

DAC 305: Design for Interactive Games

Fall 2016 (8076)

Thursdays, 3:30pm-6:20pm in ECH 1205

Instructor Information

Instructor: Dr. Lennart Nacke, Associate Professor
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Course Description

This course introduces fundamental design skills for two-dimensional interactive media, with special attention on video games. Students will learn to theorize, design, prototype, and test digital interactive creations as a form of entertainment and communication. The course also features a strong reflective component about the effects of video games and the player experience that they evoke. Students will learn a critical vocabulary that enables them to discuss video game effects and gives them insights into the latest game research.

Course Goals and Learning Outcomes

On the successful completion of the course, students will be able to:

1. Explore the basic methodologies and conceptual skills of game design, such as
 - a. systems thinking
 - b. an iterative design process
 - c. playtesting
 - d. design collaboration
 - e. critical design analysis
2. Create several playable games using an iterative development process and learn C# basics of programming
3. Organize and summarize fundamental effects of video games
4. Interpret the foundational texts in the field of game development and player experience
5. Analyze games and the resulting player experiences critically

Required Equipment

You are required to buy the following and have them with you for classes:

- Mac or PC, ideally a laptop computer, that can run [Unity 3D](#) and [Steam](#)
- Download and install Unity 4.6.9 from <https://unity3d.com/get-unity/download/archive>
- A 2D image editing program like Gimp (<https://www.gimp.org>), Paint, Paint.NET (<http://www.getpaint.net>), or online alternatives: Pixlr: <https://pixlr.com/editor/>
- For sound editing, I recommend Audacity: <http://www.audacityteam.org/>

Required Text

- The Acagamic blog: www.acagamic.com
- Schell, J. (2008) *The Art of Game Design: A book of lenses*. ISBN-10: 0123694965
- **Optional:** Salen, K., and Zimmerman, E. (2003) *Rules of Play: Game Design Fundamentals*. ISBN-10: 0262240459

I definitely recommend the book *The Art of Game Design* to every student. Additional readings may be assigned or recommended during the course. I have asked to have these available on course reserve at Dana Porter Library.

Course Requirements and Assessment

All assignments must be completed for a student to pass this course with a C- grade or higher. Any student receiving a grade of D or lower on any assignment is strongly encouraged and expected to discuss the matter with me in office hours.

* For all written assignments and exams, we reserve the right to calculate the total percentage received by multiplying with a percentage factor between 0-1 based on the instructor's evaluation. Online items (quizzes or written assignments) can be turned in online to your instructor only during the timeframe in which items are available. A submission only counts if it is registered in Learn or by your instructor.

All important new information, such as course news, notes, additional reading, etc. will be available on the Learn course page. It is your responsibility as a student to check the Learn course page for new information. Although I will regularly monitor Learn's discussion board messages, these messages are not considered official communication between students and instructor. Emails regarding an assignment received within 24 hours of the assignment due date will not be answered; it is your responsibility to start your assignments early.

Please wait at least 24 hours after you have received a grade before discussing it with me. If you want to discuss a particular grade you must do so no more than one week after the grade is returned. I'm happy to address questions and concerns.

All term issues have to be resolved prior to the last day of classes. Collaboration is not permitted on any assignments that are not designated as group work! Any answers found to be too similar will both receive a grade of zero. Discussing completed work with any student that has not completed the work is not allowed. This as well as any cheating on subsequent work will be treated as academic misconduct. For details, please refer to policy 71 regarding academic honesty and professional unsuitability and associated penalties. One simple rule about cheating in this course: Don't do it! Thank you.

