on conic sections. Additional topics: complex numbers in Euclidean geometry, quaternions in three-dimensional geometry, and the geometry of four-dimensional space-time in special relativity. Mathematics 247 is helpful but not required.

Prerequisite: Mathematics 200 and 201 (formerly Mathematics 222), or permission of the instructor.

401a–404a. Advanced Independent Study and Honors in Mathematics. The Department.

Music

Mary Hunter, Department Chair
Linda Marquis, Senior Department Coordinator

Professors: Robert K. Greenlee, Mary Hunter, Cristle Collins Judd
Associate Professors: James W. McCalla, Vineet Shende
Senior Lecturer: Anthony F. Antolini
Lecturers: Frank Mauceri, John Morneau, Roland Vazquez, Christopher Watkinson
Visiting Faculty: Anthony Perman

Requirements for the Major in Music

The music major normally consists of ten academic courses and two performance credits. Most majors follow one of the tracks indicated in the “Sample Majors” listed below, but students are also invited to design a major to suit their own needs. No more than two 100-level courses in addition to Music 101, 131, and 151 may be counted toward the major, and two 300-level courses in addition to Music 451 are normally required of all majors. Honors work normally adds one extra course to the standard ten, and its second semester counts as the senior independent study.

The process for declaring the major is as follows: (1) The student consults with a member of the music faculty as early in the individual’s college career as possible. (2) Before declaring a major, the student proposes a list of courses that fulfill the major, or identifies a sample major to follow by submitting a list or sample major announcement to the music department chair or to another member of the department. (3) Upon departmental approval of the list of courses or the particular track, the major declaration is signed by the department chair. Subsequent alterations to this list of courses are possible only in consultation with the chair of the department or another member of the music faculty.

Sample Sequences of Courses for the Music Major

General Music Major

Music 101, 131 or 211, 151, 203, 302, and 451.
Four electives, including two 200-level courses and one 300-level course. One consecutive year of lessons on the same instrument; one consecutive year in the same ensemble. Honors in music adds one advanced independent study to this list.

Music and Culture

Music 101 or 151, 131, 211; a total of five electives: two or three from the music department (including at least one at the 200 level); and two or three relevant and sequential courses from another department, including at least one at the 200 level; a 200-level independent
study combining departmental and extra-departmental perspectives; one course numbered 355–358, and 451; and one full credit of a non-Western ensemble.

Composition and Theory

Music 101, 151, 203, 218 or 291, 243, one course numbered 250–259, 302, 361, 451, and one elective, plus the lessons and ensemble required for the general major, above.

European and American Music

Music 101, 131, 151, 203, one course numbered 250–259, 302, one course numbered 351–354, two electives (including at least one at the 200 level), 451; plus the lessons and ensemble required for the general major, above.

Requirements for the Minor in Music

The minor in music consists of six credits (five academic courses and one consecutive year of private lessons or one year of participation in a single ensemble). The five academic courses include 101 and any four others including at least two above the 100 level.

Introductory, Intermediate, and Advanced Courses

61c - VPA. Fundamentals of Music. Spring 2010. MARY HUNTER.

For the entry-level student. Explores the fundamental elements of music—form, harmony, melody, pitch, rhythm, texture, timbre—and teaches basic skills in reading and writing Western music notation for the purposes of reading, analyzing, and creating musical works.

101c - VPA. Theory I: Fundamentals of Music Theory. Every year. Fall 2009. CRISTLE COLLINS JUDD.

Designed for students with some beginning experience in music theory and an ability to read music. Covers scales, keys, modes, intervals, and basic tonal harmony. Entrance to the course is determined by a placement exam or permission of the instructor. To ensure proper placement, students are expected to have taken the music placement examination prior to registering for Music 101.

102c - VPA. Introduction to Classical Music. Fall 2009. MARY HUNTER.

Introduction to some major works and central issues in the canon of Western music, from the middle ages up to the present day. Includes some concert attendance and in-class demonstrations.

