MMP 210 - Multimedia Programming I

3 credits, 2 hours lecture, 2 hour lab
Spring 2023
Monday/Wednesday 6 - 7:40pm
Online
Professor Owen Roberts
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Extension 8057

Course Description
This course introduces the basic concepts of programming for multimedia. Students will learn the principles of object oriented programming and how to create scripts for the manipulation of video, graphics, and text to construct a complete multimedia presentation.

Basic Skills: ENG 088 or ESL 062, ACR 094
Prerequisites: MMP 100
Co-requisites: MAT 051

Course Student Learning Outcomes (Students will be able to…)	**Measurements (means of assessment for student learning outcomes listed in first column**
1. Demonstrate the ability to read in an object oriented programming language.	Homework assignments
2. Demonstrate the ability to write in an object oriented programming language.	Homework assignments
3. Decompose programming problems logically.	Quiz / Homework assignments
4. Create interactive projects through programming.	Midterm and final project
5. Script real-world tasks in an application.	Final project
6. Integrate multimedia data types into an application.	Homework assignments and Final project

Use of Technology
Students will use the scripting language JavaScript. A text editor such as Notepad ++, Sublime or Bracket will be used to write code. Additionally, students may use Photoshop and Illustrator of Creative Suite 6 to design and manipulate graphics for their projects.

Requirements and Evaluation of Students

- Portfolio Webpage Assignment: 5%
- Weekly Assignments: 65%
- Final Project: 30%

Outline of Topics

- Programming Basics (statements, control structures, expressions, functions, methods, objects and variables)
- JavaScript syntax, general rules
- JavaScript and HTML
- The Document Object Model (DOM)
- Organization of object-oriented code
- Programming for Interactivity (events, mouse and key input, browser events)
- JavaScript APIs for HTML5
- Geolocation
- Canvas
- Programming Multimedia elements (video, images)
- Programming using External Data
- Building a Complete Application
- Physical Computing with Arduino

Schedule

- Week 1 Intro
    - JavaScript Intro
    - Intro to p5
    - Create an account for the p5 editor
    - Join the course on Open Lab
    - Assignment 1: Recreate an artwork
        - Choose an artwork from one of the artists in the list
        - Recreate the artwork in p5
        - You can be creative – try to capture the idea or feeling of the work without necessarily recreating each shape and color exactly
        - Save an image of the sketch and post on Open Lab
        - You can suggest an image if you want to use something else
        - Artists
            - Wassily Kandinsky
            - Julio Le Parc
            - Kazimir Malevich
            - Agnes Martin
            - Carmen Herrera
- Project 1 Self Portrait

    - Over the next three weeks you will make a self portrait, starting with a simple drawing and ending with an interactive artwork using variables.
    - One version is due each week. The three versions include a hard coded drawing, a static drawing with variables, an interactive version.
    - We will give feedback in class. Part of the evaluation is writing down feedback and using it to make changes to the self portrait. It could be as simple as changing a color or moving a line.
    - Each version is posted on Open Lab with an image and link to the project code.
- Week 2 Shape & Color
    - Shapes and Functions
    - Color Functions and Values
    - Adobe Color Wheel
    - Assignment 2: Self Portrait Version 1
        - Draw a self portrait in a p5 sketch
        - Use the shape and color functions
        - Add something unique to you
        - Doesn't necessarily have to have a face/body, could be abstract
- Week 3 Variables
    - JavaScript statements & operators
    - Variables
    - JavaScript debugging
    - Debugging challenge
    - Assignment 3: Self Portrait with Variables
        - All hard coded numbers and strings in shape and color functions replaced with variables
        - Variable names describe what they are used for
        - Update drawing based on class feedback
- Week 4 Interaction
    - System variables
    - Interaction
    - Assignment 4: Interactive Self Portrait
        - Final changes based on class feedback
        - Choose part of your self portrait to animate with interaction
        - size, position or color, or a combination
        - Use the map function at least once
        - Add instructions for the user in the HTML using a paragraph tag
- Project 2 Meme/Logo
    - The next three weeks will be dedicated to the second project. You have a choice to create a logo for youself or a fictional client or to make a "meme", meaning a humorous combination of image and text (must be appropriate for class).
    - This project will also have three versions: rough draft, simple interaction, and final animation.
    - Feedback in class.