| Assessment | Due Date | Weighting |
|---|-------------|-----------------------------|
| Class Participation (pass/fail) | Throughout | 10% |
| <i>Wildcard/Joker Choice</i> | 20 Oct 2016 | <i>Add 10% to any below</i> |
| Game Logs (Written) | 6 Oct | 10% |
| Game Logs (Presentation) | 6 Oct | 10% |
| OPTION A: Unity Tutorial Presentation | 17 Nov | 20% |
| OPTION B: In-Depth Game Analysis | 17 Nov | 20% |
| [group] Game Design Document (Written) | 24 Nov | 20% |
| [group] Final Game Implementation and Postmortem Presentation | 1 Dec | 20% |
| <hr/> | | |
| <i>Total</i> | | <i>100%</i> |

Your grade for this course will be calculated according to the above distribution ranging over game logs, attendance, a game design document, and a final game project presentation. The game design document and the final game project will be done (and peer-evaluated) in groups. The **wildcard** gives you the choice of where you want to assign the final 10% weighting of your grade to any of the following: (1) written game logs, (2) game log presentations, (3) the final game design document, (4) the final game and presentations or (5) **one of the two options: Unity tutorial presentation, or an in-depth game analysis**. For example, if you strategically plan to work really hard on your written game logs, you could assign the wildcard to written game logs and have them weighted with 30% instead of 20% for you. Maybe you know that you shine in group work and development and want to assign it to your final game, then the final game project will weigh 30% of your final grade. The choice is yours, plan early to maximize your benefit, get your group on board and you could all profit. If you don't assign your wildcard by the due date, it will be randomly assigned for you.

Group Work Assignments

For group work, a **peer evaluation** form **for your team members is required** to ensure that the overall grade is fair to the amount of work put in by every group member. Peer evaluations will affect your individual grade for group work by a factor from the average of your peer grade for your work and my grade for your work. Please take your peer evaluations seriously. Evaluate the work of your colleagues carefully when watching their game log presentations. Once you have chosen your final group (due 20 Oct) for the digital game, you will have to work with them until the end of the class.

Grading Scale

I will be using a standard A through F scale outlined at the following URL:
<http://ugradcalendar.uwaterloo.ca/page/uWaterloo-Grading-System>.

Class Attendance and Participation (Individual)

Participation requires attendance. It is not merely your presence in class that is required, but you must also attend class prepared, and so this involves professionalism. Professionalism means having read and brought with you some talking points or questions from the textbook or online readings, participating in the in-class exercises, providing useful feedback to others during presentations, contributing to the class, and submitting your work in a timely way. Your

contributions to discussion, group activities, and the general classroom atmosphere will be vital in determining what knowledge and skills you take from this course. You should ask questions, offer answers, listen, facilitate others' opportunities to contribute, and respect your classmates' opinions.

1 Game Log Written, Individual. 10%

To design great games, it's important to understand what works—and what does not work—in existing games and to reflect on your own player experience. It's rare that we create anything from scratch, so having models to go by helps us to avoid pitfalls and to take advantage of previous successful models. For this, you will be able to choose from a couple of suggested digital games every week and you will need to play the game yourself (i.e., you will have to invest at least 30 minutes into the game). Then, you will need to describe your experience during the game session and discuss the game you played. Over the course of the term, you will write **two** in-depth reviews of two games with respect to the principles of game design and player experience as discussed in class and in your readings. You should include the following:

- A discussion of graphics, gameplay/rules/flow, user interface, audio
- Basic game information (name, publisher, year, platform, genre, etc.)
- Overview of the game: premise, storyline, objectives, rules
- Strengths and weaknesses of the game
- When you played the game (time of day) and for how long

You may use flow-charts or screen-shots to illustrate your key points, but these will not count towards your page count. Your analysis should be between 2 and 4 pages, double-spaced with 12-point serif font (Times or Georgia are recommended). Assignment grading will be based on evidence of your understanding of class discussion and readings, evidence of original thought and the depth of your analysis.

