CSC/CPE 344: Music Programming

1. CSC/CPE 344: Music Programming

2. **Credit units**: 4 **Contact hours**: 6

3. **Course Coordinator**: John Clements

4. **Textbook**:


   b. **Prerequisite**: CSC/CPE 357.

   c. **Required/Elective/Selective Elective for CPE, CSC, SE**

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6. a. **Course Goals/Outcomes**

   The student will be able to:
   
   - Write programs that map scores to sound data,
   - Design filters to achieve particular effects,
   - Translate filters designs into programs,
   - Be able to convert between time and frequency domain for simple signals, and
   - Develop programs that generate music algorithmically.

   b. **How Student Outcomes addressed**

   ("B" = Basic level, "I" = Intermediate level, "A" = Advanced level)

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7. **Major Topics Covered**: (number of lecture hours each)

   - Basic physics of sound (2)
   - Terms of western music (1)
   - Representations of sound (1)
   - MIDI Basics (1)
   - Sound processing architectures (1)
   - Digital Audio Workstations / plugin architectures (1)
   - Simplifying sine waves (Euler's equation) (2)
• Taking apart sounds (the Fourier transform) (2)
• Synthesis architectures (1)
• Diagramming additive synthesizers (1)
• Ring Modulation, Amplitude Modulation (1)
• Frequency Modulation (1)
• Intro to filtering, LTI filters (2)
• Convolution (1)
• FIR filters, the Z transform (3)
• IIR Filters (2)
• Distortion (2)
• Algorithmic generation of music (3)
• Markov models (1)
• Genetic algorithms (1)