# Description: OSPI logo for white bground

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| **Course:** Game Design & Programming 1 | | **Total Framework Hours up to:** 90 |
| **CIP Code:** 110701 | **Exploratory  Preparatory** | **Date Last Modified:** 29 June 2018 |
| **Career Cluster:** Information Technology | | **Cluster Pathway:** Programming & Software Development |

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| Unit 0: Introduction – Gamer Meet Designer | |
| COMPONENTS AND ASSESSMENTS | |
| Performance Assessments:   * Creation of class folders and accounts, given a set of instructions. * Research notes on careers in the game (interactive experience) industry. * Create or revise wiki entry describing the career researched. * Letter or e-mail inviting an industry professional to speak to the class. | |
| Leadership Alignment:  **Skills USA**   * Local Program Resource Guide (Current Edition) * Connecting Career Development Event (Local, State, and National Level) * Attendance at leadership specific conferences: Made for Excellence * Advanced Leadership Development   Students will **access and evaluate information**, **reason effectively**, and **solve problems** while researching a current issue in the industry. Students will **apply technology effectively**, reviewing educational technology skills, industry tools, and the computer-based classroom learning environment including the Canvas LMS | |
| Standards and Competencies | |
| **Standard/Unit: Using physical and electronic tools to manage information and communicate with collaborators. Making informed choices about the tool to use.** | |
| Competencies:   * Precisely follow a set of written instructions to accomplish a task. * Manage digital files and folders - create, delete, name, rename, and organize. * Organize online resources with bookmarks, manage bookmarks. | Total Learning Hours for Unit: 5 |
| **Computer Science:**   * **WACSLS 3A-I-1-26**: Compare and debate the positive and negative impacts of computing on behavior and culture. * **WACSLS 3A-I-1-27**: Demonstrate how computing enables new forms of experience, expression, communication, and collaborating.   **Literacy:**   * **CCSS.ELA-Literacy.CCRA.R.2**: Determine central ideas or themes of a text and analyze their development; summarize the key supporting details and ideas. * **CCSS.ELA-Literacy.CCRA.W.6**: Use technology, including the Internet, to produce and publish writing and to interact and collaborate with others. | |

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| Unit 1: Critical Thinking About Games | |
| COMPONENTS AND ASSESSMENTS | |
| Performance Assessments:   * Demonstrate the ability to use common vocabulary and conceptual frameworks in discussions of game design and development.   + Test of conceptual framework knowledge:     - MDA (Robin Hunicke et al)     - Game elements (Tracey Fullerton)     - Games and related forms (Keith Burgun)   + Vocabulary test:   + Use of vocabulary and conceptual frameworks in written work and class discussion. * After playtesting a variety of games write a short report proposing a modification to a game tested using "industry standard" vocabulary and concepts. | |
| Leadership Alignment:  Skills USA:   * Professional Development Program (PDP) * Total Quality Curriculum * Leadership Handbook   Students will **reason effectively, use systems thinking**, **solve problems** and **produce results** as we learn the skill of playtesting games and providing constructive feedback to peers. | |
| Standards and Competencies | |
| **Standard/Unit: Applying knowledge of industry standard concepts, practices, and terminology** | |
| **Competencies:**   * Use accepted industry concepts and terminology to communicate with peers. * Explain industry concepts and terminology to people outside of the field. * Use industry concepts to describe and analyze games. * Conduct tests to evaluate an idea. | Total Learning Hours for Unit: 7 |
| **Computer Science:**   * **WSCSLS-3A-A-5-5**: Use user-centered research and design techniques (e.g., surveys, interviews) to create software solutions * **WSCSLS-3A-I-7-25**: Describe how computation shares features with art and music by translating human intention into an artifact. * **WSCSLS-3A-I-1-26**: Compare and debate the positive and negative impacts of computing on behavior and culture (e.g., evolution from hitchhiking to ridesharing apps, online accommodation rental services). * **WSCSLS-3A-I-1-27**: Demonstrate how computing enables new forms of experience, expression, communication, and collaborating. * **WSCSLS-3A-I-1-28**: Explain the impact of the digital divide (i.e., uneven access to computing, computing education, and interfaces) on access to critical information.   **Literacy:**   * **CCSS.ELA-Literacy.CCRA.L.6**: Acquire and use accurately a range of general academic and domain-specific words and phrases sufficient for reading, writing, speaking, and listening at the college and career readiness level; demonstrate independence in gathering vocabulary knowledge when encountering an unknown term important to comprehension or expression. * **CCSS.ELA-Literacy.CCRA.R.2**: Determine central ideas or themes of a text and analyze their development; summarize the key supporting details and ideas. * **CCSS.ELA-Literacy.CCRA.W.6**: Use technology, including the Internet, to produce and publish writing and to interact and collaborate with others. | |

