CMPT 468 - D100 Introduction to Computer Music and Sound Synthesis

Instructor(s): Tamara Smyth SFU Surrey

Calendar Objective/Description:

An introduction to the fundamentals of digital audio, computer music, basic sound synthesis algorithms, and digital audio effects and processing. Topics include concepts of sound and digital audio representation, basic concepts of digital filtering, fundamentals of spectrum analysis, and sound synthesis techniques. Understanding of theoretical concepts will be consolidated through practical programming assignments in Matlab, however there will also be exposure to various freeware real-time audio programming and sound editing environments.

Instructor's Objectives:

This course introduces the fundamentals of digital audio, computer music, basic sound synthesis algorithms and digital audio effects and processing. Understanding of theoretical concepts will be consolidated through practical programming assignments in Matlab and Pd (a real time audio programming environment).

Prerequisites:

MATH 152 and one of CMPT 125, 126 or 128 (or permission of instructor).

Topics:

- Concepts of Sound and Digital Audio
- Spectrum Analysis
- Sound Synthesis Techniques
- Introduction to Digital Filters
- Sound Processing and Audio Effects

Grading:

Midterm 20%, Assignments 30%, Project 20%, Final Exam 30% (Marking scheme is tentative and will be confirmed during the first week of classes). Students must attain an overall passing grade on the weighted average of exams in the course in order to obtain a clear pass (C or better).

Required Books:

Computer Music: Synthesis, Composition, and Performance, Charles Dodge and Thomas A. Jerse, Wadsworth Publishing, 1997, 2nd Edition

CMPT 468 Course Notes, , To be distributed on-line throughout the course.

Reference Books:

DSP First-A Multimedia Approach, J.H. McClellan, R.W.Schafer and M.A. Yoder, Prentice Hall, 1998

A Digital Signal Processing Primer, Ken Steiglitz, Addison Wesley, 1996

The Computer Music Tutorial, Curtis Roads, MIT, 1996

Elements of Computer Music, F. Richard Moore, PTR Prentice Hall, 1990

Real Sound Synthesis for Interactive Applications, Perry R. Cook, A.K. Peters, 2002

Academic Honesty Statement::

Academic Honesty plays a key role in our efforts to maintain a high standard of academic excellence and integrity. Students are advised that ALL acts of intellectual dishonesty are subject to disciplinary action by the School; serious infractions are dealt with in accordance with the Code of Academic Honesty (T10.02) (http://www.sfu.ca/policies/teaching/t10-02.htm). Students are encouraged to read the School's policy information (http://www.cs.sfu.ca/undergrad/Policies/).