105c - VPA. Introduction to Audio Recording Techniques. Spring 2010. CHRISTOPHER WATKINSON.

Explores the history of audio recording technology as it pertains to music, aesthetic function of recording technique, modern applications of multitrack recording, and digital editing of sound created and captured in the acoustic arena. Topics include the physics of sound, microphone design and function, audio mixing console topology, dynamic and modulation audio processors, studio design and construction, principles of analog to digital (ADA) conversion, and artistic choice as an engineer. Students will create their own mix of music recorded during class time.

[113c - VPA. African Dance and Music. (Same as Africana Studies 113 and Dance 113.)]
Music 120 through 149 cover specific aspects of music history and literature, designed for students with little or no background in music. Course titles and contents may change every semester.

A survey of jazz’s development from its African American roots in the late nineteenth century through the Swing Era of the 1930s and 1940s, and following the great Swing artists—e.g., Louis Armstrong, Duke Ellington, Billie Holiday, and Benny Goodman—through their later careers. Emphasis is on musical elements, but includes much attention to cultural and historical context through readings and videos. (Same as Africana Studies 121.)

122c - VPA. History of Jazz II. Every other year. Fall 2010. James McCalla.
A survey of jazz’s development from the creation of bebop in the 1940s through the present day, e.g., from Charlie Parker and Dizzy Gillespie through such artists as Joshua Redman, James Carter, and the Art Ensemble of Chicago. Emphasis is on musical elements, but includes much attention to cultural and historical context through readings and videos. (Same as Africana Studies 122.)

125c - IP, VPA. Music of the Middle East. Every other year. Fall 2009. Mary Hunter.
A survey of music in both Arab and non-Arab countries of the Middle East and North Africa. Students learn the fundamental melodic and rhythmic features of music of this region and then address a variety of topics like music and Islam, music and dance, and the music of particular regions or histories. Includes live demonstrations by professional musicians.

An exploration of the guitar’s development, from its second millennium B.C.E. Middle Eastern origins to its twenty-first-century digital modeling descendants. Examines how history, culture, and technology have shaped the physical instrument, its technique, its sonic possibilities, and its resultant repertoire. The contributions and innovations of important luthiers, composers, and performers will be studied. While focus will be on the instruments and music of six-string classical, steel-string, and electric guitars, other fretted string relatives, such as the Japanese Biwa, the Indian Sitar, and the Arabic Oud, will be considered as points of reference.

Highly recommended for those considering majoring in music. An introduction to the academic study of music and the types of questions confronting music scholars today. Why do humans make music? In what ways are ideas communicated with musical sounds? How do musical preferences develop? How can we understand musical practices from different cultural and historical contexts? Introduces students to the disciplinary goals and methods of the numerous subfields of music scholarship, as well as the ways in which music scholarship contributes to a variety of interdisciplinary approaches and life outside of academia.

[139c - IP, VPA. Music of South Asia. (Same as Asian Studies 139.)]

Introduction to a broad range of musical styles from throughout Africa. Explores how music is used in religious contexts, within nationalist movements, and in social life more generally, with special attention given to popular music and transnational influences on these forms. Students read a range of ethnographic writings on African music, as well as popular press to address issues of colonialism, capitalism, and commercialization in post-colonial Africa. (Same as Africana Studies 144.)
**151c - VPA. Write Your Own Beatles Tune: Introductory Practicum in Tonal Music.** Every year. Fall 2009. VINEET SHENDE.

A largely practical, project-oriented course, for students with some basic experience in music. Students learn tonal and basic chromatic vocabulary through writing and performing their own songs, mostly in the style of Lennon, McCartney, and Harrison. Melodic, harmonic, and rhythmic writing, and analysis; bass-line construction; text-setting; and basic keyboard skills are addressed. Small-group and individual lab sessions are scheduled separately.

Prerequisite: Music 101 or passing grade on the department’s music theory placement examination, or permission of instructor.

