MUSIC TECHNOLOGY (MPATE-GE)

MPATE-GE 2013 Audio Mastering (3 Credits)
Typically offered Fall, Spring, and Summer terms
Mastering is the crucial final stage of audio production where subtle to transformative techniques are used to ensure that recorded works are ready for mass distribution. The craft demands a wide-ranging aesthetic sense, a solid understanding of digital audio, aural communication skills, and deep listening. This class combines demonstrations, discussions of theory and process, and hands-on practice. Significant participation in the form of frequent and continuing discussions throughout the semester is required.
Grading: Grad Steinhardt Graded
Repeatable for additional credit: No
Prerequisites: MPATE-GE 2135 or MPATC-GE 2136 or MPATE-GE 2629 or MPATE-GE 2650 or MPATE-UE 1005 or MPATE-UE 1006 or MPATC-UE 1135 or (MPATE-GE 2311 and 2312).

MPATE-GE 2017 Electronic Product Design for Music and Audio (3 Credits)
This is a multidisciplinary course in which students with previous experience with analog and digital electronics create a novel hardware--based electronic musical instrument, controller, effects unit, or other device related to their interests in music and audio. Student projects may be analog, digital, or a hybrid, and should be unique in some way from devices currently in the commercial marketplace. Students present their designs and functioning physical prototypes with the class as they evolve throughout the semester for feedback.
Grading: Grad Steinhardt Graded
Repeatable for additional credit: Yes

MPATE-GE 2018 Accessible Design of Digital Media (3 Credits)
This introductory course teaches students how to make digital media accessible to people with disabilities. Emphasis on audio, video, digital documents, web design, and software applications. Students are expected to read and comment on current scholarly papers and learn industry-standard tools and techniques for creating accessible media. Classes include topic introductions, current research, and hands-on work with students' own media as well as professional examples.
Grading: Grad Steinhardt Graded
Repeatable for additional credit: No

MPATE-GE 2031 Distributed Performance (2 Credits)
The course will explore the technology used in the collaborative process in performing arts in a context of creating interactive performances distributed between multiple sites, using the Internet2. Students examine audio and video technology, improvisation, scheduling tools and other factors that must be addressed in creating and implementing distributed performances using synchronous and asynchronous communication, performance, and roduction media, to establish online performances. May be repeated for credit.
Grading: Grad Steinhardt Graded
Repeatable for additional credit: Yes

MPATE-GE 2036 Adv Musical Acoust (3 Credits)
Typically offered Spring and Summer
A continuation of the principles covered in E85.1035. The semester is divided into three modules - Room Acoustics, Physics of Vibration and Issues in Synthesis and Sound Design - designed to address critical yet broad areas concerning the science and art of producing sound in space. Students are responsible for hands-on projects on each modules, quizzes on reading assignments and a final project.
Grading: Grad Steinhardt Graded
Repeatable for additional credit: No

MPATE-GE 2037 Elect Music Synthesis: Fundamental Techn. (3 Credits)
Typically offered Fall and Summer terms
This course focuses on electronic music synthesizer techniques. Concepts in the synthesis of music, including generation of sound, voltage control, and treatment of sound and tape techniques. Included is a short synopsis of the history and literature of analog electronic music. Students complete laboratory tasks and compositions on vintage synthesizer modules and create one or more final projects that demonstrate(s) the application of these concepts.
Grading: Grad Steinhardt Graded
Repeatable for additional credit: No

MPATE-GE 2038 Creating With Interact Media (3 Credits)
Typically offered Fall
A study of the principles and practice of interactive media; surveying strategies, aesthetics, techniques, and software. Various works will be analyzed for insight into creative process as applied to interactive media. Resources utilized include the Yamaha Disclavier and Nights Multimedia facilities.
Grading: Grad Steinhardt Graded
Repeatable for additional credit: Yes

MPATE-GE 2039 Deep Learning for Media (3 Credits)
Deep learning, a sub-field of machine learning and artificial intelligence, has promoted breakthroughs in managing and creating media content. This course provides a hands-on, project-oriented introduction to deep learning for the classification, retrieval, and creation of media content, with emphasis in audio-visual content. Students create and work with deep learning models using Python libraries, and think critically about their application for media. Students develop an understanding of how to use these tools in the context of their work.
Grading: Grad Steinhardt Graded
Repeatable for additional credit: No

