

Game Design 105: Game Programming I

Eugenio María de Hostos Community College - Humanities Dept.



****In order to continue in this class beyond the first class session, all enrolled students must complete the [Course Intro & Agreement Form](#) before the start of the second class of the semester. ****

Spring 2019 Syllabus

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Game Programming I

Basic Course Info

Course	GD105 - 716A
Class Number	17360
Course Title	Game Programming I
Meets	Spring 2019 / TTh 5:30-6:45PM / C-456
Credit Hours	3
Instructor	Professor Juno Morrow (they/them or she/her)
Class Site	hostosmdp.ryver.com (Private Team: S19 - GD105 Game Programming I) https://www.openprocessing.org/class/59276 (Join code: A4840C)
Email	jmorrow@hostos.cuny.edu or juno.morrow@gmail.com (emergencies only!)
Office/Hours	C-415 - Tue/Thu 12:30-2pm (by appointment)
Phone	718.518.6682

Course Description

This course introduces students to game programming. Students will explore the core concepts of basic programming techniques, including variables, syntax, conditionals, loops, functions and classes. Students will incorporate their knowledge of illustration, images, text, animation, and sound to create meaningful game experiences in code.

Prerequisites

GD101 Intro to Games; MAT100 College Math (or higher)

Course Objectives

- Provide knowledge of what code is, including a brief history of code and how it is currently used, along with the advantages and limitations of code.
- Demonstrate interactive code applications for artists and designers, especially as related to game development.
- Give students resources, both online and in print, to further their coding knowledge. Introduce students to the open source community as both a learning and sharing tool.
- Students will gain an understanding of basic code data types, syntax, and a rudimentary feeling for how the “machine” interprets this information.
- Students will gain an understanding of more complex features of code (functions, loops, arrays) and how these can be applied to code-based projects.
- Develop the ability to construct and analyze processes by applying “human logic” into code oriented logic and breaking down chunks of code into constituent parts.

Recommended readings:

- Shiffman, D. (2015). *Learning Processing*. Morgan Kaufmann.
 - Shiffman, D. (2012). *The Nature of Code*. Lexington [KY].
- (This is only recommended for students wanting to take on more advanced content.)

Commitment to Diversity and Safer Spaces ([source](#))

We understand the classroom as a space for practicing freedom; where one may challenge psychic, social, and cultural borders and create meaningful artistic expressions. To do so we must acknowledge and embrace the different identities and backgrounds we inhabit. This means that we will use preferred pronouns, respect self-identifications, and be mindful of special needs. Disagreement is encouraged and supported, however our differences affect our conceptualization and experience of reality, and it is extremely important to remember that certain gender, race, sex, and class identities are more privileged while others are undermined and marginalized. Consequently, this makes some people feel more protected or vulnerable during debates and discussions. A collaborative effort between the students and instructor is needed to create a supportive learning environment. While everyone should feel free to experiment creatively and conceptually, if a class member points out that something you have said or shared with the group is offensive, avoid being defensive; instead approach the discussion as a valuable opportunity for us to grow and learn from one another. Alternatively if you feel that something said in discussion or included in a piece of work is harmful, you are encouraged to speak with the instructor.

Assignments

This is a studio course involving a combination of various projects and in-class assignments. The lecture/discussions will reference and introduce concepts and vocabulary that may at times be unfamiliar and so require students to do independent research. This will be expected. 15% of the grade will be based on engagement and consistent attendance. The balance of the grade will be determined by a number of Scenarios and projects undertaken over the 15 week course.

Submission & Class Ryver

Assignments are required to be turned in as a post on the class team blog on at least an hour before the start of class. I will be reviewing that week's posted assignments during this pre-class period. If a student has not posted the assignment by the expiration date/time, it will be marked with a grade of **0** points. Students that have a display name not matching their roster name will not be able to receive credit.