**164c - VPA. A cappella.** Spring 2010. ROBERT GREENLEE.

A study of currently popular a cappella music, including folk song arrangements, pop music in the collegiate a cappella tradition, works by American composers such as Whitacre and Lauridsen, spirituals, and Zulu Iscathamiya (such as Ladysmith Black Mambazo). Possible projects include arranging, rehearsing an ensemble, and analyzing repertoire and performance styles. Vocal techniques will be discussed, and students will be expected to sing.

Prerequisite: Music 101, 271, or 273 or permission of instructor.

**203c - VPA. Tonal Analysis.** Every year. Spring 2010. JAMES MCCALLA.

Through a survey of music from Bach to Chopin, the student learns to recognize the basic processes and forms of tonal music, to read a score fluently, and to identify chords and modulations.

Prerequisite: Music 151 or permission of instructor.

**211c - VPA. Theory and Method in Ethnomusicology.** Every other year. Fall 2009. ANTHONY PERMAN.

An introduction to the principal theories and methods of ethnomusicology. Focuses on the foundational texts defining the cultural study of the world’s musics, drawing upon concepts and tools from both anthropology and musicology. Addresses issues regarding musical fieldwork, recording, and cultural analysis. Students engage in ethnomusicological field projects to put into practice what they study in the classroom.

Prerequisite: One course in music, or permission of the instructor.

**218c - VPA. Introduction to Electronic Music.** Every other year. Fall 2009. FRANK MAUCERI.

Examination of the history and techniques of electronic and computer music. Topics include compositional aesthetics, recording technology, digital and analog synthesis, sampling, MIDI (Musical Instrument Digital Interface), and computer-assisted composition. Ends with a concert of student compositions.

Prerequisite: Music 203.

**221c. Improvisation.** Every other year. Spring 2011. FRANK MAUCERI.

Do we understand improvised and composed music differently, and, if so, how? Investigates musical syntax in improvised settings and its consequences for the organization of time in music. Also considers the social functions and meanings of improvisation. Analysis draws from recordings, interviews, and writings in ethnomusicology, semiotics, and music theory. At the same time, students participate in regular improvisation workshops exploring vernacular musics, avant-garde open forms, and interactive electronics.

Prerequisite: Music 151 or permission of the instructor.


A detailed study of the life and work of one of America’s greatest composers and musicians in the context of twentieth-century music and contemporary social history. Ellington disliked
the term “jazz” and preferred (among other labels) “African American music.” Examines his works’ antecedents, its stylistic elements, its cultural work within United States society from the Harlem Renaissance through the Civil Rights era, and its presentation by the government as a symbol of the United States overseas. Also considers Ellington’s almost thirty-year collaboration with Billy Strayhorn (1915–1967); the extraordinary range of his band’s and small groups’ work from secular Hollywood films to the late Concerts of Sacred Music; and his projects with such guest artists as John Coltrane, Ella Fitzgerald, Charles Mingus, and others.

Prerequisite: Music 121 (same as Africana Studies 121) or 122 (same as Africana Studies 122).

[226c - VPA. Solitude, Society, Good, Evil, and Love: The Operas of Benjamin Britten.]


An introduction to the art of combining the elements of melody, harmony, rhythm, form, and orchestration to create cohesive and engaging music. Students learn techniques for generating and developing musical ideas through exercises and four main compositional assignments: a work for solo instrument, a theme and variations for solo instrument and piano, a song for voice and piano, and a multi-movement work for three to five instruments. Students also learn ways to discuss and critique their own and one another’s work. Ends with a concert of student compositions.

Prerequisite: Music 101 or permission of the instructor.


Explores the role of globalization and commercialization in the creation of “world music” and “worldbeat.” Investigates how the demands of an international market and the constraints of neoliberalism shape musical performance and production in various contexts around the world. Also explores how local and cosmopolitan tastes shape the ways in which music is understood as a living practice, a mode of expression, and as a commodity. (Same as Anthropology 253.)


