SANTA ROSA JUNIOR COLLEGE

Computer Studies

CS42: Introduction to Game Coding
Section 5363, Spring 2026 Course Syllabus

Instructor: Ethan Wilde (he/him/his), ewilde@santarosa.edu

Course Description

This course introduces students to the design, development, and coding of simple graphical computer-based games. During the course, students will be introduced to various game engines and development environments. Students will gain experience working individually and in a team environment. Emphasis is placed on engaging players through compelling application of game mechanics, dynamics, and aesthetics, as well as on playtesting and iterative development to ensure user-centered design goals are met.

Recommended Preparation: Course completion of CS 110A and/or programming experience

Prerequisites: None

Whether you want to become a member of a professional AAA game development team, or just want to try your hand as an independent game developer, mastery of the game development process, including coding, is essential to those goals. We will work with the ECMA-compliant JavaScript language and real-world tools to develop proficiency in the creation of browser-based, mobile and console games. This course will follow the Transformational Process in development of final game projects.

Student Learning Outcomes

Students will be able to:

1. Understand and apply systems-level thinking and game development methodology best practices to the design and development of simple graphical computer-based games.
2. Develop team-based game creation skills that cover game logic sequencing; storyboarding; artistic and technical coordination; and understanding of technical requirements and limitations.

Upon completion of the course, students will be able to:

1. Explain factors that motivate game players and apply those to the design of games that satisfy the needs of players. This includes the design of a logical sequence of game rules, play flow, and interaction opportunities.
2. Develop game coding skills to implement simple versions of games they design. Desired functions include: graphical, interactive user interface; sprite creation, collision detection, applied simulation of physical forces; classes, object instantiation; and modular implementation.

3. Determine that games are of measurable high quality and error-free through playtesting, iterative development, and an adherence to best practices in quality assurance, including a proper and documented testing process.
4. Work independently and in teams using an iterative process to prepare and create Game Design Documents, storyboards, game assets and scripting to create game simulations.
5. Utilize the concepts of game mechanics, dynamics, and aesthetics to discuss game play of games of different genres on varied platforms.

Topics and Scope:

I. Game Development Fundamentals
   A. Introduction to systems thinking
      1. Flow control and diagramming
      2. Visual scripting systems
   B. Introduction to scripting
      1. Variables and data types
      2. Expressions and operators
      3. Control structures
      4. Functions
      5. Objects and classes
      6. Events and triggers
   C. Mathematics and physics fundamentals
      1. Cartesian coordinate systems
      2. World space, object space, camera space
      3. Vectors, forces and physics simulations
   D. Development methodologies
      1. Unified and agile processes
      2. Iterative design
      3. Human-centered design
      4. Design patterns
      5. Project management and quality assurance
II. Considerations of Game Creation
   A. Types of games
   B. Game mechanics, dynamics, and aesthetics
      1. Mechanics of gameplay
      2. Dynamics of gameplay
      3. Aesthetics of gameplay
   C. Motivational and emotional aspects of playing games
   D. Generic game design rules
   E. Technologies, platforms, tools
   F. Game development frameworks and engines
III. Game Development Process
   A. Setting goals for the game
   B. Developing a storyboard and designing gameplay
   C. Drafting a Game Design Document (GDD)
   D. Iterative prototyping
   E. Stakeholder feedback loop and playtesting
   F. Features, functions, and program components

1. Game loop
2. Assets
3. User input
4. Sprites and collisions
5. Audio representation

G. Game rules
H. Navigation and wayfinding
I. Graphical user interfaces

IV. Supporting Disciplines
A. Game playtesting and validation
1. Quality assurance testing plan
2. Bug tracking and resolution

B. Working as a team
C. Productization and packaging
D. Art work

Assignments:

1. Read approximately 25-30 pages a week
2. Prepare 1-2 written Game Design Document(s) (GDD) that closely mirror the documentation process used in the field. (3-7 pages each)
3. Regular group discussion contributions (0 - 12) such as:
   A. Play logic and navigation design
   B. Storyboarding, player motivation
   C. Theories of game development
   D. Design and implementation of game logic (rules and programmatic navigation)
   E. Use of design patterns
   F. Graphical user interface design
   G. Implementation technologies and validation
4. Game creation and scripting assignments that solve particular technical challenges (6 - 12)
5. Midterm and final examinations that evaluate critical thinking skills such as:
   A. Game requirements analysis and validation
   B. Game storyboard design and implementation
   C. Software games, techniques, and technologies
   D. Tools and techniques used in the software industry
6. A final class project that includes topics such as:
   A. Selection of a viable, realistic project
   B. Interviews with players and project stakeholders to collect requirements and risks
   C. Creation of a comprehensive software-based game
   D. Summary of playtesting findings and suggested improvements for future versions

Course Outline of Record

You may find the official course outline of record for this course at the following link:
https://portal.santarosa.edu/srweb/SR_CourseOutlines.aspx?ck=CS42

Note: if this Canvas course website happens to be shared by multiple sections, student names and coursework may be visible to students in both sections.

