

PY.550 (RECORDING ARTS AND SCIENCES)

Courses

PY.350.511. Songwriting. 2 Credits.

Students will explore the creative, technical, and sociopolitical elements of popular songwriting through critical listening, musical and lyrical analysis, collaboration and the general study of songwriting and production as a compositional tool. This course will be offered remotely, with some in-person opportunities.

PY.550.111. Recording 1a - Fundamentals. 2 Credits.

A course designed to introduce the beginning Recording Arts student to components of the recording process including the physical aspects of sound, human perception of sound, the mechanisms of commonly used microphones, and stereophonic microphone techniques. Open to Recording Arts majors. Non-majors who wish to enroll should email the instructor's permission to peabodyregistrar@jhu.edu.

Prerequisite(s): Open to Recording Arts majors. Non-majors who wish to enroll should email the instructor's permission to peabodyregistrar@jhu.edu.

Distribution Area: P, Y

PY.550.112. Recording 1b - Fundamentals. 2 Credits.

A continuation of Recording 1a, this semester focuses on analog and digital signal flow, the operation of recording consoles, and recording and editing within a digital audio workstation. Prerequisite: Completion of Recording 1a with a B- or higher is required, PY.550.111. Open to Recording Arts majors only or with permission of the instructor.

Prerequisite(s): Open to Recording Arts majors only or with permission of the instructor.; Completion of Recording 1a with a B- or higher is required, PY.550.111[C].

Distribution Area: P, Y

PY.550.211. Recording 2a - Studio Technology. 2 Credits.

Builds on the material from Recording 1a and 1b providing students with a deeper understanding of the technology and procedures involved in the recording process. Prepares students for the technique-focused courses of Recording 3 and Recording 4. Prerequisite: Completion of Recording 1b with a B- or higher is required, PY.550.112. Open to Recording Arts majors only or with permission of the instructor.

Prerequisite(s): Open to Recording Arts majors only or with permission of the instructor.; Completion of Recording 1b with a B- or higher is required, PY.550.112[C].

Distribution Area: P, Y

PY.550.212. Recording 2b - Studio Technology. 2 Credits.

Continuation of Recording 2a. providing students with an in-depth exploration of the tools and technology associated with the recording process include signal flow, analog and digital theory, signal processing, and recording systems. Prerequisite: Completion of Recording 2a with a B- or higher is required, PY.550.211. Open to Recording Arts majors only or with permission of the instructor. .

Prerequisite(s): Open to Recording Arts majors only or with permission of the instructor.; Completion of Recording 2a with a B- or higher is required, PY.550.211[C].

Distribution Area: P, Y

PY.550.311. Recording 3a - Classical/Jazz Techniques. 2 Credits.

An exploration of techniques and aesthetics associated with recording classical music ensembles. Many classes will involve a recording session with a guest chamber ensemble performing in one of the school's concert halls or Studio A. Prerequisite: Completion of Recording 2b with a B- or higher is required, PY.550.212. Open to Recording Arts majors only or with permission of the instructor.

Prerequisite(s): Open to Recording Arts majors only or with permission of the instructor.; Completion of Recording 2b with a B- or higher is required, PY.550.212[C].

Distribution Area: P, Y

PY.550.312. Recording 3b - Classical/Jazz Mixing and Editing. 2 Credits.

A continuation of Recording 3a, this semester focuses on techniques associated with recording Jazz ensembles in the studio. Additional topics include headphone monitoring, immersive/surround recording and mixing. Prerequisite: Completion of Recording 3a with a B- or higher is required, PY.550.312. Open to Recording Arts majors only or with permission of the instructor. .

Prerequisite(s): Open to Recording Arts majors only or with permission of the instructor.; Completion of Recording 3a with a B- or higher is required, PY.550.311[C].

Distribution Area: P, Y

PY.550.411. Recording 4a - Rock/Pop Techniques. 3 Credits.

A focus on recording techniques associated with modern music styles such as rock and pop. Advanced use of digital audio workstations for multitrack recording, mixing, and overdubbing, and operation of the studio recording console. Prerequisite: Completion of Recording 3b with a B- or higher is required, PY.550.312. Open to Recording Arts majors only or with permission of the instructor.

Prerequisite(s): Open to Recording Arts majors only or with permission of the instructor.; Completion of Recording 3b with a B- or higher is required, PY.550.312[C].

Distribution Area: P, Y

PY.550.412. Recording 4b - Rock/Pop Mixing and Editing. 3 Credits.

A continuation of Recording 4a, focuses on recording techniques associated with modern music styles such as rock and pop. Advanced use of digital audio workstations for multitrack recording, mixing, and overdubbing, and operation of the studio recording console. Prerequisite: Completion of Recording 4a with a B- or higher is required, PY.550.411. Open to Recording Arts majors only or with permission of the instructor.

