COMP1501 A (Winter 2026)
Introduction to Computer Game Design

Land acknowledgement:

Carleton University acknowledges the location of its campus on the traditional, unceded territories of the Algonquin nation.

Teaching Team:
- **Instructor:** Connor Hillen (Lecturer)
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  - **Office:** 5370 Herzberg
  - **Best Ways to be in Touch:** In class, during student hours, Brightspace forums. Private concerns via email or student hours; include `[COMP1501]` in the subject line.
- **Teaching Assistants:** TA Information will be posted to Brightspace shortly after the start of the term.

Course Information
- **Course Website:** https://brightspace.carleton.ca/
- **Class Location:** In-Person (refer to your schedule)
- **Lecture Times:** Mon. Wed. 10:05 - 11:35
- **Tutorials:** Mondays
  - **A1:** 11:35 – 12:55
  - **A2:** 14:35 – 15:55
  - **A3:** 13:05 – 14:25
  - **Start:** Begin Monday, Jan. 12

Important dates and deadlines can be found here: https://students.carleton.ca/academic-dates/, including class suspension for winter break and statutory holidays.

1. Course Calendar Description
Introduction to game design and prototyping. Topics include: formal theories of fun; the mechanics-dynamics-aesthetics framework; game economies; game balance; statistical tools for analyzing game mechanics; game settings; and storytelling. Special attention is given to the attributes of games and what makes a game fun.

Prerequisite(s): COMP 1005 or COMP 1405.

1.1. Course Outline Quick Links

2. Learning Material(s) and Other Course/Lab-Related Resources
You are NOT required to make any purchases for this course.

All course texts are optional and freely available via Carleton's O'Reilly Portal here, though some restrictions may be placed on availability: https://library.carleton.ca/node/16228

- **(Suggested)** Tracy Fullerton, *Game Design Workshop*, 3rd Ed. (2014) A practical overview of the process of brainstorming, designing, creating, and releasing games.
- **(Suggested)** Jesse Schell, *The Art of Game Design: A Book of Lenses*, 3rd Ed. (2019) A game design theory book with hundreds of practical questions to help examine your game and improve it over time. Most valuable after some experience practically creating games.

Please note that you are expected to learn much of the Godot game engine on your own before the final project. Try to learn about the Godot game engine in your free time **before** the winter break: https://docs.godotengine.org/en/4.5/index.html

3. Topics Covered and Learning Outcomes

Week	Topic/Content	Readings/Prep for Class
1	Design and Structure	Read outline and policies
2	Structure and Emotion	Review PlayingCards.io before tutorial.
3	Motivation and Playtesting	
4	Dynamics of Fun	
5	Target Experiences and Quiz 1	Prepare for the quiz
6	Godot Week	Complete the Godot tutorial and bring questions.
7	Winter Break	
8	Project & Production	
9	Space and Pacing	
10	Dynamics with Math	
11	Stories and Narrative	
12	Characters and Quiz 2	Prepare for the quiz
13	Extra Topics TBA	
14	Presentation Day!	Submit your project and marketing materials

We begin by learning design fundamentals, applying this in tabletop games and playtesting with peers, learn to work as a team, then wrap up by developing a game in the Godot Game Engine.

- **Godot Game Engine:** Implement simple computer game prototypes using the Godot Game Engine and GDScript, a Python-like scripting language made for the engine.
- **Build Your Game Vocabulary:** Define a game and describe the different types of games.
- **Demonstrate an Understanding of Game Decomposition, Including:**
  - The game loop, MDA Framework,
  - The taxonomy of fun,
  - Artificial intelligence in games, finite state machines,
  - Probability, combinatorics for games,
  - Narrative structures in games, including the hero's journey, worldbuilding.
- **Process:** Explain the principles of game design and the incremental process involved in designing games.
- **Project management:** Apply introductory knowledge of game project management to plan a project and communicate effectively in team settings.

4. Technology Notes

For this class, we will be using two major pieces of software:

- **PlayingCards.io:** A free, web-based system for creating tabletop games that can be shared in the browser. You will be using this for your first 4 assignments beginning on Week 2, and you are strongly encouraged to review the documentation before your first tutorial: https://playingcards.io/docs/
- **Godot:** For this class, we will be using the Godot Game Engine, specifically Version 4.5.x (e.g., 4.5.1, 4.5.2). The Godot Game Engine is free, lightweight, and open source. While Godot supports many programming languages to code in, we will specifically be using GDScript, the Python-like language designed specifically for Godot.