Option A: In-Depth Game Analysis, Individual. 20%

For this exercise, you will have to do either a comparative analysis, a reading/interpretation, a case study, or a historical analysis of a game that you have played intensely (it cannot be the same game as in your first game log). You are expected to relate your analysis to the theories and studies discussed in class. Your analysis should be between 8 pages, double-spaced with 12-point serif font (Times or Georgia are recommended). Assignment grading will be based on the assignment rubric.

Option B: Unity Tutorial Presentation, Individual, 20%

If you are not doing an in-depth game analysis, you have the option to prepare a 15-minute Unity tutorial on a 2D game development topic outlined in the exercise document for this assignment. You don't have to write up anything, but simply walk the class through an interactive 15-minute Unity tutorial for this in class on November 17. You must submit any materials (slides, presentation notes, etc.) in the Dropbox in Learn.

1 Game Log Presentation, Individual. 10%

It is always good practice to present your work—it is one of the skills that you will take with you into the work force. Sharing your ideas and gaining valuable feedback will also help to spark new ideas that will help you to improve and expand on your work. We will do two rounds of game log presentations for which you will have to sign up for slots after class. In the first round, 20 slots will be available before Oct 6 (by which you will need to have written and presented your first game log) and 20 slots before Nov 17. You will present your analysis to the class in a presentation of 5-10 minutes.

Written Game Design Document (Groups of 5, peer-evaluated)

At the end of the course, you will need to present one final non-digital game to the rest of the class that you have developed with a group of 5 people. Using the game design documents from your readings as examples, write a game design document in your group for your game (note that there are many approaches to a design document: Your approach is up to you as long as it follows the guidelines below). The document's format is up to you, but it must include the following:

- Game mechanics: vision of gameplay, flow, layout, rules, and so forth. Flow overview should include a flowchart.
- Asset list (audio, animations and graphics)
- Audio overview: description of how it will work with game, sfx, music, etc.
- Art overview: description of any animations/graphics/video to be included, with details on characters, terrain, etc.
- User Interface: detailed description of play activity, with specific details as to what the player does (shoot/select text/etc.) and how they accomplish this (click mouse/button/etc.)
- Game play elements: all elements that the player (or characters/units) can engage, acquire or otherwise interactive with. These are such things as weapons, buildings, switches, items, spells, power-ups, and points.
- Narrative/story or theme of your game (if applicable)
- Schedule: organize mini-deadlines and report on how well each deadline has been achieved

Keep in mind that your final game may change from what you present in your design document: Your postmortem presentation (see below) can address these changes with explanations. Design documents typically go through many changes during a game's development, which is a natural part of the game's development process. Page lengths may vary—a longer document is not necessarily more thorough. Efficiency of language is an important skill in the business world! In addition to fulfilling the assignment's parameters above, the assignment will be graded on depth/thoroughness, evidence of originality, creativity, and the design of your game. This assignment is peer-evaluated.

Final Game Implementation and Postmortem Presentation (Groups of 5)

While the creation of a game in and of itself may not be a skill that you will use in the future, there are many aspects of game creation that you will find will come in handy. These include, for instance, integrating text, image and sound, designing and planning a major project,

documenting your work, and being reflective about that process. Your major project for the term is the completion of a video game in Unity. Your game should be playable, complete, and bug-free. ALL game objects must be original or public domain (with reference). You may use sounds from sound effects libraries if the sounds are in the public domain and royalty free for non-commercial use, but any voice work must be original. You must always indicate which sources (sounds and images) are your own and which are from clipart/sound effect libraries.

Present your game design document and your final game to the class in a 10-15-minute presentation. Discuss how your game design changed and evolved, and go through the key areas of your game design document explaining your game, possibly give a demo of the game. You will be graded on your presentation skills, creativity, and content.

Your assessment will be based on your role in the game's production, but may include:

- Are all game assets original (see note above)?
- Overall game design (does everything work well together, is this a game that others will want to pick up and play?)
- Playability (is it easy to understand, does it flow, does it provide the right amount of challenge)
- Originality (is it creative and original)
- Quality and appropriateness of graphics/artwork
- Quality and appropriateness of audio
- Quality and appropriateness of narrative/storyline
- User interface: is user interface logical and appropriate for users?