Prerequisite(s): Open to Recording Arts majors only or with permission of the instructor.; Completion of Recording 4a with a B- or higher is required, PY.550.411[C].

Distribution Area: P, Y

PY.550.419. Recording Internship. 4 Credits.

Undergraduate students work in supervised professional positions in which they can apply the knowledge and expertise developed during their course of study in Recording Arts and Sciences. Prior approval of the desired internship and clear expectations must be documented with the instructor prior to its start. Prerequisite: Completion of Recording 3b with a B- or higher is required, PY.550.312. Open to Recording Arts majors only or with permission of the instructor. .

Prerequisite(s): Open to Recording Arts majors only.; Completion of Recording 3b with a B- or higher is required, PY.550.312.

PY.550.511. Advanced Recording Systems 1. 3 Credits.

Theory and practical application of the tools and techniques used in professional audio recording in all common musical styles. Topics include a review of studio acoustics, human perception of sound, microphone theory and application, signal processing, recording, mixing and mastering. Advanced techniques in Classical, Jazz and Rock music recording, and other styles as time permits. Open to incoming students in the Recording and Production track of the Master of Arts in Audio Sciences. Open to Recording Arts majors only.

Prerequisite(s): Open to incoming students in the Recording and Production track of the Master of Arts in Audio Sciences. Open to Recording Arts majors only.

PY.550.512. Advanced Recording Systems 2. 3 Credits.

Continuation of Advanced Recording Systems 1. Additional topics include immersive/surround recording and mixing. Prerequisite: Completion of Advanced Recording Systems 1 with a B- or higher is required. Open to Recording Arts majors only. Completion of Advanced Recording Systems 1 with a B- or higher is required, PY.550.511[C].

Prerequisite(s): Open to Recording Arts majors only.; Completion of Advanced Recording Systems 1 with a B- or higher is required, PY.550.511[C].

PY.550.513. Advanced Studio Production 1. 3 Credits.

Advanced practical training in producing and engineering recordings in a variety of musical styles at a professional level in a masterclass-like environment with an accomplished professional recording engineer. Final capstone projects will be evaluated by a panel of outside producers representing Classical, Jazz and Rock music styles and engineers who are experts in their respective field of professional audio recording, and presented at the end of the year in an open forum attended by all students in the Recording Arts and Sciences department. Open to majors only.

Prerequisite(s): Open to Recording Arts majors only.

Distribution Area: P, Y

PY.550.514. Advanced Studio Production 2. 3 Credits.

Advanced practical training in producing and engineering recordings in a variety of musical styles at a professional level in a masterclass-like environment with an accomplished professional recording engineer. Final capstone projects will be evaluated by a panel of professional engineers representing Classical, Jazz and Rock music styles, and presented at the end of the year in an open forum attended by all students in the Recording Arts and Sciences department. Prerequisite: 550.412 Recording 4b or 550.512 Advanced Recording Systems.

Prerequisite(s): Open to Recording Arts majors only.; Completion of PY.550.412 Recording 4b or PY.550.512 Advanced Recording Systems. Distribution Area: P, Y

PY.550.515. Musical Acoustics. 3 Credits.

A course concerned with the physics of sound as applied to properties of musical instruments, perception of musical sound, electronic music reproduction, and the spaces in which they perform. Open to majors only, others by permission of instructor. Prerequisite for Recording Arts majors: Recording 2. Prerequisite for non-Recording Arts majors: Recording for Musicians.

Prerequisite(s): Open to Recording Arts majors only, others by permission of instructor.; Completion of Recording 2b or Recording for Musicians or permission of the instructor.

Distribution Area: P, Y

PY.550.516. Electroacoustics. 3 Credits.

This class will cover the basic fundamentals of electro-acoustics subdivided into roughly four units: fundamentals and transducer theory, loudspeakers, headphones and microphones. Prerequisite for Recording Majors: Physics 2.

Distribution Area: P, Y

PY.550.517. Psychoacoustics. 3 Credits.

The course focuses on the basics of the physiological and psychological aspects of hearing with applications to audio and sound systems, architectural acoustics, and musical acoustics. Topics include auditory physiology of the outer and inner ear, masking, critical bands, loudness, duration, binaural hearing, localization, and pitch. Prerequisite: Recording 2b or acceptance to MA Audio Sciences. Open to majors only, others by permission of instructor.

Prerequisite(s): Open to Recording Arts majors only, others by permission of instructor.

Distribution Area: P, Y

PY.550.519. Acoustical/Audio Measurements. 3 Credits.