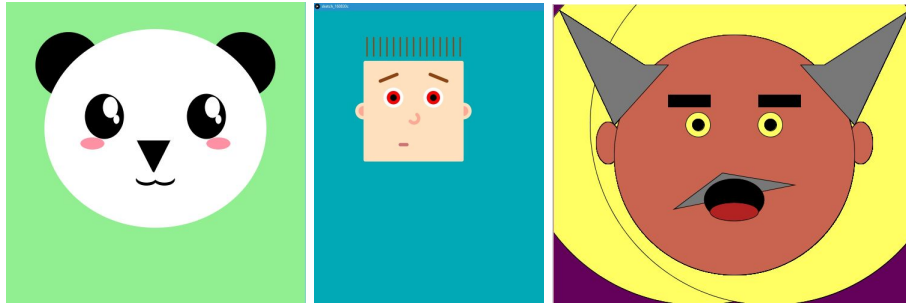
We will plan on ensuring access to Ryver and the class team on the first day of class. Please [e-mail me](#) or see me during office hours for any technical problems you may be having.

Tentative Assignment Descriptions

Please note that these are tentative and should only be used for reference as the assignment may have changed. Please see Ryver for the most recent assignment description.

CS1: Code Scenario 1

Create a self-portrait in Processing with your favorite animal or item using the elements we used in class today. Find four new functions or things in the Processing documentation to use. For example, you could use [stroke](#), [triangle](#), etc. Be creative and show off your new skills.



CS2: Code Scenario 2

Create a procedurally generated moving image. You can use your homework from the previous class as a base or start from scratch if you'd prefer. This means you must use variables multiple times and operators(+, -, *, /, etc.) to vary these. You can use your previous homework as a base, or try something new. Try using the built-in (read-only) variables, such as mouseX, mouseY, width, etc. See the example for help.⁶

When you submit your sketch on OpenProcessing, don't forget to add it to the proper assignment collection on the class OP page. Don't forget that they are due at least an hour before class begins. If you have any persistent questions, ask your peers in the chat or shoot me a message.



CS3: Code Scenario 3

Create a dance party with at least 5 different "dancers" and 5 different "dances". For the dancers, use images with transparency (.gif or .png). Each of your "dancers" should move in different ways. Here's some inspiration...

When uploading the homework, don't forget to use the preload code below. Copy the entire line and replace the filenames with whatever your images are named. Under the Files tab, don't forget to upload the files. Check the slides if you need a guide.

```
/* @pjs preload="beyonce.png, godzilla.jpg"; */
```

CS4: Code Scenario 4

Use the homework from last week as a basis for this week's assignment (or start a new one if you'd prefer). Add at least 3 rectangular buttons that a player can hover over that cause the dancer(s) to do different things. This will require you to apply the logic we used in the example (changing the color of the rect when hovering) applied to other code in your sketch.

CS5: Code Scenario 5

Build upon what we did in class, but this time, have 2 rects moving in the scene that bounce off of each other. Each time they bounce. Additionally, add in a third rect that can be controlled by the player using keyboard input. Please see the [documentation](#) for help. Imagine you are a player in a top-down game. What might these things represent? What interactions could be added to this system?



CS6: Code Scenario 6

For this assignment, you should use a minimum of 5 on screen objects or images that can be dragged into the mouth of a hungry dog. When they get in close proximity, make something happen. Perhaps doggo gets hyper and moves around or grows from eating so much food. Maybe doggo open mouth image is replaced by a closed mouth image. Be creative and have fun! See the function `dist()` to calculate distances between 2 points.

GM1: Game Mission 1 (part 1)

Using for loop(s), create interactive patterns of shapes/objects. They should be beautiful! Use i to differ positions, sizes, etc. as the loop iterates. If you need inspiration, rewatch the video from class or look on fprocessing. Start thinking about how you can gamify this with win and lose conditions.

GM1: Game Mission 1 (part 2)

Continue working on the homework you started last class, turning your looping elements into an interactive game with both a win and lose condition (or start a new over if you'd prefer). You should use both loops and arrays to keep track of various changes.