You will present your game along with a post-mortem of the game on the last day of class to an audience at the Games Institute. This assignment is peer-evaluated.

Course Outline

I would generally recommend for students to keep up to date with Gamasutra design articles, which can be found here: <http://gamasutra.com/category/design/> and the Gamasutra postmortems: <http://www.gamasutra.com/features/postmortem/>

| Week | Date | Reflection Topic (~60 mins) | Hands-On Session (~60 mins) | Presentations |
|------|----------|--|---|---------------|
| 1 | 8/9/16 | Introduction and Course Details | Revision of basics of Game Design | - |
| 2 | 15/9/16 | Why do we play games? | Introduction to Unity | 4 @ ~10 mins |
| 3 | 22/9/16 | Models of Player Experience | Intro to C# Scripting in Unity | 4 @ ~10 mins |
| 4 | 29/9/16 | Fun, Enjoyment, Violence | C# Scripting in Unity (NumberWiz) | 6 @ ~10 mins |
| 5 | 6/10/16 | Immersion and Presence | Unity Text Adventure | 6 @ ~10 mins |
| - | 13/10/16 | Classes Follow Tuesday Schedule | NO CLASS! ↑ 6/10 deadline for 1st round of Game Logs | - |

| Week | Date | Reflection Topic (~60 mins) | Hands-On Session (~60 mins) | Presentations |
|------|----------|---|---|---------------|
| 6 | 20/10/16 | Guest lecture (TBA) | (Guest, Dr. Nacke away) | - |
| 7 | 27/10/16 | Choice and Agency | | 4 @ ~10 mins |
| 8 | 3/11/16 | Gamification | | 4 @ ~10 mins |
| 9 | 10/11/16 | UI for NumberWiz Unity | | 6 @ ~10 mins |
| 10 | 17/11/16 | Breakout Clone or Unity | | 6 @ ~10 mins |
| 11 | 24/11/16 | Games User Research (Game Design Doc due) | ↑ 17/11 deadline for Option A or B assignment | - |
| 12 | 1/12/16 | Final project due (game) and final postmortem presentations | | |

Course Disclaimer

Final course grades may be adjusted to conform to program or Faculty grade distribution profiles. This course outline documents my intentions for this course. If over the period of the academic year, it becomes apparent that modifications are necessary, the following strategy will be pursued: Any necessary modifications that may influence student success or the marking scheme will only be made after in-depth, frank discussion with the students and prior approval from the DAC unit director.

Late Work

I do not accept late assignments. If Learn marks your submissions as late, you will receive a zero on that assignment. There are no exceptions to this rule without a valid medical note. To make a successful submission, give yourself ample time to submit before an assignment is due (Learn may slow down due to server load – submit a bit early to be safe). If you miss an in-class assignment, exam, or quiz, you will receive a grade of zero for that item. If you are unable to hand in or attend the exam/assignment in question due to an illness or bereavement, you must provide valid documentation to the registrar's office within 5 days of the exam/assignment date/due date. For medical reasons, you must fill out the appropriate official Medical Statement.

Request for Regrading

Any requests for regrading of student work, will have to be done in writing with a signed paper letter submitted to the instructor directly. These requests will have to be submitted to the instructor first.

Information on Plagiarism Detection

Students and faculty at the University of Waterloo share an important responsibility to maintain the integrity of the teaching and learning relationship. This relationship is characterized by honesty, fairness, and mutual respect for the aim and principles of the pursuit of education. Academic misconduct impedes the activities of the university community and is punishable by appropriate disciplinary action.