MPATE-GE 2042 Psychology of Music (3 Credits)
This course considers the effect of music on the human mind. Concepts discussed include our perception of music, psychoacoustics, expressive performance, representations of music, computational models, and the relations between music theory and our perceptions of music.
Grading: Grad Steinhardt Graded
Repeatable for additional credit: No

MPATE-GE 2047 Advanced Computer Music (3 Credits)
Typically offered Fall, Spring, and Summer terms
Focuses on artistic creation with digital audio, honing both technical and aesthetic skills. Students work through exercises using a variety of platforms, learn to critique and help improve each other's work, and explore unfamiliar techniques and styles to extend and enrich the idioms of their prior practice. Students analyze landmark compositions from the history of computer music as well as contemporary electronic genres. Course culminates with a public performance of student work.
Grading: Grad Steinhardt Graded
Repeatable for additional credit: Yes

MPATE-GE 2056 Advanced Projects in Immersive Sound (1 Credit)
This course is designed for students who have a strong foundation in immersive sound principles and techniques and wish to deepen their knowledge through hands-on projects. Through a series of guided projects and individual exploration, students work on advanced challenges in immersive sound design, spatial audio research, and interactive audio experiences. The course emphasizes practical skills development, creative problem-solving, and collaboration in the context of real-world immersive sound projects.
Grading: Grad Steinhardt Graded
Repeatable for additional credit: Yes
Prerequisites: MPATE-GE 2613; Music Tech graduates, PhDs, and Tonmeister only.

MPATE-GE 2136 Procedural Audio (3 Credits)
This course explores the creation of sound effects for linear and interactive media using real time synthesis models and prototypes. Techniques ranging from subtractive synthesis to physical modeling will be explored in an attempt to better understand the nature of various types of common sound effects from the standpoint of acoustics and physics. A hands-on approach is strongly encouraged and students are required to build audio models and sound effects engines using real time tools such as MaxMSP and Pure Data.
Grading: Grad Steinhardt Graded
Repeatable for additional credit: No
Prerequisites: MPATE-GE 2614 or MPATE-UE 1014.

MPATE-GE 2138 Global Electronic Music I (3 Credits)
This studio course examines a mixtape selection of electronic music from around the world using music theory and composition. Global electronic music necessitates diverse methodologies in critical discussion of the research of this music in a post/neo-colonial setting. Students engage in critical discussion of the studio and the digital audio workstation as compositional tools and of the music itself as innovation, communication, and historiography in global communities of the Information age. This course does not count towards graduate degree requirements.
Grading: Grad Steinhardt Graded
Repeatable for additional credit: No

MPATE-GE 2300 Independent Study (1-6 Credits)
Typically offered Fall, Spring, and Summer terms
It should be noted that independent study requires a minimum of 45 hours of work per point. Independent study cannot be applied to the established professional education sequence in teaching curricula. Each departmental program has established its own maximum credit allowance for independent study. This information may be obtained from a student's department prior to registering for independent study, each student obtain an independent study approval from the adviser.
Grading: Grad Steinhardt Graded
Repeatable for additional credit: Yes

MPATE-GE 2311 Tonmeister Technology I (3 Credits)
Typically offered Summer term of odd numbered years
This course examines Tonmeister theories & techniques related to recording acoustic music in concert hall settings. Students will sharpen their recording skills with class lectures & live recording sessions. Producing classical music is the primary focus, however other acoustic music genres including jazz, world, & folk will be examined. Topics include spot and stereo microphone technique, concert hall acoustics, & record production.
Grading: Grad Steinhardt Graded
Repeatable for additional credit: No

MPATE-GE 2312 Tonmeister Technology II (3 Credits)
Typically offered Summer term of odd numbered years
Course examines advanced Tonmeister music production theories & techniques related to recording acoustic music for playback on immersive sound systems. Students will sharpen their recording skills through class lectures & live recording sessions. Topics include surround sound (Dolby 5.1), surround with height channels (Auro-3D), wave field synthesis (WFS), immersive audio, & object based systems (Dolby ATMOS).
Grading: Grad Steinhardt Graded
Repeatable for additional credit: No

MPATE-GE 2315 Colloquy Tonmeister (3 Credits)
Typically offered Fall and Spring
A supervised & individualized study culminating in a professional portfolio of recorded works, analysis, & documentation that represent the skills & expertise of the Tonmeister Studies. A panel of experts in the fields of sound recording & music production will review the portfolio. Successful completion of the Advanced Certificate in Tonmeister Studies requires a positive evaluation of the portfolio & written documentation.
Grading: Grad Steinhardt Graded
Repeatable for additional credit: No
Prerequisites: MPATE-GE 2312; Music Tech graduates, PhDs, and Tonmeister only.

