

## Syllabus:

### Foundations of Sound Recording Technology

Course Requirements: Music 101 or Music150, or Permission of Instructor. Open to all CCRMA/Music Students

### Instructors:

Eoin Callery – [ecallery@ccrma.stanford.edu](mailto:ecallery@ccrma.stanford.edu) (Office Hours by appointment: Mon 2-5, Tues 2-8, Wed 2-8)

Mark Rau – [mark.rau6@gmail.com](mailto:mark.rau6@gmail.com) (Office Hours TBD)

**Class Times:** Mon and Wed 10.30-11.50 CCRMA Classroom and CCRMA Recording Studio.

**Course Units:** The course can be taken for 3 units – letter grade or credit/no credit – may only be taken once.

### Course Description:

This course serves as an introduction to the recording facilities and technology at CCRMA. Through studio based exercises and sessions students learn and practice various techniques to improve their audio literacy such as; studio operation and maintenance; microphone selection and placement giving regard to basic room and instrument acoustics; audio effects processing, concentrating on equalization and compression; other topics such as sample making/editing, mixing techniques, and audio software.

**PHONES OFF IN THE STUDIO!!! No late days and no extensions except in the case of emergencies**

The CCRMA studio is reserved for students of 192A Mon-Sun 9AM-8PM throughout the quarter. A sign-up sheet will be posted on the studio door. It is expected that student will spend 2 hours in the studio every week working on assignments. Students will be given a weekly glossary of terms (circa 20 terms each week) to learn for the written portions of the midterm and final exam. Assignments are due on Mondays by 1PM. A studio log sheets should be submitted with all assignments, midterm, and final. Every student receives a cable to practice their cable coiling... there is a cable coiling final!!!

### Texts:

- 1) The Science of Sound Recording - Jay Kadis (ISBN-13: 978-0240821542, ISBN-10: 0240821548)
- 2) Read *Sound on Sound* - <https://www.soundonsound.com>

### Grading:

Attendance and Participation (phone non-usage) – 50%

Assignments – 10%

Midterm – 15% (5% written, 10% recording)

Final Project – 15% (5% written, 10% recording)

Cable Coiling – 10% (Cable coiling should be 99% of your grade, consider yourselves lucky!!!)

### Recommended Ear Training Sites and Apps:

Sound Gym: <https://www.soundgym.co>

Technical Ear Trainer: <http://webtet.net/apcl/#/>

Longer List: <https://sonicscoop.com/2015/09/03/the-best-ear-training-apps-for-producers-engineers-recording-musicians/>

### In class and home listening:

Exuma – *The Obeah Man*

Davis/Evans – *Sketches of Spain*

Eliane Radigue – *Naldjorlak*

Yasuaki Shimizu – *TBD*

Massive Attack – *Unfinished Sympathy*

Tinariwen – *TBD*

Tool – *Stinkfist*

Chance the Rapper – *We don't do the same drugs no more*

Tomahawk – *Captain Midnight*

Beyoncé – *All Night*

Taylor Swift – *Look What you made me do (Full Album)*

Tom Waits – *Real Gone (Full Album)*

Dead Can Dance – *The Serpents Egg (Full Album)*

Manu Chao – *Clandestino (Full Album)*

Paul Simon – *TBD*

Muluqen Mellese – *Ete Endenesh*

Mr.Bungle – *Retro Vertigo*

Leonard Cohen – *New Skin for Old Ceremony (Full Album)*

Judee Sill – *Heart Food (Full Album)*  
*Goat Rodeo Sessions - TBD*  
Ligeti – *Continuum*  
Poulenc – *Les Mamelles de Tirésias, Prologue*  
Ruth Crawford Seiger – *String Quartet No.2 Movement III*  
Henryk Górecki – *Symphony no. 3 – Lento*  
Beethoven – *Grosse Fugue*  
Kate Soper with Mivos Quartet – *Echo (and Full Album)*  
Fleet Foxes  
The Mountain Goats

#### **STUDENTS WITH DOCUMENTED DISABILITIES:**

Students who have a disability that may necessitate an academic accommodation or the use of auxiliary aids and services in a class must initiate the request with the Disability Resource Center (DRC). The DRC will evaluate the request with required documentation, recommend appropriate accommodations, and prepare a verification letter dated in the current academic term in which the request is being made. Please contact the DRC as soon as possible; timely notice is needed to arrange for appropriate accommodations. The DRC is located at 563 Salvatierra Walk (723-1066; TDD 723-1067)

#### **Classes – (\* with Jay Kadis)**

##### **Week 1:**

Mon Sept 24th: Course Intro, a brief intro to Logic

Readings + Listening: Some ideas on studios and production:

