

Spring 2024**Class:** T 4:05 - 7:05PM, [MUB0144](#)**Professor:** Dr. Tina Tallon (tallonc@ufl.edu), she/hers (*please feel free to call me Tina!*)**Office Hours:** Th 1:55-2:45PM, or by appointment (MUB 306 or Zoom)

COURSE DESCRIPTION

In this seminar, we will engage with computational methods for the analysis and generation of musical materials and structures to better understand how humans produce and interact with them. Topics covered will include music representation and encoding, music information retrieval, corpus studies, statistical modeling, machine improvisation, and procedural music generation. These techniques will be considered in the context of many different aesthetics, styles, genres, modes of music-making, and theoretical frameworks. We will also examine the ways in which various computational methods are related to music cognition, authorship, intellectual property, labor, and automation, with an eye towards understanding how advances in artificial intelligence (and technology in general) are changing the ways that we create and consume music in the twenty-first century. No prior coding or music technology experience is required.

REQUIRED MATERIALS

Textbooks

There are no required textbooks, and all readings, datasets, and example code will be posted on the course's Canvas page.

Software

The majority of the course will be taught using a programming language called Python, which can be downloaded for free here: <https://www.python.org/downloads/>. I recommend downloading Python 3.10.6 (the latest version). Depending on your operating system, we may need to configure specific libraries and packages to ensure that everything runs smoothly. While we'll often be working through examples together using Jupyter notebooks (a way to distribute and work through code step-by-step), I'm always happy to work one-on-one with you to find a configuration that works for you and any projects/applications that you might dream up. You're also welcome to use other languages (R, MATLAB, C++, etc.) if you're familiar with them; at the end of the day, I'm much more interested in modes of thinking and ways of solving problems than specific tools that we might use to accomplish our goals, and I'm happy to work with you to find something that fits your workflow/dataset/use cases.

Other pieces of software that you may find useful (and which may be referenced during the semester) include:

- Pure Data: <http://msp.ucsd.edu/software.html> (free)
- Reaper: <https://www.reaper.fm/download.php> (free)
- Sonic Visualiser: <http://www.sonicvisualiser.org/> (free)
- Some sort of notation software (though pencil and paper is always useful!)

Hardware

Access to some sort of computing device will be crucial. If this is not possible, please let me know ASAP and we will try to work with the administration to get you what you need. While no additional hardware is necessary outside of a computer, if you would like to purchase a microphone for high-quality recording of audio, we can talk about what options might suit your needs. Your projects may require access to a high-quality audio lab, in which case I will ensure that you have access to studios in the MUB.

GRADING

Assignment Breakdown

The course will primarily consist of six small skill development assignments (designed to help introduce you to working with code - don't worry, they'll be very user-friendly tutorials!), a final project to be presented in class (the development of which will span much of the semester), and engagement/participation. The final project can take many forms depending on the students' areas of expertise, including but not limited to a composition, an analytical paper, a piece of software, a performance, curriculum design - if you have an idea, let's talk about how we can make it happen!

Short Assignments (Sass) (x6)	30%
Final Project	50%
-Prospectus	10%
-Documentation	25%
-Presentation	15%
Engagement/Participation	20%

Assignment Submission

All projects are expected to be completed on time and submitted in their final designated form (this may vary from assignment to assignment) along with any accompanying source materials in a .zip folder in the appropriate folder on Canvas prior to class on the day that they are due. Files should use the naming convention "LastName_AssignmentName.zip" in order to make downloading and grading easier. Feedback will be given within 1 week of on-time assignment submission. While there are no penalties for late assignments, keep in mind that they may receive abbreviated (or no) feedback from the instructor if they are not submitted on time.

