COURSE MODULES

1. Introduction, Background & Overview
2. Tuning Theory
3. Spaces, Objects/Entities, Relations & Operations
4. Mathematical Music Theory
5. Composing with Numbers

Course Description
A graduate-level music theory topics seminar focusing on mathematical music theory and compositional applications of mathematical ideas. The course is designed for an audience of musicians (composers, conductors, educators, performers, etc.) with an interest in mathematical approaches to musical theory. Examples will be drawn from a wide variety of Western art music genres (1300-present), as well as from folk, jazz, world and pop/rock traditions. Students will be introduced to concepts from tuning theory, post-tonal theory (pitch-class set theory, diatonic set theory, scale theory, twelve-tone theory, etc.), geometrical music theory, transformational theory and neo-Riemannian theory.

Prerequisites
High school algebra/geometry and undergraduate music theory.

Required Text

Readings
Readings from various other sources will be made available via electronic reserve.

Instructional Methods
This course will be taught using multiple instructional methods including lecture, critical group discussion, interactive multimedia, peer programming, small workgroup collaboration and flipping.

Course Objective
By the end of the course, students will have a greater understanding of historical, theoretical and compositional issues surrounding the emerging discipline of mathematical music theory.

Learning Outcomes
Students will learn how to:
• Use concepts from algebra, geometry, combinatorics, number theory, set theory, group theory, graph theory, etc. to model musical structures
Learning Outcomes (cont.)

• Apply analytical techniques from tuning theory, pitch-class set theory, geometrical music theory, transformational theory and neo-Riemannian theory in different musical contexts
• Summarize primary and secondary source readings
• Navigate the research literature (print and electronic)
• Compare and contrast compositional styles with a mathematical basis
• Differentiate between compositional approaches that have a mathematical, numerical, statistical and computational basis
• Plan, develop and execute a final oral presentation with supporting printed handout

Requirements

• Daily assigned reading and listening
• Daily participation in class discussion
• Daily use of the course website and Blackboard ([http://blackboard.sc.edu](http://blackboard.sc.edu)) to access electronic course materials
• Check-your-own work homework assignments (Solution guides are available on the course website)
• Three take-home exams (4-6 hours each)
• A final oral presentation with supporting printed handout on an instructor-approved music and mathematics topic. Presentations will take place in class during the last two weeks of the term.

Grade Distribution

15% - Homework, class preparation, participation and attendance
60% - 3 exams (20% ea.)
25% - Final oral presentation with supporting printed handout

Grading Scale
100-93 A; 92-86 B+; 85-75 C+; 74-70 C; 69-65 D+; 64-60 D; 59-0 F

Attendance Policy
The university attendance policy states the following: “Enrollment in a course obligates the student not only for prompt completion of all work assigned but also for punctual and regular attendance and for participation in whatever class discussion may occur. It is the student’s responsibility to keep informed concerning all assignments made. Absences whether excused or unexcused do not absolve him or her from this responsibility. Absence from more than 10 percent of the scheduled classes, whether excused or unexcused, is excessive and the instructor may choose to exact a grade penalty for such absences.”

Attendance will be taken every day.

Accommodating Disabilities
Accommodations are available through the Office of Student Disability Services. If you have a disability and need accommodations to fully participate in this class, contact the Office of Student Disability Services: 777-6142, sasds@mailbox.sc.edu, or stop by LeConte College Room 112A.

More Information on the Web
Information about the university’s academic integrity policy, classroom distraction policy, free counseling services, etc. is available on the Theory Area website: