GLASSBORO SCHOOL DISTRICT

Updated 2/1/05

Monthly Board Items

Date Submitted:	Proposed Effective Date:	Grade(s) impacted:
3.21.19	**2019-2020**	**9-12**

Name:	Position/Item:	Submitted By:	Building:
Dr. Danielle F. Sneathen	**Computer Game Design & Development**	**Dr. Danielle F. Sneathen**	**GHS**

Proposed cost/amount:	Funded through:	Hours/Days per wk:	Benefits: Y or N (circle one)
None			

Is candidate currently employed by District:
_____No _____Yes

(if yes, what position)
If yes, part time or **full time** (circle one)

Is candidate a former employee:
___ No ___ Yes

Check references/review district personnel file?
_____ No _____Yes

Board Action Requested: I am requesting that a new course be approved to be offered in the GHS Business Department as an elective option named Computer Game Design & Development for the 2019-20 school year.

Details and ramifications:
All training and curriculum materials are currently being used in the Intro to Computer Programming class, which will no longer be offered, as it has been replaced with AP Computer Science which was awarded in a grant from Amazon.

Positives:
This allows us to follow the new state law requiring all schools to offer a course in Computer Science. Offering this course will allow for all general education/college prep level students to be provided with and be exposed to a Computer Science course.

Concerns:

Other Comments:.

FOR OFFICE USE ONLY:

Board Date: _____ Approved: Y or N Index #: _____

COURSE NAME: Computer Game Design & Development
LENGTH: 1 Semester

SCOPE AND SEQUENCE

The course will provide instruction in six critical areas:

1. Technical skills related to software development, computer programming & graphic design
2. Creative, innovative & critical thinking
3. Communication and collaboration as an individual and part of a team
4. Using appropriate and accessible digital tools for research and learning
5. Using engineering, physics & mathematical concepts critical to game development
6. Post-secondary and career options & resources related to STEM

1. **Technical Skills**
   a. Programming through a drag-n-drop method
   b. Programming by writing code using GML
   c. Follow technical and increasingly complex programming instructions in order and detail
   d. Program original game projects
   e. Use digital design resources and color theory to draw and animate sprites, objects, platforms, backgrounds and loops
   f. Become familiar and competent in using game engines (Game Maker); open files, save files, create and program original material, integrate separate files into a final game project, create and edit audio sound effects and music
   g. Technical writing; user instructions, game directions, game rules and document development process within a development team
2. **Creative, Innovative & Critical Thinking**
   a. Learn about the engineering design cycle (discover-evaluate, design-evaluate, develop-evaluate, deliver-evaluate) and how it works as a practical problem solving method
   b. Use gained technical skills to improve game programs
   c. Used gained technical skills to create, design & program original working games
   d. Troubleshoot existing game programs to fix bugs and ensure performance
   e. Test fellow classmate's games to ensure performance
   f. Perform self-evaluations of projects against the required established directives
   g. Perform evaluations of classmate's projects against the required directives
   h. Develop a marketing plan for original programmed game to include: target audience, current competition, delivery options, product pricing, logo design and strategy to spend budgeted funds
3. **Communication & Collaboration**
   a. Form game development groups to achieve directive of creating original game
   b. Assign tasks to members of development group to achieve directive of creating an original game

c. Use the engineering design cycle within the development team to achieve directive of original game
d. Project management; students will have an opportunity to lead a development team, assign tasks, evaluate progress, facilitate communication among members and ensure that project is completed within time deadline
e. Conduct two in-class presentations including demonstration of original game

4. **Using Digital Research Tools**
   a. Use appropriate internet websites to gather and analyze research on a variety of subjects including: game development, marketing statistics, color and design theory, post-secondary education options and careers in game development & technology
   b. Use appropriate wiki's and blogs to engage other (distance) users of Game Maker for research, ideas and help
5. **Engineering, Physics & Math**
   a. Learn how the process used in designing and developing software can be applied to other design and development projects like bridges, buildings and machines
   b. Learn how basic physics concepts like gravity, acceleration, velocity, speed, trajectory, Newton's Laws of Motion, force & elasticity are used in game development
   c. Use required mathematical techniques to perform physics calculations in determining how physics is used in gaming compared to the real world
   d. Use knowledge of math & physics to evaluate behavior in games in the "virtual world" as compared to the "real world"
6. **Further Career, STEM & Post-secondary Education Options**
   a. Research how technical & communication skills used in game design translate to other technology industries and businesses
   b. Research required post-secondary diplomas, certificates & degrees needed to gain employment in game development and other technology based industries
   c. Research career trends, wage data and employment opportunities in game development and technology based industries

Unit 1: We will

- Learn about why games are important and how gaming skills translate to the "real world"
- Learn about color & design techniques
- Learn how & why game development teams are formed
- Technical Skills
  - Programming through a drag-n-drop method
  - Programming by writing code using GML
  - Follow technical and increasingly complex programming instructions in order and detail
  - Program original game projects
  - Use digital design resources and color theory to draw and animate sprites, objects, platforms, backgrounds and loops
  - Become familiar and competent in using game engines (Game Maker); open files, save files, create and program original material, integrate separate files into a final game project, create and edit audio sound effects and music

- Technical writing: user instructions, game directions, game rules and document development process within a development team

Unit 2: We will

- Learn about the engineering cycle used by game development teams to problem solve
- Learn about the different jobs and skills used in a game development team
- Learn how physics & math are very important in designing a good game

Unit 3: We will

- Learn about Game Maker software
- Learn about different programming languages and techniques
- Build off of our knowledge of "What makes a good game" and use Game Maker to design and program actual working games
- Learn how important engineering, science and math skills are in game development

Unit 4: We will

- Put all of our learned game design skills into an original project
- Form game development teams
- Design an original game
- Create a marketing plan for your game
- Present your game and plan to the class
- Take a course feedback survey