MUSI 2525: Introduction to Audio Technology I – Fall 2026
Credits: 3 credit hours

Meeting Time: Mondays and Wednesdays 9:30am-10:45am

Location: West Village 277

Instructor Information:

Name: Jocelyn Kavanagh
Email: jocelyn.kavanagh@gatech.edu

To contact me, please send me an email with the "MUSI 2525" in the subject line. I will respond as quickly as I can. For homework or exam related questions, CC the TA. I will not check Canvas messages.
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Graduate Teaching Assistant:

Name: TBD
Email: TBD
Office Hours: TBD

Prerequisites:

MATH1552 Calculus II

(Please let me know if you have not taken Integral Calculus or any CS courses)

Course Description:

Students will gain critical understanding of, and hands-on experience with the fundamentals of audio technology. Student learning outcome will include deep understanding and practical familiarity with concepts such as signals and systems, electro-acoustics, sound effects, synthesis, and music protocols. Upon completion of the course, students will demonstrate:

- critical understanding of audio signals and systems
- knowledge and critical understanding of the fundamentals of analog audio technology, electro-acoustics, audio effects, and music protocols,

- the ability to understand the signal flow in typical equipment for audio processing, and

- the ability to use this knowledge to create a technological artifact for audio processing.

Learning Outcomes:

We will be discussing topics such as the sinusoidal nature of sound, amplitude and phase control, wavetables, sampling, synthesis, modulation, delays, and filters. A trained music technology scholar is able to consider these techniques through the lens of multiple disciplines. At the end of this course, you will be able to:

- Use mathematics and physics to model the expected behavior of these audio technology principles.
- Solve practical problems related to each of these concepts in an audio engineering context.
- Identify the use of these techniques in music recordings and live audio software output.
- Implement these techniques using a real-time programming language (Max).
- Choose appropriately from this palette of tools to create a music technology artifact.

GRADING BREAKDOWN:

10% Participation

- There will be 12 checkpoint “quizzes” given during lecture throughout the term. Additionally, 10 programming exercises will be assigned throughout the term. This allows for 22 opportunities to engage in course material.
- You are required to complete a total of 15 of these opportunities to get a full 10% on your participation grade. This could be 12 checkpoints and 3 exercises or 10 exercises and 5 checkpoints or some other combination that gets to 15. It doesn’t matter how many of each you complete as long as you complete 15.
- Any additional checkpoint quizzes or exercises completed will be extra credit. Each additional participation activity completed is worth 0.25%. All activities completed yields 1.75% extra credit.
- All participation activities are graded for completion/effort. Checkpoint quizzes must be completed during class and cannot be made up. We will review exercises during our office hours.

15% Quizzes

- There are 3 short quizzes throughout the term to check for understanding and help prepare you for future assessments. Each quiz is worth 5%.
- Quizzes may be delivered on Canvas or on paper.
- Material will be drawn from what we've covered so far in the section (lecture, readings, checkpoints, and programming assignments).

30% Midterm Exams

- There will be 3 exams throughout the term.
- Exams may be delivered on Canvas or on paper.
- Material will be drawn from the entire section (lecture, readings, programming assignments, and checkpoints).

25% Programming Assignments

- There will be 5 programming assignments throughout the term. Each assignment is worth 5%
- We will go over programming assignments together during class. When available, class time will be allocated as lab time to work on homework.
- These assignments will be graded according to rubrics posted on Canvas
- Unless stated otherwise, programming assignments should be completed individually with limited collaboration.

20% Final Project

- For the final project, you will create a music tech artifact in Max and submit a written supplement explaining how your project relates to and expands on the topics learned in this course.

- Final project details and submission takes place on Canvas
- Graded according to the final project rubric posted on Canvas
- All final projects will be presented during the final exam slot

Grading Policy:

All assignments, quizzes, and tests will be graded by points. The final grade for the course will be determined by dividing the total points earned by the number of points possible for each of the categories. These numbers will be converted into a grade according to the following scale: A=100-90%, B=89-80%, C=79-70%, D= 69-60%, F= 59% and below.