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| Unit 2: Designing, Prototyping, and Playtesting | |
| COMPONENTS AND ASSESSMENTS | |
| **Performance Assessments:**  Demonstrate the ability to work on a small team (2 or 3 people) using an iterative design process to develop and playtest a paper prototype for a game that provides players an opportunity to explore an experience that may be unfamiliar to them. Skills will be assessed by the following methods:   * Test/quiz on iterative design processes. * A physical (paper) game prototype consisting of:   + A set of rules   + The materials needed to play the game   + A playtest plan and report   + Evidence of at least two iterations. * Reflection on process and contributions * Designer’s notebook | |
| Leadership Alignment:  Skills USA:  • Local Program Resource Guide (Current Edition)  • Connecting Career Development Event (Local, State, and National Level)  • Attendance at leadership specific events  • Made for Excellence  • Advanced Leadership Development  21st Century Skills:  Be Self-Directed Learners   * Monitor, define, prioritize and complete tasks without direct oversight   Students will **use and manage information** and be **self-directed learners** as they practice the design cycle and learn techniques for rapidly prototyping games on paper. Students will **produce results** and **manage projects** while completing the exercises and the final project in this unit. | |
| Standards and Competencies | |
| **Standard/Unit: Using an iterative design process to create and test game prototypes.** | |
| Competencies:   * Develop an understanding of a problem. * Generate ideas for possible solutions. * Break a problem into component parts. * Manage a project. * Collaborate on a team. * Test possible solutions. * Revise ideas. * Communicate results. | Total Learning Hours for Unit: 15 |
| **Computer Science:**   * **WSCSLS-3A-A-5-5**: Use user-centered research and design techniques (e.g., surveys, interviews) to create software solutions * **WSCSLS-3A-D-5-17**: Create computational models that simulate real-world systems (e.g., ecosystems, epidemics, spread of ideas). * **WSCSLS-3A-I-2-22**: Debate the social and economic implications associated with ethical and unethical computing practices (e.g., intellectual property rights, hacktivism, software piracy, diesel emissions testing scandal, new computers shipped with malware). * **WSCSLS-3A-I-7-25**: Describe how computation shares features with art and music by translating human intention into an artifact. * **WSCSLS-3A-I-1-26**: Compare and debate the positive and negative impacts of computing on behavior and culture (e.g., evolution from hitchhiking to ridesharing apps, online accommodation rental services). * **WSCSLS-3A-I-1-27**: Demonstrate how computing enables new forms of experience, expression, communication, and collaborating.   **Literacy:**   * **CCSS.ELA-Literacy.CCRA.L.6**: Acquire and use accurately a range of general academic and domain-specific words and phrases sufficient for reading, writing, speaking, and listening at the college and career readiness level; demonstrate independence in gathering vocabulary knowledge when encountering an unknown term important to comprehension or expression. * **CCSS.ELA-Literacy.CCRA.R.2**: Determine central ideas or themes of a text and analyze their development; summarize the key supporting details and ideas. * **CCSS.ELA-Literacy.CCRA.W.6**: Use technology, including the Internet, to produce and publish writing and to interact and collaborate with others. | |

