

INTRO TO COMPUTER GAME DESIGN
COMP 1501A

Course Outline (Winter 2021, Tentative - Subject to Change)

Instructor:	Connor Hillen	Time:	Tue. Thu. 18:05 – 19:25 EDT
Email:	connor.hillen@carleton.ca	Office Hours:	TBD (Discord)
Website:	https://carleton.ca/culearn	TA Info:	Posted on course web page
Zoom Code:	942 6960 9289	Discord:	TBA

1. About the Course

Course Calendar Description: Introduction to computer game programming interfaces. Topics may include: game balance and level design; storytelling and narrative; basic game architecture; sprite-based games and isometric games; representation of scenes; user interaction; architecture of game consoles; development tools for game consoles; interaction with game peripherals.

Prerequisite(s): one of COMP 1405, COMP 1005, ECOR 1051, ECOR 1606, SYSC 1005

Textbooks and Other Resources: The following textbooks are recommended, but not strictly required. The asterisked textbook, *Schell*, is highly recommended, will be referenced often, and available through the school book store - **no readings will be assigned**.

I have reserved the third edition of Schell, however alternative editions are fine, given some page number references may be incorrect. While it is not strictly required, these books are widely referenced in the game design industry and are likely of interest for anyone interested in the field.

Note: All of the below books are also available as free e-books through Carleton's O'Reilly portal available here: <https://library.carleton.ca/node/16228> - there may be some restrictions on availability.

- * Jesse Schell, *The Art of Game Design: A Book of Lenses, 3rd Edition, 2019*
- Raph Koster, *A Theory of Fun for Game Design, 2nd Edition, 2014*

Additional resources will be made available on the course web page. These includes a course calendar, additional readings, supplemental videos, discussion forums, and more.

Objectives: The goal of this course is to introduce you to the fundamentals of game design and enable you to develop games with designed intent. By engaging in all of the course content you should build a new appreciation for design in games and be able to write computer games using Python 3 and the pygame library.

Topics Covered: This course covers game design fundamentals and introductory implementation of games. A detailed prospective calendar of lecture topics can be found on the course web page, but topics are subject to change as the course progresses. Below is a list of topics we'll cover, and what a student that completes all coursework should be able to do with it:

- **Python 3 and Pygame:** Implement simple computer game prototypes using Python 3 and Pygame
- **Build Your Game Vocabulary:** Define a game and describe the different types of games
- **Demonstrate an Understanding Of:**
 - The game loop, MDA Framework
 - The taxonomy of fun

- Artificial intelligence in games, finite state machines
- Probability, combinatorics for games
- Narrative structures in games, incl. the hero's journey, worldbuilding

- **Explain the principles of game design**

2. Assessments

This course is made up of two major assessment goals: learning the theory of game design with some math required for implementing 2D games, and applied game development knowledge. The quizzes and final exam will primarily cover the theory of game design while the tutorials and assignments will focus on teaching implementation.

The lectures will contain some of both, but will largely focus on design theory while the tutorials will focus on implementation. As such, you are expected to keep up with both the lecture and tutorial components to learn all of the material. Due to these goals, there is a **strict double pass requirement** - in order to pass the course, you must achieve a passing (>50%) grade in both development and theory applications (see below for details).

Grading: Your grade in this course is made up of various parts. There will be **4 assignments**, two **quizzes** (in-class, date subject to change), **10 tutorials** (starting TBD), and a **final exam** (date scheduled later).

Assignments (4x10%)	40%
Tutorials (1%x10, Starting TBD)	10%
Quizzes (2x10%, During Class, TBD)	20%
Final Exam (Scheduled by registrar)	30%

Tutorials: Tutorial attendance is **mandatory** - students will be required to be available online during the scheduled tutorial times to work on the tutorials. If you are unable to complete your work during the tutorial, you will have **one week** to submit your code for grading. **Extensions for tutorials will not be provided for any reason beyond this one week.** Students must **attend the tutorial they are registered in** or **you will not receive grades.** You are expected to arrive **on time** in order to receive information required to complete the tutorial.