Any regrade requests or grade disputes must be submitted via email 1 week after the grade release. You will schedule time or come to office hours to explain your request for a regrade.

Assignment Submission Policy:

All programming assignments will be submitted electronically on Canvas. Assignments are due at the date and time listed on Canvas, typically 11:59pm. However, you will have a 12-hour grace period to submit your assignment after the due date. This is to account for unexpected problems with Canvas, computer access, etc. Assignment submissions submitted after the grace period will result in a letter grade deduction a day. Assignments will not be accepted after 4 days late.

Exceptions to the policy will be made in the event of Institute excused absences, documented personal illness, and family emergencies. Such exceptions will require that the teaching staff be consulted well before the deadline.

Attendance Policy:

Though attendance is not required, it is strongly encouraged. Checkpoint participation questions are meant to be completed in class - not from home. **If you complete the checkpoint question or any quizzes/exams from home, you will receive a zero on the assignment.**

If you intend to miss a quiz or exam, you must notify the instructor at least 1 week before the assessment to schedule a make-up.

If you miss a quiz or exam without prior notice, you must notify the instructor before class time. Exam and quiz make-ups for last minute absences are at the instructor's discretion unless Institute approved absences are provided.

Materials:

This course uses Max, a graphical programming language. Students are required to install and maintain a working copy of this program on their personal laptop computer. Please install the full version of Max 9 - you will not be able to complete all course material with the trial license. The license is available through the School of Music. You do not need to purchase a license yourself.

I will be assigning readings and listening exercises from many sources, all of which are available free of charge online. All required readings will be listed in each class's agenda/module. Two books used frequently in this course are:

- Puckette, Miller. **The theory and technique of electronic music.** World Scientific Publishing Company, 2007.
- Roads, Curtis, and John Strawn. **The computer music tutorial.** Second Edition. MIT Press, 2023.

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.

Generative AI Usage Guidelines

Use of Generative AI (such as Microsoft Copilot) is permitted in this course but only within instructor-approved boundaries (e.g., drafting assignments, stages of writing, or support tasks such as grammar refinement or coding assistance). If allowed, its use must be transparent and documented in a required AI Usage Statement with each submission.

The statement must include:

- Tool used and date of access
- The input (prompt) you provided
- A copy of the output
- A description of how you used or edited the AI-generated content

Failure to follow these guidelines—including using Generative AI when it is not permitted or failing to disclose its use—may be considered a violation of Georgia Tech's academic integrity policies. When in doubt, always consult your instructor before using Generative AI.

Additional Notes on Academic Integrity and AI – Please Read!

Please make sure that you've read the Georgia Tech Honor Code. Collaboration on any assignment is strictly prohibited, unless otherwise specified. Cases of suspected inappropriate collaboration or cheating will be immediately reported to the Office of Student Integrity.

We will not use a lockdown browser for in-class assessments, but you are expected to follow the Georgia Tech Honor Code. All your answers and solutions should be the work of your own - not of the internet. All quizzes, checkpoints, and exams must be taken in person in class or zero credit will be given.

AI tools like ChatGPT may be helpful for cementing your conceptual understanding of topics in this course. However, you should not copy directly from any AI tools. Again, all your answers and solutions should be the work of your own.

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.

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 Well-Being Resources

At Georgia Tech, we are concerned about your overall physical, social, and mental well-being. A comprehensive list of wellness related resources has been compiled and maintained by the Office of the Vice President for Student Engagement and Well-being (student-resource-guide (gatech.edu). Additional resources can be found here.

When faced with personal or academic hardship, remember you can contact the Dean of Students to help make a plan or receive a referral to the right resource.

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Changing of Course Requirements:

Since all classes do not progress at the same rate, it may be necessary to modify the above requirements or their timing as circumstances dictate. For example, the number and frequency of exams may be changed, or the number and sequence of assignments will be altered. In either of these cases, adequate notification will be given in writing and be discussed in class.