

CS5631 Sound Synthesis and Manipulation

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Lectures: Thursday 10am-11am CSG25
Labs: First group: 11am-12pm CSG13
Second group: 4pm-5pm CSG13

Aims and Objectives: Gain appreciation of the range of techniques available for synthesizing sound, including real-time methods. Competence in sound synthesis software

Lecture notes: Lecture notes written by the instructor will NOT be available. It is your responsibility to attend lecture and take sufficient notes.

Labs: Your labs are scheduled for one hour a week. However, there are fewer machines than students. Therefore, we are taking some of our lecture time to enable all students to work individually on labs. The group division was made randomly and applies:

Group A (11am-12pm)	Group B (4pm-5pm)
Conor Barron	John Gough
Joseph Casey	Keith Halpin
John Galvin	William Kemp Gerrard
Simon Grogan	Alexander Lennon
Dylan Gully	John Lillis
Fintan Hahnefeld	Brona Martin
John Maybury	Thomas Neville
Thomas Nowotny	Simon O’Reilly
Stephen O’Callaghan	Ross Rochford
Conor O’Dwyer	Na Shen
Jie Meng	????
Shu Liu	

If you wish to exchange places with someone, you may do so. However, you cannot simply go to the other lab time.

Homework: Each week will have assigned reading and/or exercises. These will not be graded. However, the assigned work will have direct bearing on what will be asked of you in the scheduled exam time, which *will* be graded.

Grades:

Lab assignments: due in lab times: 15%
Midterm project: due Week 6: 25%
Final Project: due during final exams: 60%

There will be no repeats as this is a project based module. If you fail this module, you must repeat the year.

Required text:

Roads, C. *The Computer Music Tutorial*, MIT Press

Dodge, C. & Jerse, A.J. *Computer Music*, 2nd ed., Schirmer Books

Boulanger, R. *The Csound Book*, MIT Press

Recommended texts:

Moore, FR. *Elements of Computer Music*, Prentice-Hill

Wishart, T. *On Sonic Art*, new & revised ed., Harwood Academic Press

Wishart, T. *Audible Design*, Imagineering Press

Useful background:

Emmerson, S. *The Language of Electroacoustic Music*, MacMillan Press

Provisional weekly plan:

1. What is sound? Sine waves
2. Sound levels, Noise, Subtractive Synthesis
3. Amplitude envelopes
4. Spatialization, Localization, Sampling, Quantizing
5. Additive Synthesis,
6. Phase Vocoder, Cross synthesis
7. Real time methods
8. Fourier Transforms
9. Ring Modulation, AM, FM
10. More cross synthesis
11. Waveshaping and Granular Synthesis