MPATE-GE 2472 Music Lit of the 20 Cent: Sound, Music, Tech (1900-Present) (3 Credits)
Typically offered Fall
This course tells the stories of composers, inventors, & entrepreneurs who opened music up to electronic instruments, new sounds, & new ideas of composition between 1900 & the beginning of the 21st century. Specific instruments will be examined, including the Theremin, RCA Synthesizer, Moog synthesizer, Buchla synthesizer, Synclavier, & Kyma. Specific compositions will be discussed. This course will define a starting point for ongoing innovation in sound design, composition, & the creation of new musical instruments.
Grading: Grad Steinhardt Graded
Repeatable for additional credit: No

MPATE-GE 2590 Graduate Fundamentals of Music Technology (1 Credit)
Typically offered Fall, Spring, and Summer terms
A general introduction to the fundamental concepts of music technology, including: sound propagation, the principles of microphone operation, the use of speakers and mixers, the MIDI standard and its implementation, the basics of digital systems, waveform editing and audio file formats and compression. The lectures will be complemented by practical assignments and demonstrations, through which students will gain a basic understanding of how to use technology to enhance and demonstrate their musical work.
Grading: Grad Steinhardt Graded
Repeatable for additional credit: No

MPATE-GE 2598 Fundamentals of Digital Signal Theory Lab (1 Credit)
Typically offered Fall, Spring, and Summer terms
Hands-on lab accompanying Fundamentals of Digital Signal Theory Lab E85.2599. Lab sessions will contain programming exercises to reinforce topics including signal representation, Fourier transform, spectrum analysis, transfer functions, convolution, and filtering.
Grading: Grad Steinhardt Graded
Repeatable for additional credit: No

MPATE-GE 2599 Fundamentals of Digital Signal Theory (3 Credits)
Typically offered Fall, Spring, and Summer terms
Theoretical and practical foundations for digital signal processing. Topics covered include signal representation in time and frequency domains, Fourier transform, spectrum analysis, transfer functions, convolution, filter theory and implementation. Lectures are reinforced with a co-requisite weekly lab.
Grading: Grad Steinhardt Graded
Repeatable for additional credit: No

MPATE-GE 2600 Graduate Seminar in Music Technology (3 Credits)
Typically offered Fall, Spring, and Summer terms
New Description: A graduate seminar in Music Technology students intended to provide the framework for intellectual challenge, as well as an opportunity to explore many areas of student interest in the field of music technology. The course provides a study of the theoretical foundations in key areas of Music Technology research through lecture as well as student review and discussion of the writings of prominent researchers in the field.
Grading: Grad Steinhardt Graded
Repeatable for additional credit: No
Prerequisites: MPATE-GE 2590 (can be taken as corequisite); Music Tech graduates and Tonmeister only.

MPATE-GE 2601 Colloquy in Music Technology (3 Credits)
Typically offered not typically offered
The final masters project in Music Technology reflects some contribution to the field, and will bring together the student's class work experience and interests during the two year Masters program. Possible directions include documented performance techniques, analysis or software applications/development to music.
Grading: Grad Steinhardt Graded
Repeatable for additional credit: Yes

MPATE-GE 2602 Thesis in Music Technology I (1 Credit)
Typically offered occasionally
This course serves as the first-semester master's thesis research and writing class. It covers research methods, testing with human subjects, data analysis, and academic writing. Students are expected to complete the major pre-writing work on their projects by the end of the semester.
Grading: Grad Steinhardt Graded
Repeatable for additional credit: Yes

MPATE-GE 2603 Thesis in Music Technology II (1 Credit)
Typically offered occasionally
This course serves as the master's thesis writing and presentation class. It covers academic writing and oral presentation techniques, and features class discussions about published papers and theses. It concludes with an oral thesis defense required of all graduating master's students
Grading: Grad Steinhardt Graded
Repeatable for additional credit: Yes

MPATE-GE 2604 Game Audio I (3 Credits)
Typically offered Spring
No Course Description Available
Grading: Grad Steinhardt Graded
Repeatable for additional credit: No
Prerequisites: MPATE-GE 2598 and MPATE-GE 2599 Restriction: Music Tech graduates, PhDs, and Tonmeister only.