Class Meetings

Spring 2026 Schedule

Class Delivery	Day and Time	Modality
Online	Modules start on Wednesdays	Canvas
Live Web conference (optional) https://santarosa-edu.zoom.us/j/961817861	Wednesdays, 10:00am - 11:30am	Zoom

All class materials for each module will be released online in Canvas on Wednesdays throughout the entire semester. A live online meeting will be held on Wednesdays via Zoom. Attendance at the live web conferences is highly recommended. Every student must either attend the live web conference or watch the entire screencast recording of the web conference. To view any recorded screencasts, visit the Screencast page for any module in the Modules section.

Instructor Contact

Ethan Wilde

Email: ewilde@santarosa.edu

Phone: 707-527-4855

Spring 2026 Office Hours
January 12 – May 11, 2026

Day	Time	Location

Mondays (online)	8:00am - 2:40pm	Online: Zoom meeting ID 950-229-0128 or pre-arranged alternative via email ewilde@santarosa.edu

» Reserve a future office hour appointment

I typically respond to emails within 48 hours, weekends excepted. I never respond on Sundays.

Course Web Site

Students will use the Canvas course web site to access all course content, for reading, assignment instructions, submitting assignments, viewing classmates' work, sharing resources, and viewing grades. *The Google Chrome browser is recommended for viewing the Canvas-powered course site. Other browsers are not well-tested by the Canvas LMS developers, so problems with Canvas are more likely.*

Required Textbooks

If you have any problems accessing the free online versions of these books, try following the steps in this announcement.

Beyond Vibe Coding (early release)
Addy Osmani
No ISBN available yet
Free eBook available via SRJC Libraries

Eloquent JavaScript (4th)
Marijn Haverbeke
978-1718504103 (ISBN 13)
Free PDF eBook available

The Transformational Framework (1st)
Sabrina Culyba
978-1387895274 (ISBN 13)
Free PDF available
Publisher site available

Blueprints Visual Scripting for Unreal Engine 5 (3rd)
Marcos F. Romero
978-1801811583 (ISBN 13)
Free eBook available via SRJC Libraries

Practical Game Design
Adam Kramarzewski and Ennio De Nucci
978-1787121799 (ISBN 13)
Free eBook available via SRJC Libraries

The required textbooks are available online without cost.

If you would like a printed copy, you can locate and order books online via the SRJC Bookstore and other resellers.

Students are also required to read many original written passages from the instructor and articles written by other authors. Students are also required to watch a collection of streaming videos. All content for reading and watching is available without cost via our Canvas-based course website.

Equipment

- **A personal computer**, either at home, work, or on the Santa Rosa or Petaluma campuses

Required Software + Services

- **Internet access**
- **Web browser**
  - Google Chrome strongly recommended
- **Coding education site**
  - CodeCombat free account required for all students
- **Integrated Development Environments (IDE)**
  - Microsoft Visual Studio Code strongly recommended
  - Cursor *using free or student education Pro-level account*
  - Replit.com optional for all students – y*ou may create a free account for Replit.com*
  - MIT Scratch simple coding IDE that is optional for all students – Scratch will provide a code editor without any additional software needed – y*ou may create a free account for MIT Scratch*
- **Hosting service**
  - SRJC Student Hosting Server required for all students to host class assignments
- **2D Graphics software** such as
  - Adobe Photoshop (not required), part of a Creative Cloud subscription
  - Pixlr browser-based image editor
  - Drawio.com browser-based drawing app
- **Spritesheet and tilemap editing software** such as
  - Tiled map editor found online at https://www.mapeditor.org/
  - TexturePacker texture/sprite sheet editor found online at https://www.codeandweb.com/
- **Phaser.js 2D game engine JavaScript library, version 3.x**
  - Found online at phaser.io
- **3D game engine software** choose one
  - **PlayCanvas**

        - Browser-based WebGL 3D Game Engine and IDE, starting Week 10, for 3D-based class assignments – PlayCanvas will provide a text editor and file transfer support without any additional software needed – y*ou may create a free account at PlayCanvas.*
        - Found online at PlayCanvas
    - **Unreal Engine**
        - Desktop-based 3D Game Engine and IDE, starting Week 10, for 3D-based class assignments
        - Found online at Unreal Engine
- **JavaScript code validator**
    - https://srjc.ethan.com/esprima/
- **PDF display software** such as
    - Adobe Reader

Optional Software

The additional software listed below is often used for game development. Our IDEs – the Microsoft Visual Studio Code IDE for our work with Phaser.js, the integrated PlayCanvas IDE, the Unreal Engine IDE, and the browser-based Scratch software – all provide code editors and file transfer support without any additional software needed.

