CS4025 Digital Audio Fundamentals

Instructor: Dr Kerry Hagan
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Teaching Assistants: TBD

Lectures: Monday 12-1pm, Schuman 205
       Wednesday 1-2pm, CS Building G01

Aims and Objectives: Understand and apply basic principles of digital signal processing for audio. Understand principles, terminology, current standards, and applications of digital audio technologies. Understand sound synthesis techniques, audio editing software, and basic recording techniques.

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 two hours a week. These labs may be used for lecture review, demonstrations, or projects. When the full two hours are not used for this module, you may use the lab for work-related projects.

Homework: Each week is accompanied by an assigned reading. Completing the reading is highly advised since some material that is not covered in lecture may be included on the exams.

Midterm exam: 15 October (Week 6) 30%
Final exam (cumulative): 70%
A repeat exam will replace the entire module grade. NOTE: if you fail this module, you must repeat the ENTIRE YEAR.

Required text:
Pohlmann, K. 2000. *Principles of Digital Audio*, 4th Edition, McGraw-Hill Professional.

Recommended texts:
Rumsey, F & McCormick, T. 1996. *Sound and Recording: An Introduction*, Focal Press
Watkinson, J. 2001. *The Art of Digital Audio*, 3rd Edition, Focal Press.

Provisional weekly plan:

1. What is sound? Analogue sound. Transducers. Noise. Introduction to digitizing.
2. Fundamentals of Digital Audio. AD Conversion.
3. DA Conversion. Error correction.
4. Digital recording & editing systems. Digital audio applications.
5. Digital signal processing.
6. Mid-term & open days (no labs)
7. Digital audio compression
8. Digital audio interfaces and transmission. Timecode. Synchronization.
9. Internet audio. Digital radio and TV broadcasting
10. Media (DAT and hard disk)
11. Media (CD and DVD)