



## **Game Development II**

### **Course Description**

This course provides an extension to the concepts covered in Game Development I, and will introduce students to 3D video game design, theory, development, and programming. Emphasis is placed on understanding and analyzing industry roles, 3D game genres, 3D game play, 3D art design, playability, storytelling, rule dynamics in a 3D world and what makes quality game. The course includes an introduction to 3D modeling, 3D Animation, coding in Python, 3D physics and creating a 3D game. Topics include geometric transformation, 3D object models, understanding what makes up a mesh, texturing, lighting, animation, creating physics, and creating interactivity in a 3D world.

## Game Development II

Pacing Guide		
Unit	Topic	Suggested Timing
Unit 1	Game Development I Review, with a Focus on 2D vs. 3D	approx. 7 weeks
Unit 2	Coding with Python	approx. 9 weeks
Unit 3	Concept and Preproduction Stages of Creating a 3D Game	approx. 10 weeks
Unit 4	Production, Postproduction, and Distribution Stages of Creating a 3D Game	approx. 10 weeks

## Educational Technology Standards

8.1.12.A.2, 8.1.12.B.2, 8.1.12.D.1, 8.1.12.D.1, 8.1.12.F.1

### ➤ Technology Operations and Concepts

- Collaborate in online courses, learning communities, social networks or virtual worlds to discuss a resolution to a problem or issue.  
**Example form unit:** Students will learn python through an online course called Code Combat.

### ➤ Creativity and Innovation

- Apply previous content knowledge by creating and piloting a digital learning game or tutorial.  
**Example form unit:** Code Combat is a online learning Game used to teach python coding.
- Analyze the capabilities and limitations of current and emerging technology resources and assess their potential to address personal, social, lifelong learning, and career needs.  
**Example form unit:** Students need to understand system limitations to effectively make use of online course.

### ➤ Critical Thinking, Problem Solving, Decision Making

- Evaluate the strengths and limitations of emerging technologies and their impact on educational, career, personal and or social needs.  
**Example form unit:** Python coding requires many hours of problem solving to ensure proper coding results

## Career Ready Practices

*Career Ready Practices describe the career-ready skills that all educators in all content areas should seek to develop in their students. They are practices that have been linked to increase college, career, and life success. Career Ready Practices should be taught and reinforced in all career exploration and preparation programs with increasingly higher levels of complexity and expectation as a student advances through a program of study.*

### **CRP2. Apply appropriate academic and technical skills.**

Career-ready individuals readily access and use the knowledge and skills acquired through experience and education to be more productive. They make connections between abstract concepts with real-world applications, and they make correct insights about when it is appropriate to apply the use of an academic skill in a workplace situation.

**Example form unit:** Students will be writing pseudo-code and python in this unit.

### **CRP4. Communicate clearly and effectively and with reason.**

Career-ready individuals communicate thoughts, ideas, and action plans with clarity, whether using written, verbal, and/or visual methods. They communicate in the workplace with clarity and purpose to make maximum use of their own and others' time. They are excellent writers; they master conventions, word choice, and organization, and use effective tone and presentation skills to articulate ideas. They are skilled at interacting with others; they are active listeners and speak clearly and with purpose. Career-ready individuals think about the audience for their communication and prepare accordingly to ensure the desired outcome.

**Example form unit:** Addressing coding issues requires students to communicate bugs and problems with clarity so that the teacher can effectively assist with problems solving.

### **CRP7. Employ valid and reliable research strategies.**

Career-ready individuals are discerning in accepting and using new information to make decisions, change practices or inform strategies. They use reliable research process to search for new information. They evaluate the validity of sources when considering the use and adoption of external information or practices in their workplace situation.

**Example form unit:** Students are encouraged to find solutions with coding problems online.

### **CRP8. Utilize critical thinking to make sense of problems and persevere in solving them.**

Career-ready individuals readily recognize problems in the workplace, understand the nature of the problem, and devise effective

## Career Ready Practices

plans to solve the problem. They are aware of problems when they occur and take action quickly to address the problem; they thoughtfully investigate the root cause of the problem prior to introducing solutions. They carefully consider the options to solve the problem. Once a solution is agreed upon, they follow through to ensure the problem is solved, whether through their own actions or the actions of others.

**Example form unit:** Coding requires constant problems solving as students attempt to fix issues found in bad codes.

### **CRP11. Use technology to enhance productivity.**

Career-ready individuals find and maximize the productive value of existing and new technology to accomplish workplace tasks and solve workplace problems. They are flexible and adaptive in acquiring new technology. They are proficient with ubiquitous technology applications. They understand the inherent risks-personal and organizational-of technology applications, and they take actions to prevent or mitigate these risks.

