The Psychology of Games

Credit Hours: 3
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Course Description
In order to design a game with a specific aesthetic, a game designer must understand the way the gamer's mind works. Only then can the designer hope to elicit a player interpretation of the game such that the player experiences the desired aesthetic the designer created the game for. This course is an in-depth look at cognitive principles, such as perception, attention, and motivation, and how we, as game designers, can apply these principles to create the engaging games we intend.

Learning Objectives
The overarching goal of this class is that you will be able to proficiently apply cognitive theory to the game design process. More specifically you will be able to:

1. Identify cognitive principles at work in design
2. Appraise a game's design and articulate why a particular design yielded the intended, or unintended, effect.
3. Sketch a game design, describing the important cognitive principles to follow
4. Understand how to improve UX based on a specific understanding of the gamer's mind.
5. Formulate game design improvements based on sound science.

Assignments
1. Weekly Reading Quiz (25% of the overall grade)
    - There will be weekly reading assignments with a reading quiz due at the end of the week. The quiz will cover basic topics of the readings to be discussed the ***subsequent*** week. This is my way of assessing *Learning Outcome(s) 1, 3, and 4*
2. Reading Presentations (25% of the overall grade)
    - Every week (after week 2) will have student-led discussion on the topic for that week. Each student-led discussion will last about an hour and should include:
        i. The three most important facts about the reading
        ii. Two questions that would be good for discussion. *You don't necessarily need to know the answer, or could be a question up for debate*
        iii. One opinion. *Should be substantive*
    - Note: leading the discussion means familiarizing yourself enough with the reading to be able to answer questions that may come up and preparing potential discussion points if the discussion needs prompting. This is my way of assessing *Learning Outcome(s) 1, 3, and 4*
3. Game Design Snacks (25% of the overall grade)

- The class will be divided up into three-four sections lasting 3-4 weeks each. At the end of each section, there will be a section assignment. For each of the topics covered you will need to find one good and one bad game design snack (an example within a game) that illustrates the principles from each topic. Utilize MDA-GFI to help you describe how the design was good/bad.This is my way of assessing *Learning Outcome(s) 2, 3, and 5*

Participation is key to this course, therefore attendance and participation will be an influential part of your grade. (25% of the overall grade). Below, you will find my rubric for assessing participation, reproduced from the *Eberly Center for Teaching Excellence* at *Carnegie Mellon University* (www.cmu.edu/teaching/assessment):

	Exemplary	Proficient	Developing	Unacceptable
Frequency of Participation in Class	Student initiates contributions more than once in each recitation.	Student initiates contribution once in each recitation.	Student initiates contribution at least in half of the recitations.	Student does not initiate contribution & needs instructor to solicit input.
Quality of Comments	Comments always insightful & constructive; uses appropriate terminology. Comments balanced between general impressions, opinions & specific, thoughtful criticisms or contributions.	Comments mostly insightful & constructive; mostly uses appropriate terminology. Occasionally comments are too general or not relevant to the discussion.	Comments are sometimes constructive, with occasional signs of insight. Student does not use appropriate terminology; comments not always relevant to the discussion.	Comments are uninformative, lacking in appropriate terminology. Heavy reliance on opinion & personal taste; for example: - “I love it” - “I hate it” - “It’s bad”
Listening Skills	Student listens attentively when others present materials, perspectives, as indicated by comments that build on others’ remarks. In other words: student hears what others say & contributes to the dialogue.	Student is mostly attentive when others present ideas, materials, as indicated by comments that reflect & build on others’ remarks. Occasionally needs encouragement or reminder from instructors	Student is often inattentive and needs reminder of focus of class. Occasionally makes disruptive comments while others are speaking.	Does not listen to others; regularly talks while others speak or does not pay attention while others speak; detracts from discussion; sleeps.

		of focus of comment.		

Material

- *The Gamer's Brain: How Neuroscience and UX Can Impact Video Game Design*, by Celia Hodent

  > "This book is designed to provide you with an overview of how to identify the ingredients that contribute to the enduring magic of video games and the most common barriers to enjoyment and engagement."