GM2: Game Mission 2 (part 1)

Create a one-button game involving cats. An example of a one-button game is Flappy Bird. For this week, get the core mechanics running. You will be able to continue working on it next week. Keep in mind that a game with mouse positional input is not a one-button game. Imagine you have a controller that consists of one button and that's all the input you can use.

GM2: Game Mission 2 (part 2)

For GM2, finish up your one button game, complete with win and lose states, as well as a progression (i.e. it gets harder or changes as you play).

FGP1: Final Game Prototype 1

For next week, you should have the basic mechanics implemented or at least in progress. We will review them in class next time before we move onto OOP.

FGP2: Final Game Prototype 2

FGP2 should be fully playable, only needing to address balancing and polish issues before the final presentations.

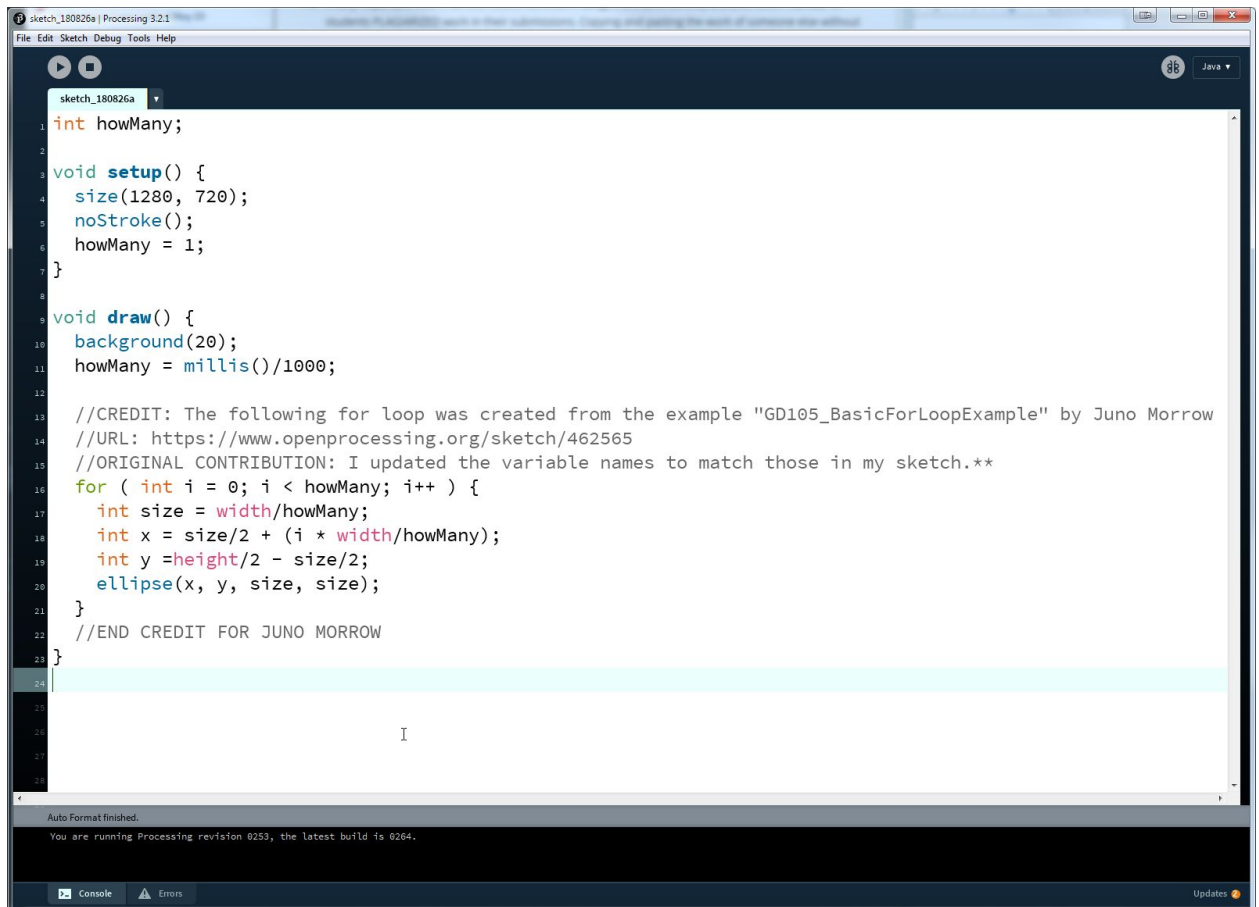
Plagiarism

If you use code resources from anywhere else, you must **CLEARLY** show what code you used from another source and what that source is. It should be crystal clear what code is yours and what code originates elsewhere. Copying and pasting the work of someone else without giving explicit credit detailing what work is your own and what is taken from somewhere else is considered **CHEATING**, which can possibly lead to expulsion. Treat this class the way you do your other classes. If you copy and paste an essay in your English class changing a few words here and there would be just as **unacceptable**.

To make sure you are not taking credit for someone else's work, you must use a comment before that code, which clearly indicates the following:

- WHO you got it from
- WHERE you got it from/The URL
- WHAT was your original contribution, if any

Any code, including unique approaches or methods, that was copied and pasted MUST be cited in comments. See the image below for an example of a proper citation:



```

1 int howMany;
2
3 void setup() {
4   size(1280, 720);
5   noStroke();
6   howMany = 1;
7 }
8
9 void draw() {
10  background(20);
11  howMany = millis()/1000;
12
13  //CREDIT: The following for loop was created from the example "GD105_BasicForLoopExample" by Juno Morrow
14  //URL: https://www.openprocessing.org/sketch/462565
15  //ORIGINAL CONTRIBUTION: I updated the variable names to match those in my sketch.**
16  for ( int i = 0; i < howMany; i++ ) {
17    int size = width/howMany;