**Example form unit:** Python comes with assist technology embedded to help streamline the coding process

## Differentiated Instruction

### Strategies to Accommodate Students Based on Individual Needs

<u>Time/General</u>	<u>Processing</u>	<u>Comprehension</u>	<u>Recall</u>
<ul style="list-style-type: none"> <li>• Extra time for assigned tasks</li> <li>• Adjust length of assignment</li> <li>• Timeline with due dates for reports and projects</li> <li>• Communication system between home and school</li> <li>• Provide lecture notes/assignments, and tutorials outline</li> </ul>	<ul style="list-style-type: none"> <li>• Extra Response time</li> <li>• Have students verbalize steps</li> <li>• Repeat, clarify or reword directions</li> <li>• Mini-breaks between tasks</li> <li>• Provide a warning for transitions</li> <li>• Video lessons online</li> </ul>	<ul style="list-style-type: none"> <li>• Precise step-by-step directions</li> <li>• Short manageable tasks</li> <li>• Brief and concrete directions</li> <li>• Provide immediate feedback</li> <li>• Small group instruction</li> <li>• Emphasize multi-sensory learning</li> </ul>	<ul style="list-style-type: none"> <li>• Teacher-made checklist</li> <li>• Use visual graphic organizers</li> <li>• Reference resources to promote independence</li> <li>• Visual and verbal reminders</li> <li>• Graphic organizers</li> </ul>
<u>Assistive Technology</u>	<u>Tests/Quizzes/Grading</u>	<u>Behavior/Attention</u>	<u>Organization</u>
<ul style="list-style-type: none"> <li>• Computer/whiteboard</li> <li>• Video lesson</li> <li>• Spell-checker</li> <li>• Text speech software</li> </ul>	<ul style="list-style-type: none"> <li>• Adjusted rubrics for projects</li> <li>• Study guides</li> <li>• Shortened tests</li> <li>• Read directions aloud</li> </ul>	<ul style="list-style-type: none"> <li>• Consistent daily structured routine</li> <li>• Simple and clear classroom rules</li> <li>• Frequent feedback</li> </ul>	<ul style="list-style-type: none"> <li>• Individual daily planner</li> <li>• Display a written agenda</li> <li>• Note-taking assistance</li> <li>• Color code materials</li> </ul>

## **Differentiated Instruction**

### **Strategies to Accommodate Students Based on Content-Specific Needs**

- Extra time for assigned tasks
- Adjust length of assignment
- Timeline with due dates for reports and projects
- Communication system between home and school
- Small group instruction



## Enrichment

### **Strategies Used to Accommodate Based on Students Individual Needs:**

- Adaption of Material and Requirements
- Evaluate Vocabulary
- Elevated Text Complexity
- Elevated Projects Rubrics
- Independent Written and Video Online Tutorials
- Projects completed individual or with Partners
- Self Selection of Research
- Tiered/Multilevel Activities
- Online Learning Communities
- Individual Response Board
- Independent Book Studies
- Open-ended activities
- Community/Subject expert mentorships

## Assessments

### Suggested Formative/Summative Classroom Assessments

- Storyboards
- Teacher-created Unit Assessments, Topic Assessments, Quizzes
- Teacher-created DBQs, Essays, Short Answer
- Accountable Talk, Debate, Oral Report, Role Playing, Think Pair, and Share
- Projects, Portfolio, Presentations, Prezi, Gallery Walks
- Homework
- Concept Mapping
- Primary and Secondary Source analysis
- Photo, Video, Political Cartoon, Radio, Game Analysis
- Create an Original Song, Animation, Board Game
- Game salad Video Tutorials
- Khan Academy intro to coding.

## Interdisciplinary Connections

### English Language Arts

- Close reading of the music industry-related content. (NJSLSA.R1)
- Write professional level game review. (NJSLSA.W2)

### Social Studies

- Research the history of art in 2D video games. (6.1.12)
- Use historical references to develop original 2D Graphics. (6.2.12)

### World Language

- Translate graphic design content (7.1.ILA)
- Create a translated index of graphic design vocabulary (7.1.ILA)

### Math

- Create objects and shapes using X and Y coordinates and pixels for lengthen and width (G-CO)
- Assign variables and values for the variables to use in java script. (G-CO)

### Fine & Performing Arts

- Create original graphics (landscapes, menus, characters etc.) for use in a 2D game. (1.2.12)
- Design 2D images that appear 3D. 1.2.12)

### Science

- Research latest developments in audio industry technology (HS-ETS1-4)
- Investigate applicable-careers in java script coding. 9.2.12)

## New Jersey Student Learning Standards

### 8.2 Technology

#### TECHNOLOGY AND SOCIETY

- 8.2.12.B.1 Research and analyze the impact of the design constraints (specifications and limits) for a product or technology driven by a cultural, social, economic or political need and publish for review.

#### COMPUTATIONAL THINKING: PROGRAMMING:

- 8.2.12.E.4 Use appropriate terms in conversation (e.g., troubleshooting, peripherals, diagnostic software, GUI, abstraction, variables, data types and conditional statements)

### 9.1 Personal Financial Literacy

- 9.1.12.E.4: Evaluate how media, bias, purpose, and validity affect the prioritization of consumer decisions and spending.

### 9.3– Career and Technical Education

#### CAREER CLUSTER: ARTS, A/V TECHNOLOGY & COMMUNICATIONS (AR)

- 9.3.12.AR.1: Analyze the interdependence of the technical and artistic elements of various careers within the Arts, A/V Technology & Communications Career Cluster.
- 9.3.12.AR.3: Analyze the lifestyle implications and physical demands required in the arts, audio/visual technology and communications workplace.