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| Unit 3: Digital Prototyping | |
| COMPONENTS AND ASSESSMENTS | |
| **Performance Assessments:**  Using a prototyping toolkit, such as the Unity PlaygroundProject (<https://github.com/UnityTechnologies/PlaygroundProject>), collaborate with a small team to develop a paper game prototype into a playable digital prototype. | |
| **Leadership Alignment:**  Skills USA:  • Local Program Resource Guide (Current Edition)  • Connecting Career Development Event (Local, State, and National Level)  • Attendance at leadership specific events  • Made for Excellence  • Advanced Leadership Development  21st Century Skills:  Be Self-Directed Learners   * Monitor, define, prioritize and complete tasks without direct oversight   Students will **use and manage information** and be **self-directed learners** while utilizing a variety of resources to learn about Unity and the techniques for prototyping digital games. Students will **produce results** and **manage projects** while using the design process to complete the projects in this unit. | |
| Standards and Competencies | |
| Standard/Unit: Practice creating digital prototypes in Unity using the PlaygroundProject toolkit. | |
| Competencies:   * Apply an iterative design and problem-solving process * Analyze problems and find computational solutions * Develop and test algorithms * Document and communicate computational thinking * Work with Unity and a game toolkit / library * Manage files and folders * Track changes to digital files | Total Learning Hours for Unit: 15 |
| **Computer Science:**   * **WSCSLS-3A-A-2-1**: Design and develop a software artifact working in a team. * **WSCSLS-3A-A-2-2**: Demonstrate how diverse collaborating impacts the design and development of software products (e.g., discussing real-world examples of products that have been improved through having a diverse design team or reflecting on their own team's development experience). * **WSCSLS-3A-A-4-8**: Deconstruct a complex problem into simpler parts using predefined constructs (e.g., functions and parameters and/or classes). * **WSCSLS-3A-A-3-11**: Explain and demonstrate how modeling and simulation can be used to explore natural phenomena (e.g., flocking behaviors, queueing, life cycles). * **WSCSLS-3A-C-5-14**: Create, extend, or modify existing programs to add new features and behaviors using different forms of inputs and outputs (e.g., inputs such as sensors, mouse clicks, data sets; outputs such as text, graphics, sounds). * **WSCSLS-3A-I-6-29**: Redesign user interfaces (e.g., webpages, mobile applications, animations) to be more inclusive, accessible, and minimizing the impact of the designer's inherent bias.   **Literacy:**   * **CCSS.ELA-Literacy.CCRA.L.6**: Acquire and use accurately a range of general academic and domain-specific words and phrases sufficient for reading, writing, speaking, and listening at the college and career readiness level; demonstrate independence in gathering vocabulary knowledge when encountering an unknown term important to comprehension or expression. * **CCSS.ELA-Literacy.CCRA.R.2**: Determine central ideas or themes of a text and analyze their development; summarize the key supporting details and ideas. * **CCSS.ELA-Literacy.CCRA.W.6**: Use technology, including the Internet, to produce and publish writing and to interact and collaborate with others. | |

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| Unit 4: Slow-Motion Collaborative Game Jam | |
| COMPONENTS AND ASSESSMENTS | |
| **Performance Assessments:**  Working with a small team, collaborate to produce a digital prototype of a 2D game, using a prototyping toolkit, such as the Unity PlaygroundProject (<https://github.com/UnityTechnologies/PlaygroundProject>), that models a real-world event or experience using an iterative design process. The assessed components of the project are:   * A game design document describing the game, its mechanics, and the roles of the team members. * A project schedule – revised through the course of the project. * A paper prototype of the game. * Evidence of playtest/revision cycles with the paper prototype. * A digital prototype of the game. * Evidence of playtest/revision cycles with the digital prototype. | |
| **Leadership Alignment:**  Skills USA:  • Local Program Resource Guide (Current Edition)  • Connecting Career Development Event (Local, State, and National Level)  • Attendance at leadership specific events  • Made for Excellence  • Advanced Leadership Development  21st Century Skills:   * Monitor, define, prioritize and complete tasks without direct oversight   Students will **use and manage information** and be **self-directed learners** as they use a variety of resources to design and prototype a game. Students will **produce results**, **manage projects, guide,** and **be responsible to others** while using the design process to complete their culminating project. | |
| Standards and Competencies | |
| Standard/Unit: Game development team project. | |
| Competencies:   * Use an iterative design process. * Collaborate with a diverse team. * Use Unity as a tool for creating a game prototype. * Combine individual work into a collaborative whole. * Revise the product based on feedback. * Use digital / online tools to help manage a project within time constraints. * Create project documentation using accepted industry concepts and terminology. | Total Learning Hours for Unit: 15 |
| **Computer Science:**   * **WSCSLS-3A-A-2-1**: Design and develop a software artifact working in a team. * **WSCSLS-3A-A-2-2**: Demonstrate how diverse collaborating impacts the design and development of software products (e.g., discussing real-world examples of products that have been improved through having a diverse design team or reflecting on their own team's development experience). * **WSCSLS-3A-A-5-5**: Use user-centered research and design techniques (e.g., surveys, interviews) to create software solutions * **WSCSLS-3A-A-4-8**: Deconstruct a complex problem into simpler parts using predefined constructs (e.g., functions and parameters and/or classes). * **WSCSLS-3A-A-3-11**: Explain and demonstrate how modeling and simulation can be used to explore natural phenomena (e.g., flocking behaviors, queueing, life cycles). * **WSCSLS-3A-C-5-14**: Create, extend, or modify existing programs to add new features and behaviors using different forms of inputs and outputs (e.g., inputs such as sensors, mouse clicks, data sets; outputs such as text, graphics, sounds). * **WSCSLS-3A-D-5-17**: Create computational models that simulate real-world systems (e.g., ecosystems, epidemics, spread of ideas)   **Literacy:**   * **CCSS.ELA-Literacy.CCRA.L.6**: Acquire and use accurately a range of general academic and domain-specific words and phrases sufficient for reading, writing, speaking, and listening at the college and career readiness level; demonstrate independence in gathering vocabulary knowledge when encountering an unknown term important to comprehension or expression. * **CCSS.ELA-Literacy.CCRA.R.2**: Determine central ideas or themes of a text and analyze their development; summarize the key supporting details and ideas. * **CCSS.ELA-Literacy.CCRA.W.6**: Use technology, including the Internet, to produce and publish writing and to interact and collaborate with others. | |

