

# MUSIC TECHNOLOGY (PHD)

Department Website (<http://steinhardt.nyu.edu/music/>)

NYSED: 31846 HEGIS: 1099.00 CIP: 40.0809

## Program Description

The PhD program in Music Technology prepares students for research and teaching careers in academia and industry at the constantly changing intersection of music, sound, and technology. This degree program involves research in the fields of computer music, immersive audio, music psychology and neuroscience, sound and music computing, and data science, as well as in cutting-edge technologies for music experiences, interaction, education, creation, production, and accessibility.

The program of study is distributed among foundation courses, cognate course work related to the student's area of specialization, content and dissertation proposal seminars, course work in specialized research methods, and research requirements. Students are mentored closely by music technology faculty while benefiting from courses, facilities, resources, and research opportunities across across the University, including the Courant Institute of Mathematical Sciences, Tandon School of Engineering, Center for Data Science, Tisch School of the Arts, and the Graduate School of Arts & Science.

## NYU Abu Dhabi Fellowship

Music Technology PhD candidates may choose to become NYU Abu Dhabi Fellows. NYUAD Fellows commence their degree work in New York, taking full-time coursework for a year before continuing on to Abu Dhabi to complete coursework, research, and their dissertation, all while maintaining close contact with faculty in New York, including regular research visits. Opportunities in Abu Dhabi include extensive facilities, world-class faculty in computer music, recording, machine learning, and (ethno)musicology, and collaboration with the Music and Sound Cultures ([https://wp.nyu.edu/music\\_and\\_sound\\_cultures/](https://wp.nyu.edu/music_and_sound_cultures/)) (MaSC) research group, which develops groundbreaking work on the computational analysis and understanding of music from the Arabian Gulf and surrounding regions. Interested applicants should include in their statement of purpose ideas as to how their research interests could be applied in the NYUAD context.

## Admissions

Admission to graduate programs in the Steinhardt School of Culture, Education, and Human Development requires the following minimum components:

- Résumé/CV
- Statement of Purpose
- Letters of Recommendation
- Transcripts
- Proficiency in English

See NYU Steinhardt's Graduate Admissions website (<https://steinhardt.nyu.edu/admissions/how-apply/graduate-students/>) for additional information on school-wide admission. Some programs may require additional components for admissions.

See How to Apply (<https://steinhardt.nyu.edu/degree/phd-music-technology/how-apply/>) for admission requirements and instructions specific to this program.

## Program Requirements

The program requires the completion of 48 credits, comprised of the following:

Course	Title	Credits
<b>Major Requirements</b>		
<i>Foundations</i>		
MPATE-GE 2599	Fundamentals of Digital Signal Theory	3
MPATE-GE 2598	Fundamentals of Digital Signal Theory Lab	1
MPATC-GE 2930	Review of Tonal Theory I	1
MPATC-GE 2931	Review of Tonal Theory II	1
<i>Specialized Research Methodology</i>		
MPAME-GE 2130	Research in Music and Music Ed	3
<i>Content and Dissertation Proposal Seminars</i>		
MPATE-GE 3060	Doctoral Symposium in Music Technology	3
MPAET-GE 3005	Doct Proposal Seminar	3
<b>Electives<sup>1</sup></b>		
Research Electives		18
Specialization Electives		15
<b>Total Credits</b>		<b>48</b>

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Students entering with a master's degree may receive advanced standing following a careful review of their transcripts and may be able to complete their doctoral studies for as few as 36 credits by taking fewer research and specialization electives.

## Additional Program Requirements

### Teaching Requirement

Doctoral Candidates are expected to complete at least one semester as a teaching assistant working with a full-time faculty member in preparing and teaching a class, as well as providing assistance to the students in that class. The student will further be expected to fulfill at least one semester of independent teaching after completing their experience as a teaching assistant. This experience is intended both to prepare students for teaching careers in higher education, as well as to further foster the mentoring relationship between the candidate and the faculty with whom they will be working on curricular development and teaching.

### Doctoral Candidacy Exams

Doctoral degree candidacy in Music Technology is based on an oral examination and a written examination. The student will be required to take the doctoral candidacy exam after completing no more than 30 credits toward the degree.

## Sample Plan of Study

Course	Title	Credits
<b>1st Semester/Term</b>		
MPATE-GE 2599	Fundamentals of Digital Signal Theory	3
MPATE-GE 2598	Fundamentals of Digital Signal Theory Lab	1
MPATC-GE 2930	Review of Tonal Theory I	1
CSCI-GA 2112	Scientific Computing	3

MPAME-GE 2130	Research in Music and Music Ed	3
<b>Credits</b>		<b>11</b>
<b>2nd Semester/Term</b>		
MPATC-GE 2931	Review of Tonal Theory II	1
MPATE-GE 2613	3 D Audio	3
CSCI-GA 1170	Fundamental Algorithms	3
MPATE-GE 2608	Algorithmic Composition and Computer Music Programming using Java	3
<b>Credits</b>		<b>10</b>
<b>3rd Semester/Term</b>		
MPATC-GE 2200	Seminar in Music Theory	3
MPATE-GE 2623	Music Info Retrieval	3
CSCI-GA 2565	Machine Learning	3
<b>Credits</b>		<b>9</b>
<b>4th Semester/Term</b>		
MPATE-GE 3060	Doctoral Symposium in Music Technology	3
MATH-GA 2962	Mathematical Statistics	3
<b>Credits</b>		<b>6</b>
<b>5th Semester/Term</b>		
MPAIA-GE 3097		3
MPATC-GE 2046	Music Criticism	3
<b>Credits</b>		<b>6</b>
<b>6th Semester/Term</b>		
CSCI-GA 3033	Spec Top Computer SCI:	3
MATH-GA 2563	Harmonic Analysis	3
<b>Credits</b>		<b>6</b>
<b>Total Credits</b>		<b>48</b>

Following completion of the required coursework for the PhD, students are expected to maintain active status at New York University by enrolling in a research/writing course or a Maintain Matriculation (MAINT-GE 4747) course. All non-course requirements must be fulfilled prior to degree conferral, although the specific timing of completion may vary from student-to-student.

## Learning Outcomes

Upon successful completion of the program, graduates will:

1. Have the ability to make a significant and original contribution to scholarly work at the intersection of music, science and technology.
2. Have the ability to critically analyze/apply/discuss the theories, concepts and critical issues in the fields of computer music, music cognition, audio recording and production, sound and music computing, music theory, performance and composition, and immersive audio environments.
3. Show proficiency in the use of common methodologies for scientific experimentation and evaluation, with a focus on the explanation of observable phenomena by measuring evidence and applying inductive reasoning, and the testing of these explanations, or hypotheses, by means of carefully-designed, statistically-rigorous and reproducible experimental studies.
4. Obtain in-depth knowledge and proficiency in the use of various methods and techniques from the applied sciences and mathematics, in areas such as computer programming, digital signal processing, machine learning, time-series analysis, neuroscience, cognitive sciences, computational modeling, acoustics and electronics.
5. Show proficiency in oral and written communication appropriate to the discipline.

6. Have the ability to produce works that are of sufficient quality for publication in scientific journals and conference proceedings.
7. Have the ability to teach and mentor college students.

## Policies NYU Policies

University-wide policies can be found on the New York University Policy pages (<https://bulletins.nyu.edu/nyu/policies/>).

## Steinhardt Academic Policies

Additional academic policies can be found the Steinhardt academic policies page (<https://bulletins.nyu.edu/graduate/culture-education-human-development/academic-policies/>).