- 9.3.12.AR.4: Analyze the legal and ethical responsibilities required in the arts, audio/visual technology and communications workplace.
- 9.3.12.AR.5: Describe the career opportunities and means to achieve those opportunities in each of the Arts, A/V Technology & Communications Career Pathways.
- 9.3.12.AR.6: Evaluate technological advancements and tools that are essential to occupations within the Arts, A/V Technology & Communications Career Cluster.

### **PATHWAY: VISUAL ARTS (AR-VIS)**

- 9.3.12.AR-VIS.2 Analyze how the application of visual arts elements and principles of design communicate and express ideas.
- 9.3.12.AR-VIS.3: Analyze and create two and three-dimensional visual art forms using various media.

### **INFORMATION TECHNOLOGY CAREER CLUSTER**

- 9.3.IT.3: Demonstrate the use of cross-functional teams in achieving IT project goals.
- 9.3.IT.6: Describe trends in emerging and evolving computer technologies and their influence on IT practices.

### **PATHWAY: INFORMATION SUPPORT & SERVICES (IT-SUP)**

- 9.3.IT-SUP.2: Manage operating systems and software applications, including maintenance of upgrades, patches and service packs.
- 9.3.IT-SUP.3: Apply appropriate troubleshooting techniques in resolving computer hardware, software and configuration problems.

### **CAREER CLUSTER : SCIENCE, TECHNOLOGY, ENGINEERING & MATHEMATICS (ST)**

- 9.3.ST.5: Demonstrate an understanding of the breadth of career opportunities and means to those opportunities in each of the Science, Technology, Engineering & Mathematics Career Pathways.
- 9.3.ST.6: Demonstrate technical skills needed in a chosen STEM field.

**PATHWAY: ENGINEERING & TECHNOLOGY CAREER PATHWAY (ST-ET)**

- 9.3.ST-ET.3: Apply processes and concepts for the use of technological tools in STEM.

## Common Career Technical Core (CCTC)

### Career Pathway: Design/Pre-Construction

AC-DES 7 - Employ appropriate representational media to communicate concepts and design.

- AC-DES 7.1 - Convey graphic information using multi-dimensional drawings.
- AC-DES 7.2 - Build models using referenced drawings and sketches.
- AC-DES 7.3 - Utilize computer technology when communicating concepts and designs.

### Arts, A/V Technology & Communications Career Cluster (AR)

AR 1– Analyze the interdependence of the technical and artistic elements of various careers within the Arts, A/V Technology & Communications Career Cluster.

- AR 1.1 Summarize the features of the partnership that technology and the arts have in developing presentations and productions.
- AR 01.4 – State how various Career Pathways within the cluster work together to generate productions, media and other activities.

AR 05 – Describe the career opportunities and means to achieve those opportunities in each of the Arts, A/V Technology & Communications Career Pathways.

- AR 05.1 – Locate career opportunities that appeal to personal career goals.
- AR 05.2 – Match personal interests and aptitudes to selected careers.
- AR 05.4 – Identify pathways with common knowledge and skills that provide a worker with the potential for mobility.

AR 06 - Evaluate technological advancements and tools that are essential to occupations within the Arts, A/V Technology & Communications Career Cluster.

- AR 06.1 – Research the impact of potential new technological advancements related to this cluster in the future.
- AR 06.2 – Analyze the technological systems that are apparent within the various pathways in this cluster.

AR VIS 1 - Analyze how the application of visual arts elements and principles of design communicate and express ideas.

- AR VIS 01.5 – Analyze the development of tools and technologies employed in the visual arts.

AR VIS 3 - Analyze and create two- and three-dimensional art forms using various media.

- AR VIS 03.4 – Analyze art elements and principles of three-dimensional forms of visual art in various media.

## **Information Technology Career Cluster (IT)**

IT 02 - Use product or service design processes and guidelines to produce a quality information technology (IT) product or service.

- IT 1.1 Summarize the process of IT product/service design.
- IT 1.2 Identify and implement new products/services.

IT 06 - Describe trends in emerging and evolving computer technologies and their influence on IT practices.

- IT 06. - 1. Identify new IT technologies.

IT 07 - Perform standard computer backup and restore procedures to protect IT information.

- IT 07.1 – Explain the need for regular backup procedures.
- IT 07.2 – Configure, perform and maintain backup procedures.

IT WD 04 - Demonstrate the effective use of tools for digital communication production, development and project management.

- IT WD 04.1 - Select and use appropriate software tools.



## Common Core State Standards (CCSS)

### CCSS - English-Language Arts

#### Range of Writing:

- CCSS.ELA-LITERACY.W.11-12.10 Write routinely over extended time frames (time for research, reflection, and revision) and shorter time frames (a single sitting or a day or two) for a range of tasks, purposes, and audiences.

#### Comprehension and Collaboration:

- CCSS.ELA-LITERACY.SL.12.1a. Come to discussions prepared, having read material under study; explicitly draw on that preparation by referring to evidence from texts on the topic or issue to stimulate a thoughtful, well- reasoned exchange of ideas

#### Craft and Structure:

- CCSS.ELA-LITERACY.RI.12.4 Determine the meaning of words and phrases as they are used in a text, including figurative, connotative, and technical meanings.