- **3D modeling software** including
    - Blender
    - Trimble Sketchup Pro ($49 education license)
- **Enterprise-class game engine software (optional)** including
    - Unity3D, Personal Edition
- **Code editor** such as
    - Sublime Text (Windows, Mac OS, Linux)
    - BBEdit (Mac OS only)
- **Integrated Development Environment** for making native mobile apps
    - Apple Xcode (Mac OS only)
- **Additional Web browsers** including
    - Mozilla Firefox
    - Apple Safari (Mac OS only)
    - Microsoft Edge (Windows 10 only)
- **File Transfer Protocol (FTP) software** such as
    - CyberDuck (Mac OS and Windows, free)
    - Fetch (Mac OS only)
    - WinSCP (Windows only)

Important Dates

Day Class Begins: Monday, January 12, 2026
(first course module begins with class meeting on January 14, 2026)

Day Class Ends: Friday, May 22, 2026
(last class meeting is on May 13, last day to submit final exam or any late work is May 22, 2026)

Last Day to Drop with refund: Sunday, January 25, 2026

Last Day to Add with instructor's approval: Sunday, February 1, 2026

Last Day to Drop without a 'W' symbol: Sunday, February 1, 2026

Last Day to Drop with a 'W' symbol: Sunday, April 19, 2026

Last Day to Opt for Pass/No Pass: Friday, May 15, 2026

Dropping the Class

If you decide to discontinue this course, it is your responsibility to officially drop it. A student may be dropped from any class when that student's absences exceed ten percent (10%) of the total hours of class time. It is strongly advised that if you need to miss more than one class/homework deadline in a row that you contact the instructor to avoid being dropped from the class.

Attendance

Students who fail to complete the requirements of the first and second class modules will be dropped by the instructor. **Students must view and participate in online materials released each week in the Modules section of the course Canvas website.**

Pass-NoPass (P/NP)

You may take this class P/NP. You must decide before the deadline, and add the option online within your student portal or file the P/NP form with Admissions and Records. With a grade of C or better, you will get P.

You must file for the P/NP option by May 15, 2026. Once you decide to go for P/NP, you cannot change back to a letter grade. If you are taking this course as part of a certificate program, you can probably still take the class P/NP. Check with a counselor to be sure.

Instructor Announcements

The instructor will post announcements on the “Announcements” page in Canvas throughout the semester. Canvas notifies students according to their preferred Notification Preferences.

Late Policy

Please make a plan before the course starts to allow yourself the necessary time each week to complete the required reading, watching, online discussion posting, and assignments. The

official Course Outline of Record for this four-unit semester-length course stipulates that each student is expected to complete 210 hours of learning for the class. This works out to 12 hours per week for each of the seventeen weeks of regular instruction along with 6 hours for Finals Week. If you plan accordingly, you can avoid submitting assignments late.

All assignments are due at 11:59pm Pacific time on the **Tuesday** corresponding to the due date. A late submission will receive a 10% penalty for each week it is late. Submissions more than two weeks late are not accepted without prior written arrangement.

Exams

There will be online midterm and final exams. The material comes from the textbooks, class lectures and supplemental materials. If any exam is missed, a zero will be recorded as the score, unless you have made prior written arrangements with me. It is your responsibility to take the exams by the due date.

Grading Policy

Click the "Grades" link in Canvas to keep track of your grades. I grade once a week and post grades and comments in the Canvas gradebook.

Grades will be assigned based on points		
Letter Grade	**Percentage**	**Points Total**
A	90% - 100%	900 points or more
B	80% - 89%	800 to 899 points
C	70% - 79%	700 to 799 points
D	60% - 69%	600 to 699 points
F	59% or lower	599 points or less

Grading Breakdown

Percent	Points	Grading Category
36.5%	365 points	**Assignments: Problem Solving**
30.0%	300 points	**Assignments: Skill Demonstration (Final Project)**
10.0%	100 points	**Assignments: Game Design Documents**
9.0%	90 points	**Discussions + Participation**
7.0%	70 points	**Midterm Exam**
7.0%	70 points	**Final Exam**
0.5%	5 points	**Syllabus Quiz**
100%	1000 points	**1000 points possible**

Standards of Conduct

Students who register in SRJC classes are required to abide by the SRJC Student Conduct Standards. Violation of the Standards is basis for referral to the Vice President of Student Services or dismissal from class or from the College. See the Student Code of Conduct page.

Collaborating on or copying of tests or homework in whole or in part will be considered an act of academic dishonesty and result in a grade of zero for that test or assignment, except for assignments that allow collaboration. Students are encouraged to share information and ideas, but not their work.