Assignments: Completing assignments is **mandatory.** Assignments will be submitted on cuLearn. Make-up and extension information is described later under the *Assessment Accommodations* section. Assignments must be completed individually. Once grades are released, students will have **two weeks to verify the correctness of their grades.** Students can email the TA within two weeks of receiving grades to seek a correction. Any requests made after two weeks will not be considered. **Late submission information will be posted shortly.**

Double Pass Requirement: This course uses a "double pass" evaluation. **In order to pass this course students must** achieve a combined score of 50% or higher in *both* development work (assignments + tutorials) **and** in examinations (quizzes + final exam). For example, if a student does not attend tutorials and receives a 50% on each assignment, their assigned work receives a mark of $(0.1 * 0) + (0.4 * 0.5) = 0.20$ or 20% of a possible 50%, a **40%** in their development component, and thus the student would receive an F in the course regardless of exam marks.

Collaboration Policy: While I would typically encourage collaboration in game development, we *must* assess your individual knowledge of these concepts before sending you forward in the stream. After all - nobody wants to work on a group game development project with someone who was not able complete any of the previous assessments on their own!

All graded course work must be done individually unless otherwise specified. Tutorials may be collaborated in pairs, as long as both students are capable of discussing and demonstrating an understanding of *all* of the work completed during the tutorial. 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, on any graded item:

- **You may not** copy, use, look at, or modify code obtained from other students or websites
- **You may not** give out your code or any course materials to anyone, including students or websites
- **You may not** work on assignments with other students, friends, or family
- **You may not** talk to anyone other than instructors or proctors during quizzes or the final exam
- **You may not** discuss specifics of assignment solutions for any assignment during the whole term - including after the deadline - due to the make-up policies.

Any collaboration on **non-graded** material is *encouraged*, such as discussing lectures, working on practice problems, discussing textbook chapters, or doing exam reviews.

Suspected academic integrity offences are reported to the office of the Dean of Science. Penalties for such offences can be found on the ODS webpage [here](#). The new standard penalties are as follows:

- **First offence, first-year students (< 4.0 credits completed):** No credit for assessment(s) in question, or a final grade reduction of one full letter grade (e.g., A- becomes B-), whichever is a greater reduction
- **First offence (anyone else):** A grade of F in the course
- **Second offence (anyone):** A grade of F in the course and a one-term suspension from studies
- **Third offence:** Expulsion from the University

Regret Policy: Sometimes people make bad decisions, and I want to support those that realize that what they did was wrong and want to set things right. As such, if you knowingly commit an academic offense, you will have **48 hours** after submitting the offending material to email the instructor (from a Carleton email address) asking to invoke the regret clause. **You can only do this once.** In this instance, you will receive a zero on the assessment and allowed to submit individual work following the makeup rules listed below (note: this is subject to change, and at instructor discretion depending on the offense). If you are suspected to have committed a second offense during the term, this information - including your regret offense - will be forwarded to the dean with no further chances.

3. Course Modality

This course involves in-class activities, graded quizzes, and discussions, and thus must be **synchronous**, or live-streamed. We will start by meeting on Zoom (linked at the top), but this modality may change as new technology is evaluated.

You will also need to be able to attend the course Discord during lectures for in-class group activities. Make sure your attendance method allows you to attend both Zoom and Discord simultaneously.

You are expected to attend **every class**. Class recordings will be posted afterwards, but you may miss out on important in-class activities and discussions.

You are **not** required to be on camera during lectures, however you **must** have a working microphone to interact with each other.

4. Make-up Policies, Missed Assessments

This is an unprecedented school year, and as such I will be providing some opportunities to make-up assignments and quizzes. Please be aware of these policies, and keep up to date for any changes. **Note:** You likely should not need to contact the instructor regarding accommodations, as they will likely just fall under these policies automatically. If there are extenuating circumstances where these policies do not work for you, contact the instructor.

Tutorials: If you are unable to attend or complete your tutorial during the time provided, you will have **one week** to complete your tutorial and demonstrate it at the next tutorial.

Quizzes: There will be two in-class quizzes during the term. If you do not complete the quiz, you will receive a zero. There will be no extensions, rescheduling, or make-up for the quiz; however, if you achieve a higher grade on your final exam than your quizzes, your quiz grade will be replaced by your final exam grade. If you perform better than *both* of your quiz grades, both quizzes will be replaced by your final exam grade. **If you are unable to attend the quizzes for any reason**, you do not need to request accommodations as your final exam grade will automatically replace the quiz you can not attend.