- David Katz: A beginner's guide to Scientist, dub reggae's experimental genius

Link: <http://www.factmag.com/2015/07/14/a-beginners-guide-to-scientist/>

- Brian Eno: The Studio as a Compositional Tool

Link: [http://music.hyperreal.org/artists/brian\\_eno/interviews/downbeat79.htm](http://music.hyperreal.org/artists/brian_eno/interviews/downbeat79.htm)

Wed Sept 26th: CCRMA Studio Signal Path 1 (Live Room to Control Room)

Reading: Hearing/Physics of Sound

Kadis – Chapter 3

- <https://ccrma.stanford.edu/courses/192a/Lecture1-Hearing.pdf>

- <https://physics.info/sound/>

##### **Week 2:**

Mon Oct 1st: Cables/Microphones (Dynamic/Condenser/Ribbon/Polar Pattern/Phantom Power\*)

Readings: History of Recording

- Roger Beardsley and Daniel Leech-Wilkinson: A Brief History of Sound Recording

Link: [http://www.charm.rhul.ac.uk/history/p20\\_4\\_1.html](http://www.charm.rhul.ac.uk/history/p20_4_1.html)

- Steve Schoenherr for AES: Recording Technology History

Link: <http://www.aes-media.org/historical/html/recording.technology.history/magnetic4.html>

Kadis – Chapter 5

Wed Oct 3rd: MIXERS/DM2000

CCRMA Studio Signal Path 2 - Preamps/Monitoring Signals, SPL and dB  
Electronics - Voltage Dividers – Potentiometers - Amps\*

**Assignment 1 (Due by 1PM Monday October 8th) – set up a Logic Session**

##### **Week 3:**

Mon Oct 8th: Microphones 2 – Listening to instruments/choosing mics, mono recording, recording pianos

Reading: Disklavier Manual

Kadis – Chapter 6

Wed Oct 10th: Stereo Recording (including Bi-aural)

**Week 4:**

Mon Oct 15th: Voice Recording – speaking vs singing

Wed Oct 17th: EQ (Filters) – types, bands, centroid, q, gain

Assignment 2 (Due by 1PM Monday October 22nd) – make a mono and stereo recording

**Week 5:**

Mon Oct 22nd: Formats\*

Reading:

[https://ccrma.stanford.edu/courses/192b/Release\\_Media.pdf](https://ccrma.stanford.edu/courses/192b/Release_Media.pdf)

<https://ccrma.stanford.edu/courses/192b/SACD.pdf>

and TBD

Wed Oct 24th: Review and SHORT Written MIDTERM

Mechanics of Speakers\*

Reading:

Kadis – Chapter 10

Midterm – Record 1 MIN AUDIO with at least one mono track and one stereo track. Give two mixes with different EQ settings on the Master Output

(Due by 1PM Monday October 29th)

**Week 6:**

Mon Oct 29th: Compression and Gates – the main parameters

Reading:

[https://ccrma.stanford.edu/courses/192b/192b\\_Lecture\\_1\\_18.pdf](https://ccrma.stanford.edu/courses/192b/192b_Lecture_1_18.pdf)

Wed Oct 31st: EQ 2 – mid side

Electronics review – filters \*

Reading:

Kadis – Chapter 7

Assignment 3 (Due by 1PM Monday Nov 5th) – EQ a voice and instrument recording only using only attenuation and compress the output

**Week 7:**

Mon Nov 5th: Sampling and audio effects 1

Reverb, Delay, Distortion - main parameters and automation

Wed Nov 7th: CCRMA Studio signal routing 3 - Bussing Effects and Headphone Mix/Talkback

**Week 8:**

Mon Nov 12th: Sampling and audio effects 2 - Drum Mics

Wed Nov 14th: Other CCRMA Studios and rooms... CHECKING YOUR MIX

Reading:

<https://ccrma.stanford.edu/courses/192b/mastering.pdf>

Assignment 4 – (Due by 1PM Mon November 12th)  
Recording effects automation + make drum loop from your own percussion samples

**Thanksgiving Break****Week 9:**

Mon Nov 26th: Shielding/Grounding/Amp Mic versus Amp Model\*

Kadis – Chapter 7 (Again!)

Wed Nov 28th: Field Recording

**Week 10:**

Mon Dec 3rd: Magnetic Recording/Digital Recording... and... so what's this dB thing again?  
Reading:

[https://ccrma.stanford.edu/courses/192b/Digital\\_Audio\\_Systems.pdf](https://ccrma.stanford.edu/courses/192b/Digital_Audio_Systems.pdf)

Kadis – Chapter 8 and 9

Wed Dec 5th: Final Written Exam/ Cable Exam!!!

**Final Projects due end by 1PM December 14th**

**Final projects must contain ONLY your own audio recordings**