    - Each version has its own URL.
- Week 5 Text & Image
    - Text
    - Image
    - Code Academy: Variables
    - Assignment 5: Meme/Logo
        - Rough draft of logo or meme
        - Can be hard coded, extra credit for using variables
- Week 6 Logic
    - Conditional logic
    - Drawing with logic
    - Code Academy: Control Flow
    - Assignment 6: Interactive Meme/Logo
        - Use interactivity to update the project
        - Use conditional statements to control how the projects changes
        - Change parameters for the shape, color, image and/or text functions
- Week 7 Animation
    - Animation
    - Transformation
    - Assignment 7: Animation
        - Add animation to the Meme/Logo design
        - Choose what type of animation to use
        - One from first category: size, position or color
        - One from second category: translate, rotate, shear or scale
        - Extra credit: Combine animation from first and second category
- Project 3 Pattern Generator
    - This project introduces using loops and a user interface that allows users to generate a pattern.
    - That pattern could be applied to different themes, like a product design, website background, or game setting.
- Week 8 Loop
    - Loop
    - Random
    - In class: Code academy: loops
    - Assignment 8: Variations
        - Using a loop and random, create several varations of a drawing
        - You could use your self portrait
        - Use a series of windows on a building
        - An abstract pattern
- Week 9 User Interface
    - DOM Elements
    - Assignment 9: User Interface
        - Add buttons to save and regenerate your pattern from Assignment 8

        - Style the buttons using CSS
        - Add one more variation to the pattern
        - Connect the variation to a button, slider, or other interface elements
- Week 10 Pattern
    - Nested Loop
    - Generating patterns
    - Assignment 10: Generated Pattern
        - Using a nested for loop, create a pattern
        - Use randomness and variation
        - Use user interface components for user to customize pattern
- Project 4 Sound Sampler
    - This project introduces adding sound files to a p5 project.
    - We will combine interactivity and sound to create interactive samplers.
- Week 11 Keyboard + Sound
    - Keyboard interaction
    - Sound
    - Assignment 11: Keyboard Sampler
        - Combine sounds with keyboard events to create a sound sampler
        - Use simple colors or images to reflect changes in sound
- Week 12 Interaction 2
    - Functions
    - Interaction 2
- Final Proposal
    - Presentation sketch
    - Choose a previous project to elaborate on or propose something new, hybrid
    - How will the user interact with the sketch?
    - What type of graphics will be used?
- Final Project
    - p5 sketch
    - User interaction (with sketch variables or DOM elements or both)
    - At least one external file (image or sound)
    - Use variables
    - Use at least one example of logic (if statem

Below are the college's general education learning outcomes, the outcomes that checked in the left-hand column indicate goals that will be covered and assessed in this course. (Check at least one.)

General Education Learning Outcomes	**Measurements (means of assessment for student learning outcomes listed in first column**

Communication Skills: Students will be able to write, read, listen and speak critically and effectively	Class presentations of midterm and final projects
Quantitative Reasoning: Students will be able to use quantitative skill and the concepts and methods of mathematics to solve problems.	Student homework assignments
Scientific Reasoning: Students will be able to apply the concepts and methods of the natural sciences	
Social and Behavioral Science: Students will be apply the concepts and methods of the social sciences	
Arts & Humanities: Students will be able to develop knowledge and understanding of the arts and literature through critiques of works of art, music, theatre and literature.	
Information & Technology Literacy: Students will be able to collect, evaluate and interpret information and effectively use information technologies.	Student homework assignments
Values: Students will be able to make informed choices based on an understating of personal values, human diversity, multicultural awareness and social responsibility.	

