

# CSIT 173: GAME PROGRAMMING WITH OPEN GL

---

## 1. Course Information

**Subject**

CSIT - Computer Science/ Information Technology

**Course Number**

173

**School**

Science, Technology, Engineering, Mathematics

**Course Title**

Game Programming With Open GL

## 2. Hours

**Semester Hours**

3.00000

**Lecture**

3

**Lab**

0

**Practicum**

0

## 3. Catalog Description

**For display in the online catalog**

This course will build on the topics learned in a prior object-oriented programming language course to provide both theory and practice in game programming as supported by the graphical structures in the Open Graphic Library (GL). This course will provide students with a comprehensive introductory background in interactive game programming. It will explore programming options not offered in traditional programming courses, thus widening the scope of their knowledge, adding to their diversity in the programming sector and enhancing their opportunities within the field of programming. Open lab time required.

## 4. Requisites

**Prerequisites**

CSIT 163 or CSIT 165

**Corequisites**

None

## 5. Course Type

**Course Fee Code**

3

**Course Type for Perkins Reporting**

vocational (approved for Perkins funding)

## 6. Justification

**Describe the need for this course**

This is a required course in Computer Science AS Degree: Game Development and Design Option and an elective in the Computer Science/Information Technology AAS degree.

## 7. General Education

Will the college submit this course to the statewide General Education Coordinating Committee for approval as a course, which satisfies a general education requirement?

No

If the course does not satisfy a general education requirement, which of the following does it satisfy:

Program-specific requirement

## 8. Consistency with the Vision and Mission Statements, the Academic Master Plan, and the strategic initiatives of the College

Please describe how this course is consistent with Ocean County College's current Vision Statement, Mission Statement, Academic Master Plan, and the strategic initiatives of the College:

Add item	
1	Offer comprehensive educational programs that develop intentional learners of all ages and ensure the full assessment of student learning in these programs. (Mission Statement)
2	Foster educational innovation through effective teaching-learning strategies, designed to develop and nurture intentional learners who are informed and empowered. (Vision Statement)
3	Employ technology and learning outcomes assessment to ensure student success in an increasingly diverse and complex world. (Vision Statement)
4	Prepare students for entrance into the workforce and/or for successful transfer to other educational institutions. (Academic Master Plan)
5	Seek to empower students through the mastery of intellectual and Practical Skills. (Academic Master Plan)
6	Challenge students to transfer information into knowledge and knowledge into action. (Academic Master Plan)

## 9. Related Courses at Other Institutions

### Comparable Courses at NJ Community Colleges

#### Institution

Brookdale CC

#### Course Title

Game Programming I

#### Course Number

COMP275

#### Number of Credits

3

#### Institution

Camden County College

#### Course Title

Game Design and Development II

#### Course Number

CGR200

#### Number of Credits

3

#### Institution

Mercer County CC

#### Course Title

Game Programming I

**Course Number**

GAM145

**Number of Credits**

3

---

**Institution**

Raritan Valley CC

**Course Title**

Programming for Game Developers

**Course Number**

CISY242

**Number of Credits**

3

---

**Institution**

Salem CC

**Course Title**

Introduction to Game Programming

**Course Number**

CGA162

**Number of Credits**

3

---

**Institution**

Union County College

**Course Title**

Game Design and Development II

**Course Number**

GDP210

**Number of Credits**

3

---

**Transferability of Course****Georgian Court University**

Course Code, Title, and Credits	Transfer Catagory	If non-transferable; select status
Elective, 3 credits	Elective	

**Kean University**

Course Code, Title, and Credits	Transfer Catagory	If non-transferable; select status
CPSX1003, CS Elective, 3 credits	Elective	

**Monmouth University**

Course Code, Title, and Credits	Transfer Catagory	If non-transferable; select status
CS001, 100 Level CS Elective, 3 credits	Elective	

**Rowan University**

Course Code, Title, and Credits	Transfer Category	If non-transferable; select status
Elective, 3 credits	Elective	

**Rutgers - New Brunswick, Mason Gross School of the Arts**

Course Code, Title, and Credits	Transfer Category	If non-transferable; select status
		Will not transfer

**Stockton University**

Course Code, Title, and Credits	Transfer Category	If non-transferable; select status
CSISEC, Computer Science and Information Systems Elective, 3 credits	Elective	

