RARITAN VALLEY COMMUNITY COLLEGE
ACADEMIC COURSE OUTLINE
GDEV 267 – Programming for Game Developers

I. Basic Course Information

A. Course number and Title: GDEV 267 – Programming for Game Developers

B. New or Modified Course: Modified

C. Date of Proposal: Semester: Fall   Year 2018

D. Effective Term: Fall 2019

E. Sponsoring Department: Visual and Performing Arts

F. Semester Credit Hours: 3

G. Weekly Contact Hours: Lecture __2__
                                        Lab __2__
                                        Out of class student work per week: __5__

H. Prerequisites: GDEV 242 – Object Oriented Programming

I. Laboratory Fees: Yes

J. Name and E-Mail Address of Department Chairs and Divisional Dean at time of Approval: John Sichel, john.sichel@raritanval.edu and Vandana Nadkarni, vandana.nadkarni@raritanval.edu, Department Chairs; Patrice Marks, Patrice.marks@raritanval.edu, Divisional Dean

II. Catalog Description

(Prerequisite/s: GDEV 242 – Object Oriented Programming) This course focuses on the varied techniques required in developing prototypes of game play using a modern, professional level game engine, such as Unity, Unreal Engine or similar. Students are taught to quickly develop ideas using computer languages in common use in the game industry and general programming. The course will cover a variety of game styles that include programming and design techniques in 2D and 3D games.

III. Statement of Course Need

        A. It is rare for a game to be written without the aid of middleware, whether that be physics or audio modules or game engines. While the engine is responsible for

reading user input or reporting that frame rendering is below optimal rates, it is the job of the programmer to respond appropriately to the input or to optimize the code or level layout to hit the performance goals for the title under development. This course provides the student with the opportunity to develop a deep understanding of a professional level toolset as well as the background theory to apply this knowledge to other game engines.

B. Lab is necessary for the students to receive instruction in the game engine utilized in the course. Modern game production takes place on a combination of the engine as a 3D creative environment and a programming integrated development environment (IDE). It is important for students to develop fluency with the technology and cognitive flexibility regarding the capabilities of the toolset.

C. This course generally transfers as a computer science program elective

IV. Place of Course in College Curriculum

A. Free Elective
B. This course meets a program requirement for
   a. Game Development AAS
C. This course is a program option in
   a. Interactive Digital Media & Web Development AS Degree
   b. Interactive Digital Media & Web Development AAS Degree
   c. Interactive Digital Media & Web Development Certificate
D. Computer Elective on the Computer and Programming Electives List
E. Programming Elective on the Computer and Programming Electives List
F. To see course transferability: a) for New Jersey schools, go to the NJ Transfer website, www.njtransfer.org; b) for all other colleges and universities, go to the individual websites.

V. Outline of Course Content

This course explores the following topics:

A. Fundamentals of the game engine of instruction
B. Fundamentals of the primary programing language for the game engine of instruction
C. Core game object classes, properties and methods
D. Gameplay scripting for different game genres
E. Designing and programming user interface models of computer, tablet and other display devices
F. Use of physics simulation for game play
G. Programmatic principles of real time animation
H. Use of state machines to manage game object transitions
I. Materials, Shaders, textures, normal maps and environment maps

J. Processing external data files to define game objects and screen layout
K. Using graphics profilers to determine where lag is occurring in the rendering process
L. Topics within current state of art in game development

VI. Educational Goals and Learning Outcomes

A. General Education Learning Outcomes:

After completion of this course, the student will be able to:

1. Apply creativity to problem solving; decision making; and quantitative reasoning (GE-NJ2)

B. Course Learning Outcomes:

At the conclusion of the course, students will be able to:

1. Create a game prototype using the game engine of instruction
2. Demonstrate the use of the main game objects under the language of instruction
3. Modify existing scripts and write new scripts implementing changes to gameplay features, rendering and user interface

C. Assessment Instruments:

1. laboratory products
2. demonstrations
3. journals
4. portfolios
5. computer programs
6. tests

VII. Grade Determinants

A. Homework - The student will complete homework assignments throughout the semester. The assignments will relate to the topics currently being discussed in class.
B. Tests - Test questions will be multiple choice, short answer, and coding.
C. Game Project – Students will design a game prototype using the game engine of instruction

Given the goals and outcomes described above, LIST the primary formats, modes, and methods for teaching and learning that may be used in the course:

A. lecture/discussion
B. small-group work
C. guest speakers
D. laboratory
E. student collaboration
F. independent study

VIII. Texts and Materials

Suggested Textbooks

A. Gibson-Bond, Jeremy, Introduction to Game Design, Prototyping, and Development: From Concept to Playable Game with Unity and C#, Addison-Wesley Professional 2014

(Please Note: The course outline is intended only as a guide to course content and resources. Do not purchase textbooks based on this outline. The RVCC Bookstore is the sole resource for the most up-to-date information about textbooks.)

IX. Resources

A. Computer Lab for classroom instruction and exercises
B. Technology Support
   a. A continuously updated license of game engine of instruction
   b. An appropriate programming IDE for the game engine of instruction
   c. Adobe Creative Cloud or CS6
   d. Desktop application for git/SCM