

Course Syllabus: Project Studio Tech

Instructor: Jeremy Muller, D.M.A.

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Walk-in Office Hours: Fridays 12:30pm-1:30pm or by appointment, please email.

Office: Couch Building 209C (office suite)

Location: West Village 277

Lecture times: M/W 11:00am-12:15pm

Lab times: Fridays 8:00am-10:45am

Course Description

This course gives BS music tech students experience with large-scale collaborative design and research projects. Students go through all the stages of a project lifecycle, including literature review, problem / goal formulation, iterative design and implementation, acquisition of skills needed to realize the project, assessment, and dissemination. This course builds on core skills developed in lower-division BSMT courses, prepares students for success in upper-division coursework (including capstone), and has a particular focus on soft skills that are critical to success in any career such as effective collaboration, foundational research, problem formulation, self-critique, and independent skills acquisition.

Course Objectives

Each offering of this course focuses on a broad theme. This semester, we will focus on physical modeling (AKA, parametric sound synthesis) with musical creation, performance, and/or education. This will involve some amount of knowledge of digital signal processing and digital filters. Once we understand what physical modeling synthesis is, we will begin to investigate what areas can it improve. What areas is there lacking sufficient research? How can we improve on what has already been done? What are the benefits and/or disadvantages that we may face? In this course, we will first conduct a thorough examination of the history and present state of physical modeling, then leverage this knowledge to brainstorm specific prototype systems we could develop to demonstrate potential new uses of physical modeling synthesis. Within a small

group, you will take on one of these ideas, create a design, and implement a working prototype. My hope is that every project will be shared beyond the context of this course, where it can contribute productively to the ongoing research and commercial use of modeling physics as a way of sound synthesis.

By the end of this course, you should be able to:

- successfully complete all the stages of a medium scale project, including specification of functionality/defining a research question, investigating prior art, project planning with milestones, defining and executing proper measures of success and evaluation procedures, and implementing the project in a suitable programming platform;
- coordinate and work productively on a team, communicating and coordinating effectively with others, making and keeping task commitments, advocating for ideas while being open to those of others, and leading the group towards a shared vision and methodical plan for achieving it;
- leverage technological tools, such as version control, citation managers, work-based collaboration support tools (file sharing, chat, etc.), and project management platforms, to support your effective group collaboration.

Course Materials

Text

- Cook, Perry R. *Real Sound Synthesis for Interactive Applications*. 1st ed., A K Peters, 2002.

Technology

We will be using the following technologies to conduct class (all free to use for Georgia Tech students):

- Canvas: assignments, syllabus, course information and links, grading, etc.
- Teams: group collaboration, class discussion, etc.
- Github: group collaboration and version control (<https://github.gatech.edu>)
- Programming language of your choice appropriate for audio signal prototyping and implementation (I will mostly use *Pure Data* to demo in class)

Please take time now to make sure you are familiar with the features of all of these platforms.

Policy Statements

Grading Policy

Homework assignments and Projects are due by the beginning of class **ON THE DUE DATE**. A penalty of one letter grade per day will be applied to all late assignments. Documented illnesses

and family emergencies are accepted, of course. Quizzes and exams cannot be made up without a valid, documented excuse.

- **Attendance and Active Participation:** 10%
- **Individual Assignments:** 30%
- **Group Projects:** 60%

Grading Scale

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 listed in Method of Evaluation. 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.

Attendance Policy

Regular attendance is expected and required. Attendance will be taken at each class. You get two unexcused absences (no questions asked) from class before it begins to affect your grade.

Prerequisites

- Completion of core lower-division BSMT courses including Audio Tech 1 & 2 and Fundamentals of Musicianship 1, 2, 3, and 4.
- This course assumes a basic level of musical literacy, and programming literacy (in any language). Students with weak programming skills should expect to put in extra effort so as to keep pace with the rest of the class.
- Attend all class lecture and lab meetings. If you are not feeling well or have an urgent commitment that precludes your attendance, please e-mail the instructor in advance of the class meeting.
- Prepare for all class meetings, including completing any reading or listening assignments, group, or individual assignments that are due. Note: If students do not keep up with reading assignments, we may begin requiring pop quizzes and/or reading response assignments which will count as part of the class participation grade.
- Participate actively in class by sharing your insights and ideas in class and asynchronously outside of class.
- Be professional and respectful in your interactions with others.
- Be fully invested in your group work: do your fair share of work and keep the commitments you have made to deliver quality work on time to your group.

Expectations for successful completion of the course

If you must miss class or due dates for Institute related activities, religious observances, or due to documented accommodations please make sure to communicate with me BEFORE the due date, so we can make appropriate arrangements.

Please refrain from using a cell phone, tablet, or electronic device during class unless you have been given specific permission. Consider how your use of mobile computing technology in class will affect your own learning and the learning environment of those around you. Limit your use of phones/tablets/laptops during class to class related activities.

Academic Honesty/Integrity Statement

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 the student [Code of Conduct](#) and the [Academic Honor Code](#), especially [Appendix A: Graduate Addendum to the Academic Honor Code](#).

Statement about acceptable student conduct

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. See [Student-Faculty Expectations rules 22](#) for an articulation of some basic expectation 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](#) 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.

Core IMPACTS

Not applicable.