-computer interaction, interactivity, robotic musicianship, multimedia, audio systems, or sound design.

Leveraging many of NC State’s strengths through its interdisciplinary nature, the program design will be unique within the UNC system and among the small number of premiere music technology programs in existence across the nation (for example University of Miami and Georgia Tech). Currently, only one institution in the UNC system, UNC-Asheville, offers a major in the most relevant CIP code (50.0913-Music Technology) and two other institutions, Appalachian State University and Elizabeth City State University, offer music technology related majors through the CIP code for Music Industry (50.1003). The proposed degree does not duplicate or compete with any of these programs. The major at UNC-Asheville, a Bachelor of Science in Music Technology, is limited to audio mixing and recording and requires only limited interdisciplinary study, predominantly in physics, with the intent of producing students who “learn how to professionally mix and record music.” The program at Elizabeth City State University is offered as a music business or sound recording technology concentration within a Bachelor of Arts degree with the intent of providing “a broad liberal arts education for students interested in diverse fields within the music industry.” It does not require interdisciplinary training or the extensive mathematics or science components anticipated in our intended curriculum. Similarly, Appalachian State University offers a Bachelor of Science in Music Industry Studies with a concentration in “recording and production” designed to help students “develop expertise in the fields of studio recording and live sound” or “manufacturing and merchandising.” Both concentrations include substantial studies in business, but do not have the extensive engineering, mathematics, or science components of our
intended curriculum.

The establishment of a Bachelor of Science in Music Technology would directly contribute to the strategic goals of both the UNC system and NC State while also filling a vital gap in North Carolina’s growing technology industry and strong arts economy. The development of this program supports both the first and the third goal of NC State’s strategic plan as articulated in the initiative to “explore new undergraduate degree programs to encourage multi/interdisciplinary focus.” The addition of this curriculum will build on NC State’s culture of collaboration and interdisciplinarity and its strategic strengths to serve a growing industry that has both a strong regional and national need for support and development. In so doing it supports UNC system goals for economic impact and opens the door for North Carolina to become a leader in the quickly growing music technology industry.

**Student Demand:** *(Provide evidence of student demand. Discuss the extent to which students will be drawn from a pool of students not previously served by the institution. Maximum length 1,000 words.)*

As an emerging discipline, prospective enrollment is best identified through a review of both current student interest in music and engineering, generalized growth in music technology study, and the enrollment trends of other institutions that have developed similar programs. Among our own student body there are significant ties between student interest in music study and engineering, science, and math. This is not unexpected as the interrelationships between music, math, and science have long been established and recognized. Of the 5,381 incoming students surveyed in the university’s Student Involvement Survey in the fall of 2018, 8.1% indicated an interest in music technology related opportunities. Among currently-declared music minors, 64.8% are pursuing major studies in a science or engineering field related to the degree proposal. The Higher Education Arts Data Summary in Music compiled each year from the annual reports of the more than 500 member institutions of the National Association of Schools of Music (NASM), the accrediting body for post-secondary education in music in the United States, shows significant growth in the number of students enrolling in programs in the broadly-defined area of music technology/engineering. From the 2011-12 academic year to the 2016-17 academic year NASM member institutions reported a combined 213% increase in enrolled music technology/engineering majors. More specific to the department’s proposed curriculum are enrollment numbers at institutions that house the nation’s leading music technology programs. The Bachelor of Music (BM) in Music Technology in the Department of Music and Performing Arts Professions, Steinhardt School, at New York University has approximately 100 music technology majors and entering classes average 32 students. The Bachelor of Science in Music Engineering Technology at the Frost School of Music, University of Miami (FL), and the Bachelor of Science in Music Technology program in the Department of Music and Arts Technology at Indiana University-Purdue University Indianapolis both have an average of 70-80 total undergraduate music technology majors. The new Bachelor of Science of Music Technology begun in the spring semester of 2016 at Georgia Tech exceeded all of its enrollment projections and already has more than 75 majors.¹

According to data compiled from the University of Michigan’s “Monitoring the Future” study nearly 40%