#### Research to Build and Present Knowledge:

- CCSS.ELA-LITERACY.W.12.9b. Draw evidence from informational texts to support analysis, reflection, and research; apply *grade 12 Reading standards* to literary nonfiction

## Common Core State Standards (CCSS)

### CCSS - Mathematics

#### Extending to Three Dimensions:

- CCSS.MATH.CONTENT.HSS.G.MG.14 Solve design problems using geometric methods.
- CCSS.MATH.PRACTICE.MP1 Make sense of problems and persevere in solving them.
- CCSS.Math.Practice.MP2 Reason abstractly and quantitatively.
- CCSS.Math.Practice.MP4 Model with mathematics.
- CCSS.MATH.PRACTICE.MP6 Attend to precision.
- CCSS.Math.Practice.MP7 Look for and make use of structure.
- CCSS.Math.Practice.MP8 Look for and express regularity in repeated reasoning.

#### Congruence, Proof, and Construction:

- CCSS.MATH.CONTENT.HSS.G.CO.2, G.CO.3, G.CO.4, G.CO.5 Develop and perform rigid transformations that include reflections, rotations, translations and dilations using geometric software, graph paper, tracing paper, and geometric tools and compare them to non-rigid transformations.

<p><b>Course:</b> Game Development II  <b>Unit:</b> 2 - Coding with Python  <b>Grade Level:</b> 10-12</p>	<p><b>Unit Overview:</b> Students will be introduced to writing code in the Python language. They will learn and utilize Basic Syntax, Arguments, Strings, While Loops, Variables, Algorithms, If Statements, Functions, Parameters, Advanced Strings, Basic Input Handling, Basic Game AI, and Create a playable a game project.</p>
<p><b>New Jersey Student Learning Standards (NJSLS):</b> 8.2.12.B.1, 8.2.12.E.4, 9.1.12.E.4, 9.3.12.AR.1, 9.3.12.AR.3, 9.3.12.AR.4, 9.3.12.AR.5, 9.3.12.AR.6, 9.3.12.AR-VIS.2, 9.3.12.AR-VIS.3, 9.3.IT.3, 9.3.IT.6, 9.3.IT-SUP.2, 9.3.IT-SUP.3, 9.3.ST.5, 9.3.ST.6, 9.3.ST-ET.3</p>	
<p><b>Common Career Technical Core (CCTC):</b> AC-DES.7.1, AC-DES.7.2, AC-DES.7.3, AR 1.1, AR 1.4, AR 05.1, AR 05.2, AR 05.4, AR 06.1, AR 06.2, AR VIS 01.5, AR VIS 03.1, AR VIS 03.3, AR VIS 03.4, IT 06-1, IT 07.1, IT 07.2, IT WD 04.1</p>	
<p><b>Common Core State Standards (CCSS):</b> CCSS.ELA-LITERACY.W.11-12.10, CCSS.ELA-LITERACY. SL.12.1a, CCSS.ELA-LITERACY. RI.12.4, CCSS.ELA-LITERACY. W.12.9b, CCSS.MATH.CONTENT.HSS.G.MG.14 CCSS.MATH.PRACTICE.MP1, CCSS.Math.Practice.MP2, CCSS.Math.Practice.MP4, CCSS.MATH.PRACTICE.MP6, CCSS.Math.Practice.MP7, CCSS.Math.Practice.MP8, CCSS.MATH.CONTENT.HSS. G.CO.2, G.CO.3, G.CO.4, G.CO.5</p>	

Student Learning Objectives (SLOs)	Essential Questions	Skills & Indicators	Sample Activities	Resources
<p>Understand and utilize basic syntax and arguments in the python language.</p> <p><b>NJSLS:</b> 8.2.12.B.1, 8.2.12.E.4, 9.1.12.E.4, 9.3.12.AR.1, 9.3.12.AR.3, 9.3.12.AR.4, 9.3.12.AR.5,</p>	<p>Why is syntax important?</p> <p>Does order matter?</p> <p>Can a human understand the directions even if there's a mistake in the syntax,?</p>	<ul style="list-style-type: none"> <li>▪ Use Python syntax</li> <li>▪ Call functions</li> <li>▪ Understand that order matters</li> <li>▪ Create pseudo-code.</li> <li>▪ Translate pseudo-code to actual code.</li> <li>▪ Create basic</li> </ul>	<p><b>Student Robot.</b>                      The Class is given a list of command lines to choose from. A student volunteers to be a robot that can only carry out the commands from the list. The class' job is to get the robot to</p>	<p><b>Dungeons Of Kithgard</b>  <a href="https://codecombat.com/play/level/dungeons-of-kithgard?course=560f1a9f22961295f9427742&amp;codeLanguage=python">https://codecombat.com/play/level/dungeons-of-kithgard?course=560f1a9f22961295f9427742&amp;codeLanguage=python</a></p> <p><b>Shadow Guard</b></p>