Warning: While it might be enticing to simply skip the quizzes with this kind of accommodation, you will be put at a disadvantage. The quiz material will help prepare you for the final exam and provide you with a better picture of your standing in the course. You do not want to miss the quizzes and rely on your final exam covering 50% of your grade, *and* determining whether you pass/fail due to the double pass rule.

Assignments & Make-Up Day: (Note: This section subject to change, pay attention to latest announcements for more information). If you are unable to submit assignments, there will be a day designated at the end of the term that you can submit the assignment and still receive full grades for that assessment. *The intention* is that this should only be for assessments where you were unable to complete, but for fairness, it is also open as a submission to *replace* your previous assignment grades. No matter what grade you get - your make-up submission will replace the old one, including if it would reduce your grade further.

If you are unable to submit an assignment, there is no need to request special accommodations - prepare it and submit it by the make-up day submission deadline, any time until the end of the term.

If you are able to submit an assignment, but are uncomfortable with the grade you received, you can submit a *new version* of the assignment and it will replace your old grade. If you feel your assignment was marked *incorrectly*, contact the TA that graded you to dispute the grade within two weeks rather than relying on the make-up. Policies will be listed on the make-up day submission page, but be aware: your assignment **must be new** - you can not simply take your old code and update it to receive more marks, but start a new submission from scratch. Again, specifics for each assignment will be available on the make-up day submission page.

Warning: As with the quiz policy, some students will take make-up day as a reason not to complete assessments they *might* be able to complete in time. Make-up day grading will have minimal feedback, a very limited window to dispute grades, and you will miss out on a major component (minimum 10%) of your grade until the end of term and not know your standing. It's *highly* recommended to only take advantage of make-up day in worst case circumstances. In addition, attempting to use make-up day to improve an otherwise good mark may lead to a *reduction* in grades, as the make-up assignment replaces your old grade. In addition to this, there is no guarantee you will be able to find the time to work on the make-up submission throughout the term; it is risky to rely on this if you are otherwise able to complete it during the regularly scheduled assessment time.

5. Communication Policy

The move to all courses being online has strained the communication for the term. Due to a very high volume of email traffic, emails sent directly to instructors and TAs should be kept to a minimum. **The only emails sent directly to TAs and the instructor should require the confidentiality of direct email.**

Importantly: Before emailing, **check the Discord, review the syllabus, check announcements, and review lecture intros.** Anything easily answered by these components may be ignored, or possibly redirected to the material to evaluate yourself.

There are three major communication channels you need to be aware of for this course:

- **Discord:** Discord will be the primary place to post general questions about the course, attend tutorials, and hold office hours.
- **Email Announcements:** While Discord will have the most announcements, severely important messages will be sent via cuLearn announcements.
- **Assignment Forums:** While Discord is great for discussion, it's not very good at *organized* discussion. Each assignment will have a cuLearn forum attached to it so that we can have organized Q&A for each assignment that everyone can easily reference. **You must detail your question in the title** to avoid duplicate questions.

You should not email regarding:

- Assignment Clarifications: Unless you **must** show your implementation, or discuss your own code, this does not have confidential information and publicly discussing clarifications helps all students.
 - Due Dates: All due dates are posted on cuLearn and in the course outline.
 - Grade Release: Grades should be released on a regular schedule, but if you are **truly concerned** about when grades are released, you can post publicly to ask
 - Policy Questions: As the policies are all public information, as long as it is a general inquiry about what a policy means, this should be asked publicly. Of course, if you are inquiring about personal circumstances, send an email privately.
1. Any **private emails** (eg. grades, accommodations) must include [**COMP 1501A**] in the subject line, include your **student ID**, and include your **tutorial section** if you are discussing tutorials
 2. **Assignment questions** should *first* be dealt with during office hours, and on cuLearn forums for that assignment
 3. **Course material assistance** is handled during the instructor office hours and TA office hours if available
 4. **For technical issues** first look on the course website, then the SCS **technical support page**, then inquire with the teaching assistants who may forward your concern to the instructor.
 5. **Students must behave in a professional manner** in all communications. Any communication that is seen as discourteous and unprofessional may be moderated, ignored, or in the worst case reported to the university.