You are strongly encouraged to begin experimenting in the Godot Game Engine as early as possible. Resources to support self-directed learning will be available on the course Brightspace. While it may seem daunting to learn the ropes of the engine mostly on your own, many students have successfully picked up enough of the Godot engine to make some very interesting and engaging projects!

5. Assessment Scheme

Assignments must be submitted and ready to demonstrate **before your subsequent tutorial**.

Component	Grade Value	Date	Notes
Assignment 1	5%	Due Jan. 18	
Assignment 2	5%	Due Jan. 25	
Assignment 3	5%	Due Feb. 01	
Assignment 4	5%	Due Feb. 08	
Assignment 5	5%	Due Feb. 22	
Final Project	40%	Due Apr. 05	
Side Quests	5%	2.5% before winter break; varies	Extra credit up to 3% available
Quiz 1 (Online Asynchronous)	7.5%	Feb. 04 at 08:00 – Feb. 05 at 18:00	
Quiz 2 (Online Asynchronous)	7.5%	Mar. 25 at 08:00 – Mar. 26 at 18:00	
Final Exam (In-Person)	20%	Scheduled by Registrar	

Reweighting and Assessment Flexibility:

- **Quizzes:** Final exam scores will automatically replace any lower quiz scores, but you should only take this option under extenuating circumstances so that you can make sure that you learn the material and are prepared for the final exam.
- **Second-Chance Grading:** Quizzes and Assignments offer a second-chance to complete them so that you can learn, revise, and improve, with a weighting adjustment. See Section 6.5 for information.
- **Extra Credit:** You can complete up to 3% in additional Side Quests to earn extra credit.

6. Assessment Types

6.1. 5 Weekly Assignments

Each week before Winter Break, you will be asked to design and test one game each week, with a given prompt. You will need to submit a one sheet instruction manual and answer a few short questions about the design process of each game. Teams are randomly formed in advance on Brightspace. Tutorial attendance is mandatory to receive assignment marks.

The assignment prompts are as follows (subject to change):

1. **(Team A) Paper Prototyping:** Design a game from a starting goal, test it, and provide instructions.
2. **(Team A) Radical Revision:** Take the previous week's game, playtest it, find what's fun, and radically revise the game to emphasize the most fun parts.
3. **(Team B) Disruption:** Take an existing game and radically disrupt one major aspect of it, then evaluate it.
4. **(Team C) Experience Game:** Given a target experience, design a game which gives the feeling of the target experience without purely simulating it.
5. **(Team C) Attempting Godot:** Using either the Experience Game or a new game design based on a provided prompt, attempt to make a game in Godot. This assignment will be marked on completion, rather than fun, to experiment with different Godot features.

Assignments 1-4 are graded by two TAs playing your game and grading on a rubric of different elements of fun. A detailed rubric will be made available on Brightspace but expect to be assessed on topics such as clarity of instructions, choices of the player affecting outcomes in interesting ways, and clarity of goals.

Submissions: Assignments have two submissions:

- **Group Submission:** Your game instructions, a playable version of your game, and for Assignments 2, 3, 4, notes about your playtest and possibly some group reflection questions.
- **Individual Submission:** A short survey peer evaluation quiz, graded based on completion. If peers report you as absent, you may receive a zero for the assignment

6.2. Final Project

In the second half of the course, you will form a final team to pitch, design, and implement a game in the Godot Game Engine. Like the assignments, each week there are two submissions:

- **Group Milestone Submission:** Must meet the specified milestone requirements.
- **Individual Peer Evaluation:** The final peer evaluation will be used to influence final marks. A portion of the final project grade is based on the peer evaluations.

During the final project, tutorial attendance is marked based on prompt attendance and duration of stay in the tutorial to ensure consistent participation in groupwork activities.

If you experience group issues during the project, you are expected to reach out right away. Note that experiencing and overcoming group issues in a mature way using communication techniques discussed in-class is a part of the learning outcomes and working individually due to group dynamics issues may lead to deductions overall.

6.3. Side Quests

A selection of **Side Quests** will be available on Brightspace. These are small tasks designed to engage you in different aspects of game design and development which you are most interested in. You can choose which quests to complete, each rewarding a certain percentage for completion. There will be suggested side quests, but you are free to choose any you would like to fulfil these requirements. You may also propose side quests to the instructor if you feel there are fun related side projects you would like to engage in!

Important: 2.5% worth of your side quest grade is **due** before the start of winter break.. There are recommended side quests to reach this 2.5% with details posted to Brightspace.