A historical study of many of the principal works of Western classical music, with special attention to the processes of canon formation and the changes in the canon over time.

Prerequisite: Music 203.


An intensive survey of (mostly) Western classical music and musical aesthetics from ca. 1905 through the present day. Critical listening, stylistic analysis, score study, and both primary and secondary source readings.

Prerequisite: Music 203 or permission of the instructor.


A compositional study of the stylistic traits of the late common-practice period in Western Europe. In addition to frequent short exercises, aural drill, and keyboard studies, students write three compositions in the style of the late romantic era: a song or character piece, a portion of a sonata, and a scene from an opera.

Prerequisite: Music 203 or permission of the instructor.

Covers advanced topics in computer music. Focuses on algorithmic composition and sound synthesis. The significance of these techniques will be discussed with reference to information theory, cybernetics, and cultural critiques of media technology. Students design projects in computer-assisted composition, video sound tracks, and live (real time) media applications.

Prerequisite: Music 218.

**353c. Topics in Music History: Mozart's Operas.** Spring 2010. Mary Hunter.

A close study of the Mozart operas, with special focus on the late works. Includes musical analysis and work in biography, and musical, social, and theatrical history. Projects include analysis and creation of productions.

Prerequisite: Music 203 or permission of the instructor.

**361c. Topics in Ethnomusicology.**

**361c. Topics in Music Theory: Orchestration.** Every other year. Fall 2009. Vineet Shende.

An in-depth examination of factors to consider when writing for modern orchestral instruments. Students become familiar with all such instruments and arrange and transcribe works for ensembles such as string quartet, woodwind quartet, brass quintet, percussion ensemble, and full orchestra. Students also study scores by composers such as Brahms, Mahler, Ravel, Schoenberg, Stravinsky, and Takemitsu in order to further their knowledge of the techniques of instrumentation.

Prerequisite: Music 203, 243, or 302, or permission of the instructor.

**401c–404c. Advanced Independent Study and Honors in Music.** The Department.

**451c. Senior Project in Music.** Every spring. The Department.

All senior majors must take this course, which involves either a single semester of independent work or the second semester of an honors thesis. Students meet regularly with each other and at least one faculty member to discuss their work or readings relevant to all senior majors. Must be taken in the spring of the senior year. Open only to senior music majors.

**PERFORMANCE STUDIES**

Up to six credits of individual performance and ensemble courses together may be taken for graduation credit. Music 385–387 count for academic credit and are thus not included in this limitation. Lessons, large ensembles, chamber ensembles, and jazz ensembles may also be taken as non-credit courses.

**285c–289c. Individual Performance Studies.** Every semester.

The following provisions govern applied music lessons for credit:

1. Individual performance courses are intended for the continued study of instruments with which the student is already familiar. Students must take at least two consecutive semesters of study on the same instrument to receive one-half credit per semester and to receive the reduced rate. The first semester of study on the first instrument will be designated Music 285. The second and all subsequent semesters of credit lessons on the same instrument will be designated Music 286. The first semester of study on a different instrument will be designated
Music 287. The second and all subsequent semesters of study on that second instrument will be designated Music 288. The number Music 289 is reserved for all semesters of study on a third instrument.

2. One-half credit is granted for each semester of study. Students are graded with regular course grades. To receive credit, students must register for lessons at the beginning of each semester of study in the Office of the Registrar and the Department of Music. Note: Add/drop dates for lessons are earlier than add/drop dates for other courses. The deadline to add lessons is one week from the start of classes, and the deadline to drop lessons is two weeks from the start of classes.

3. Admission is by audition only. Only students who are intermediate or beyond in the development of their skills are admitted.

4. Beginning with the second semester of lessons, students must perform in an end-of-semester public performance. Repertory classes, Lunchbreak Concerts, and other designated music department venues all count as public performances. Such performances must be registered with the department coordinator to count for credit.

