

**STATE UNIVERSITY OF NEW YORK
COLLEGE OF TECHNOLOGY
CANTON, NEW YORK**



MASTER SYLLABUS

GAME130 – 2D Programming

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Canino School of Engineering Technology

Department: Decision Systems

Semester/Year: Spring 2020

- A. **TITLE:** 2D Programming
- B. **COURSE NUMBER:** GAME130
- C. **CREDIT HOURS:** 3 credit hour(s) per week for 15 weeks
(1 hour lecture, 3 hours recitation per week)
- D. **WRITING INTENSIVE COURSE:** Yes No
- E. **GER CATEGORY:** None: Yes:
If course satisfies more than one:
- F. **SEMESTER(S) OFFERED:** Fall Spring Fall & Spring

G. **COURSE DESCRIPTION:**

This course is meant for new programmers, regardless of language, who are not familiar with the concepts of Object Oriented Programming. This course begins with the fundamentals of basic programming using Python, including data types, logic flow control, conditions, loops, file I/O, functions, classes and objects. It explores game-related concerns such as the game loop, rules, and game object design and implementation. Other topics include an overview of programming language principles, simple analysis of algorithms and extensive bugtesting.

- H. **PRE-REQUISITES:** None Yes If yes, list below:

GAME110

CO-REQUISITES: None Yes If yes, list below:

I. STUDENT LEARNING OUTCOMES: (see key below)

By the end of this course, the student will be able to:

<u>Course Student Learning Outcome</u> <u>[SLO]</u>	<u>Program Student Learning Outcome</u> <u>[PSLO]</u>	<u>GER</u> <i>[If Applicable]</i>	<u>ISLO & SUBSETS</u>	
Use raycasting to detect object collision.	<p>PSLO1 - Present working prototypes and listen to, analyze and evaluate, and respond critically to the ideas of others.</p> <p>PSLO5 - Synthesize trends, theories, movements and advancements in technology in the development of new ideas.</p> <p>PSLO8- Demonstrate an understanding of recent principles of game design, including, programming, narrative, character and level design.</p>		5- Industry, Professional, Discipline Specific Knowledge and Skills	
Follow a rule-based movement system to navigate a character through a maze.	<p>PSLO1 - Present working prototypes and listen to, analyze and evaluate, and respond critically to the ideas of others.</p> <p>PSLO5 - Synthesize trends, theories, movements and advancements in technology in the development of new ideas.</p> <p>PSLO8- Demonstrate an understanding of recent principles of game design, including, programming, narrative, character and level design.</p>		5- Industry, Professional, Discipline Specific Knowledge and Skills	

<p>Manipulate a camera in-game.</p>	<p>PSLO1 - Present working prototypes and listen to, analyze and evaluate, and respond critically to the ideas of others.</p> <p>PSLO5 - Synthesize trends, theories, movements and advancements in technology in the development of new ideas.</p> <p>PSLO8- Demonstrate an understanding of recent principles of game design, including, programming, narrative, character and level design.</p>		<p>5- Industry, Professional, Discipline Specific Knowledge and Skills</p>	
<p>Read and write data.</p>	<p>PSLO1 - Present working prototypes and listen to, analyze and evaluate, and respond critically to the ideas of others.</p> <p>PSLO5 - Synthesize trends, theories, movements and advancements in technology in the development of new ideas.</p> <p>PSLO8- Demonstrate an understanding of recent principles of game design, including, programming, narrative, character and level design.</p>		<p>5- Industry, Professional, Discipline Specific Knowledge and Skills</p>	
<p>Develop at least three games of light complexity, following a tutorial, and extending the exercise further by adding additional mechanics.</p>	<p>PSLO2 - Research, organize, evaluate, and document gathered information for a comprehensive examination of the design process and manage a professional game design, development, and production workflow, including development roles and the specific skill sets required by each role, in order to develop a successful career path.</p>		<p>5- Industry, Professional, Discipline Specific Knowledge and Skills</p>	

	PSLO3 - Students will explore, evaluate, and analyze assigned projects through group critique.			
Design and develop a game of light complexity using entirely native code, working individually.	PSLO2 - Research, organize, evaluate, and document gathered information for a comprehensive examination of the design process and manage a professional game design, development, and production workflow, including development roles and the specific skill sets required by each role, in order to develop a successful career path. PSLO3 - Students will explore, evaluate, and analyze assigned projects through group critique.		5- Industry, Professional, Discipline Specific Knowledge and Skills	
Give and accept criticism of game concepts.	PSLO2 - Research, organize, evaluate, and document gathered information for a comprehensive examination of the design process and manage a professional game design, development, and production workflow, including development roles and the specific skill sets required by each role, in order to develop a successful career path. PSLO3 - Students will explore, evaluate, and analyze assigned projects through group critique.		2- Critical Thinking 4- Social Responsibility	PS T

KEY	<u>Institutional Student Learning Outcomes [ISLO 1 – 5]</u>
ISLO #	ISLO & Subsets
1	Communication Skills Oral [O], Written [W]
2	Critical Thinking <i>Critical Analysis [CA] , Inquiry & Analysis [IA] , Problem Solving [PS]</i>
3	Foundational Skills <i>Information Management [IM], Quantitative Lit./Reasoning [QTR]</i>
4	Social Responsibility <i>Ethical Reasoning [ER], Global Learning [GL], Intercultural Knowledge [IK], Teamwork [T]</i>
5	Industry, Professional, Discipline Specific Knowledge and Skills

*Include program objectives if applicable. Please consult with Program Coordinator

J. **APPLIED LEARNING COMPONENT:** Yes No

If YES, select one or more of the following categories:

- | | |
|---|--|
| <input checked="" type="checkbox"/> Classroom/Lab | <input type="checkbox"/> Civic Engagement |
| <input type="checkbox"/> Internship | <input type="checkbox"/> Creative Works/Senior Project |
| <input type="checkbox"/> Clinical Placement | <input type="checkbox"/> Research |
| <input type="checkbox"/> Practicum | <input type="checkbox"/> Entrepreneurship |
| <input type="checkbox"/> Service Learning | (program, class, project) |
| <input type="checkbox"/> Community Service | |

K. **TEXTS:**

No mandatory texts assigned.

L. **REFERENCES:**

None.

M. **EQUIPMENT:** None Needed: PC and Macintosh Computer Lab with Microsoft Office, Unity, Godot and Adobe Creative Suite installed.

N. **GRADING METHOD:** A-F

O. **SUGGESTED MEASUREMENT CRITERIA/METHODS:**

Project-based evaluations that follow a rubrics that emphasize the skills being taught.
Homework evaluations evaluated on the merit of accuracy.

P. **DETAILED COURSE OUTLINE:**

- I. Programming Fundamentals Review
- II. A tutorial walking through the process of creating a grid-based maze-navigation game where that handles item generation and collection, and avoiding an AI that is racing you to the exit.
- III. A tutorial to build a contemporary platformer game. Students are expected to extend past the lesson to add mechanics based on a menu of possibilities.
- IV. Students design and develop a game of light complexity using entirely native code.
- V. A tutorial to build the framework of a physics-based 2D reflex game, then design and develop their own mechanics to add to it.
- VI. A tutorial to build the framework of a physics-based 2D space shooter, then design and develop their own mechanics to add to it.

Q. **LABORATORY OUTLINE:** None Yes

