MUSI 6204/4460 Syllabus

Computational Music Analysis: Symbolic | 3 Credit Hours
Fall 2026
Location: TBA

Instructor Information

Instructor: Claire Arthur

Email: claire.arthur@gatech.edu

Office Location: Couch 203B

Office Hours: TBD and by appointment

General Course Information

Description

In this course we will perform computational analysis, modeling, and visualization of high-level musical structures (e.g., melody, harmony, form, cadences, style...) using symbolic representations of musical information (e.g., digital scores, performance data), as well as extra-musical data and metadata. In doing so, we will gain greater understanding of the methodological challenges in the fields of computational musicology and MIR, develop skills for approaching complex musicological problems, and work towards instilling hypothesis-driven mindsets in approaching many kinds of projects and tasks in music technology.

This course will introduce you to the motivations, methodologies, and literature of computer-based music research with an emphasis on computational musicology. The class will be of interest to anyone wishing to enhance their music research skills using computers, and to anyone who may be interested in a career involving any form of music data analysis. This course will take a critical perspective to computational approaches to music scholarship. We will ask: What are the strengths and weaknesses of digital music analysis and representation in general? What are the strengths and weaknesses of specific techniques and tools? What are the cultural, historical, and epistemological assumptions of different digital representations of music, and the tools used to analyze them? Students will not only gain knowledge and skills in symbolic computational analysis, but will also learn topics and methods that enhance the musicological foundations for research in music psychology and music information retrieval.

Course Learning Outcomes

Student learning outcomes include developing a deeper familiarity with the representations and manipulation of symbolic musical data, including transcribing, visualizing, grouping, sorting, querying, evaluating, and modeling. Students will expand upon basic coding skills (primarily in R), and become comfortable working at the command line and using regular expressions. This course will focus primarily on addressing specific musicological (or musical) questions through the analysis of symbolic musical and extramusical data.

In this class, you will learn to:

- Identify the strengths, weaknesses, problems, and challenges in computational musicology and digital music research more broadly.
- Have greater familiarity with the principle data forms and techniques in symbolic computational analysis.
- Apply the fundamentals of computational and empirical analysis to musical data (and beyond).
- Design, evaluate, and carry out a project in computational musicology.
- Use digital musicology tools and libraries for conducting musical analysis.
- Quantitatively evaluate a musicological hypothesis.

Prerequisites

This course assumes a basic level of musical literacy. Students should have experience performing and writing about music, and should have a basic knowledge of the fundamental concepts of Western music theory. Knowledge of Western music notation will be extremely helpful. Non-music students are welcome only if they can demonstrate sufficient familiarity and fluidity with these topics and skills. Similarly, this class will involve programming using R, command line tools, and potentially some other coding languages as well.

Required Course Materials

There will be no specific texts for this class. Reference materials and assigned readings will be online and provided through Canvas.

Software

The assignments and projects will rely on the use of R files (.R; .Rmd) or plain text files (humdrum assignments may be carried out and submitted as Jupyter notebooks). Other tools or programming languages can be used for specific projects only if approved by the instructor.

Grading Policy

Note: number of assignments and grade percentages subject to revision prior to first week of class.

Participation	10%
Assignments	50%
Midterm	15%
Final Project	25%

Description of Graded Components

Participation

Regular attendance and participation in class activities, discussions, and presentations is mandatory for the full Participation grade. This class will meet twice weekly for in-person lecture and activities. There will be no hybrid options, and class content will not be recorded. All lecture materials will be posted to Canvas.

Homework and Assignments

Short assignments will be given (mostly) each week. There will be approximately 8 to 10 assignments worth a total of 50% of the grade. The instructor reserves the right to not grade any homework or assignments turned in late. Homework or assignments turned in more than one week late will not be accepted unless prior arrangements were made. Students enrolled in the 4460 Section will engage in the same topics but assignments will have lighter reading requirements, and increased optional components.

Projects

Midterm

The midterm will be a take-home exam comprising of computational musical analysis coding as well as written essay-style questions or the creation and documentation of a symbolic data corpus. Students enrolled in the 4460 Section will engage in the same midterm deliverables but with modified specifications (e.g., length, optional components).

Final

The final project for this class will be a hypothesis-driven analysis of a musicological (or musical) question or problem using corpus methods, with deliverables including a paper writeup of the motivation, methodological details, analysis and results, including visualizations and evaluation, as well as the code and data required to carry out and evaluate the analysis.

The final project will include a presentation of your work to your peers. Final project presentations will be split between the final class and the final exam slot for this class.

Students enrolled in the 4843 Section will engage in the same project but with modified specifications (e.g., length, complexity).

Course Policies

Attendance and Participation

Regular attendance is expected. This class will meet twice weekly for in-person lecture and activities. There will be no hybrid options, and class content will not be recorded. Please note that the health and safety of all students is a priority. If you are feeling sick, please do NOT come to class, but do notify your instructor so that we may direct you as to how to best catch up. All lecture materials will be posted to Canvas.

Academic Integrity

Georgia Tech aims to cultivate a community based on trust, academic integrity, and honor. Students are expected to act according to the highest ethical standards.

Review Georgia Tech's Honor Code and the student Code of Conduct.

Any student suspected of cheating or plagiarism on a quiz, exam, or assignment will be reported to the Office of Student Integrity, who will investigate the incident and identify the appropriate penalty for violations.

Core IMPACTS

Not applicable.

Accommodations for Students with Disabilities

If you are a student with learning needs that require special accommodation, contact the Office of Disability Services (404-894-2563) as soon as possible to make an appointment to discuss your special needs and to obtain an accommodations letter. Please also e-mail me as soon as possible in order to set up a time to discuss your learning needs.

Student-Faculty Expectations Agreement

At Georgia Tech, we believe that it is important to strive for an atmosphere of mutual respect, acknowledgement, and responsibility between faculty members and the student body. The Student-Faculty Expectations articulate some basic expectations that you can have of me and that I have of you. In the end, simple respect for knowledge, hard work, and cordial interactions will help build the environment we seek. Therefore, I encourage you to remain committed to the ideals of Georgia Tech while in this class.

Additional Course Policies and Information

Academic Grievance Policy

Students should first discuss any concerns with the relevant faculty member. If it is not possible to come to resolution with the faculty member, students may then report the matter to the appropriate administrator (Chair, Associate Chair, or Director of Studies) of the department of instruction, or report it via the link below.

Academic Grievance Reporting

Georgia Tech Academic Grievance Policy

Inclement Weather and Digital Learning Days

With developments and improvements to digital instruction over the past few years, the Institute has developed policies to leverage digital learning as much as reasonably possible. The policy sets forth requirements, procedures, and responsibilities related to the scheduling of digital instruction and/or make-up classes due to the modification of campus operations, closing of campus, or the necessary closing of instructional spaces for any reason (including but not limited to emergencies, such as inclement weather, power outages, or other infrastructure failures). Students should await communications from their instructor regarding delivery of classes during that period, based upon the Digital Learning Days for Modified Campus Operations Policy. Students should follow guidance and/or directions provided by the Office of the Vice President for Student Engagement and Well-Being regarding student activities, events, programs and services.