I reserve the right to use electronic means to detect and help prevent plagiarism. Students agree that by taking this course all assignments are subject to submission for textual similarity review by software (e.g., Turnitin.com or Grammarly). Assignments submitted to Turnitin.com will be included as source documents in Turnitin.com's restricted access database solely for the purpose of detecting plagiarism in such documents for five academic years. The instructor may require students to submit their assignments electronically to Turnitin.com or the instructor may submit questionable text on behalf of a student.

Examinations Policy

This class has no final or midterm exam, but the policy regarding the Watcard applies: Final and midterm examinations are held during the final examination period at the end of the semester and may take place in a different room and on a different day from the regularly scheduled class. Examinations may be in oral or written form. Check the published Examination Schedule for a complete list of days and times. Students are advised to obtain their Student ID Card (Watcard) well in advance of the examination period as they will not be able to write their examinations without it.

Email Policy

Please kindly refrain from writing emails longer than 600 characters. When writing emails, expect answering delays of at least 48 hours up to a week (I also recommend following this online guide to writing short and effective emails: <https://goo.gl/1mfx7L>). If something is urgent, please discuss with me after class. Emails will not be answered outside of regular business hours (Mo-Fr, 9am-5pm). For the fastest response, talk to me in class, or call me. Please use **[DAC 305]** plus a succinct statement as your **email subject** – this helps me filter email.

Electronic Device Policy

Cell phones must be turned off during lectures. If you forget to turn off your cell phone and it rings during class, I reserve the right answer it. See Appendix A for more suggestions regarding the use of electronic devices in my classroom. You should only use your electronic devices in a way that makes you more productive in class or allows you to participate in enhanced learning activities. Disruptive laptop use (gaming, watching videos, etc.) will not be tolerated. Sometimes you will be asked to close or shut down your electronic devices for class activities. You must follow this advice without exceptions.

Attendance Policy

Participation necessarily requires attendance. Failure to attend classes will affect your final mark. You are allowed to miss a maximum of two classes over the term without excuse or repercussions. Lecture notes are not a substitute for class attendance. Do not interrupt class mates. If you arrive late or need to leave early, please sit near the back. You are a valued professional, please govern yourself accordingly.

Cross-listed course

Please note that a cross-listed course will count in all respective averages no matter under which rubric it has been taken. For example, a PHIL/PSCI cross-list will count in a Philosophy major average, even if the course was taken under the Political Science rubric.

Academic Integrity

To maintain a culture of academic integrity, members of the University of Waterloo are expected to promote honesty, trust, fairness, respect and responsibility.

Discipline: A student is expected to know what constitutes academic integrity, to avoid committing academic offences, and to take responsibility for his/her actions. A student who is unsure whether an action constitutes an offence, or who needs help in learning how to avoid offences (e.g., plagiarism, cheating) or about “rules” for group work/collaboration should seek guidance from the course professor, academic advisor, or the Undergraduate Associate Dean. When misconduct has been found to have occurred, disciplinary penalties will be imposed under Policy 71 – Student Discipline. For information on categories of offenses and types of penalties, students should refer to [Policy 71 - Student Discipline](#).

Grievance: A student who believes that a decision affecting some aspect of his/her university life has been unfair or unreasonable may have grounds for initiating a grievance. Read [Policy 70 - Student Petitions and Grievances, Section 4](#).

Appeals: A student may appeal the finding and/or penalty in a decision made under Policy 70 - Student Petitions and Grievances (other than regarding a petition) or Policy 71 - Student Discipline if a ground for an appeal can be established. Read [Policy 72 - Student Appeals](#).

Other sources of information for students

[Academic integrity](#) (Arts) [Academic Integrity Office](#) (uWaterloo)

Accommodation for Students with Disabilities

Note for students with disabilities: The AccessAbility Services office, located in Needles Hall Room 1132, collaborates with all academic departments to arrange appropriate accommodations for students with disabilities without compromising the academic integrity of the curriculum. If you require academic accommodations to lessen the impact of your disability, please register with the AS office at the beginning of each academic term.