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| Unit 5: Project Presentations & Evaluation | |
| COMPONENTS AND ASSESSMENTS | |
| **Performance Assessments:**  After completing the digital game prototype the team will present their project and an assessment of their process to the class. The assessed items for this unit are:   * Presentation:   + Demo of game prototype   + Description of individual contributions   + Lessons learned about group process – advice for the future * Individual reflection * Constructive feedback to peers * Group proposal and rationale for allocating of scores | |
| **Leadership Alignment:**  Skills USA:  • Local Program Resource Guide (Current Edition)  • Made for Excellence  • Advanced Leadership Development  Students will **use and manage information**, **produce results**, **manage projects, guide,** and **be responsible to others** while using the design process to complete their culminating project. | |
| Standards and Competencies | |
| **Standard/Unit: Present & evaluate team’s project** | |
| Competencies:   * Reflect on and assess the success of a project in terms of its initial goals. * Reflect on and assess one’s individual contributions to a team effort. * Constructively critique the group process and make suggestions for improvement. | Total Learning Hours for Unit: 4 |
| **Computer Science:**   * **WSCSLS-3A-A-5-5**: Use user-centered research and design techniques (e.g., surveys, interviews) to create software solutions * **WSCSLS-3A-I-7-25**: Describe how computation shares features with art and music by translating human intention into an artifact. * **WSCSLS-3A-I-1-26**: Compare and debate the positive and negative impacts of computing on behavior and culture (e.g., evolution from hitchhiking to ridesharing apps, online accommodation rental services). * **WSCSLS-3A-I-1-27**: Demonstrate how computing enables new forms of experience, expression, communication, and collaborating.   **Literacy:**   * **CCSS.ELA-Literacy.CCRA.W.6**: Use technology, including the Internet, to produce and publish writing and to interact and collaborate with others. | |

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| **Aligned Washington State Standards** | |
| Arts |  |
| Computer Science | WSCSLS-3A-A-2-1, WSCSLS-3A-A-2-2, WSCSLS-3A-A-5-4, WSCSLS-3A-A-5-5, WSCSLS-3A-A-4-8, WSCSLS-3A-A-3-11, WSCSLS-3A-C-5-14  WSCSLS-3A-D-5-17, WSCSLS-3A-I-2-22, WSCSLS-3A-I-7-25, WSCSLS-3A-I-1-26, WSCSLS-3A-I-1-27, WSCSLS-3A-I-1-28 |
| Educational Technology | WSETS-1-EL, WSETS-2-DC, WSETS-3-KC, WSETS-4-ID, WSETS-5-CT, WSETS-6-CC, WSETS-7-GC |
| Health and Fitness |  |
| Language | CCSS.ELA-Literacy.CCRA.L.6 |
| Math |  |
| Reading | CCSS.ELA-Literacy.CCRA.R.2 |
| Science |  |
| Social Studies |  |
| Speaking and Listening | CCSS.ELA-Literacy.CCRA.SL.2 |
| Writing | CCSS.ELA-Literacy.CCRA.W.6, CCSS.ELA-Literacy.CCRA.W.7, CCSS.ELA-Literacy.CCRA.W.8, CCSS.ELA-Literacy.CCRA.W.10 |

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| **21st Century Skills** | | |
| Check those that students will demonstrate in this course: | | |
| **LEARNING & INNOVATION**  **Creativity and Innovation**  Think Creatively  Work Creatively with Others  Implement Innovations  **Critical Thinking and Problem Solving**  Reason Effectively  Use Systems Thinking  Make Judgments and Decisions  Solve Problems  **Communication and Collaboration**  Communicate Clearly  Collaborate with Others | **INFORMATION, MEDIA & TECHNOLOGY SKILLS**  **Information Literacy**  Access and Evaluate Information  Use and Manage Information  **Media Literacy**  Analyze Media  Create Media Products  **Information, Communications and Technology (ICT Literacy)**  Apply Technology Effectively | **LIFE & CAREER SKILLS**  **Flexibility and Adaptability**  Adapt to Change  Be Flexible  **Initiative and Self-Direction**  Manage Goals and Time  Work Independently  Be Self-Directed Learners  **Social and Cross-Cultural**  Interact Effectively with Others  Work Effectively in Diverse Teams  **Productivity and Accountability**  Manage Projects  Produce Results  **Leadership and Responsibility**  Guide and Lead Others  Be Responsible to Others |