# MPATE-GE 2618: C Programming for Music Technology

**Syllabus • Spring 2017**

## Instructor

Dr. Schuyler Quackenbush
schuyler.quackenbush@nyu.edu

## Lab Teaching Assistant

Jong Wook Kim
jongwook@nyu.edu

## Description

MPATE-GE 2618: C Programming for Music Technology is an intensive, graduate-level introductory course in programming concepts and computer science with a focus on software design, algorithms, and data representation for digital signal processing and audio applications. Assignments consist of extensive programming in C.

Topics include:

- C programming: syntax, primitive types, iteration, conditional expressions, functions, arrays, pointers, dynamic memory allocation, standard libraries.
- Software development: problem decomposition, abstraction, data structures, implementation, debugging, testing.
- Algorithms: design, specification, and analysis.
- Data representations for signal processing and audio applications.
- Introduction to audio APIs

## Prerequisites

No prior programming experience is required.

## Class Times

**Lectures** (MPATE-GE 2618) meets on Tuesday and Thursday 1:40-2:55 in room 1102 of the Education building (35 W. 4th St).

**Lab** (MPATE-GE 2617) meets Thursday 3:30-4:xx in room 1101 of the Education building (35 W. 4th St).

NOTE: All students enrolled in MPATE-GE 2618 must also take MPATE-GE 2617.

## Office Hours

Weekly office hours will be in the time between the Thursday lecture and the lab. Location TBD by student and instructor.

## Class Materials

All class materials are available at the NYU Classes course website:

- Resources
  - Lecture slides as PDF
  - Any other course material
- Assignments
  - Problem description and any associated source code and data
  - Final project information

**Problem Sets**

Problem sets will be distributed via NYU Classes Assignments. Each will have a posted due data. Students should post completed assignments via the same NYU Classes Assignment mechanism.

**Quizzes**

The course will have at least one quiz. The quiz will be "closed-book." However, you may utilize during each quiz one two-sided page (8.5" × 11") of notes, typed or written, but nothing else.

**Final Project**

The final project will be your opportunity to put your programming skills to use and implement your own software application. As long as your project is written in C, the nature of your project is entirely up to you, albeit subject to the instructor's approval. You are welcome to utilize external libraries and hardware provided that the instructor has access to all of these things and you are able to present it in class at the end of the semester.

Final projects include a written report, the actual program code, and a presentation to the class.

Students in the music technology program are encouraged to choose a project topics that involve processing of audio signals, including real-time audio I/O.

**Final Exam**

The course does not have a final exam.

**Grades**

Final grades for the lecture class will be determined using the following weights:

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|---|---|
| Problem Sets (drop worst): | 70% |
| Quizzes: | 10% |
| Final Project: | 20% |

Final grades for the lab will be determined using the following weights:

| | |
|---|---|
| Problem Sets (drop worst): | 70% |
| Attendance: | 30% |

The instructor will post grades for each assignment, quiz and final project on the NYU Classes Gradebook.

**Books**

Required text:
Programming in C, Third Edition by Stephen Kochan

Optional text for students less comfortable with programming:
Absolute Beginner's Guide to C, Second Edition by Greg Perry

Optional recommended audio programming text:
The Audio Programming Book, R. Boulanger and V. Lazzarini (Eds.)

**Platforms**

Assignments are designed to be implemented on a UNIX-based system such as Mac OS X or Cygwin on Windows.