18    int x = size/2 + (i * width/howMany);
19    int y = height/2 - size/2;
20    ellipse(x, y, size, size);
21  }
22  //END CREDIT FOR JUNO MORROW
23 }
24

```

Extra Credit

Throughout the semester, there may be opportunities for extra credit to be earned. In order to receive the extra credit, students must complete the assignment in full and post it to the team by the deadline. Extra credit opportunities will be listed in the Extra Credit Forum on Ryver. There may also be additional extra credit opportunities offered during class time and hidden in lecture materials with specific instructions for receiving credit. For the first extra credit opportunity (3 points), type "Extra Credit!" in the comment section at the end of the *Course Intro & Agreement Form*. You must do this when submitting the form before the second week of class in order to receive credit.

Participation

Every student begins the term with 45 participation points. Regular attendance is

required in order to maintain a proper grasp of the material, participate in discussions and class activities, as well as maintain a good participation grade.

Attendance will be taken every single class. Students enrolled in this course will be allowed a fixed number of flexible absences for any reason throughout the semester (including both those that would traditionally be considered excused and unexcused). No points will be deducted from the grade for all absences up to the number chosen or allotted by default for the student.

Students will indicate how many flexible absences they want allotted before the second class of the semester. **There will be no excused absences beyond the number allotted.** It is recommended that students choose the smallest number of absences that they can strive to achieve. Setting high, but realistic standards for oneself encourages better performance. The option chosen will be permanent for the remainder of the semester and cannot be changed.

For each class session missed in excess of the allotted amount, **15** participation points will automatically be deducted. Lateness is highly discouraged; 3 tardies will be treated as one absence. Students arriving more than half an hour late will be considered absent and marked accordingly.

Severe, life-changing emergencies leading to excess absences will be evaluated on a case-by-case basis. However, these are exceedingly rare and should not be something that comes up more than once every few years.

