

Game Development Pipeline

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This syllabus is subject to change depending on the course progress during the semester.

Course Objectives:

The course aims to present a historical and technical knowledge in evolution of video games with an introduction to game AI, algorithms and design patterns. Major topics related with game development and design will be covered that give the students insight on this field and help them select their elective courses more consciously. Design components and processes, recent techniques in game development, widely accepted software and game engines and special topics in the field will be covered in the scope of the course. Having knowledge on these issues will give students the chance to select a specialization area to concentrate on, with awareness on all important concepts of game design, development and production.

Textbook(s):

- Schell, J. (2014). The Art of Game Design: A book of lenses. AK Peters/CRC Press.
- Yannakakis, G. N., Togelius, J. (2018). Artificial Intelligence and Games. New York: Springer.
- Nystrom, R. (2014). Game programming patterns. Genever Benning.

Reference(s):

- Elias, G. S., Garfield, R., Gutschera, K. R. (2012). Characteristics of games. MIT Press.
- Merriam, S. B., Tisdell, E. J. (2015). Qualitative research: A guide to design and implementation. John Wiley Sons.
- Rouse, R., Illustrator-Ogden, S. (2000). Game design theory and practice. Wordware Publishing Inc.
- Salen, K., Zimmerman, E. (2006). The game design reader. USA: MIT Sida.(2007). Retrieved May, 15, 2007.
- McGonigal, J. (2011). Reality is broken: Why games make us better and how they can change the world. Penguin.
- Skolnick, E. (2014). Video game storytelling: what every developer needs to know about narrative techniques. Watson-Guptill.

Online Resources:

- IEEE Transactions on Games - <https://ieeexplore.ieee.org/xpl/RecentIssue.jsp?punumber=7782673>
- IEEE Conference on Computational Intelligence and Games - <http://www.ieee-cig.org/>
- JMIR Serious Games - <https://games.jmir.org/>
- The Genetic and Evolutionary Computation Conference - <https://gecco-2019.sigevo.org/index.html/tiki-index.php>
- Entertainment Computing - <https://www.journals.elsevier.com/entertainment-computing>
- Games for Health Europe - <https://www.gamesforhealtheuropa.org/>
- Reddit Augmented Reality - <https://www.reddit.com/r/augmentedreality/>
- Road to VR - <https://www.roadtovr.com/category/augmented-reality/>
- Unity 3D Tutorials - <https://unity3d.com/learn/tutorials>
- Unity 3D User Manual - <https://docs.unity3d.com/Manual/index.html>
- Reddit GameDev - <https://www.reddit.com/r/gamedev/>
- Game Programming Patterns - <http://gameprogrammingpatterns.com>
- Institute of Digital Games - <http://www.game.edu.mt/>
- Pier Luca Lanzi — Video Game Design Lecture Slides - <https://www.slideshare.net/pierluca.lanzi/>
- Helmut Hlavacs — Research Group Entertainment Computing - <https://ec.cs.univie.ac.at/research/projects/>
- Sebastian Risi — Robotics, Evolution, and Art Lab <https://real.itu.dk/people/sebastian-risi/>
- Simon Colton — Computational Creativity Research Group - <http://ccg.doc.gold.ac.uk/simoncolton/>
- NYU Game Center - <http://gamecenter.nyu.edu>
- Digital Creativity Labs - <http://www.digitalcreativity.ac.uk/>
- Game Developer Tips - <http://gamedevelopertips.com/>
- Game Accessibility Guidelines - <http://gameaccessibilityguidelines.com/>
- MIT GameLab - <http://gamelab.mit.edu/tag/serious-games/>
- Games For Change - <http://www.gamesforchange.org/>

Tentative Course Outline:

The weekly coverage might change as it depends on the progress of the class.

Week	Topic(s)
Week 1	Introduction - Brief History
Week 1	Design Components and Processes - Game Concepts - Roles of Teams Game Genres
Week 1	Storytelling and Narrative - Gameplay
Week 1	Project Phase 1 Presentations
Week 2	Game Worlds - Character Development Components
Week 2	Gameplay Components
Week 2	Visiting Center for Society and Science Research
Week 2	Level Design - Game Balancing
Week 3	User Interface
Week 3	Visiting METU Animation Technologies and Game Development Center (ATOM)
Week 3	Technology, Tools and Testing
Week 3	Game Publishing - Business of Games - Game markets
Week 3	Transformation, Responsibilities and Purpose
Week 3	Project Final Presentations