COURSE SYLLABUS

Course Number:
COSC2636

Course Name:
Game Software Engineering

Classroom:
TBA

Lecture Day(s)/Time(s):
Mon., Wed. 5:30pm-7pm

Instructor:
Dr. Miguel Garcia-Ruiz

Office Number:
WW105G

Office Hours: Fri. 10am-12pm

Email: miguel.garcia@algomau.ca

Telephone Extension: 4312

Course Description:

This course presents the methodologies for design, implementation, and maintenance of commercially-sized video games. Students will gain knowledge of the various rapid prototyping and programming paradigms used in the game industry. Key components such as graphics, animation and sound will be introduced. Students will apply their knowledge to build a prototype game project for critique. Prerequisite: COSC2947, MATH 1056/MATH1057. (LEC 3) (3 cr)

Optional textbook, including ISBN:

Clinton Keith, “Agile Game Development with Scrum”, Addison-Wesley, 2010
ISBN-10: 0-321-61852-1 ISBN-13: 978-0-321-61852-8

Supplemental Text(s) including ISBN:

John Hight, Jeannie Novak, “Game Development Essentials: Game Project Management”, Delmar Cengage Learning. 2007, ISBN-10: 1418015415

John P. Flynt, Omar Salem, “Software Engineering for Game Developers”, Course Technology Ptr, 2005, ISBN 1592001556, 9781592001552

Steve McConnell, “Rapid Development: Taming Wild Software Schedules”, Microsoft Press, 1996, ISBN-10: 1556159005, ISBN-13: 978-1556159008

Chris Bradfield, “Godot Engine Game Development Projects: Build five cross-platform 2D and 3D games with Godot 3.0”, Packt, 2018, ISBN-10: 1788831500

Godot documentation: https://docs.godotengine.org/en/stable/

Learning Outcomes:

Students who successfully complete this course have reliably demonstrated the ability to:

1. Understand the importance of software engineering life-cycle models for the development of game software.
2. Work effectively in a team software development environment.
3. Employ rapid prototyping tools to explore and evaluate gameplay ideas and user interfaces.
4. Understand how Scrum agile framework can be effectively applied to video game development.
5. Develop and present a prototype project for critique orally and in writing.
6. Get exposed to programming using a game engine that is used in the video game industry.
7. Acquire and practice programming and software design skills necessary for developing commercially-sized video games.

Course Outline by Week:

Dates	Topics
Week 1 Mon. Jan. 6 Wed. Jan. 8	Course Introduction. Introduction to Software engineering (SE). Brief history and overview of game development.
Week 2 Mon. Jan. 13 Wed. Jan. 15	 Introduction to game software development lifecycle methodologies, rapid prototyping methods.
Week 3 Mon. Jan. 20 Wed. Jan. 22	 Introduction to agile methodologies. Introduction to Scrum and sprints.
Week 4 Mon. Jan. 27	 Teams.

Wed. Jan. 29	Requirements elicitation and user stories.
Week 5 Mon. Feb. 3 Wed. Feb. 5	 Software design and architecture in Scrum. Introduction to GDScript (Godot game engine’s language)
Week 6 Mon. Feb. 10 Wed. Feb. 12	 Introduction to GDScript part II Best practices of game programming, code formatting.
Week 7	Feb. 17-21 Study Week; no lectures.
Week 8 Mon. Feb. 24 Wed. Feb. 26	 **First in-term examination. Closed-book.** Artwork and audio asset development in Scrum.
Week 9 Mon. Mar. 2 Wed. Mar. 4	 Risk analysis in game software development. Agile planning.
Week 10 Mon. Mar. 9 Wed. Mar. 11	 Video game project planning tools. Epics and spikes in Scrum.
Week 11 Mon. Mar. 16 Wed. Mar. 18	 Course project review. Level development and its tools in Scrum. Faster Iterations.
Week 12 Mon. Mar. 23	 Software testing in game programming.

Wed. Mar. 25	Agile QA. Myths and challenges of Scrum.
Week 13 Mon. Mar. 30 Wed. Apr. 1	**Second in-term examination. Closed-book.** Project presentations. Conclusions.

Method of Evaluation (weighting of assignments, tests, labs, final examinations, etc.):

- 2x12.5% in-term examinations (25%). Materials from previous classes and assignments.
- 4x10% assignments (40%)
- Student participation (5%)
- Course project (30%)

Please note that this course does not hold a final examination.

Due Dates for Assignments:

Assignment no. 1: Jan. 10

Assignment no. 2: Jan. 20

Assignment no. 3: Feb. 10

Assignment no. 4: March 10

Penalty for Late Assignments:

20% off per day, no exceptions.

Dates for in-term examinations:

First in-term examination: Mon. Feb. 24
Second in-term examination: Mon. Mar. 30

Book-closed exams. Materials seen in class, posted on the CMS and from the assignments.

Evaluation Content:

Lecture notes, materials seen in class, PowerPoint presentations uploaded to the course website (CMS), articles from magazines, materials from assignments.

Attendance Policy for this Course:

The general regulations of the university require punctual and regular attendance at the various academic exercises. If there are extenuating circumstances related to an absence, the instructor should be notified. Absences in excess of 20% may jeopardize receipt of credit for the course. **Attendance lists will be taken in all classes.** You should attend all my classes. I will explain in class some complementary information and I will give you photocopies that are not explained in the Powerpoint files.

Participation (up to 5% of final grade):

Students are expected to attend class and to participate in discussions and other activities, individually and in teams. During classes, students are expected to answer to questions and give insightful comments about class topics. Students will be given materials prior to class to read and discuss them during class such as articles, blogs and web pages. All these will be used as their participation metrics. The sole student attendance to classes is not enough for earning participation points.

Academic Dishonesty:

> *The University takes a very serious view of such offences as plagiarism, cheating, and impersonation. Penalties for dealing with such offences will be strictly enforced.* Algoma University Calendar's Chapter 3 contains a complete policy statement on academic dishonesty and attendance. Students are encouraged to read this policy for further clarification of theses issues:
> https://www.algomau.ca/academics/academic-calendar/

Disability Accommodation:
If you are a student with a physical, learning, and/or psychological disability and plan to request any academic accommodations for this class, you are required to bring in an authorization letter from Disability Services listing the permitted accommodations. I will work with you to arrange your accommodations from the point in time that you deliver and discuss such an authorization letter with me. The Coordinator of Disability Services will keep your disability documentation confidential. Contact information is as follows:
Coordinator of Disability Services 705-949-2301 ext. 4221 learning@algomau.ca