

ISE 575 / CSCI 575 / EE 675 / PSYCH 675¹:

Topics in Engineering Approaches to Music Cognition – Human-Centered Computing in Generating Music

**Epstein Department of Industrial and Systems Engineering
University of Southern California Viterbi School of Engineering**

COURSE SYLLABUS

- Instructor:** Elaine Chew <echew@usc.edu>
GER 241, 213.8212414
Office Hours: Thu 4-5 PM (or by appointment)
- Section:** 048-35575R
Day: Thursday 6:30-9:20pm (negotiable at first meeting)
Location: KAP167 (may be changed at first meeting)
- Text:** Selected technical papers from current literature
- OpenCourseware:** <http://www-scf.usc.edu/~ise575/c>
- Courseware Archive:** <http://www-scf.usc.edu/~ise575>
- Pre-requisites:** Graduate standing in engineering or by instructor's consent.
Programming experience (C++ or Java) and/or formal music knowledge.

Course Objectives:

This course surveys human-centered mathematical and computing methods for composition and improvisation. *By considering mathematical and computational techniques for synthesizing musical patterns under human direction, supervision, or interaction, the course examines new ways to formalize, represent, and experiment with, musical ideas.* Topics include mathematical techniques for generating rhythms, chord sequences, and harmonizations under constraints, and interactive computer environments for composition and improvisation.

Class Format, Expectation and Evaluation Method:

In general, each class will consist of seminar style presentation and discussion on a focussed topic. In addition, a number of guest lectures by experts on composition and improvisation have also been scheduled.

¹ Approved for credit towards the MSIMS and MSEE (MCT) and the MSCSCI (MCT) degrees.

Homework: Each student is expected to write reviews of the papers assigned each week. Each paper is typically 10-15 pages long, and typically there may be two assigned readings per week. Occasionally, there may be a small programming or project assignment.

Presentation: When assigned to present a paper, the student is expected to have read and understood the content sufficiently to present the problem(s) addressed, and explain the approach taken and experimental findings to the class. Whenever possible, the student is expected to go beyond the paper to seek online resources and examples that illustrate the principles and algorithms introduced in the paper. Each presentation is equivalent to a short seminar, and the number of presentations per student will depend on the class size. Depending on class size, discussion roundtables may be substituted for some presentations.

Project: For the project, each student is expected to either implement and extend the findings of one of the papers, or propose an independent music and computing project on a similar topic. The implementation of selected algorithms should be done in teams of no more than two. At the end of the semester, the student is expected to give a presentation to demonstrate the results of the implementation project.

The goal of this course is to acquire domain knowledge in computational music research. As such, the evaluation is based on:

Paper presentations and assignments	25%
Weekly paper reviews	40%
Final project	25%
Class participation	10%

Schedule:

Readings are selected from current literature, and changes from year to year depending on the topic. The detailed list can be found at – <http://www-scf.usc.edu/~ise575/c> . The reading assignments also may be updated through the course of the semester.

Academic Integrity Policy:

The Viterbi School of Engineering adheres to the University's policies and procedures governing academic integrity as described in SCampus. Students are expected to be aware of and to observe the academic integrity standards described in SCampus, and to expect those standards to be enforced in this course.

The Student Conduct Code appears in the Scampus and at <http://www.usc.edu/dept/publications/SCAMPUS/governance>. The USC Student Conduct Code prohibits plagiarism. Some examples of what is not allowed by the conduct code: copying all or part of someone else's work (by hand or by looking at others' files, either secretly or if shown), and submitting it as your own; giving another student in the class a copy of your assignment solution; consulting with another student during an exam. If you have questions about what is allowed, please discuss it with the instructor.

Students who violate University standards of academic integrity are subject to disciplinary sanctions, including failure in the course and suspension from the University. Since dishonesty in any form harms the individual, other students, and the University, policies on academic integrity will be strictly enforced. We expect you to familiarize yourself with the Academic Integrity guidelines found in the current SCampus. Violations of the Student Conduct Code will be filed with the Office of Student Conduct, and appropriate sanctions will be given.

Disability Policy Statement:

Any Student requesting academic accommodations based on a disability is required to register with Disability Services and Programs (DSP) each semester. A letter of verification for approved accommodations can be obtained from DSP. Please be sure the letter is delivered to me (or to TA) as early in the semester as possible. DSP is located in STU 301 and is open 8:30 a.m. - 5:00 p.m., Monday through Friday. The phone number for DSP is (213)740-0776.