**10. Course Learning Outcomes****Learning Outcomes**

Students who successfully complete this course will be able to:	
CLO1	Discuss the applications of computer graphics and how to utilize Application Programming Interfaces (API's) within the Open GL library.
CLO2	Identify the principles and tools of rasterization and apply them to applications within the graphic programming platform.
CLO3	Utilize Open GL and C++ commands, create polygons and spheres; RGB and Indexed color within their program designs; and code two and three dimensional objects utilizing aspect ratios and programming structures.
CLO4	Define and utilize display lists and array objects.
CLO5	Utilize fonts within the GLUT (Graphic Library Utilities) library.
CLO6	Program geometric objects and transformations of those objects such as scale, rotate, and translation (movement).
CLO7	Utilize the matrix operations needed to create geometrical objects within their programs.
CLO8	Utilize frames, N-Tuples, and the coordinate system.
CLO9	Create user interfaces and event driven programs.
CLO10	Utilize perspective; and employ light and color to add appeal and depth to their objects within their program.

**11. Topical Outline**

(include as many themes/skills as needed)

	Major Themes/ Skills	Assignments (Recommended but not limited to)	Assessments (Recommended but not limited to)	Course Learning Outcome(s)
T01	Graphic Systems and Models 1) Applications of Computer Graphics 2) Graphic systems 4) The Human Visual System 5) The Pinhole Camera and Synthetic Camera Model 6) API's (Application Programmer's Interfaces) 7) Graphic Architecture and Rasterization	Lectures, hands on projects	Projects/ Programming	CLO1

T02	Graphic Programming 1) Arrays and Structs 2) Programming Two Dimensional Applications and the Coordinate System 3) The Open GL API 4) Primitives and Attributes 5) Color 6) Viewing 7) Control Functions 8) Polygons and Recursive Programming	Lectures, hands on projects	Projects/ Programming	CLO2, 3, 5, 9
T03	Input and Interaction 1) Input Devices 2) Definition and Execution of Display Lists 3) Programming Event Driven Input 4) Animating and Designing Interactive Programs	Lectures, hands on projects	Projects/ Programming	CLO5-9
T04	Geometric Objects and Transformations 1) Scalars, Points, and Vectors 2) Two and Three Dimensional Primitives 3) Frames and the Coordinate System 4) Modeling a Colored Cube 5) Scaling, Rotating, and Translating 6) Transformations	Lectures, hands on projects	Projects/ Programming	CLO6-9
T05	Viewing 1) Classical and Computer Viewing	Lectures, hands on projects	Projects/ Programming	CLO1-3
T06	Shading 1) Light and Light Sources 2) Color Sources 3) Polygonal Shading 4) Approximating a Sphere by Recursive Subdivision and Sphere Shading	Lectures, hands on projects	Projects/ Programming	CLO7, 9, 10

## 12. Methods of Instruction

In the structuring of this course, what major methods of instruction will be utilized?

Class lecture/discussion, demonstrations, current readings, computer interaction, assignments and programming projects.

## 13. General Education Goals Addressed by this Course (this section is to fulfill state requirements)

Information

---



---



---

**Technological Competency**

Yes

**Related Course Learning Outcome**

All

**Related Outline Component**

All

**Assessment of General Education Goal (Recommended but not limited to)**

**PROJECTS AND PROGRAMS**

---

---

---

---

---

---

---

**14. Needs**

**Instructional Materials (text etc.):**

Appropriate textbooks and/or open educational resources will be selected. Contact the department for current adoptions. Class notes, presentations, software and online materials.\_\_\_\_

**Technology Needs:**

College Portal and/or College Distance Learning Platform and/or Textbook or Instructor Website.

**Human Resource Needs (Presently Employed vs. New Faculty):**

Presently employed

**Facility Needs:**

Laboratory classrooms equipped with computer workstations, each configured to support program development using C++. Podium computer similarly equipped plus the ability to present audio-video presentations to the class.

**15. Grade Determinants**

The final grade in the course will be the cumulative grade based on the following letter grades or their numerical equivalents for the course assignments and examinations

**A: Excellent**

**B+: Very Good**

**B: Good**

**C+: Above Average**

**C: Average**

**D: Below Average**

**F: Failure**

**I: Incomplete**

**R: Audit**

For more detailed information on the Ocean County College grading system, please see Policy #5154.

**16. Board Approval**

**History of Board approval dates**

Revised: December 1990; February 27, 1996; April 30, 1996; December 1998; May 4, 2004; Feb. 28, 200; March 8, 2006

Board of Trustees Approval Date: December 11, 2006

Board of Trustees Approval Date: March 26, 2012

Board of Trustees Approval Date: February 25, 2013

Board of Trustees Approval Date: March 26, 2020