Class Participation
Participation in the academic activity of each course is a significant component of the learning process and plays a major role in determining overall student academic achievement. Academic activities may include, but are not limited to, attending class, submitting assignments, engaging in in-class or online activities, taking exams, and/or participating in group work. Each instructor has the right to establish their own class participation policy, and it is each student's responsibility to be familiar with and follow the participation policies for each course.

BMCC is committed to the health and well-being of all students. It is common for everyone to seek assistance at some point in their life, and there are free and confidential services on campus that can help.

Single Stop www.bmcc.cuny.edu/singlestop, room S230, 212-220-8195. If you are having problems with food or housing insecurity, finances, health insurance or anything else that might get in the way of your studies at BMCC, come by the Single Stop Office for advice and assistance. Assistance is also available through the Office of Student Affairs, S350, 212-220-8130.

Counseling Center www.bmcc.cuny.edu/counseling, room S343, 212-220-8140. Counselors assist students in addressing psychological and adjustment issues (i.e., depression, anxiety,

and relationships) and can help with stress, time management and more. Counselors are available for walk-in visits.

Office of Compliance and Diversity www.bmcc cuny.edu/aac, room S701, 212-220-1236. BMCC is committed to promoting a diverse and inclusive learning environment free of unlawful discrimination/harassment, including sexual harassment, where all students are treated fairly. For information about BMCC's policies and resources, or to request additional assistance in this area, please visit or call the office, or email olevy@bmcc.cuny.edu, or twade@bmcc.cuny.edu. If you need immediate assistance, please contact BMCC Public safety at 212-220-8080.

Office of Accessibility www.bmcc.cuny.edu/accessibility, room N360 (accessible entrance: 77 Harrison Street), 212-220-8180. This office collaborates with students who have documented disabilities, to coordinate support services, reasonable accommodations, and programs that enable equal access to education and college life. To request an accommodation due to a documented disability, please visit or call the office.

BMCC Policy on Plagiarism and Academic Integrity Statement
Plagiarism is the presentation of someone else's ideas, words or artistic, scientific, or technical work as one's own creation. Using the idea or work of another is permissible only when the original author is identified. Paraphrasing and summarizing, as well as direct quotations, require citations to the original source. Plagiarism may be intentional or unintentional. Lack of dishonest intent does not necessarily absolve a student of responsibility for plagiarism. Students who are unsure how and when to provide documentation are advised to consult with their instructors. The library has guides designed to help students to appropriately identify a cited work. The full policy can be found on BMCC's Web site, www.bmcc.cuny.edu. For further information on integrity and behavior, please consult the college bulletin (also available online).

BMCC Mask Mandate Policy for In-Person Classes
CUNY has put in place a temporary mask mandate policy that requires the wearing of masks indoors in all campus buildings. See:
https://www.cuny.edu/coronavirus/university-updates/clarity-new-mask/

Face masks help prevent the spread of COVID-19. As it is possible to have or carry the coronavirus without having orshowing symptoms, it is necessary for every person in our community to wear a mask even if you are fully vaccinated and/or have tested negative for COVID19, or think you are completely healthy. For appropriate/acceptable masks and guidelines on use, see CDC guidelines at:
https://www.cdc.gov/coronavirus/2019-ncov/prevent-getting-sick/diy-clothface-coverings.html.

While the mask mandate is in effect, the following will apply to all in-person classes (including in-person classes associated with hybrid courses):

- In a classroom, if a fully vaccinated instructor is teaching a class and can maintain social distance from all others in the classroom, he/she may choose not to wear a mask (subject to any additional Department guidelines regarding the use of face shields or other layers of protection).
- Students who attempt to enter a classroom without wearing masks will be asked by the instructor to put on their masks before entering. Students who remove their masks

during a class session will be asked by the instructor to put on their masks. Masks will be available for distribution for those who need one.

- Students may remove their masks momentarily during class (to drink something quickly), in classrooms other than labs, but must replace their masks immediately after that. The consumption of food is not permitted in any classroom or lab.