

EE P 598 A: Advanced Topics In Electrical And Computer Engineering (Introduction to Digital Audio)

Spring Quarter 2026

T Th 4:30-6:20, Raitt 205/132

Contact Information

Course Instructor

- [Dr. Joseph Anderson](mailto:joanders@uw.edu) (joanders@uw.edu)
- Office Hours: T Th 3:30 - 4:20, or by appointment
- Office: Raitt 207 ([map](#))

Class mailing list*: [eep598a_sp26](#)

*Note: you'll need to post email using your UW NetID email

Course Schedule & Organization

Perhaps the easiest way to view how this course is organized is to review the [Home page](#)*. Here you'll find material organized in terms of topic areas and assignments.

Another option is to review your [Canvas Calendar](#) view. Make sure you select *EE P 598 A Sp 26: Advanced Topics In Electrical And Computer Engineering* to be a visible calendar. We'll often begin each meeting with a look at this view.

*Note: to be updated/modified regularly

Time Budget & Course Load

EE P 598 A Sp 26: Advanced Topics In Electrical And Computer Engineering is a 4 credit course. The [Student Guide](#) notes, "1 credit represents a total student time commitment of 3 hours each week". Plan to budget at least $(4 * 3 =) 12$ hours a week of study for this course.

Course Description

In this course we explore topics of digital sound synthesis and signal processing from a practical perspective. We'll be working within a domain specific rapid prototyping programming environment dedicated to audio synthesis and processing, which offers a quick route to implementing theory in a real-world practice.

Topics include: aspects of acoustics and psychoacoustics; elements of tone / timbre; classic synthesis techniques; algorithm implementation and design; auditioning and assessing algorithms.

Prerequisites

Undergraduate signal processing background is required. Ideally you'll have experience with digital sampling theory, periodic signals, Fourier series and transforms, filtering and signal flow graphs. You should also be comfortable with object oriented programming.

If you've taken any of the following courses at UW, you should have the appropriate background:

- E E 242 Signals, Systems, and Data I (5)
- E E P 502 A: Analytical Methods for Electrical Engineers
- PHYS 207 The Physics of Music (3)
- PHYS 536 Introduction to Acoustics and Digital Signal Processing (4)

Learning Objectives

1. Recognize and understand the elements of system design within a Digital Audio context.
2. Identify, describe and apply the classic techniques of digital sound synthesis.
3. Formulate and design algorithms for sound synthesis within the framework of the MUSIC-N programming paradigm.
4. Create short demonstrations / works of sound synthesis.

Assignments

Graded assignments are a combination of listening evaluations, coding exercises, experiments and short demonstrations. There are multiple lab tasks and four homework assignments.

Attendance at the scheduled final exam time (and any other assignments involving presentation) is mandatory. Your grade will break down as described in the section below.

See [Assignments](#) page for *all* assignments. Assignments can be viewed by *Date* or *Type*; click *Show by* field on the [Assignments](#) page to change view.

Grading

Grading of all assignments will be based upon the quality of concept, experimentation, work ethic and realisation. The overall class grade will be broken down as follows:

- Lab Tasks: 20%
- Assignments 1-4: 80% (20% each)

It is **VERY** important that all work is completed. Everything in the course builds on previous work, so do not fall behind. *Late work will not be accepted—unless due to documented and unforeseen circumstances.* (To be reviewed by instructors.)

Books

Primary*

- [Dodge, C., & Jerse, T. A. \(1997\). *Computer music : synthesis, composition, and performance* \(Second edition.\). Schirmer Books.](#)
 - see also: [\[this link\]](#)

Suggested

- [Udo Zölzer. \(2011\). *DAFX: Digital Audio Effects, Second Edition* \(2nd ed.\). Wiley.](#)
- [Fieldsteel, E. \(2024\). *SuperCollider for the creative musician : a practical guide* \(1st ed.\). Oxford University Press.](#)
- [Wilson, S., Collins, N., & Cottle, D. \(2011\). *The SuperCollider book*. MIT Press.](#)
- [Lazzarini, V. \(2021\). *Spectral music design : a computational approach*. Oxford University Press.](#)

Further Reading & Resources

- [\[additional resources\]](#)

*Note: You are strongly encouraged to purchase your own hardcopies of the Primary Texts.

Listening Examples

Primary*

- [\[listening resources\]](#)

*Note: if you are off campus, you can access Naxos [here \(Links to an external site.\)](#) (you will need to login with your UWNNetID)

Lab Resources

Please see [Course-Specific Technologies](#) page.

Academic Integrity & Student Responsibilities

- **Attend** all lectures, labs and any other sessions.
 - Every session reviews many topic details. Therefore it is important not to miss **any** sessions, and **attend** regularly. If you are to miss class due to emergency, illness or an established religious holiday, *please notify the instructors directly in advance.*
 - Students are expected to *arrive on time* and be ready to begin promptly. Please bring along any required materials, homework and/or note-taking equipment.
- **Complete** all topic **reading, listening, lab tasks** and **assignments**.
 - NOTE: the last assignment includes a **presentation during Finals Week**
- **Participate** in discussions in and out of class time.
- Creative **experimentation** is required and expected: use your imagination to explore the boundaries of any and all assignments.

The University takes academic integrity very seriously. Behaving with integrity is part of our responsibility to our shared learning community. If you're uncertain about if something is [academic misconduct](#), ask. We are willing to discuss questions you might have.