- Other readings provided by the instructor (see Schedule)

Tentative Schedule

The schedule is subject to change pending revisions/feedback. It includes the topics to cover in the course, and will be updated as the semester progresses. After week 2, the students in the class will be responsible for presenting/leading the discussions on the corresponding week's materials. The assignments due includes tentative dates for non-presentation related assignments for the course.

Week	Topics	Reading	Assignment Due
1	Course introduction, syllabus review, the MDA-GFI framework, The Brain (overview), The Mind (overview)	Hodent, Ch. 2 Robin Hunicke, Marc LeBlanc, and Robert Zubek. "MDA: A formal approach to game design and game research." In Proceedings of the AAAI Workshop on Challenges in Game AI, pp. 1722-1727, 2004. Cardona-Rivera, Rogelio E., José P. Zagal, and Michael S. Debus. "GFI: A Formal Approach to Narrative Design and Game Research." In Proceedings of the 13th International Conference on Interactive Digital Storytelling, 133–48. 2020.	
2	Perception	Hodent, Ch. 3	
3	Attention	Hodent, Ch. 5	
4	Event Cognition	Radvansky, Gabriel A., and Jeffrey M. Zacks. "Event boundaries in memory and cognition." Current Opinion in Behavioral Sciences 17 (2017): 133-140.	Game Design Snacks 1: Perception and Attention
5	Memory: Models	Hodent, Ch. 4	

6	Memory: Cognitive Load	Sweller, John, Jeroen J. G. van Merriënboer, and Fred Paas. “Cognitive Architecture and Instructional Design: 20 Years Later.” Educational Psychology Review 31, no. 2 (June 2019): 261–92.	
7	Motivation	Hodent, Ch. 6	Game Design Snacks 2: Events, Memory, Cognitive Load
8	Emotion	Hodent, Ch. 7	
9	Learning	Hodent, Ch. 8	
10	Decision Making: Choices, The Framing Effect	Amos Tversky and Daniel Kahneman. "The framing of decisions and the psychology of choice." Science 221, no. 4481 (1981): 453-458. Peter Mawhorter, Michael Mateas, Noah Wardrip-Fruin, and Arnav Jhala. 2014. “Towards a Theory of Choice Poetics.” In Proceedings of the 9th International Conference on the Foundations of Digital Games.	
11	Decision Making: Choice Architecture	Richard H. Thaler, Cass R. Sunstein, John P. Balz. “Choice Architecture” (Chapter 25), in Eldar Shafir (ed.) The Behavioral Foundations of Public Policy. Princeton University Press, 2013.	Game Design Snacks 3: Motivation, Emotion, Learning
12	Ecological Psychology: Affordances, Embodiment	Donald A. Norman. "Affordance, conventions, and design." interactions 6, no. 3 (1999): 38-43. Jonas Linderoth. "Why gamers don’t learn more: An ecological approach to games as learning environments." Journal of Gaming & Virtual Worlds 4, no. 1 (2012): 45-62.	
13	Problem Solving	Herbert A. Simon. “Theories of Bounded Rationality” (Chapter 8), in C. B. McGuire and Roy Radner (eds.), Decision and Organization.	

		North-Holland Publishing Company, 1972.	
14	Creativity	Boden, Margaret A. The creative mind: Myths and mechanisms. Psychology Press, 2004. (Chapter 1)	Game Design Snacks 4: Decision Making, Problem Solving, Ecological Psychology
15	Identity	Pauline Hope Cheong, and Kishonna Gray. "Mediated intercultural dialectics: Identity perceptions and performances in virtual worlds." Journal of International and Intercultural Communication 4, no. 4 (2011): 265-271. Ignacio X. Domínguez, Rogelio E. Cardona-Rivera, James K. Vance, and David L. Roberts. "The Mimesis Effect: The effect of roles on player choice in interactive narrative role-playing games." In Proceedings of the 2016 CHI Conference on Human Factors in Computing Systems, pp. 3438-3449, 2016	
16	Finals Week		

About the instructor

I have my Master's is in EAE on the Engineering track, my B.S. in Mathematics, and I have worked for four different game companies as a gameplay programmer including EA Maxis, CA. I have taught game design and gameplay programming, creating my own curriculum, as an associate instructor for EAE summer camps, as well as tutoring students in math, game design, and computer science. I am currently performing theoretical research in educational game design and looking heavily at how cognitive principles can help us improve learning from meaningful play.