<p>9.3.12.AR.6, 9.3.12.AR-VIS.2, 9.3.12.AR-VIS.3, 9.3.IT.3, 9.3.IT.6, 9.3.IT-SUP.2, 9.3.IT-SUP.3, 9.3.ST.5, 9.3.ST.6, 9.3.ST-ET.3</p> <p><b>CCTC:</b> AC-DES.7.1, AC-DES.7.2, AC-DES.7.3, AR 1.1, AR 1.4, AR 05.1, AR 05.2, AR 05.4, AR 06.1, AR 06.2, AR VIS 01.5, AR VIS 03.1, AR VIS 03.3, AR VIS 03.4, IT 06-1, IT 07.1, IT 07.2, IT WD 04.1</p> <p><b>CCSS:</b> CCSS.ELA-LITERACY.W.11-12.10, CCSS.ELA-LITERACY.SL.12.1a, CCSS.ELA-LITERACY.RI.12.4, CCSS.ELA-LITERACY.W.12.9b, CCSS.MATH.CONTENT.HSS.G.MG.14, CCSS.MATH.PRACTICE.MP1, CCSS.Math.Practice.MP2, CCSS.Math.Practice.MP, CCSS.MATH.PRACTICE.MP6, CCSS.Math.Practice</p>	<p>Can a computer?</p>	<p>commands</p>	<p>successfully navigate the class.</p> <p><b>Pseudo Code</b> Students write commands in basic English as a rough draft for coding. Then translate the English to Python language.</p>	<p><a href="https://codecombat.com/play/level/shadow-guard?course=560f1a9f22961295f9427742&amp;codeLanguage=python">https://codecombat.com/play/level/shadow-guard?course=560f1a9f22961295f9427742&amp;codeLanguage=python</a></p> <p><b>Enemy Mine</b> <a href="https://codecombat.com/play/level/enemy-mine?course=560f1a9f22961295f9427742&amp;codeLanguage=python">https://codecombat.com/play/level/enemy-mine?course=560f1a9f22961295f9427742&amp;codeLanguage=python</a></p>
---	------------------------	-----------------	--	---

<p>.MP7,CCSS.Math.Practic e.MP8,CCSS.MATH.CO NTENT.HSS. G.CO.2, G.CO.3, G.CO.4, G.CO.5</p>				
<p>Understand and utilize While Loops, in the python language.</p> <p><b>NJSLS:</b> 8.2.12.B.1, 8.2.12.E.4, 9.1.12.E.4, 9.3.12.AR.1, 9.3.12.AR.3, 9.3.12.AR.4, 9.3.12.AR.5, 9.3.12.AR.6, 9.3.12.AR- VIS.2, 9.3.12.AR-VIS.3, 9.3.IT.3, 9.3.IT.6, 9.3.IT- SUP.2, 9.3.IT-SUP.3, 9.3.ST.5, 9.3.ST.6, 9.3.ST-ET.3</p> <p><b>CCTC:</b> AC-DES.7.1, AC- DES.7.2, AC-DES.7.3, AR 1.1, AR 1.4, AR 05.1, AR 05.2, AR 05.4, AR 06.1, AR 06.2, AR VIS 01.5, AR VIS 03.1, AR VIS 03.3, AR VIS 03.4, IT 06-1, IT 07.1, IT 07.2, IT WD 04.1</p>	<p>What is a loop?</p> <p>What is an expression?</p> <p>How do you write a loop that never ends?</p>	<ul style="list-style-type: none"> <li>▪ Understand what a loop is.</li> <li>▪ Understand what is an Infinite loop.</li> <li>▪ Compare and contrast loops and infinite loops.</li> <li>▪ Write an infinite loop.</li> <li>▪ Decimate a larger problem into a group of smaller ones.</li> <li>▪ Make educated choices on what command lines should be repeated.</li> <li>▪ Achieve only as much action needed with as few lines of code as possible.</li> </ul>	<p><b><u>Code Combat – Introduction to Computer Science levels 1-5</u></b></p> <p><b><u>Code Combat – Introduction to Computer Science levels 6-10</u></b></p> <p><b><u>Code Combat – Introduction to Computer Science levels 11-15</u></b></p>	<p><b><u>True Names</u></b> <a href="https://codecombat.com/play/level/true-names?course=560f1a9f22961295f9427742&amp;codeLanguage=python">https://codecombat.com/play/level/true-names?course=560f1a9f22961295f9427742&amp;codeLanguage=python</a></p> <p><b><u>Fire Dancing</u></b> <a href="https://codecombat.com/play/level/fire-dancing?course=560f1a9f22961295f9427742&amp;codeLanguage=python">https://codecombat.com/play/level/fire-dancing?course=560f1a9f22961295f9427742&amp;codeLanguage=python</a></p> <p><b><u>Loop Da Loop</u></b> <a href="https://codecombat.com/play/level/loop-da-loop?course=560f1a9f22961295f9427742&amp;codeLanguage=python">https://codecombat.com/play/level/loop-da-loop?course=560f1a9f22961295f9427742&amp;codeLanguage=python</a></p>