Acts of academic misconduct may include but are not limited to:

- Cheating (working collaboratively on quizzes/exams and discussion submissions, sharing answers and previewing quizzes/exams)
- Plagiarism (representing the work of others as your own without giving appropriate credit to the original author(s))
- Unauthorized collaboration (working with each other on assignments)

Concerns about these or other behaviors prohibited by the [Student Conduct Code](#) will be referred for investigation and adjudication by [Community Standards & Student Conduct \(CSSC\)](#). More information about the student conduct process can be found [here](#).

Students found to have engaged in academic misconduct may receive a zero on the assignment (or other possible outcome).

AI-based tools

All work submitted for this course must be your own. Any use of generative AI tools, such as ChatGPT, when working on assignments is forbidden. Use of generative AI will be considered academic misconduct and subject to investigation

The assignments in this class have been designed to challenge you to develop creativity, critical-thinking, and problem-solving skills. Using AI technology will limit your capacity to develop these skills and to meet the learning goals of this course.

If you have any questions about what constitutes academic integrity in this course or at the University of Washington, please feel free to contact the course instructor (and/or assistant) to discuss your concerns.

Policies

- No smoking, eating or drinking in the laboratory, classroom or building. Review: [Raitt Hall Lab Usage Policy](#).
- Pen Is Mightier: to facilitate both learning and participation, lectures and seminars observe a [Pen Is Mightier](#) policy. Take notes in *longhand*, and refrain from using electronic devices during class.
- Back up your data. There is no excuse for losing papers, web documents, images, sound files, etc. Keep at least three copies of everything: one on your hard drive, one on a CD or thumbdrive, and one somewhere else just in case (e.g. online / cloud-drive).

- Access and Accommodations, please see below.
- Religious Accommodations, please see below.

Evaluation

We use [online course evaluations](#) to continuously improve this course. You've benefited from the feedback your colleagues have made in previous years. Towards the end of the Quarter, you'll be asked to complete an evaluation. Your comments and suggestions really do help help us make this course better. Thanks, in advance, for your contributions.

Access and Accommodations

Your experience in this class is important to us. If you have already established accommodations with [Disability Resources for Students \(DRS\)](#), please communicate your approved accommodations to me at your earliest convenience so we can discuss your needs in this course.

If you have not yet established services through DRS, but have a temporary health condition or permanent disability that requires accommodations (conditions include but not limited to; mental health, attention-related, learning, vision, hearing, physical or health impacts), you are welcome to contact DRS at 206-543-8924 or uwdrs@uw.edu or disability.uw.edu. DRS offers resources and coordinates reasonable accommodations for students with disabilities and/or temporary health conditions. Reasonable accommodations are established through an interactive process between you, your instructor(s) and DRS. It is the policy and practice of the University of Washington to create inclusive and accessible learning environments consistent with federal and state law.

Religious Accommodations

Washington state law requires that UW develop a policy for accommodation of student absences or significant hardship due to reasons of faith or conscience, or for organized religious activities. The UW's policy, including more information about how to request an accommodation, is available at [Religious Accommodations Policy](#). Accommodations must be requested within the first two weeks of this course using the [Religious Accommodations Request form](#).

In-person Instruction & Respiratory Illness and Exposure

This class is conducted in-person. Students are expected to participate in class to fully benefit from course activities and meet the course's learning objectives.

To protect their fellow students, faculty, and staff, students who feel ill or exhibit possible respiratory illness symptoms should not come to class. When absent, it is the responsibility of the student to inform the instructor in advance (or as close to the class period as possible in the case of an unexpected absence), and to request appropriate make-up work as per policies established in the syllabus. What make-up work is possible, or how assignments or course grading might be modified to accommodate missed work, is the prerogative of the instructor. For chronic absences, the instructor may negotiate an incomplete grade after the 8th week, or recommend the student contact their academic adviser to consider a [hardship withdrawal](#) (known as a Former Quarter Drop).

Further, detailed information and advice regarding exposure may be found here:

- [Respiratory Illness and Exposure Guidance](#)
- [UW Public Health Flowchart for Respiratory Illness](#)
- [Respiratory Illness Resources](#)

Safety

Call [SafeCampus](#) at 206-685-7233 anytime – no matter where you work or study – to anonymously discuss safety and well-being concerns for yourself or others. SafeCampus's team of caring professionals will provide individualized support, while discussing short- and long-term solutions and connecting you with additional resources when requested.

Guidance to Students Taking Courses Outside the U.S.

Faculty members at U.S. universities – including the University of Washington – have the right to academic freedom which includes presenting and exploring topics and content that other governments may consider to be illegal and, therefore, choose to censor. Examples may include topics and content involving religion, gender and sexuality, human rights, democracy and representative government, and historic events.

If, as a UW student, you are living outside of the United States while taking courses remotely, you are subject to the laws of your local jurisdiction. Local authorities may limit your access to

course material and take punitive action towards you. Unfortunately, the University of Washington has no authority over the laws in your jurisdictions or how local authorities enforce those laws.

If you are taking UW courses outside of the United States, you have reason to exercise caution when enrolling in courses that cover topics and issues censored in your jurisdiction. If you have concerns regarding a course or courses that you have registered for, please contact your academic advisor who will assist you in exploring options.