Attendance and Engagement/Participation Policy

Students are expected to attend and be engaged in every class in some way (preferably synchronously when possible, though recordings will be made available for asynchronous viewing as soon as possible after the class is finished - which may depend on upload/processing speed). Because of the realities of living in an ongoing global pandemic, no doctors' notes are required for missed classes, and you do not need to notify me in advance if you will not be in class (though I will likely check in with you just to make sure you're okay and have what you need). However, students are very strongly encouraged to wear masks for their safety and the safety of others, and please, please, **DO NOT COME TO CLASS IF YOU ARE SICK, REGARDLESS OF THE SEVERITY OF YOUR SYMPTOMS.** What gave you a headache may put your professor in the hospital - and I promise to do everything in my power to help get you up to speed on any class that you've missed. That said, because class discussions and in-

class experimentation will comprise an important part of the course, all members of the class are expected to treat each other with the utmost respect and professionalism, whether physically in the classroom, during office hours, or online. We are all here to learn, so please do not hesitate to ask questions or share your opinions or experiences. At some points during the course, challenging and/or uncomfortable subjects may be discussed. Students are in no way, shape, or form evaluated on their positionality with respect to these subjects, and are expected to form their own opinions based upon careful analysis of and reflection on relevant scholarship, data, and inquiry - whatever forms those may take. We will study a variety of sources, some of which will present viewpoints that differ from our own, but we are expected to engage with them in an objective and neutral manner and evaluate them using all of the tools at our disposal in the spirit of developing our analytical toolbox. However, discriminatory or threatening language will not be tolerated and anyone who creates a toxic work environment for any other members of the community will be asked to leave.

Grading Scale

Letter	%	General Grading Criteria (specific assignment rubrics TBD)
A	93 - 100%	Excellent. Well-prepared and thorough. Shows creativity, diligence, or insight beyond the basic requirements
A-	90 - 92.99%	
B+	87 - 89.99%	Good. Meets basic expectations. Demonstrates a basic understanding of the material, perhaps with minor flaws
B	83 - 86.99%	
B-	80 - 82.99%	
C+	77 - 79.99%	Fair. Completes the assignment, but demonstrates a less-than-firm grasp of the material; missing elements; multiple technical errors
C	73 - 76.99%	
C-	70 - 72.99%	
D+	67 - 69.99%	Poor. Demonstrates a lack of effort or understanding of the material. Multiple errors, missing elements, or failure to follow assignment instructions
D	63 - 66.99%	
D-	60 - 62.99%	
F	<60%	Fail. Missing, incomplete, plagiarized, or incoherent

Academic Integrity

By submitting assignments, you certify that all work is your own (or that of your group, in the case of group assignments). If you use elements of someone else's work (such as audio/video samples, datasets, or code), please be sure to credit your sources the same as you would in a journal article or other academic publication. Please refer to UF's honor code to review criteria and consequences for plagiarism and other instances of academic misconduct: <https://sccr.dso.ufl.edu/policies/student-honor-code-student-conduct-code/>. We will have in-depth discussions about intellectual property, labor, and automation, and the implications for scholarly and artistic work in the 21st century (particularly in the context of AI). Sometimes, the concept of authorship can be murky - and that's okay! We're here to explore those ambiguities together, and as long as we do our best to ensure that we are giving as much credit as we possibly can where credit is due, we shouldn't have any problems.

RESOURCES

At the end of the day, my first priority is for your physical and mental health. College and grad school can be an extremely difficult time - and especially so now. We are all exhausted, and we're all trying our best. If there is ever any way that I can best support you, please do not hesitate to reach out - open lines of communication are crucial in order to make sure that everyone can get the help they need in a timely manner. I will try my very best to respond to all emails within 24 hours during the week, but in the case that I haven't responded yet and you need immediate help, here are some resources at UF that may be useful to you throughout the semester:

- UF Counseling & Wellness Center, 401 Peabody Hall, 352-392-1575, for personal and career counseling: <https://counseling.ufl.edu/>
- UF U Matter, We Care, 352-392-2273, for mental health and personal counseling: <https://umatter.ufl.edu/>
- UF Crisis and Emergency Response Center (CERC), 352-392-1575: <https://counseling.ufl.edu/services/crisis/>
- UF Career Connection Center, 352-392-1601, for career development assistance and counseling: <https://career.ufl.edu/>

Students Requesting Accommodations

I will do my very best to provide whatever accommodations I can to help you be successful, no questions asked. However, there may be cases where we both need support to set us up for success, and students requesting classroom accommodation through official means (which I do not require, though which may be helpful to have on record) should first register with the Dean of Students Office. The Dean of Students Office will provide documentation to the student who must then provide this documentation to the Instructor when requesting accommodation. To request classroom accommodations, you can start by visiting <https://disability.ufl.edu/> or contacting the Assistant Dean of Students/Director of the Disability Resources Program at P202 Peabody Hall, or call 392-1261 (V), 392-3008 (TDD).

