

COSC 442 Mobile Educational Game Development

Instructor: Bowen Hui (SCI 257, ext 79353), [bowen.hui@ubc.ca](mailto:b Bowen.Hui@ubc.ca)

Duration: Winter 2017 term 1, 3 credits

Lectures: T/R 2:00-3:30 in ART 106

Course Format

The course will be delivered via in-class lectures complemented by out-of-class readings, programming and written assignments, and a course project. Course content will be posted online. Midterm break and other calendar dates can be found at <http://okanagan.students.ubc.ca/calendar/>

Course Overview, Content and Objectives

The course will introduce students to principles of game design as applied to educational software. Specifically, the topics may include a survey of instructional design frameworks, storytelling techniques, overlapping goals, game flow, and game metrics. The course will also introduce evaluation methods (e.g., controlled studies, empirical research and analysis) and learning modeling (e.g., personalization, user modeling, learning analytics). The objective of this course is to initiate students to a fun and practical area of software development and to provide hands-on experience in developing a mobile educational game.

Learning Outcomes

Upon completion of this course, students will be able to:

- Appreciate design issues in educational software
- Gain hands-on experience in developing a mobile educational game
- Gain a deeper understanding of key design and evaluation methodologies
- Apply analytics to evaluate player's success with learning
- Design and conduct controlled experiments involving real users in a pilot study
- Deploy a mobile app for public use
- Promote their candidacy for employment opportunities using their project

Evaluation Criteria and Grading

Assignments	50%
In-Class Activities	35%
Quizzes	15%

Late Policy

Assignments can be submitted up to 3 calendar days late. Thereafter, your work will receive a mark of 0. For each day that is late, you will receive a penalty of -5% of the assignment mark. For example, if A1 is one day late, you will get at most 95/100% for it.

There is no late tolerance for presentations. Presentations that are not done at the scheduled day and time will receive a mark of 0.

Passing Criteria

In order to pass the course:

- Students MUST achieve a passing grade in the programming assignments component.
- Students MUST achieve a passing grade in the design/written assignments component.
- Students MUST achieve a passing grade in the quizzes component.

Failure to satisfy ***all*** of the above clauses will result in a maximum of 45% for the course.

Expectations

- Attend **all** classes and prepare before attending class.
- Read the assigned readings **before** the lecture.
- Learn the material in the course and undertake sufficient effort to produce all the programming assignments and quality projects.
- Enjoy attending class and feel free to participate according to your personality. Feel free to ask questions by raising your hand or speaking out at appropriate times.
- Please actively participate in class discussions, questions, and problem solving exercises.
- **I want all students to pass the course, receive a good grade, produce their own mobile apps, and feel the course was beneficial.**
- For this course, it is expected that you will spend **at least six hours per week** on out-of-class preparation.

Required Readings and Videos

- M. Bojey, B. Hui, R. Campbell. (2014) Engaging Higher Order Thinking Skills with a Personalized Physics Tutoring System. In *Proceedings of the 12th International Conference on Intelligent Tutoring Systems (ITS)*, Springer LNCS, Volume 8474, pp.613-614.
- A. Churches. (2009) Bloom's Digital Taxonomy. Retrieved on August 01, 2013 from <http://edorigami.wikispace.com>
- S.E. Copp, R.L. Fischer, T. Luo, S. Dikkers, D.R. Moore. (2013) Batman Meets Gagne: Analyzing Commercial Video Game Instruction through the Lens of Instructional Design. In *World Conference on E-Learning in Corporate, Government, Healthcare, and Higher Education 2013(1)*, pp.1102-1108.
- M.C. Desmarais, R.S.J.d. Baker. (2012) A Review of Recent Advances in Learner and Skill Modeling in Intelligent Learning Environments. *User Modeling and User-Adapted Interaction* 22(1-2), pp.9-38.
- S. Esper, S.R. Foster, W.G. Griswold. (2013) CodeSpells: Embodying the Metaphor of Wizardry for Programming. In *Proceedings of the 18th Annual Conference on Innovation and Technology in Computer Science Education (ITiCSE'13)*.
- B. Honeycutt. (2012) Applying Bloom's taxonomy to game design. Flip It Consulting. Retrieved on August 01, 2013 from <http://www.flipitconsulting.com/2012/03/23/free-use-bloomstaxonomy-to-flip-your-training-session/>
- B. Hui, C. Boutilier. (2006) Who's Asking for Help? A Bayesian Approach to Intelligent Assistance. In *Proceedings of the ACM International Conference on Intelligent User Interfaces (IUI)*, pp.186-193.
- R. Mazza, V. Dimitrova. (2004) Visualizing Student Tracking Data to Support Instructors in Web-based Distance Education. In Proceedings of the 13th International World Wide Web conference (WWW'04), pp.154-161.
- D. Murphy. (2013) Visualizing Student Progress to Provide Actionable Information. Retrieved on May 20, 2015 from ResearchNetwork.Pearson.com.