Students are expected to check their Carleton email addresses and Discord announcements **daily** for updates. For convenience, you can set up your cuLearn notifications to reduce email volume. Note that you should **not expect responses outside of business hours (8:30AM - 5:30PM, Monday-Friday)**. Due to high volumes, expect up to a 48 hour response. Plan ahead and try to ask questions before the weekend or evenings. Anyone not following the communication guidelines risks having their communication go ignored or redirected, so please make an effort to follow the guidelines as best as you can.

6. Important Considerations

Technical issues will not exempt you from assignment deadlines. You are expected to submit your assignment well in advance of the submission time, and submit often to receive part marks. Submission issues may pop up if you submit late - unless it is extenuating circumstances affecting many students, there will be no further extensions provided outside of make-up day options.

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 office hours, post to cuLearn, or finally contact the instructor.

If your submitted code does not run for any reason, it may receive a mark of zero. It is recommended that as soon as you upload your assignment, you should download and run it again to make sure everything was submitted correctly.

Your code may be penalized if it is poor quality. You are expected to use the tools and techniques discussed in class, do the necessary problem solving preparatory work before coding, and practice good coding practice where possible. **You may be asked to present (or do) your preparatory work** before a TA will offer support.

7. SCS Support

SCS Computer Accounts: Any student taking an SCS course qualifies to have an SCS account. SCS accounts can be created at the following URL: <https://www.scs.carleton.ca/newacct>. Technical support is available in room HP5161 Monday to Friday from 9:00 until 17:00 or by emailing support@scs.carleton.ca. Additional support information and all SCS account related information is accessible at the following URL: <https://www.scs.carleton.ca/technical-support>.

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

8. University Policies

Student Academic Integrity Policy: Every student should be familiar with the Carleton University student academic integrity policy. A student found in violation of academic integrity standards may be awarded penalties which range from a reprimand to receiving a grade of F in the course or even being expelled from the program or University. Examples of punishable offences include: plagiarism and unauthorized co-operation or collaboration. Information on this policy may be found [here](#).

Plagiarism: As defined by Senate, “plagiarism is presenting, whether intentional or not, the ideas, expression of ideas or work of others as one’s own”. Such reported offences will be reviewed by the office of the Dean of Science.

Unauthorized Co-operation or Collaboration: Senate policy states that “to ensure fairness and equity in assessment of term work, students shall not co-operate or collaborate in the completion of an academic assignment, in whole or in part, when the instructor has indicated that the assignment is to be completed on an individual basis”. Please refer to the course outline statement or the instructor concerning this issue.

Academic Accommodations for Students with Disabilities: If you have a documented disability requiring academic accommodations in this course, please contact the Paul Menton Centre for Students with Disabilities (PMC) at 613-520-6608 or pmc@carleton.ca for a formal evaluation or contact your PMC coordinator to send your instructor your Letter of Accommodation at the beginning of the term. You must also contact the PMC no later than two weeks before the first in-class scheduled test or exam requiring accommodation (if applicable). After requesting accommodation from PMC, meet with your instructor as soon as possible to ensure accommodation arrangements are made. For more details, visit the [Paul Menton Centre website](#).

Religious Obligation: Please contact your instructor with any requests for academic accommodation during the first two weeks of class, or as soon as possible after the need for accommodation is known to exist. For more details, visit [Equity Services](#).

Pregnancy Obligation: Please contact your instructor with any requests for academic accommodation during the first two weeks of class, or as soon as possible after the need for accommodation is known to exist. For more details, visit [Equity Services](#).

Survivors of Sexual Violence: As a community, Carleton University is committed to maintaining a positive learning, working and living environment where sexual violence will not be tolerated, and survivors are supported through academic accommodations as per Carleton’s Sexual Violence Policy. For more information about the services available at the university and to obtain information about sexual violence and/or support, visit: <https://carleton.ca/sexual-violence-support>

Medical Certificate: The following is a link to the official medical certificate accepted by Carleton University for the deferral of final examinations or assignments in undergraduate courses. To access the form, please go to <http://www.carleton.ca/registrar/forms>