6.4. Asynchronous Quizzes and Final Exam

There are two quizzes which will be held on Brightspace asynchronously. **Tentatively:** Class will be cancelled during the running of these quizzes to allow time to write if the reserved time is needed. If we fall far behind in the material, the class may need to be un-cancelled and this will be announced in advance. They must be completed individually.

- **Quiz 1:** Covers design theory and game decomposition.
- **Quiz 2:** Covers more technical and math-related skills.
- **Final Exam:** In-person; covers the content of the first two quizzes and the final course topics.

6.5. Second-Chance Policy

To promote learning through mistakes, feedback, and iterative design, this course will be permitting the re-submission of Assignments 1 - 5 and re-taking of Quizzes 1 and 2 with the following conditions:

- **Assignments 1 - 5:**
  - May be re-submitted and re-assessed within **one week** of when grades are released on Brightspace,
  - Grading times are variable, and so the second submission link will not be available until feedback is returned,
  - The second submission will receive less feedback than the first submission to expedite grading time,
  - The overall mark for each assignment uses the “Weighted Average with Insurance” scheme described below.
  - You **must** include a changelog of what you changed and why with your second submission to be assessed.
- **Quizzes 1 and 2:**
  - May be re-taken **one week** after the original quiz is released,
  - The overall mark for each quiz uses the “Weighted Average with Insurance” scheme described below.
- Due to limitations, Brightspace may not accurately reflect the combined mark for an assessment
- The final project and final exam are **not eligible** for re-submission or re-taking and are intended to be the final evaluation of your understanding of the course material.
- **These policies are also the primary short-term accommodation for students who miss the original deadlines for any reason.**

Weighted Average with Insurance: The mark for a second-chance assessment is calculated as follows:

- The overall mark for an assessment, A_o, combines the first attempt, A_1, and the second attempt, A_2, as follows:

$$A_o = \max(A_1, 0.80 \times \max(A_1, A_2) + 0.20 \times \min(A_1, A_2))$$

- If your first attempt is higher than your second attempt, the first attempt is used as the overall mark. If you do not take a second attempt, the first attempt is used as the overall mark.
- Otherwise, the overall mark is 80% of the highest mark of the two attempts and 20% of the lowest of the two attempts.
- Thus, if you do not take the first attempt, your maximum score is 80% assuming a perfect score on the second attempt.
- E.g., A score of 70% on attempt 1 and 95% on attempt 2 results in $(0.80 * 95 + 0.20 * 70) = 90\%$ for that assessment

7. Assignment & Project AI and Collaboration Policy

This course expects a lot of collaboration within teams and receiving playtest feedback from other students. You are not allowed to work on any other team's work, outside of providing playtest feedback. You are required to participate in all different disciplines of tasks involved in the course, as discussed in class. If it is found through peer evaluations and progress reports that you did not partake in design, development, and playtesting by the end of the year, this is grounds for deductions at the instructor's discretion. You may be requested to demonstrate the tasks you completed during the assignment / project based on feedback.

The work that you produce for this course is expected to be original: Your designs must be original designs, worked on with your group. Your code must primarily be made by yourself and your group. In this course, collaboration and peer support is encouraged to support learning the technology and receiving feedback for design. In spirit: Do not share code specific to your game's design and do not use code which would govern the direction of your game's design. Any shared code should not be a deciding factor in an assessed component of your game's design.

If you are unsure of what is expected of you, or are unsure of what constitutes inappropriate collaboration, please ask the instructor, and review the academic integrity information. To further clarify:

- You **may** use a small snippet of code (e.g., <5 lines) from online sources or peers, but you must provide sources for the code in the comments. Cite by stating who/where the code came from and how it was modified. You must understand and be ready to explain all code in your submissions. At no point should you pass off anyone else's work as your own.
- You **may** use assets (images, sounds) from online sources if they are freely permitted to be used. For simplicity, you may only use explicitly CC0 / Public Domain licenced assets, and must provide credit to the author and source in your game.
- You **may** use generative AI for game assets and small amounts of code. You must provide citations in your submitted documents detailing which AI was used and for what purpose. Ensure anywhere that you post your games permit the use of generative AI.
- You **may NOT** give out your game's code to students in other teams, though you can provide links to helpful resources or help explain general concepts and provide a few lines of general-purpose example code that does not directly influence the design of their game.
- You **may NOT** work on assignments with other students, friends, or family outside of your team, however you may show off in-progress work for playtesting purposes and receive technical assistance. Keep track of anyone who provides design feedback to provide them with fair credit.
- You **may NOT** talk to anyone while taking the midterm quizzes or discuss the quiz content until quiz grades are released.