Tentative Course Schedule

See the updated schedule on the course website.

- Week 1: Educational software
- Week 2: Educational frameworks
- Week 3: Storytelling, goals, game flow, game design
- Week 4: Design and storyboarding
- Week 5: Copyrights and game metrics

- Week 6: Game metrics
- Week 7: Presentations
- Week 8: Evaluation methods
- Week 9: Data collection
- Week 10: Data collection
- Week 11: Deployment
- Week 12: Case studies
- Week 13: Presentations

Plagiarism and Collaboration

The "default" assumption is that students will work on assignments independently. Students who complete assignments with the aid of collaborators or other sources (e.g. other textbooks) must:

- (i) acknowledge this fact (including the name(s) of other sources) at the start of their homework submission (see above),
- (ii) produce an independent write-up (copied submissions are not permitted),
- (iii) be prepared to explain their solutions in further detail, if asked, and
- (iv) be prepared to have the assignment grade adjusted accordingly.

Collaborating in groups of size greater than four is not permitted.

Plagiarism (the submission of work of another person as your own) and other anti-intellectual behaviour will not be tolerated. Your attention is directed to the "Student Discipline" section of the University Calendar as well as the UBC-V computer science Department Policy on "Plagiarism and Collaboration", available through the Undergraduate Web Page at <http://www.cs.ubc.ca/our-department/administration/policies/collaboration>. In particular, note that **it is not acceptable to make a solution available as an aid to others**.

Cooperation vs. Cheating

Working with others on assignments is a good way to learn the material and we encourage it. However, there are limits to the degree of cooperation that we will permit. Any level of cooperation beyond what is permitted is considered cheating.

When working on programming assignments, you must work only with others whose understanding of the material is approximately equal to yours. In this situation, working together to find a good approach for solving a programming problem is cooperation; listening while someone dictates a solution is cheating. You must limit collaboration to a high-level discussion of solution strategies, and stop short of actually writing down a group answer. Anything that you hand in, whether it is a written problem or a computer program, must be written by you, from scratch, in your own words. If you base your solution on any other written solution, you are cheating.

There will be random audit of assignment solutions through internet-based source code search engine: Any assignment found to be significantly similar to a publicly available source code without the proper acknowledgment will trigger an investigation for academic dishonesty in addition to any copyright violation.

If you have any doubt that an action you are considering might be construed, by anyone, as cheating,
DON'T DO IT. Ask for permission first.

Grievances and Complaints Procedures

A student who has a complaint related to this course should follow the procedures summarized below:

- The student should attempt to resolve the matter with the instructor first. Students may talk first to someone other than the instructor if they do not feel, for whatever reason, that they can directly approach the instructor.
- If the complaint is not resolved to the student's satisfaction, the student should go to the departmental chair John Braun at SCI 388, 807-8032.

Academic Integrity

The academic enterprise is founded on honesty, civility, and integrity. As members of this enterprise, all students are expected to know, understand, and follow the codes of conduct regarding academic integrity. At the most basic level, this means submitting only original work done by you and acknowledging all sources of information or ideas and attributing them to others as required. This also means you should not cheat, copy, or mislead others about what is your work. Violations of academic integrity (i.e., misconduct) lead to the breakdown of the academic enterprise, and therefore serious consequences arise and harsh sanctions are imposed. **For example, incidences of plagiarism or cheating usually result in a failing grade or mark of zero on the assignment or in the course.** Careful records are kept to monitor and prevent recidivism.

A more detailed description of academic integrity, including the University's policies and procedures, may be found in the Academic Calendar at
<http://okanagan.students.ubc.ca/calendar/index.cfm?tree=3,54,111,0>.

Disability Assistance

If you require disability-related accommodations to meet the course objectives, please contact the Diversity Advisor of Disability Resources located in the University Centre, Room 227. For more information about Disability Resources or academic accommodations, please visit the website at : <http://students.ok.ubc.ca/drc/welcome.html>

Equity, Human Rights, Discrimination and Harrassment

UBC Okanagan is a place where every student, staff and faculty member should be able to study and work in an environment that is free from human rights based discrimination and harassment. If you require assistance related to an issue of equity, discrimination or harassment, please contact the Equity Office, your administrative head of unit, and/or your unit's equity representative.

UBC Okanagan Equity Advisor: ph. 250-807-9291; email equity.ubco@ubc.ca
Web: www.ubc.ca/okanagan/equity

Health & Wellness

SAFEWALK

Don't want to walk alone at night? Not too sure how to get somewhere on campus? Call Safewalk at 250-807-8076. For more information, see:

<http://www.ubc.ca/okanagan/students/campuslife/safewalk.html>