MPATE-GE 2605 Grad Intern Music Tech (1-6 Credits)
Typically offered Fall, Spring, and Summer terms
Assignment to studios, mastering labs, or other music technology-related firms for advanced on-the-job training.
Grading: Grad Steinhardt Graded
Repeatable for additional credit: Yes

MPATE-GE 2607 Digital Signal Theory (3 Credits)
Typically offered Spring
Theoretical and practical foundations for programming and digital signal processing at an advanced level. Topics covered include signal and system representation, time and frequency domains, phase vocoding, and filter theory and implementation. Lectures, covering concepts important to the implementation of DSP, are reinforced with assignments utilizing MATLAB to digitally manipulate sound files. A background in mathematics and computer programming is recommended, but not required.
Grading: Grad Steinhardt Graded
Repeatable for additional credit: No
Prerequisites: MPATE-GE 2598 and MPATE-GE 2599 Restriction: Music Tech graduates, PhDs, and Tonmeister only.

MPATE-GE 2608 Algorithmic Composition and Computer Music Programming using Java (3 Credits)
Typically offered Fall
Explores real-time music using two new JAVA music technologies: JMSL and JYSN. JAVA Music Specification Language (JMSL) is a programming environment for experiments in music performance, algorithmic composition, and intelligent music design. JYSN is a software package with which the programmer/composer can build virtual musical instruments. JSYN delivers CD-quality stereo audio in real-time. Students will be programming extensively in JAVA and should be prepared to spend considerable time outside class developing their software.
Grading: Grad Steinhardt Graded
Repeatable for additional credit: No

MPATE-GE 2609 Electronic Music Performance (2 Credits)
Typically offered Fall, Spring, and Summer terms
Through weekly performing, readings and discussions, students study the conceptualization and production of live electronics ensemble performance. Students create new works, improvisations, and rehearse compositions from a growing repertoire of electronic ensemble compositions, to be performed at a semester's end public concert.
Grading: Grad Steinhardt Graded
Repeatable for additional credit: No

MPATE-GE 2610 Advanced Max/Msp/ Jitter Programming (3 Credits)
Typically offered Spring
As a follow-up to MIDI II: Intro to Mx/MSP, this course will focus on the creation of a larger and more intricate programming projects -- for building useable and robust interactive music performance environments, algorithmic composition systems and sound installations -- including live audio and video processing/analysis using Mx/MSP/Jitter. Frequent student presentation of current or completed projects. Designed for composers, performers, audio programmers and engineers.
Grading: Grad Steinhardt Graded
Repeatable for additional credit: No

MPATE-GE 2611 Concert Recording I (2 Credits)
Typically offered Fall and Spring
Introduction to the concepts of the live concert recording. Microphone selection, characteristics, and placement, as well as the acoustic problems encountered in concert halls will be discussed. Students will have the opportunity to apply the lecture material by recording undergraduate rehearsals and recitals.
Grading: Grad Steinhardt Graded
Repeatable for additional credit: No

MPATE-GE 2613 3 D Audio (3 Credits)
Typically offered Spring
An interdisciplinary course about the theory, techniques and applications of 3D and spatial audio. Topics include the psychoacoustics of directional hearing, physical acoustics of spatial sound, stereo and multi-speaker sound reproduction, and spatial sound applications in virtual reality and other fields.
Grading: Grad Steinhardt Graded
Repeatable for additional credit: No

MPATE-GE 2614 Max Programming I (3 Credits)
Typically offered Fall and Spring
Programming for MIDI, C, and other appropriate techniques. Design and implementation of software sequencers, interface drivers, and hardware applications will be the focus.
Grading: Grad Steinhardt Graded
Repeatable for additional credit: No

MPATE-GE 2617 C Programming for Music Technology Lab (1 Credit)
Typically offered Fall and Spring
C programming for music technology lab is taken concurrently with MPATE-GE 2618 & provides students with hands-on instruction in algorithmic design & general programming concepts. Example code is implemented, discussed, & demonstrated in detail in order to provide students with step-by-step examples of programming design paradigms
Grading: Grad Steinhardt Graded
Repeatable for additional credit: No