¹ Enrollment data for these institutions was self-reported by music administration colleagues from each institution.
of high school students participate in music programs. In North Carolina, the Arts Education Data Project provides more specific detail that more than 66,000 (approximately 15%) of North Carolina high school students are enrolled in a music class. While the majority of these students will not pursue a traditional path of formal music study, a growing number are seeking ways to combine their music interests with other fields of study. The unique nature of the proposed degree both nationally and in North Carolina means it will become a strong draw for students who seek to formally combine their music and engineering interests. With no similar curricula within the UNC system, the state of North Carolina, or even the mid-Atlantic region, this program will fill a gap in current availability that will draw these students.

**Societal Demand:**  (*Provide evidence of societal demand and employability of graduates from each of the following source types. Maximum length 1,000 words*)

- Labor market information (projections, job posting analyses, and wages)
  - Specific to North Carolina (such as ncworks.gov, rctower.com, or outside vendors such as Burning Glass)
  - Available from national occupational and industry projections (such as the U.S. Bureau of Labor Statistics)
- Projections from professional associations or industry reports
- Other (alumni surveys, insights from existing programs, etc.)

North Carolina has long been an innovator in music institutions and industry. It is home to the first state-funded symphony orchestra in the nation, the NC Symphony, and has developed some of the first cultural tourism projects that focus on music in the country. Its creative arts industry through both direct and indirect jobs accounts for more than 7% of the state’s work force and the non-profit arts and culture industry alone accounts for more than $2.12 billion in the state’s economy generating approximately $201.5 million in state and local tax revenues. According to the North Carolina Arts Council, jobs in North Carolina’s creative sector have increased 27% from 2006 to 2016. Today the conclusion reached by Mike Masnick, the author of “The Music Industry Is Desperate For A Few Good Technologists,” in 2011 remains true – “It seems clear that music startups are all desperate for tech help.”

While labor statistics specific to jobs in music technology are not yet available, perspective can be gained by looking at data from Burning Glass Technologies, a labor analytics company that pulls from thousands of sources of job postings online and provides additional perspective on trends in emerging

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3 https://www.artseddata.org
4 North Carolina Arts Council, Creative Economy Measures 2016 Data Summary, ncrafts.org
5 techdirt.com, 5/10/2011

Letter of Intent to Develop a New Academic Degree Program 5
fields. Their projections indicate that jobs with skill sets similar to those in the proposed major will see “explosive growth” (102.31%) within the next five years. A report from Georgia Tech’s School of Music, which relied on data from Burning Glass, also noted that job postings requiring a bachelor degree with core skills tied closely to music technology showed growth nationally of 225%.

The North Carolina State of Technology 2018 Industry Report released by the North Carolina Technology Association notes that North Carolina is ranked third in total tech employment growth from 2011-2016. The report analyzes 87 separate North American Industry Classification System (NAICS) codes categorized into four major sub-categories. Music Technology is directly linked to fifteen NAICS categories that are included within the reports “Tech Core (IT)” subcategory. In this area the report notes the largest growth rate of all technology areas in the study with a job growth rate of about 22% in the last five years. Employment in the software subsector alone has grown by 53% from 2011-2016.

There is a significant need for educated professionals with sophisticated music technology skills in the arts and entertainment industries, software and professional audio corporations, education, music hardware manufacturers, and from manufacturers seeking to integrate music into their product including automobile, computer manufacturers, and media companies. Recent technological innovations, such as new electronic music instruments, commercial online distribution of music, and mobile music applications have fundamentally changed the business of creating, performing, and consuming music. This in turn has created a need for technologically literate musicians and artistically creative engineers to develop and operate the enabling technologies at the core of such systems and services. As a growing number of start-ups and large corporations have focused on music, new markets have emerged in music technologies for the general public, novices, multimedia, and educational applications. These areas do not receive enough attention in academia, which has resulted in a growing need for qualified music technologists.

