

**EDUCATION 487-4**  
**COMPUTERS IN MUSIC EDUCATION**

Spring, 1989  
Mondays  
4:30 - 8:20 p.m.  
Location: MPX 7610

Instructor: Dr. Robert Walker

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**GENERAL APPROACH AND FOCUS:**

Composition for the school classroom (elementary and secondary) using synthesizers, samplers, generic microcomputers, programmers, and sequencers. The course is designed for teachers who wish to understand electronic synthesis of sound, how it is used in various machines, and, most importantly, how the new technology can be used effectively as an educational force in music. The course is suitable to both elementary and secondary teachers wishing to use a compositional approach in introducing electronic music to children. The content is arranged so that teachers with little or no knowledge of sound synthesis and related techniques can acquire some. However, teachers with some knowledge but requiring a thorough "grounding" in basics may find it useful. The focus is the educational application of this new technology.

**OUTLINE OF CONTENT**

- 1) Electronic synthesis of sound:
  - Basic principles of sound synthesis including electronic generation of sound, additive and subtractive synthesis, various types of modulation, filtering, temporal and spectral envelope controls, etc.
  - The application of these basic techniques to a wide range of synthesizers, samplers, programmers, and sequencers, ranging from voltage controlled analog synthesizers to the latest linear arithmetic fully digital synthesizers.
  
- 2) Methods of controlling and managing electronically generated sound:
  - various uses of the Musical Instrument Digital Interface (MIDI) system including various ways of passing digital information from one or more synthesizers to others and linking a variety of machines through the MIDI system using the concept of "slave" and "master" controllers
  - techniques in programming using both external devices connected to synthesizers and internal capabilities of samplers and synthesizers.
  - techniques in sampling
  - techniques in sequencing using both dedicated musical computers and a variety of software for the general micro-computer
  - saving and filing compositions to disk.
  
- 3) Composition and creative work:
  - controlling and manipulating single sounds in a variety of ways to explore the amazing variety of sound, some entirely new to human experience, made available by the latest samplers and synthesizers
  - composing simple musical phrases utilising the single sounds discovered
  - composing musical pieces of two basic types: a) programmatic or descriptive, and b) building patterns in sound.

**ASSESSMENT:**

- written work
- short examination
- compositional projects
- course project designed by the student to suit individual needs.

**READINGS:**

Much of the content is new, therefore a variety of texts will be supplied for a small charge, some for loan, some free, and new books will be available for purchase or loan as necessary.