MPATE-GE 2618 C Programming for Music Technology (3 Credits)
Typically offered Fall and Spring
A graduate-level introductory course in programming for audio & music applications. Extensive C programming assignments cover topics including software designs, algorithms, & data representation for digital signal processing & other audio applications. No prior programming experience is required.
Grading: Grad Steinhardt Graded
Repeatable for additional credit: No

MPATE-GE 2619 Live Sound Reinforcement (3 Credits)
Typically offered Fall and Spring
A focus on basic knowledge of live sound reinforcement; applicable to interested students in music theatre, or the performing arts. Course topics introduce mixing consoles, room EQ, speakers, amplification, systems, monitoring systems and electrical requirements, as appropriate to the field.
Grading: Grad Steinhardt Graded
Repeatable for additional credit: Yes

MPATE-GE 2620 Audio for Video I (2 Credits)
Typically offered Fall, Spring, and Summer terms
An introduction to the concepts and applications of audio production for video, television and film. Current production techniques frequently used in the post-production industry will be explored with special emphasis on synchronization and the interfacing of SMPTE time code, and multi-track audio-sweetening techniques including music editing, sound effects design, foley, and dialog replacement.
Grading: Grad Steinhardt Graded
Repeatable for additional credit: No

MPATE-GE 2621 Audio for Video II (3 Credits)
Typically offered Spring and Summer
A continuation of E85.2620. This is an advanced detailed study of the audio-visual production and post-production process including digital recording techniques with special emphasis on synchronization and the interfacing of SMPTE time code. Multi-track audio-sweetening techniques including music editing, sound effects design, foley and playback will be discussed, as well as other issues that concern stare-of-the-art post-production.
Grading: Grad Steinhardt Graded
Repeatable for additional credit: No
Prerequisites: MPATE-GE 2620.

MPATE-GE 2623 Music Info Retrieval (3 Credits)
Typically offered Fall, Spring, and Summer terms
Comprehensive overview of research in the multi-disciplinary field of Music Information Retrieval (MIR) which uses knowledge from diverse areas such as signal processing, machine learning and information and music theory. Exploration of how this knowledge can be used to develop novel methodologies for browsing and retrieval of large music collections. Emphasis would be given to audio signal processing techniques.
Grading: Grad Steinhardt Graded
Repeatable for additional credit: No
Prerequisites: MPATE-GE 2598 and MPATE-GE 2599 Restriction: Music Tech graduates, PhDs, and Tonmeister only.

MPATE-GE 2626 Thesis in Music Technology (0-1 Credits)
Typically offered Fall and Spring
Master's thesis preparation & presentation class. The class will cover academic writing, research methods, testing with human subjects, data analysis, oral presentation techniques, & feature class discussions about published papers & theses. It will conclude with an oral thesis defense required of all graduating master's students.
Grading: Grad Steinhardt Graded
Repeatable for additional credit: Yes

MPATE-GE 2627 Aesthetics of Recording (2 Credits)
Typically offered Fall and Spring
A critical listening study of acoustic music recordings that develops the student's ability to define and evaluate aesthetic elements of recorded music. Students explore recorded music attributes including dynamic range, stereo imaging, perceived room acoustics, the use of reverb and equalization, naturalness, and the listening perspectives.
Grading: Grad Steinhardt Graded
Repeatable for additional credit: No

MPATE-GE 2628 Audio for The Web (3 Credits)
Typically offered Spring
This advanced course focuses on the technical development, production, and delivery of audio and multimedia content for the Internet using industry-standard tools and technologies. Topics include web dynamic applications, audio formats, internet protocols, audio compression, broadcasting and podcasting.
Grading: Grad Steinhardt Graded
Repeatable for additional credit: No

MPATE-GE 2629 Adv Audio Production (3 Credits)
Typically offered Fall and Spring
An advanced examination of technology and production techniques related to recorded music. Topics include evaluating artistic elements of sound in audio reproductions, the listening space, sonic characteristics of analog and digital mediums, mono, stereo, quad and surround microphone techniques, signal processing and mixing.
Grading: Grad Steinhardt Graded
Repeatable for additional credit: No
Prerequisites: MPATE-UE 1001 or MPATE-UE 1003 or MPATE-UE 1005 or MPATE-UE 1006 or MPATE-UE 1011 or MPATE-GE 2611 or MPATE-UE 1135 or MPATE-GE 2135 or (MPATE-GE 2311 & 2312).