<p><b>CCSS:</b> CCSS.ELA-LITERACY.W.11-12.10, CCSS.ELA-LITERACY.SL.12.1a, CCSS.ELA-LITERACY.RI.12.4, CCSS.ELA-LITERACY.W.12.9b, CCSS.MATH.CONTENT.HSS.G.MG.14 CCSS.MATH.PRACTICE.MP1, CCSS.Math.Practice.MP2, CCSS.Math.Practice.MP, CCSS.MATH.PRACTICE.MP6, CCSS.Math.Practice.MP7, CCSS.Math.Practice.MP8, CCSS.MATH.CONTENT.HSS.G.CO.2, G.CO.3, G.CO.4, G.CO.5</p>				
<p>Understand and utilize Variables, and Algorithms in the python language.</p> <p><b>NJSLS:</b> 8.2.12.B.1, 8.2.12.E.4, 9.1.12.E.4, 9.3.12.AR.1, 9.3.12.AR.3, 9.3.12.AR.4, 9.3.12.AR.5, 9.3.12.AR.6, 9.3.12.AR-VIS.2, 9.3.12.AR-VIS.3,</p>	<p>How do you create a variable</p> <p>What can you use a variable for?</p> <p>Can you use a variable before you create it?</p>	<ul style="list-style-type: none"> <li>▪ Understand what a variable is and what they are used for in python.</li> <li>▪ Create a variable</li> <li>▪ Use a variable as an argument</li> <li>▪ Choose appropriate variable names</li> <li>▪ Locate the variables</li> </ul>	<p><b><u>Code Combat – Game Development 1 Levels 1&amp;2</u></b></p> <p><b><u>Code Combat – Game Development 1 Levels 3&amp;4</u></b></p> <p><b><u>Code Combat – Game Development 1 Levels</u></b></p>	<p><b><u>Over the Garden Wall</u></b>  <a href="https://codecombat.com/play/level/over-the-garden-wall?course=5789587ad86a6efb573701e&amp;codeLanguage=python">https://codecombat.com/play/level/over-the-garden-wall?course=5789587ad86a6efb573701e&amp;codeLanguage=python</a></p> <p><b><u>Hero’s Journey</u></b>  <a href="https://codecombat.com">https://codecombat.com</a></p>

<p>9.3.IT.3, 9.3.IT.6, 9.3.IT-SUP.2, 9.3.IT-SUP.3, 9.3.ST.5, 9.3.ST.6, 9.3.ST-ET.3</p> <p><b>CCTC:</b> AC-DES.7.1, AC-DES.7.2, AC-DES.7.3, AR 1.1, AR 1.4, AR 05.1, AR 05.2, AR 05.4, AR 06.1, AR 06.2, AR VIS 01.5, AR VIS 03.1, AR VIS 03.3, AR VIS 03.4, IT 06-1, IT 07.1, IT 07.2, IT WD 04.1</p> <p><b>CCSS:</b> CCSS.ELA-LITERACY.W.11-12.10, CCSS.ELA-LITERACY.SL.12.1a, CCSS.ELA-LITERACY.RI.12.4, CCSS.ELA-LITERACY.W.12.9b, CCSS.MATH.CONTENT.HSS.G.MG.14, CCSS.MATH.PRACTICE.MP1, CCSS.Math.Practice.MP2, CCSS.Math.Practice.MP, CCSS.MATH.PRACTICE.MP6, CCSS.Math.Practice.MP7, CCSS.Math.Practice.MP8, CCSS.MATH.CO</p>		<p>in preexisting code.</p> <ul style="list-style-type: none"> <li>▪ Understand algorithms and what they are used for.</li> <li>▪ Utilize algorithms in original code.</li> </ul>	<p><b>5&amp;6</b></p>	<p><a href="https://codecombat.com/play/level/heros-journey?course=5789587aad86a6efb573701e&amp;codeLanguage=python">m/play/level/heros-journey?course=5789587aad86a6efb573701e&amp;codeLanguage=python</a></p> <p><b>Crushing It.</b>  <a href="https://codecombat.com/play/level/crushing-it?course=5789587aad86a6efb573701e&amp;codeLanguage=python">https://codecombat.com/play/level/crushing-it?course=5789587aad86a6efb573701e&amp;codeLanguage=python</a></p>
--	--	---	-----------------------	---

<p>NTENT.HSS. G.CO.2, G.CO.3, G.CO.4, G.CO.5</p>				
<p>Understand and utilize If Statements, Functions, and Parameters, in the python language.</p> <p><b>NJSLS:</b> 8.2.12.B.1, 8.2.12.E.4, 9.1.12.E.4, 9.3.12.AR.1, 9.3.12.AR.3, 9.3.12.AR.4, 9.3.12.AR.5, 9.3.12.AR.6, 9.3.12.AR-VIS.2, 9.3.12.AR-VIS.3, 9.3.IT.3, 9.3.IT.6, 9.3.IT-SUP.2, 9.3.IT-SUP.3, 9.3.ST.5, 9.3.ST.6, 9.3.ST-ET.3</p> <p><b>CCTC:</b> AC-DES.7.1, AC-DES.7.2, AC-DES.7.3, AR 1.1, AR 1.4, AR 05.1, AR 05.2, AR 05.4, AR 06.1, AR 06.2, AR VIS 01.5, AR VIS 03.1, AR VIS 03.3, AR VIS 03.4, IT 06-1, IT 07.1, IT 07.2, IT WD 04.1</p> <p><b>CCSS:</b> CCSS.ELA-</p>	<p>What is meant by game "pieces"?</p> <p>What are the pieces in your favorite games?</p> <p>Are there Parameters in real life?</p>	<ul style="list-style-type: none"> <li>▪ Explain a function</li> <li>▪ Utilize a function</li> <li>▪ Understand parameters.</li> <li>▪ Create parameters and use them in coding.</li> <li>▪ Understand if statements.</li> <li>▪ Create if statements in python.</li> <li>▪ Combine statements, functions and parameters to create a simple program.</li> </ul>	<p><b><u>Code Combat – Game Development 1 Levels 7&amp;8</u></b></p> <p><b><u>Code Combat – Game Development 1 Levels 9&amp;10</u></b></p> <p><b><u>Code Combat – Game Development 2 Level 1</u></b></p>	<p><b>Give and Take</b> <a href="https://codecombat.com/play/level/give-and-take?course=5789587aad86a6efb573701e&amp;codeLanguage=python">https://codecombat.com/play/level/give-and-take?course=5789587aad86a6efb573701e&amp;codeLanguage=python</a></p> <p><b>Hedge Magic</b> <a href="https://codecombat.com/play/level/hedge-magic?course=5789587aad86a6efb573701e&amp;codeLanguage=python">https://codecombat.com/play/level/hedge-magic?course=5789587aad86a6efb573701e&amp;codeLanguage=python</a></p> <p><b>Tabula Rasa</b> <a href="https://codecombat.com/play/level/tabula-rasa?course=5789587aad86a6efb573701e&amp;codeLanguage=python">https://codecombat.com/play/level/tabula-rasa?course=5789587aad86a6efb573701e&amp;codeLanguage=python</a></p>