8. Course Modality

This course is being taught in-person and attendance is expected for success in the course. In-class announcements may be the only source of important information for the flow of the course. There are no recordings for this course.

Lectures may be switched to Zoom if the instructor falls too ill to attend in-person or during a major weather event. In these events, announcements will be sent out ahead of the lecture with links and relevant information. Check-in on announcements daily to keep up to date with any changes to modality. These online emergency lectures will be recorded and released.

9. Important Assignment Submission Policies

Not following submission guidelines is grounds for a zero. If your submission does not match the submission requirements exactly (which are clearly posted on each assignment), your submission may receive a zero. Make sure to double check the submission guidelines **before** and **after** submitting your assignments online. If the requirements are unclear or you are otherwise incapable of meeting them, meet with a TA during student hours, post to the course forums, or (for issues requiring confidentiality) contact the instructor.

If a submission does not run for any reason, or if instructions for play are incomplete or unclear, it may receive a mark of zero. It is recommended that as soon as you upload your assignment, you should download and test it again to make sure everything is correct, and make sure to submit clear and complete instructions.

The final project submission is final. Consider your final project with the same importance you would consider a final exam — once the project submission time is reached, there is unfortunately very little room for any kind of additional accommodations. Ask questions ahead, triple check your submissions, and feel free to come by student hours to check-in on your submission in advance. We cannot provide detailed grading notes, but we can discuss general expectations and common issues to watch for.

9.1. Grade Disputes

It is your responsibility to dispute grades within **one week** of receiving feedback if you see an error. Grade disputes are not meant to be based on a feeling of deserving more but based on a grader outright missing something vital or outright marking something incorrectly according to the provided grading scheme. A grade dispute forum is setup on Brightspace to handle grade disputes. Post all disputes to this forum for it to be considered. Communications must be courteous — hostile communications will be ignored and possibly reported to the Dean’s office. As long as we have received your grade dispute within one week of the feedback being released, it will be considered, but may take longer than the one week to resolve.

Try to avoid upsetting or controversial topics in your game submissions that might lead to major discomfort for the other students and teaching assistants playing your games. To best support an environment focusing on mechanics design, playtesting, and collaboration — and understanding that many students and teaching assistants will be playing your submissions — ensure that your work follows Carleton’s human rights policies and procedures and does not include any potentially harassing or discriminatory content or themes. You can have fun with theming, but keep content appropriate for sharing and be respectful of your fellow classmates and TAs. If you would like to touch on serious topics that might be considered difficult subject matter, please reach out to the instructor to discuss ways of handling the topic with care and ensuring respect for others’ wellbeing.

We will occasionally see content with difficult subject matter in class to support different topics. Students will be warned of this content before it appears.

Do not feel pressured to play a game or work with a team that you are uncomfortable with. You may opt to test another game if you are uncomfortable with the theming or content, and if you find any submissions harmful or distressing, please reach out to the instructor.

10. Late and Missed Work Policies

10.1. Late Assignments

Late assignments will not be accepted, but they can be submitted to the second-chance submmission when it becomes available. If you are unable to playtest your game and a playtest is required as part of the submission, you may meet with teaching assistants during student hours or get another student to play during the week.

10.2. Missed Work

Some assessments can have accommodation considerations and many have automatic policies that do not require reaching out. Review the requirements and policy here: https://carleton.ca/registrar/academic-consideration-policy/

Long-Term Accommodation: If you are unable to attend and complete work for 1–2 weeks and the existing accommodations cannot support you, you may contact the instructor, but long-term accommodation is unlikely.

Short-Term Accommodation: Short term accommodation is handled by the second-chance policy and missed work policies.

1. **Missed Quizzes:** Quizzes are eligible for a second-chance submission in the following week and any quiz scores lower than the final exam score will be replaced by the final exam.
2. **Missed Tutorial:** You may submit **ONE** assignment individually if you miss a tutorial. You must submit to the “Individual Submission” assignment on Brightspace before the original deadline, which cannot be reflected in the individual submission page. If you submit even one minute after the original deadline, it will be graded as a second-chance.
3. **Missed Project Tutorial/Milestone:** The tutorial attendance and milestones are intended to keep you on track during the project and ensure equal collaboration with your team. If you are unable to complete the project with your team long-term due to extenuating circumstances, review the long-term accommodation requirements at the policy page linked above and contact the instructor as soon as you are aware of this to consider accommodations such as completing the project individually. As there are marks specifically for collaboration, some marks may be lost for not working with your team.
4. **Missed Side Quests:** No accommodations will be provided for missed side quests.