This challenge is highlighted by several industry leaders and companies:

*Marcus Cremer, Vice President of Applied Research at Gracenote:*

Our company is leading industrial research and development of media-centric systems and algorithms, specifically around recognition, personalization, and recommendation of music and video content. As such, we are continually seeking full-time employees and part-time interns who possess strong technical backgrounds coupled with a deep understanding of music. Identifying, hiring, and retaining genuinely multi-talented individuals with this unique skill set has been both difficult and time-consuming for us.

*Tristan Jehan, Director of Research at Spotify and Co-founder of The Echo Nest:*

Spotify’s culture is built around fast innovation. It is terribly important to the future of Spotify…that we keep hiring and hosting the finest and brightest students in the field of music
and technology. The growing and shifting music tech industry needs new talented developers that are well versed both in music and technology.

Ableton, a company founded to develop unique software and hardware for music creation and performance, notes that positions requiring the skills of a music technologist “often go unfilled for long periods of time” and qualified applicants are “very challenging to find.” Executives at Pandora, one of the most internationally recognized music streaming and automated music recommendation service companies in the world, noted that “such a unique combination of musical and technical skills is incredibly difficult to find.”

These comments are supported by the results of programs at other academic institutions. The program most closely related to our proposed curriculum and a leader in this emerging discipline is the Bachelor of Science in Music Technology at Georgia Tech. It currently reports a 94% employment rate for its graduates within four months of graduation. The University of Miami’s program reports that 90% of its graduates have secured their postgrad plans (employment or graduate school) within six months of degree completion.

For Doctoral Programs Only:

Describe the following (maximum length 2,000 words):

- The research and scholarly infrastructure in place (including faculty) to support the proposed program.
- Method of financing the proposed new program (including extramural research funding and other sources) and indicate the extent to which additional state funding may be required.
- State the number, amount, and source of proposed graduate student stipends and related tuition benefits that will be required to initiate the program.

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6 Self reported by Frank Clark, Chair of the School of Music, Georgia Institute of Technology
7 As reported on their program website.
Contact: (List the names, titles, e-mail addresses and telephone numbers of the person(s) responsible for planning the proposed program.)

<table>
<thead>
<tr>
<th>Position Title</th>
<th>Name</th>
<th>E-mail Address</th>
<th>Telephone</th>
</tr>
</thead>
<tbody>
<tr>
<td>Department Head, Music</td>
<td>Daniel G Monek, Ph.D.</td>
<td><a href="mailto:dgmonke@ncsu.edu">dgmonke@ncsu.edu</a></td>
<td>(919) 515-1692</td>
</tr>
<tr>
<td>Associate Department Head, Music</td>
<td>Tom Koch, Ph.D.</td>
<td><a href="mailto:tdkoch@ncsu.edu">tdkoch@ncsu.edu</a></td>
<td>(919) 515-0149</td>
</tr>
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</table>

This Letter of Intent to Plan a New Program has been reviewed and approved by the appropriate campus authorities.

<table>
<thead>
<tr>
<th>Position Title</th>
<th>Signature</th>
<th>Date</th>
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</thead>
<tbody>
<tr>
<td>Provost</td>
<td></td>
<td>7/26/18</td>
</tr>
<tr>
<td>Provost (Joint Partner Campus)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
North Carolina State University  Original Signature Sheet

This request has been reviewed and approved by the appropriate campus committees and authorities.

Endorsed By:  

[Signature]  
3-08-2019

Head, Department/Program  
Date

Recommended By:

Jennifer Capps  
Chair, College Curriculum Committee  
March 18, 2019

[Signature]  
Date

Endorsed By:

College Dean  
March 19, 2019

[Signature]  
Date

Recommended By:

Vice Provost, DELTA (if DE degree/certificate)  
Date

Recommended By:

[Signature]  
_date(June 10, 2019)

Chair, University Courses & Curricula Committee  
Date

Approved By:

Carrie McLear  
Dean, (DASA or the Graduate School)  
4/10/19

[Signature]  
Date

Recommended By:

[Signature]  
7/25/19

Dean's Council  
Date

Approved By:

Executive Vice Chancellor and Provost  
7/25/19

Approved By:

N/A  
Date

Chancellor  
Date