<p>LITERACY.W.11-12.10,          CCSS.ELA-LITERACY.          SL.12.1a, CCSS.ELA-          LITERACY. RI.12.4,          CCSS.ELA-LITERACY.          W.12.9b,          CCSS.MATH.CONTENT.          HSS.G.MG.14          CCSS.MATH.PRACTICE.          MP1,CCSS.Math.Practice          .MP2,          CCSS.Math.Practice.MP,          CCSS.MATH.PRACTICE.          MP6,CCSS.Math.Practice          .MP7,CCSS.Math.Practic          e.MP8,CCSS.MATH.CO          NTENT.HSS. G.CO.2,          G.CO.3, G.CO.4,          G.CO.5</p>				
<p>Understand and utilize          Advanced Strings and          Basic Input Handling, in          the python language.</p> <p><b>NJSLS:</b> 8.2.12.B.1,          8.2.12.E.4, 9.1.12.E.4,          9.3.12.AR.1, 9.3.12.AR.3,          9.3.12.AR.4, 9.3.12.AR.5,          9.3.12.AR.6, 9.3.12.AR-</p>	<p>What do we mean by          "mechanics" or "rules"?</p> <p>What are some of the          MECHANICS of your          favorite games?</p> <p>What pitfalls come with          having advance coding          knowledge.</p>	<ul style="list-style-type: none"> <li>▪ Organize their code              into reusable pieces              of logic</li> <li>▪ Construct a conditional</li> <li>▪ Choose appropriate              expressions</li> <li>▪ Evaluate expressions              Construct an if-else</li> </ul>	<p><b><u>Code Combat – Game              Development 2 Levels              2&amp;3</u></b></p> <p><b><u>Code Combat – Game              Development 2 Level 4</u></b></p> <p><b><u>Code Combat – Game              Development 2 Levels              5</u></b></p>	<p><b><u>Forest Incursion</u></b>  <a href="https://codecombat.com/play/level/forest-incursion?course=57b621e7ad86a6efb5737e64&amp;codeLanguage=python">https://codecombat.com/play/level/forest-incursion?course=57b621e7ad86a6efb5737e64&amp;codeLanguage=python</a></p> <p><b><u>Guard Duty</u></b>  <a href="https://codecombat.com">https://codecombat.com</a></p>

<p>VIS.2, 9.3.12.AR-VIS.3, 9.3.IT.3, 9.3.IT.6, 9.3.IT-SUP.2, 9.3.IT-SUP.3, 9.3.ST.5, 9.3.ST.6, 9.3.ST-ET.3</p> <p><b>CCTC:</b> AC-DES.7.1, AC-DES.7.2, AC-DES.7.3, AR 1.1, AR 1.4, AR 05.1, AR 05.2, AR 05.4, AR 06.1, AR 06.2, AR VIS 01.5, AR VIS 03.1, AR VIS 03.3, AR VIS 03.4, IT 06-1, IT 07.1, IT 07.2, IT WD 04.1</p> <p><b>CCSS:</b> CCSS.ELA-LITERACY.W.11-12.10, CCSS.ELA-LITERACY.SL.12.1a, CCSS.ELA-LITERACY.RI.12.4, CCSS.ELA-LITERACY.W.12.9b, CCSS.MATH.CONTENT.HSS.G.MG.14 CCSS.MATH.PRACTICE.MP1,CCSS.Math.Practice.MP2, CCSS.Math.Practice.MP, CCSS.MATH.PRACTICE.MP6,CCSS.Math.Practice.MP7,CCSS.Math.Practic</p>		<p>conditional.</p> <ul style="list-style-type: none"> <li>▪ Identify different actions taking place in different circumstances.</li> <li>▪ Define else as the opposite of if.</li> <li>▪ Construct a nested conditional</li> </ul>		<p><a href="https://codecombat.com/play/level/guard-duty?course=57b621e7ad86a6efb5737e64&amp;codeLanguage=python">m/play/level/guard-duty?course=57b621e7ad86a6efb5737e64&amp;codeLanguage=python</a></p> <p><b>Army Training</b>  <a href="https://codecombat.com/play/level/army-training-2?course=57b621e7ad86a6efb5737e64&amp;codeLanguage=python">https://codecombat.com/play/level/army-training-2?course=57b621e7ad86a6efb5737e64&amp;codeLanguage=python</a></p>
---	--	---	--	--