The theory and application of objective acoustical and audio measurements are studied. Measurement techniques used in the evaluation of both physical spaces and electronic equipment are presented. Topics include measurement microphones, sound level meters, noise sources, spectrum and FFT analysis, frequency analysis, reverberation, speech intelligibility, transfer functions, swept sine techniques, audio power measurements, ADC and DAC linearity, harmonic distortion and mixed signal testing.

Prerequisite(s): Completion of Architectural Acoustics 1 required, PY.550.624[C].

Distribution Area: P, Y

PY.550.524. Sound Design/Video Games. 3 Credits.

This course explores the business side of game audio and the creative and technical process of designing and integrating sound design for video games. This section is designed for advanced Composition, Computer Music, and Recording Arts students. Students from other major areas with sufficient experience in music technology may seek approval from the department chair to enroll.

Prerequisite(s): Completion of Recording 3b, Advanced Recording Systems 1, or Introduction to Programming required, PY.550.511[C], PY.550.312[C], or PY.350.466[C]. Instructor permission may also be granted instead, and should be emailed to peabodyregistrar@jhu.edu in order to enroll.

Distribution Area: P, Y

PY.550.610. Audio Science and Technology. 3 Credits.

This course is designed to integrate many of the audio and acoustics concepts discussed in the Master of Arts: Concentration in Recording and Production degree curriculum into an exploration of the electronics and acoustics fundamental to audio engineering. Topics include Current, Voltage, and Power in Audio systems; Reactive Circuit Elements; AC Circuits; Semiconductor Devices; Integrated Circuits; Transistor Based Amplifier Circuits; Power Supply Technology; Embedded Systems, and Audio System Engineering. Additional discussion of Architectural Acoustic Fundamentals, including Large Hall and Small room acoustical design. Co- and Pre-requisites: Introduction to Electrical and Computer Engineering (undergraduate) and Advanced Recording Systems (graduate), or permission of the instructor.

Distribution Area: P, Y

PY.550.611. Consumer Audio Systems. 3 Credits.

An introduction to the world of consumer audio electronics. The playback chain: What it is, how it works, and how it sounds. Lectures and outside-of-class projects will include a topology analysis of and critical listening to the following audio components and technologies: preamplifiers; power amplifiers; loudspeakers; disc players; DACs; music servers; computer audio; turntables, cartridges, tonearms, phono preamplifiers for vinyl disc playback; broadcast and internet radio; home theater configuration; interconnects; receivers; lossy and lossless codecs; multichannel audio and bass management; specifications and measurement; wireless audio profiles and codecs; network audio; active products and DSP; and headphones and headphone amplifiers. At the end of the course students will have a deep understanding of these topics and the ability to aurally discern the musical impact various design topologies have on the playback of recorded sound. Prerequisite: Audio Science and Technology, PY.550.610[C]. Co- and Pre-requisites: Recording 3b (undergraduate) and Advanced Recording Systems (graduate), or permission of the instructor.

Prerequisite(s): Completion of Audio Science and Technology required, PY.550.610[C].

Distribution Area: P, Y

PY.550.624. Architectural Acoustics 1. 3 Credits.

This class covers the fundamentals of architectural acoustics design. Topics will include: Plane and spherical waves; acoustic impedance and sound energy density; reflection, refraction, and diffusion; sound absorption; acoustic materials; psychoacoustic aspects; room modes; statistical versus geometric acoustics; reverberation theory; coupled-space acoustics; behavior of sound in rooms; and large versus small room acoustics. Open to MA Acoustics and Recording Arts (BM and MA) students, or by permission of instructor. Area P, Y.

Distribution Area: P, Y

PY.550.625. Audiovisual System Design. 3 Credits.

The objective of this class is to provide students with an overview of commercial audiovisual systems design. This will include both the considerations required to design audiovisual systems and all the ancillary considerations required to properly integrate these systems with architecture, electrical, mechanical, structural, and IT systems.

Prerequisite(s): Completion of Electroacoustics required, PY.550.516[C]. Instructor permission may also be granted instead, and should be emailed to peabodyregistrar@jhu.edu in order to enroll.

Distribution Area: P, Y

PY.550.626. Noise Control. 3 Credits.

A continuation of Architectural Acoustics (550 • 624) Topics will include: perceptual aspects of noise control; sound power, noise control criteria and standards; hearing loss prevention; environmental acoustics; airborne sound isolation (transmission loss theory, walls, floors, doors, and windows) structure-borne sound insulation (impact insulation theory and floors); vibration isolation (vibration isolators and design); heating, ventilation, and air conditioning (HVAC) noise control; and noise control applications in buildings. Prerequisites: Architectural Acoustics, or permission of instructor.