MPATE-GE 2632 Audio Streaming Technology (3 Credits)
Typically offered Spring
This course gives an introduction to the perceptual and signal processing elements from which digital audio codecs are built including the human auditory system, hearing acuity, modeling of noise masking in human hearing and sound localization in space. These principles are illustrated by investigating several MPEG audio coding formats and current music and video streaming architectures.
Grading: Grad Steinhardt Graded
Repeatable for additional credit: No

MPATE-GE 2633 Multichannel Media Installation Performance (3 Credits)
Typically offered Spring
Multichannel Media Installation & Performance is a course designed for composers & artists who want to work in a performance or installation context with immersive sound & image technology. The course focuses on software & hardware workflows for the creative applications of multi-channel sound & immersive video for the creation of fixed, generative, reactive, performance-based, & interactive systems that can be experienced in a gallery context or a live performance. Students will develop a semester-length project to use scale & immersion to creative effect. The course will feature regular creative critique as well as an overview of relevant interaction design strategies for creating interactive spaces using sensors & cameras.
Grading: Grad Steinhardt Graded
Repeatable for additional credit: No

MPATE-GE 2635 Audio for Games and Immersive Environments (3 Credits)
Typically offered Fall
This course explores audio implementation & scripting/programming for interactive environments with an emphasis on gaming & the specific requirements & demands of this medium. Using code, visual scripting tools & professional level designer software, students will construct dynamic virtual environments, build interactive prototypes of complex audio objects, & learn techniques of interactive mixing for games & immersive environments. A hands-on approach will be used & students are encouraged to experiment with the tools & techniques discussed in class in new & creative ways. The course is taught using powerful tools, software & techniques in use throughout the gaming industry.
Grading: Grad Steinhardt Graded
Repeatable for additional credit: No

MPATE-GE 2639 Adv Topics Music Tech: C++Audio Application Development (4 Credits)
This is an advanced graduate-level course covering the C++ programming language, with an emphasis on developing applications for music and audio. Students are expected to have working knowledge of C; this course extends that knowledge to C++, exploring object-oriented topics such as classes, inheritance, function and operator overloading, polymorphism and encapsulation. Students use existing frameworks and libraries to create their own audio applications and audio plug-ins.
Grading: Grad Steinhardt Graded
Repeatable for additional credit: No

MPATE-GE 2640 Modular Sound Synthesis Techniques for Creating/Performing Electronic Music (3 Credits)
Typically offered Spring
Additionally, its course description should be updated to: The course will offer a historic and practical foundation for understanding and identifying the core issues surrounding the creation of music using modular sound synthesis technologies. The lectures will present a series of alternative strategies in composing and performing with digitally assisted analog equipment. The ongoing class assignments will support both technical and cognitive understanding and usage of the hybrid approach.
Grading: Grad Steinhardt Graded
Repeatable for additional credit: No

MPATE-GE 2650 Ear Training for Audio Engineers (3 Credits)
Typically offered Fall, Spring, and Summer terms
This course will examine theories & techniques related to analyzing recorded & environmental sounds. Students will sharpen listening skills with comprehensive ear training exercises & guided listening explorations. Topics include frequency discrimination, reverberation, dynamics, distortion, sonic effects, sound ecology & other related topics.
Grading: Grad Steinhardt Graded
Repeatable for additional credit: No

MPATE-GE 3060 Doctoral Symposium in Music Technology (0-3 Credits)
Typically offered Fall and Spring
Focuses on current issues in the field and brings to bear various research methodologies in reviewing current literature and developing novel approaches to the underlying problem.
Grading: Grad Steinhardt Graded
Repeatable for additional credit: Yes

MPATE-GE 9555 Sound Design and Spatialization at IRCAM (6 Credits)
Course Description: This course focuses on three important areas in
music technology: spatialization, computer aided composition, analysis
& synthesis techniques. In each area, concepts & implementations will
be explored in a variety of artistic & technological contexts. Students
will work with the latest technologies including IRCAM Tools, Spat
plugin, Max Bach library, Ambisonics, & Wave Field Synthesis. The course
includes a 3-hour weekly lecture, 3-hour studio lab, & workshops at
IRCAM. This course is taught in collaboration with IRCAM in Paris, one of
the world leading institutions in computer music and acoustics
Grading: Grad Steinhardt Graded
Repeatable for additional credit: No