Evaluations

Students are expected to provide professional and respectful feedback on the quality of instruction in this course by completing course evaluations online via GatorEvals. Guidance is available at <https://gatorevals.aa.ufl.edu/students/>. Students will be notified when the evaluation period opens, and can complete evaluations through the email they receive from GatorEvals, in their Canvas course menu under GatorEvals, or via <https://ufl.bluera.com/ufl/>. Summaries of course evaluation results are available to students at <https://gatorevals.aa.ufl.edu/public-results/>.

If you ever have any questions, comments, or feedback about anything in class, please do not hesitate to send me an email and/or approach me after class! I am always looking for new ways to make the class more useful, relevant, and effective, so please share your experiences with me!

Thanks for reading, and I look forward to a great semester with all of you!

CLASS SCHEDULE

NB: this schedule is likely to change as current events, student interest, and group pacing dictates. Thanks in advance for your flexibility!

WEEK 1: OVERVIEW AND INTRODUCTION

8/30/22 **CLASS 1:** Review of syllabus; music encoding; a brief introduction to Python, music21, and librosa
Info sheet Assigned
Short Assignment (Sass) 1 Assigned

WEEK 2: WHAT IS MUSIC? WHAT IS DATA?

9/6/22 **CLASS 2:** intro to music encoding and computational auditory scene analysis
Info sheet Due

WEEK 3: MUSIC ENCODING

9/13/22 **CLASS 3:** in-depth look at music encoding schema and translation between symbolic and auditory representation paradigms; intro to metadata
Sass 1 Due
Sass 2 Assigned

WEEK 4: CORPUS STUDIES AND STATISTICAL MODELS

9/20/22 **CLASS 4:** corpora/dataset formation and access; strategies for iterating over large musical datasets
Final Project Prospectus Assigned

WEEK 5: MUSIC INFORMATION RETRIEVAL

9/27/22 **CLASS 5:** an introduction to MIR and classification schema; in-depth discussion of metadata
Sass 2 Due
Sass 3 Assigned

WEEK 6: ARTIFICIAL INTELLIGENCE I

10/4/22 **CLASS 6:** a brief introduction to machine learning for classification and analysis
Final Project Prospectus Due

WEEK 7: ARTIFICIAL INTELLIGENCE II

10/11/22 **CLASS 7:** a less brief introduction to machine learning for use in music generation
Sass 3 Due
Sass 4 Assigned

WEEK 8: INTELLECTUAL PROPERTY, COPYRIGHT, AND RESPONSIBLE DATA PRACTICES

10/18/22 **CLASS 8:** who owns artwork generated by AI? How do we credit(/remunerate) people for contributions to datasets?

WEEK 9: PROTOTYPE WEEK

10/25/22 **CLASS 9:** presentation/workshopping of proof-of-concept for final projects
Sass 4 Due
Sass 5 Assigned

WEEK 10: PROCEDURAL MUSIC GENERATION I

11/1/22 **CLASS 10:** common compositional algorithms; Hidden Markov Models; Bayesian mechanics

WEEK 11: PROCEDURAL MUSIC GENERATION II

11/8/22 **CLASS 11:** translating sonic data to other realms (video, lighting design, other immersive technologies, interaction design, etc.)
Sass 5 Due
Sass 6 Assigned

WEEK 12: MACHINE IMPROVISATION I

11/15/22 **CLASS 12:** types of input streams; real-time parametrization schema

WEEK 13: MACHINE IMPROVISATION II

11/22/22 **CLASS 13:** higher-order learning schema; memory; creativity
Sass 6 Due

WEEK 14: FINAL PROJECT PRESENTATIONS I

11/29/22 **CLASS 14:** Presentations

WEEK 15: FINAL PROJECT PRESENTATIONS II

12/6/22 **CLASS 15:** Presentations

12/13/22 **All Final Project Documentation Due**