UNIVERSITY OF WATERLOO
Cheriton School of Computer Science

CS798 **Games for Health** **Fall 2015**

Course Administration

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Course webpage: http://www.cs.uwaterloo.ca/∼cdimarco/cs798f15

Course Description

CS798 Games for Health is a graduate reading seminar and game design course
that will review the current major applications of games in healthcare. Readings
will cover the major fields in healthcare where games are being used. Case studies
will survey a representative set of current health-related games, from best-practices
to examples indicating just how far this application area has yet to develop.

Coursework

The coursework includes: a game design project and poster presentation, in-class
game-design workshops, paper presentations, case study reviews, and class discus-
sions. Presentations and case studies may be done alone or by a two-person team.

The course project will involve the design of a health-related game prototype (board,
card, paper, or digital). The project may be done by a team of one to four persons.

No programming will be required, although students may take their game design
further towards a working implementation if they wish. However, project marks
will not be based on implementation. Full marks may be obtained for a paper pro-
totype. Students are encouraged to tailor the project to their interests about various
aspects of game design, their academic backgrounds, and individual expertise.
Non-Computer Science students are welcome to enrol in the course after the first
week of classes if there is still space. You should add yourself to the waiting list:
https://www.cs.uwaterloo.ca/∼cs.uwaterloo.ca/current-graduate-students/courses

Auditing the Course

Auditors are welcome if there are extra seats in the classroom.

Course Objectives

By the end of this course students should have a good understanding of the current major topic areas for health-related games, an appreciation for what makes for good "gamification" in healthcare, and the ability to apply good game design principles in healthcare applications.

Meeting Time and Location

The course will meet weekly in Davis Centre 2568 on Fridays from 10:00–11:50, unless otherwise noted.

Recommended Background

There are no formal requirements other than interest in the topic and ability to read and analyze technical material. Some pre-existing knowledge of popular video games would be helpful but is not necessary. Background in other relevant fields (e.g., psychology, health sciences, narrative, art, design) may also be useful. Multidisciplinary teams are encouraged. Course staff will assist with team formation.

Grading Breakdown

Grading will be based on the following components:

- Course project (60% of final grade):

    - One-page project proposal (5%)—due Friday October 2
    - In-class game-design workshops (10%)—Sept 25, Oct 9, Nov 6
    - Poster presentation (10%)—**Friday November 27 at Games Institute Annual IMMERSe Project Meeting**
    - *****UPDATE: Project draft design document—due Fri October 30 (for feedback only)**
    - Final project design document (35%)—due Friday December 11

- Presentations of paper reviews and case studies (30% of final grade)

- Participation (class discussions, workshops, weekly attendance) (10% of final grade)

- **Bonus:** An individual "thinkpiece" on some aspect of Games for Health that presents interesting medical, technical, business, ethical, or other challenges. (up to an additional 5% of final grade).

Course Texts and Recommended Resources

Note: All readings are available either in hardcopy or electronic versions from University of Waterloo Library Course Reserves.

To find the location of a reading, go to the course reserves link on the University of Waterloo's Library web page at:

http://www.cs.uwaterloo.ca/~lib.uwaterloo.ca

When you choose our course you will see a list of the titles on reserve. Electronic content can be accessed from anywhere with an Internet connection. Hard copies on reserve will indicate where the copy is located, the loan period, and the call numbee needed to access it from the Davis Centre Library circulation desk.

If you encounter any problems (or if a hardcopy is currently unavailable) please email the course instructor—you may borrow a personal copy for a short period.

Texts

Jane McGonigal, Reality is broken: Why games make us better and how they can change the world Penguin Books, 2011 (multiple copies on reserve in DC Library)

S. Arnab, I. Dunwell, and K. Debattista (editors), Serious games for healthcare: Applications and implications IGI Global, 2013

K. Bredl and W. Bosche (editors), Serious games and virtual worlds in education, professional development, and healthcare IGI Global, 2013

B. Schouten, S. Fedtke, T. Bekker, M. Schijven, and A. Gekker (editors), Games for health: Proceedings of the Third European Conference on Gaming and Playful Interaction in Health Care Springer, 2013

Jesse Schell, The art of game design: A book of lenses CRC Press, second edition, 2014 (multiple copies on reserve in DC Library)

Jesse Schell, The art of game design: A deck of lenses Schell Games, second edition, 2014 (cards to accompany the book—multiple copies on reserve)

Other useful resources

Games for Health Organization and Conference (http:///www.gamesforhealth.org)
Game Developers Conference (http:///www.gdconf.com)
Serious Play Conference (http://www.seriousplayconference.com)
Jane McGonigal's website with sample serious games: http://janemcgonigal.com/

Project Guidelines

The course project will involve the design of a paper or digital prototype of a health game. Students who wish to take their project further towards a working game may submit an extended prototype, but this is entirely optional. Full marks may be obtained for a paper prototype. Project marking will not be based on implementation.