Grade Breakdown

Assignment	Description	Points
Code Scenarios (6)	The first third of this class we will be learning the fundamentals of code and programming in Processing. Students will be expected to complete a series of code scenarios both in class and as homework to further their understanding of game programming and to be able to talk through coding challenges in pseudo code. Scenarios are to be completed in time for review at the start of class. Students arriving with incomplete Scenarios will not be given full credit for the assignment. The lowest coding scenario grade will be dropped.	90 points total (15 each)
Challenges (3-5)	There will be 3-5 randomly occurring challenges given in-class throughout the semester.	>= 45 points (15 each)
Game Missions (2)	This class will focus a great deal of attention on the production, coding and testing of two small game	60 points (30 each)

	examples. Students will be expected to recreate these examples on their own and be able to talk through the code as pseudo code. Students arriving with incomplete missions will not be given full credit for the assignment.	
Final Game Proposal	Each student will prepare a small game proposal in the form of a short formal presentation. These presentations will detail the goal of their game, its core mechanic, coding strategy, and precedents being referenced. The class will review and critique these proposals and students will spend the last third of the semester building and testing their games.	15 points
Final Game Prototypes	Students will develop and test three iterations of their game design over the remainder of the term. These will come in the form of the following prototypes: <ul style="list-style-type: none"> • The first prototype should demonstrate the student's ability to develop and code the game's core mechanic. • The final prototype should have a refined core mechanic, working visual assets, and the larger game environment (start screen, game over, score, sounds, etc.) put in place. 	15 points
Final Game	For the last day of the class, students will be required to give a formal presentation of their final game design, its precedents, concept, various iterations, and testing for critique and review.	60 points
Attendance / Participation	This portion is based primarily on attendance and participation in class. Every student begins the term with 45 participation points. See Participation for more info.	45 points
Total	Taken out of 300 points (> 375 points possible)	300

Notes on the grading criteria:

Work will be evaluated according to the following criteria:

- Understanding and interpretation of readings
- Research and Analysis of related issues
- Contribution to in-class discussion

Grade Conversion Chart

Total Points	Achievement Level	GPA	Grade
>300	Einsteinium (Es)	4.0	A
278-300	Platinum (Pt)	4.0	A
269-277	Gold (Au)	3.7	A-
260-268	Silver (Ag)	3.3	B+
248-259	Bronze (alloy)	3.0	B
239-247	Copper (Cu)	2.7	B-
230-238	Brass (alloy)	2.3	C+
209-229	Iron (Fe)	2.0	C
180-208	Zinc (Zn)	1.0	D
<180	Coal (rock)	0.0	F

Tentative Course Schedule

Readings must be completed for each class. Not all assigned texts will be discussed in class or covered in the class lectures.

Please note that this schedule is tentative and subject to change
Please check the class blog/Ryver for the most recent assignments and updates

Week	Date	Lecture	Due	Other
1 1.5	2019.01.29 2019.01.31	Introduce each other; review syllabus; blog setup Variables	Course Intro / Agreement Form	Read: What is Code?
2 2.5	2019.02.05 2019.02.07	Basic Animation	CS1	
- 3	2019.02.12 2019.02.14	Conditional Statements COLLEGE CLOSED 2/12	CS2	

3.5 4	2019.02.19 2019.02.21	Keyboard and Mouse Interaction	CS3	
4.5 5	2019.02.26 2019.02.28	Loops	CS4	
5.5 6	2019.03.05 2019.03.07	Review	CS5	
6.5 7	2019.03.12 2019.03.14	Arrays	CS6	
7.5 8	2019.03.19 2019.03.21	NO CLASS DUE TO GDC		
8.5 9	2019.03.26 2019.03.28	Physics	GM1	
9.5 10	2019.04.02 2019.04.04	Objects and Classes	GM2	
10.5 11	2019.04.09 2019.04.11*	Libraries *Class may be canceled on this day. If so, it will be announced via Ryver.	Final Game Proposal	
11.5 12	2019.04.16 2019.04.18	<u>Final Game Proposals</u>	FGP1	
12.5 13	2019.04.30 2019.05.02	Advanced Functions (time, matrices, 3D)		
13.5 14	2019.05.07 2019.05.09	Work Session	FGP2	
14.5	2019.05.14	LAST WEEK OF REGULAR CLASSES		
15	TBD	Final Exam Period / Final Critique	FG & All Doc.	