5. To receive credit for Individual Performance Studies, the student must complete an academic course in the music department (including Music 385) within the first year and a half of study, or by graduation, whichever comes first.

6. Students taking lessons for credit pay a fee of $477 for twelve one-hour lessons per semester. Junior and senior music majors and minors may take two half-credits free of charge.

7. Student Recitals. In most circumstances, a student is required to take Music 385–387 (see below) in order to perform a solo recital. In some cases, however, a student may be allowed to perform a recital without taking Music 385–387, subject to permission of the instructor, availability of suitable times, and contingent upon a successful audition in the music department. The student is expected to arrange for an accompanist (who must play for the audition) and pay any accompanist’s fees.

Prerequisite: Music 286.

1. This option for private study is open only to students already advanced on their instruments. Students may take one or more semesters of this option. Music 386 may be repeated for credit. The first semester of study will be designated Music 385. The second and all subsequent semesters of private lessons on the same instrument will be designated Music 386. The number 387 is reserved for all semesters of study on a second instrument.

2. One credit is granted for each semester of study. Students are graded with regular course grades. To receive credit, students must register for lessons at the beginning of each semester of study in the Office of the Registrar and the Department of Music. Note: Add/drop dates for lessons are earlier than add/drop dates for other courses. The deadline to add lessons is one week from the start of classes, and the deadline to drop lessons is two weeks from the start of classes.

3. Admission is by departmental audition only. Students must audition with a member of the music department before signing up for this option. Subsequent semesters of advanced lessons on the same instrument do not require further auditions.

4. To receive credit for lessons, the student must perform a thirty- to forty-five-minute recital at the end of the semester. The student is expected to write program notes for this
Courses of Instruction

5. To receive credit, the student must have an advisor from the music department faculty, and be able to demonstrate to that faculty member that he or she understands the structure and/or context of the music. The letter grade will be determined jointly by the applied teacher and the faculty member after the recital.

6. Fees as with half-credit lessons.

Instructors for 2009–2010 include Julia Adams (viola), Christina Astrachan (voice), Naydene Bowder (piano and harpsichord), Christina Chute (cello), Ray Cornils (organ), Matt Fogg (jazz piano), Allen Graffam (trumpet), Steve Grover (percussion), Anita Jerosch (low brass), Timothy Johnson (voice), John Johnstone (classical guitar), David Joseph (bassoon), Stephen Kecskemethy (violin), George Lopez (piano), Greg Loughman (electric bass), Tracey MacLean (jazz voice), Frank Mauceri (jazz saxophone), Kathleen McNerney (oboe), Joyce Moulton (piano), Gilbert Peltola (saxophone and clarinet), Bonnie Scarpelli (voice), Krysia Tripp (flute), Scott Vaillancourt (tuba), and Gary Wittner (jazz guitar).

Ensemble Performance Studies. Every semester.

The following provisions govern ensemble:

1. All ensembles are auditioned; returning students need not normally re-audition.
2. One-half credit may be granted for each semester of study. To receive credit, the student must register for the course in the Office of the Registrar.
3. Grading is Credit/D/Fail.
4. Ensembles meet regularly for a minimum of three hours weekly, inclusive of time without the ensemble director; ensemble directors establish appropriate attendance policies.
5. All ensembles require public performance.

Note: Six of the following eight ensembles currently provide one-half credit toward the Visual and Performing Arts (VPA) distribution requirement. This VPA designation, however, will be removed after the 2009–2010 academic year.

269c - VPA. Middle Eastern Ensemble. Mary Hunter.
271c - VPA. Chamber Choir. Robert Greenlee.
273c - VPA. Chorus. Anthony Antolini.
279c - VPA. Chamber Ensembles. Roland Vazquez.
281c - VPA. World Music Ensemble. Anthony Perman.
283c - VPA. Jazz Ensembles. Frank Mauceri.