11. Communication Policy

In order to reduce the volume of emails and expedite responses, the only emails that should be sent to the instructor, teaching assistants, or lab coordinators should require confidentiality or be personal in nature, and must be handled via direct email from a Carleton email address. Your first point of contact for course support or general information should be the Brightspace forums or student hours with TAs and the instructor.

Students are expected to check their Carleton email addresses daily for announcements. Reminders for upcoming assignment deadlines will be handled using the default Brightspace notifications system, so if you require reminders, check that your Brightspace settings will send notifications.

Students should only expect responses within **3 business days** during business hours (8:30AM – 5:30PM, Monday – Friday). Plan ahead — questions asked over the weekend may go unanswered until the following week. Email communication may be delayed if there is a high volume of emails, so any messages which can be answered in the syllabus, recent course announcements, or could be asked on the course forums (because they do not require exposing personal information) may be lower priority, responses may be provided in-class or via announcement, and you are encouraged to attend student hours.

To make sure communication is handled in a timely manner, follow these guidelines:

1. Any email communication must include your name, student ID, and course code and must be sent from an official Carleton email address. As I teach multiple courses, please include the course code in the subject line.
2. **Assignment questions:** Discuss with a TA during student hours, tutorial, or via the Brightspace forums first.
3. **Course material assistance:** Use Brightspace forums, TA student hours, or instructor student hours.
4. **Technical issues:** First check Brightspace forums and course resources, then check the SCS technical support page, then ask the teaching team (who may forward your concern to the instructor).
5. Students must behave in a professional manner in all communications. Any communication that is abusive, discourteous, or unprofessional may be moderated, ignored, or reported to the university for disciplinary action.

12. School of Computer Science Information

Undergraduate Academic Advisors: The Undergraduate Advisors for the School of Computer Science are available in Room 5302HP; or by email at scs.ug.advisor@cunet.carleton.ca. The undergraduate advisors can assist with information about prerequisites and preclusions, course substitutions/equivalencies, understanding your academic audit and the remaining requirements for graduation. The undergraduate advisors will also refer students to appropriate resources such as the Science Student Success Centre, Learning Support Services and Writing Tutorial Services.

SCS Computer Laboratory: Students taking a COMP course can access the SCS computer labs. The lab schedule and location can be found at: https://carleton.ca/scs/tech-support/computer-laboratories/. All SCS computer lab and technical support information can be found at: https://carleton.ca/scs/tech-support/. Technical support staff may be contacted in-person or virtually, see this page for details: https://carleton.ca/scs/tech-support/contact-it-support/.

School of Computer Science Laptop Requirement: Every student that has been enrolled in a 1000-level (i.e., first year) course offered is required to have a laptop. This includes COMP1001, COMP1005, and COMP1006. For more information, please visit https://carleton.ca/scs/scs-laptop-requirement/ and then review the requirements at https://carleton.ca/scs/scs-laptop-requirement/laptop-specs/.

13. Academic Accommodations and Regulations

Academic Accommodation: Carleton is committed to providing academic accessibility for all individuals. You may need special arrangements to meet your academic obligations during the term. The accommodation request processes are outlined on the Academic Accommodations website (https://students.carleton.ca/course-outline/).

Academic Integrity: Students are expected to uphold the values of academic Integrity, which include fairness, honesty, trust, and responsibility. Examples of actions that compromise these values include but are not limited to plagiarism, accessing unauthorized sites for assignments or tests, unauthorized collaboration on assignments or exams, and using artificial intelligence tools such as ChatGPT when your assessment instructions say it is not permitted.

Misconduct in scholarly activity will not be tolerated and will result in consequences as outlined in Carleton University's Academic Integrity Policy.

A list of standard sanctions in the Faculty of Science can be found here.

Additional details about this process can be found on the Faculty of Science Academic Integrity website..

Students are expected to familiarize themselves with and abide by Carleton University's Academic Integrity Policy.

Student Rights & Responsibilities: Students are expected to act responsibly and engage respectfully with other students and members of the Carleton and the broader community. See the 7 Rights and Responsibilities Policy for details regarding the expectations of non-academic behaviour of students. Those who participate with another student in the commission of an infraction of this Policy will also be held liable for their actions.

Student Concerns: If you have any concerns regarding this course, your first point of contact is me. Please email me or visit during my student hours, and I will do my best to address your concerns. If I cannot resolve the issue, the next point of contact is the School of Computer Science at studentconcerns@scs.carleton.ca. If the concern remains unresolved, the final point of contact is the Office of the Dean of Science at ODScience@carleton.ca. Please follow this order of contact.

Note: You can also bring your concerns to Ombuds services.