Generative Artificial Intelligence (AI)

Unless an assignment explicitly states otherwise, use of generative AI tools is not allowed in this course. Please do not use any generative AI tool to assist you in any homework assignment in this course that does not ask you to use such tools. In almost every case, the use of content created by generative AI tools in your homework is considered a form of plagiarism.

What's a generative AI tool? Any software that creates code or content based on large language models. These include, but are not limited to:

- Microsoft CoPilot
- Google Bard/Gemini
- Anthropic Claude
- OpenAI ChatGPT
- GitHub CoPilot
- Meta.ai
- Replit.com AI Agent or Ghostwriter

See these links on plagiarism:

- SRJC's Statement on Academic Integrity
- SRJC Board Policy 8.2.8

I expect each student to maintain high standards of civility and respect when communicating with each other. The following rules of netiquette should be observed in all class discussions and communications:

- Be kind and respectful to others
- Use full sentences
- Avoid jargon and acronyms
- Use language that supports others

Special Needs

All students are welcome in this class. If you are a student who is currently living within a facility, please consider contacting me so we can make arrangements in case this impacts your access to course materials, equipment, software, and work.

Every effort is made to conform to accessibility standards for all instructor-created materials. Students should contact their instructor as soon as possible if they find that they cannot access any course materials. Students with disabilities who believe they need accommodations in this class are encouraged to contact Disability Resources by calling (707) 527-4278 or visit online at drd.santarosa.edu.

Student Health Services

Santa Rosa Junior College offers extensive health services to students. Visit Student Health Services online at shs.santarosa.edu or call them at (707) 527-4445.

Course Outline

Start Date	Canvas Module	Topics	Assignments	Discussions
1/14	Week 1	The World of Game Development / Learn to Code by Playing	• #1: JavaScript Self-Assessment • #2: Play a Game, Learn to Code *(2 weeks)* • Hosting Signup Survey • Syllabus Quiz	#1: Check-in Discussion *(2 weeks)*
1/21	Week 2	Game Development Process / JavaScript Basics	• #3: Transformational Process	•
1/28	Week 3	JavaScript, Systems Thinking + Browser-Based Games	• #4: First Game	#2: History + Origins of Games *(2 weeks)*
2/4	Week 4	Get Started with Phaser Game Engine / The VR Experience	• #5: First Phaser Game	•
2/11	Week 5	Sprites, Controls + Basic Physics	• #6: Working with Sprites + Controls	#3: Game Typologies *(2 weeks)*
2/18	Week 6	Spritesheets, Texture Atlases + Animation	• #7: Using Animation + Spritesheets	•

Start Date	Canvas Module	Topics	Assignments	Discussions
2/25	Week 7	Tilesets, Tilemaps + Cameras / Defining a Game: GDD	• #8: Using Level Maps + Tiles • #9: Draft GDD *(2 weeks)*	#4: Approaches to Game Design *(2 weeks)*
3/4	Week 8	UI, Scenes + Sound	• #10: Adding UI + Sound	•
3/11	Week 9	NPC AI + Pathfinding / Project Team Formation	• #11: Enemy AI Pathfinding	#5: GDD Presentations *(2 weeks)*
3/18	No Class	Spring Break		
3/25	Week 10	Advanced Physics / Midterm Exam	• #12: Use MatterJS Physics • Midterm Exam	
4/1	Week 11	NPC AI + Finite State Machines	• #13: Enemy AI + Finite State Machines • #14: Final Game Design Document *(2 weeks)*	#6: Team Roles + Team Formation *(2 weeks)*

Start Date	Canvas Module	Topics	Assignments	Discussions
4/8	Week 12	The World of 3D / Start Your Final Project	• #15: First 3D Game	#7: Working in 3D *(2 weeks)*
4/15	Week 13	Project Sprint 1: Prototype	• #16: Prototype	#8: Project Playtesting *(5 weeks)*
4/22	Week 14	Playtest + Project Sprint 2: Rough Draft	• #17: Second 3D Game • #18: Rough Draft	•
4/29	Week 15	Playtest + Project Sprint 3: Alpha	• #19: Alpha	•
5/6	Week 16	Playtest + Project Sprint 4: Beta	• #20: Third 3D Game • #21: Beta	•
5/13	Week 17	Native iOS Games / Playtest + Project Sprint 5: Final Build + Documentation	• #22: Final Build + Documentation	•
5/18 Mon – 5/22 Fri	Week 18	Final Exam / Final Project Review *(Exam online, no regular class meeting)*	• Final Exam *due 5/22*	#9: Final Project Sharing

Note to students: the assignments listed above will become available as modules are released in sequence each week. To view course content, go to **Modules**.