Getting started with an overview

- 2010 talk by Jesse Schell (major game designer, involved in health games):

  http:///www.ted.com/talks/jesse_schell_when_games_invade_real_life?

- 2014 review of the current state of games for health:

  https://mobihealthnews.com/34303/in-depth-burgeoning-opportunities-in-health-gaming/

Project requirements

1. One-page proposal (due Friday October 2).

   Give a short description for each of these criteria for your proposed game:

   - Overview of concept.
   - Health problem(s) the game would address and why these problems are important ones.
   - Highlight innovation(s) (e.g., improvements on current games in your topic area, development of a potential new topic area).

2. In-class game-design workshops (Sept 25, Oct 9, Nov 6).

   Participation in workshops counts for part of overall class participation mark. Note: Specific workshop deliverables will be announced closer to the dates.

3. Poster presentation (***UPDATE: Friday November 27**).

   The class poster session will take place during the Games Institute's annual meeting of "IMMERSe: Interactive and Multimodal Experience Research Syndicate", a SSHRC-funded project involving a consortium of Canadian and U.S. universities.

   Note: At least one member of your team should be present to describe your project to the visitors. However, if time conflicts prevent attendance you may just put up the poster.

Project requirements (continued)

4. *****UPDATE: Draft Design Document (1500–2000 words, due Oct 30)*****

    For the Draft Design Document you should on focus the following guidelines: (specific guidelines for each project team will be discussed in individual meetings with the course staff the week prior to October 30)

    (i) Review and update your Game Concept, following up from the CAMH discussion and our feedback.

    (ii) Focus on the game mechanics: describe the interactions.

    (iii) How do the game mechanics foster "progressive gameplay", i.e., move the game along.

    (iv) Tie together the progressive gameplay with assessment—how does this in turn lead to the desired health outcomes?

    (v) How does the game play out to the end? What does it mean to "win"? Or, what is the reward structure in your game?

    (vi) Optional (for those whose game concepts relates to these aspects):
    - Description of the Avatar, and other Characters.
    - Game environment (if you are using CAMH's "Thought Spot").
    - Technical specifications (e.g., wearable sensors).

5. Final Design Document (3000-4000 words, due Dec 11) should describe:

    - Overview of concept (updated statement from your initial proposal).
    - Behaviour change and other desired health-related outcomes.
    - Tying assessment to gameplay.
    - Gameplay structure/strategy (e.g., levelling-up).
    - Gameplay mechanics (e.g., player actions; how game progresses).
    - Description of avatar (if any) and other characters (if any).
    - Game environment.
    - Description of how game is played: a detailed "walkthrough".
    - Reward structure.
    - "Look-and-Feel" of game: video trailer or in-person walkthrough.
    - (Optional) Technical specifications (e.g., hardware platforms, software development tools, technical challenges, etc.)
    - Team members and individual tasks.

    Note: These design criteria from Karl Kapp's SlideShare presentation at:

    http://www.slideshare.net/kkapp/creating-a-game-design-document?related=1

Course Outline (details on course website)

- Session 1: Organizational Meeting—Friday September 18

- Session 2: Games versus Gamification Panel/Workshop 1—September 25

- Session 3: Board and Card Games—October 2

- Sessions 4, 5: Exergaming and Rehabilitation/Workshop 2—October 9, 16

- Session 6: Cognitive and Mental Health—October 23

- Session 7: Games for Children and Youth—October 30

- Session 8: Social and Virtual Reality Games/Workshop 3—November 6

- *****NEW*** Session 9: Games for the Elderly/Chronic Disease Management—November 13**

- Session 10: Narrative and Storytelling—November 20

- Session 11: Class Poster Session—*****Friday November 27—REGULAR CLASS TIME, AT GAMES INSTITUTE, EC1 BUILDING, 175 Columbia St W, corner of Columbia & Phillip**

- Session 12: Public and Global Health/Final Panel Discussion—December 4