Hostos-wide Academic Policies

Hostos Community College believes that developing student's abilities to think through issues and problems by themselves is central to the educational process. Since the Hostos College

degree signifies that the student knows the material s/he has studied, and the practice of academic dishonesty results in grades or scores that do not reflect how much or how well the student has learned, understood, or mastered the material, the College will investigate any form of academic dishonesty brought to its attention. If the charge of academic dishonesty is proved, the College will impose sanctions. The three most common forms of academic dishonesty are cheating, plagiarism, and bribery.

Cheating (from Catalogue)

In the collegiate setting, cheating is defined as the purposeful misrepresentation of another's work as one's own. Faculty and students alike are responsible for upholding the integrity of this institution by not participating either directly or indirectly in act of cheating and by discouraging others from doing so.

Plagiarism (from Catalogue)

Plagiarism is a form of cheating which occurs when persons, even if unintentionally, fail to acknowledge appropriately the sources for the ideas, language, concepts, inventions, etc. referred to in their own work. Thus, any attempt to claim another's intellectual or artistic work as one's own constitutes an act of plagiarism.

Bribery (from Catalogue)

In the collegiate setting, bribery involves the offering, promising, or giving of items of value, such as money or gifts, to a person in a position of authority, such as a teacher, administrator, or staff member, so as to influence his/her judgment or conduct in favor of the student. The offering of sexual favors in exchange for a grade, test score, or other academic favor, shall be considered attempted bribery. The matter of sexual favors, either requested or offered, in exchange for a grade, test score or other academic favor, shall also be handled as per the Sexual Harassment procedures of the College.

College Attendance Policy (from Catalogue)

Students are expected to attend all class meetings in the courses for which they are registered. Classes begin at the times indicated in the official schedule of classes. Arrival in class after the scheduled starting time constitutes lateness.

The maximum number of absences is limited to 15% of the number of scheduled class hours per semester and a student absent more than the indicated 15% is deemed excessively absent. Attendance is monitored from the first official day of classes. In the case of excessive absences or lateness, the instructor has the right to lower the grade, assign a failing grade, or assign additional written work or readings.

Absences due to late registration, change of program, or extenuating circumstances will be considered on an individual basis by the instructor. Each department and program may specify in writing a different attendance policy. Instructors are required to keep an official record of student attendance and inform each class of the College's or department's attendance policy.

NOTE:

- Any work missed during any period of absence must be made up by the student.
- To meet financial aid criteria, a student must attend class at least once in the first three weeks and once in either the fourth or fifth week of class.

ADA Statement

As required by the Rehabilitation Act of 1973 and the Americans with Disabilities Act of 1990, reasonable accommodations are provided to ensure equal opportunity for students with verified disabilities.

If you have a disability that requires accommodations, contact:


Accessibility Resource Center
Savoy (D) Building
120 Walton Ave, Room D101P
Bronx, NY 10451
Phone: (718) 518-4454 (Voice/TTY)

If you are already registered with ARC and have a letter from them verifying that you are a qualified student with a disability, please present the letter to the instructor as soon as possible. The instructor will work with you and ARC to plan and implement appropriate accommodations.

Please Note:

Students who do not register with the ARC office and have their disability verified are not eligible to receive any special accommodations.

Additional Policies

- CUNY Policy on [Academic Integrity](#) 
- [Política de Integridad Académica de CUNY](#) [Spanish]
- Policy on [retention](#) of academic records
- CUNY [Uniform Grade Symbols: Glossary and Guidelines](#)
- CUNY [Testing Policy for students with disabilities](#)
- CUNY Policy on [Drug and Alcohol](#)
- CUNY [Testing Policies and Procedures](#)
- State Education Department [rules on awarding credit for same courses in different degree programs.](#)
- [Religious Accommodation of Students - Memo from General Council.](#)
- [CUNY student complaint procedure](#)
- [Board of Trustees resolution on articulation and transfer](#)