<p>e.MP8,CCSS.MATH.CO          NTENT.HSS. G.CO.2,          G.CO.3, G.CO.4,          G.CO.5</p>				
<p>Understand and utilize          Basic Game AI, and          Create a playable a game          project.</p> <p><b>NJSLS:</b> 8.2.12.B.1,          8.2.12.E.4, 9.1.12.E.4,          9.3.12.AR.1, 9.3.12.AR.3,          9.3.12.AR.4, 9.3.12.AR.5,          9.3.12.AR.6, 9.3.12.AR-          VIS.2, 9.3.12.AR-VIS.3,          9.3.IT.3, 9.3.IT.6, 9.3.IT-          SUP.2, 9.3.IT-SUP.3,          9.3.ST.5, 9.3.ST.6,          9.3.ST-ET.3</p> <p><b>CCTC:</b> AC-DES.7.1, AC-          DES.7.2, AC-DES.7.3,          AR 1.1, AR 1.4, AR 05.1,          AR 05.2, AR 05.4, AR          06.1, AR 06.2, AR VIS          01.5, AR VIS 03.1, AR          VIS 03.3, AR VIS 03.4, IT          06-1, IT 07.1, IT 07.2, IT          WD 04.1</p>	<p>What is A.I.?</p> <p>What are the real word          concerns about advance          A.I.?</p> <p>What makes a game          playable?</p>	<ul style="list-style-type: none"> <li>▪ Read and understand              a nested conditional</li> <li>▪ Attend to indentation</li> <li>▪ Identify functions.</li> <li>▪ Construct a function              definition.</li> <li>▪ Call a function.</li> <li>▪ Listen for events and              execute code</li> <li>▪ Use event handling to              control a pet</li> <li>▪ Write concurrent code              mixing direct execution              and event handling</li> </ul>	<p><b><u>Code Combat – Game              Development 2 Levels              6&amp;7</u></b></p> <p><b><u>Code Combat – Game              Development 2 Levels              8&amp;9</u></b></p> <p><b><u>Code Combat – Game              Development 2 Level              10</u></b></p>	<p><b>Center Formation</b>  <a href="https://codecombat.com/play/level/center-formation?course=57b621e7ad86a6efb5737e64&amp;codeLanguage=python">https://codecombat.com/play/level/center-formation?course=57b621e7ad86a6efb5737e64&amp;codeLanguage=python</a></p> <p><b>Chokepoint</b>  <a href="https://codecombat.com/play/level/chokepoint?course=57b621e7ad86a6efb5737e64&amp;codeLanguage=python">https://codecombat.com/play/level/chokepoint?course=57b621e7ad86a6efb5737e64&amp;codeLanguage=python</a></p> <p><b>Jailbreak</b>  <a href="https://codecombat.com/play/level/jailbreak?course=57b621e7ad86a6efb5737e64&amp;codeLanguage=python">https://codecombat.com/play/level/jailbreak?course=57b621e7ad86a6efb5737e64&amp;codeLanguage=python</a></p>

<p><b>CCSS:</b> CCSS.ELA-LITERACY.W.11-12.10, CCSS.ELA-LITERACY.SL.12.1a, CCSS.ELA-LITERACY.RI.12.4, CCSS.ELA-LITERACY.W.12.9b, CCSS.MATH.CONTENT.HSS.G.MG.14 CCSS.MATH.PRACTICE.MP1, CCSS.Math.Practice.MP2, CCSS.Math.Practice.MP, CCSS.MATH.PRACTICE.MP6, CCSS.Math.Practice.MP7, CCSS.Math.Practice.MP8, CCSS.MATH.CONTENT.HSS.G.CO.2, G.CO.3, G.CO.4, G.CO.5</p>				
---	--	--	--	--

## Unit 2 Vocabulary

Account  
Argument  
Basic Syntax  
Code  
Conditionals  
Cycle  
Empty  
Equal  
Events  
Expression  
Function  
Goals  
Grader than  
Java Script  
Less Than  
Materials  
Mechanic  
Nested Conditionals  
Not equal  
Null  
Object

Order  
Player  
Progression  
Property  
Python  
Random  
Solution  
Spawnable  
String  
Transfer  
Variable  
While Loop  
infinite loop  
loop  
string  
value

## Suggested Unit Projects

*Choose At Least One*

Student groups use python to create a short 1 screen mini video game the focus will be on displaying advance knowledge of the python language.

Students complete Code Combat Courses Introduction to Computer Science, Game Development 1 and Game Development 2

## Suggested Structured Learning Experiences

Museum of Play  
 1 Manhattan Square  
 Rochester, NY 14607  
<http://www.museumofplay.org/about/icheg>

Nintendo NY  
 10 Rockefeller Plaza  
 New York, New York 10020  
<http://nintendonyc.com/faq/>

Cooper Hewitt  
 2 East 91<sup>st</sup> Street  
 New your, New York 10128  
<http://www.cooperhewitt.org/visit/getting-here/>