

Electronic Synthesizer Techniques

Course Syllabus • Fall 2010

MUEA 474a (43438)
Class Date/Time: Monday/12:00-1:50 PM
Class Location: PIC 200/CSS G147
Dr. Brian Shepard, Instructor

Office Location: LPB G110 **Office Phone:** 213.821.4152 **Email:** brian.shepard@usc.edu
Office Hours: Monday 2-4 and by Appointment

Goal: It is the goal of this course that each student—upon successful completion—gains a working knowledge of electronic synthesizers and the components of the synthesis process (oscillators, filters, envelope generators, etc.) for the creation, shaping, and design of sound. To reach this goal, each student must successfully accomplish the objectives described below. Accomplishment will be evaluated with weekly assignments, quizzes, exams, and a final synthesizer project.

Objectives:

- Describe and explain basic concepts of sound, acoustics, and digital audio
- Explain and demonstrate a working knowledge of standard synthesizer componentry such as oscillators, filters, envelope generators, modulation controllers, and effects processors
- Use synthesizer components and algorithms to create and manipulate sound

Required Text: *Power Tools for Synthesizer Programming* by Jim Aikin. You are to read the appropriate sections and complete the associated online reading quiz **PRIOR TO** the class session for which the reading assignment was made.

Required Materials: Stereo Headphones with ¼" TRS plug. You may also want to use a USB "flash" drive for backup purposes.

Online Access and Materials: Reading quizzes, in-class handouts, audio examples and other supplemental materials will be available through Blackboard (<https://blackboard.usc.edu/>). **Please notify me ASAP of any problems with the online reading quizzes.** I will only use your USC email to contact you and send any notifications, so please check that account regularly or make sure it is being forwarded.

Grade Breakdown:	Weekly Assignments	15%
	Final Project	25%
	Online Reading Quizzes	15%
	Sound and Audio Exam	10%
	Midterm Exam	15%
	Final Exam	20%

Grading Scale:	92 - 100 = A	72 - < 78 = C
	90 - < 92 = A-	70 - < 72 = C-
	88 - < 90 = B+	68 - < 70 = D+
	82 - < 88 = B	62 - < 68 = D
	80 - < 82 = B-	60 - < 62 = D-
	78 - < 80 = C+	< 60 = F

Attendance: Because so much of this course will be practical in nature, attendance is extremely important. Each student will be allowed two (2) unexcused absences without any direct effect on his/her grade. After the 2nd unexcused absence, however, the student's final course grade will be lowered 2% for each additional unexcused absence. **The only excused absences are for university sanctioned events and must be approved by me IN ADVANCE of the date to be missed.**

Due Dates:

Online Reading Quizzes must be completed before the class for which the reading assignment has been made in the course outline. Quizzes not completed by 12:00pm on that date will disappear from Blackboard and be graded as a zero. **Weekly Assignments** are due at the beginning of each class (12:00). The **Final Project** is due by 5:00pm on Tuesday December 7th. Assignments turned in after that time will be late and penalized 10% for that day as well as 10% for each additional day or portion of a day that they are late.

Academic Dishonesty will not be tolerated in any part of this course (assignments, quizzes, exams, etc.) If you are not sure what violates the University code, please read the pertinent sections of *SCampus* or see me. Ignorance of the rules will not be an excuse.

Disabilities Policy: 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 as early in the semester as possible. DSP (213-740-0776) is located in STU 301 and is open 8:30 am-5:00 pm, Monday through Friday.

Please help protect the facility and the equipment. Do not bring any food or drink into PIC 200 or CSS G147. Do not allow guests and unauthorized persons into the facility. Do not prop open any doors to the room. Failure to comply with any of these directives may result in loss of access to PIC 200/CSS G147, and thus, academic consequences related to failure to complete the remainder of the course.

Course Outline Fall 2010

Date	Class Topic**	Reading*	Exams/Projects
8/23	Policies, Procedures, Introduction to Synthesis		
8/30	Sound and Acoustics	pp. 1-20, 26-29	
9/6	No Class – Labor Day Holiday		
9/13	Digital Sound, Synthesizer Design and Structure	pp. 20-25, 31-51	
9/20	Oscillators and Waveforms	pp. 53-75	Sound and Audio Exam
9/27	Combining Oscillators	Handout	
10/4	Filters	pp. 79-91	
10/11	Dynamic Filters and Low Frequency Oscillators	pp. 91-114	
10/18	Midterm Exam		Midterm Exam
10/25	Envelope Generators	pp. 117-136	
11/1	Modulation Sources	pp. 140-148	
11/8	Effects Processing	pp. 157-182	
11/15	MIDI	pp. 148-156	
11/22	Individual Work on Projects		
11/29	Working with Synthesizer Sounds, Course Review	Handout	
12/7	5:00PM Lab Closes for the Semester		Final Project Due
12/10	11:00AM-1:00PM		Final Exam

Notes:

*All reading assignments are from *Power Tools for Synthesizer Programming* by Jim Aikin. The reading must be completed before coming to class that day. For each reading assignment there will be a brief (5 question) quiz in Blackboard to help reinforce the material. **The online quiz must be completed before 12:00pm on the day the reading is due. Failure to complete the quiz by that time will result in a zero grade for that particular quiz.**

**Each class will contain both theoretical and practical experiences. In general, I will present the day's subject material during the first part of the class then work on it for the remainder of the class. Should the needs of the class so dictate, I reserve the right to change this course outline. You will be notified of any substantive schedule changes.