Prerequisite(s): Completion of Architectural Acoustics 1 required, PY.550.624[C]. Instructor permission may also be granted instead, and should be emailed to peabodyregistrar@jhu.edu in order to enroll.

Distribution Area: P, Y

PY.550.627. Acoustical Modeling. 2 Credits.

An introduction to background principles and the applied techniques in computer acoustic modeling for prediction and research. This may include computational models, models for physical acoustic behavior, barrier considerations, noise models for building systems and absorption models, but the core of the course will focus on geometric room acoustic prediction and auralization simulation models. The course will focus on the techniques, development, potentials, strengths and limitations of acoustic models as tools, rather than on specifically how to operate a single software platform. A deep understanding of current and relevant modeling programs used will be inherent. Open to MA Acoustics students only or by permission of the instructor. [2 Credits]

Distribution Area: P, Y

PY.550.631. Graduate Acoustics Seminar. 2 Credits.

This course examines current issues and topics, specific to professional practice in acoustics, to provoke discussion and deeper understanding. Topics include ethics and professional responsibility, the landscape of the acoustics industry, design process, acoustics in society, regulation and policy, parallel industries, professional organizations, contracts, exposure, liability, project structure and documentation. Open to MA Acoustics students only. [2 credits]

PY.550.632. Architectural Acoustics 2. 3 Credits.

This class is a continuation of content introduced in PY.550.624: Architectural Acoustics. This course focuses on analysis, design and application, expanding on established foundations and topical content in previous courses. Architectural acoustics applications for Concert Halls, Recital Halls, Spoken-word Theatre Spaces, Lecture and Classroom Spaces, Worship Spaces, Outdoor Performance Venues, Rehearsal and Practice Spaces, Recording and Production Spaces, Cinemas, Sports Venues, Restaurants and/or Office Spaces may be considered. Open to MA Acoustics students, or by permission of instructor. Prerequisite(s): Completion of PY-550-624 Architectural Acoustics 1 and completion or concurrent enrollment in PY-550-626 Noise Control.

Prerequisite(s): Completion of PY-550-624 Architectural Acoustics 1 and completion or concurrent enrollment in PY-550-626 Noise Control.

Distribution Area: P, Y

PY.550.633. Graduate Acoustics Seminar 2. 2 Credits.

This course examines current issues and topics, specific to professional practice in acoustics, to provoke discussion and deeper understanding. Topics include ethics and professional responsibility, the landscape of the acoustics industry, design process, acoustics in society, regulation and policy, parallel industries, professional organizations, contracts, exposure, liability, project structure and documentation. For second year MA Acoustics students, this course also serves as preparation for the Acoustics Design Practicum. This course will lead students in a research and discovery exercise in both broad ideation and eventually directed focus toward their Acoustics Practicum Proposal. Open to MA Acoustics students only. [2 credits]

PY.550.640. Acoustics Design Practicum. 3 Credits.

In this course taken in the final semester of study, students act as acoustical consultants to design or analyze an existing room or sound system using the knowledge gained through prior classes. The students are responsible for complete analysis, measurements, modeling, design documentation, and presentation of the final design in class. Open to majors only. Prerequisite: Completion of Architectural Acoustics 1 PY.550.632[C] and Graduate Acoustics Seminar 2 PY-550-633[C] required. Pre- or Co-requisite with Noise Control PY-550-626[C], Acoustical/Audio Measurements PY-550-519 and Acoustical Modeling PY-550-627.

Prerequisite(s): Completion of Architectural Acoustics 1 PY.550.632[C] and Graduate Acoustics Seminar 2 PY-550-633[C] required. Pre- or Co-requisite with Noise Control PY-550-626[C], Acoustical/Audio Measurements PY-550-519 and Acoustical Modeling PY-550-627.; Open to Recording Arts and Acoustics majors only.

PY.550.651. Recording for Musicians 1. 2 Credits.

A comprehensive course in recording and associated technologies designed for the musician who wishes to know about the recording arts. The course is taught parallel to Basic Recording I and II but without the required mathematics and physics and is open to upper-level undergraduates and graduate students of all majors. Distribution Area: P, Y

PY.550.652. Recording for Musicians 2. 2 Credits.

Designed for non-recording majors, this class offers an overview of the recording process starting with a basic understanding of the acoustics of a performance space; through the signal chain of microphones, signal processing, recording, editing, mixing, and loudspeaker and headphone monitors; to the acoustics of the monitoring environment and the human perception of sound. Additional topics include mastering a final product and distribution on CD and through online services. The completion of PY.550.651 is a prerequisite.

Prerequisite(s): PY.550.651[C]

Distribution Area: P, Y