

CS276-15 Video Game Design and Development

26/27

Department

Computer Science

Level

Undergraduate Level 2

Module leader

Alexander Dixon

Credit value

15

Module duration

10 weeks

Assessment

Multiple

Study location

University of Warwick main campus, Coventry

Description

Introductory description

The video game industry is now larger than the film and music industries combined, and there are over 3 billion gamers worldwide. Video games serve as a source of artistic and creative expression for developers and players alike.

In this module, students can gain a well-founded appreciation for what goes into making a video game, from ideation and creative computing through to systems design and marketing. They will have the opportunity to learn about industry roles and, through assessed work, design their own video games from beginning to end.

This module is available to second-year students with whose home department is Computer Science only.

Module aims

Students will learn the fundamentals of designing and developing video games from the ground up. This includes a full view of the component parts of video game development, such as: design and ideation; the use of digital assets (graphics, audio, text); engineering concerns and system

design and architecture; the psychology of play; and selected topics in human-computer interaction.

Outline syllabus

This is an indicative module outline only to give an indication of the sort of topics that may be covered. Actual sessions held may differ.

Topics covered in this module may include: algorithmic techniques for video games (applications of AI; procedural generation); the psychology of play ("game feel"); video game engineering (the entity-component-system architecture); human-computer interaction as applied to games (incl. inclusive and accessible computing); the video game development life cycle (ideation; rapid prototyping; publishing); and the use of game development frameworks.

Learning outcomes

By the end of the module, students should be able to:

- Understand the professional roles that comprise the field of video game development
- Explain the fundamental concepts behind games, and how they interrelate to create engaging player experiences
- Use modern development techniques to prototype and iterate on game ideas
- Apply domain-specific engineering and architectural principles to the video game development
- Design and develop original video games from end to end
- Apply critical evaluation techniques to link the theory of games to practical implementations
- Create innovative experiences founded on solid theoretical and practical design principles

Indicative reading list

[Reading lists can be found in Talis](#)

Subject specific skills

- Technical design and application of software engineering principles
- Algorithmic thinking
- Rapid prototyping
- Creative computing
- Use of video-game development frameworks

Transferable skills

- Critical analysis and evaluation

- Design thinking
 - Project management
 - Working in a team
 - Technical writing
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Study

Study time

Type	Required
Lectures	20 sessions of 1 hour (13%)
Supervised practical classes	20 sessions of 1 hour (13%)
Private study	70 hours (47%)
Assessment	40 hours (27%)
Total	150 hours

Private study description

Completion of assessment components; reading of recommended texts to complement lectures

Costs

No further costs have been identified for this module.

Assessment

You do not need to pass all assessment components to pass the module.

Assessment group A1

	Weighting	Study time	Eligible for self-certification
Prototype and Game Design Document	30%	10 hours	No

The development of a small prototype of a video game idea according to a set brief given at the beginning of the module. This is to be accompanied by a Game Design Document outlining the intentions for the game. The coursework is to be completed in small groups to be determined at the beginning of the module.

	Weighting	Study time	Eligible for self-certification
The given word count covers the game design document only.			
Video Game	70%	30 hours	No
Groups will work together to design a complete video game according to a given theme and set of criteria. The assessment also requires an individual report from each student evaluating the submitted game according to key evaluation criteria seen in lectures, and relating aspects of the implementation to design concepts seen in lectures and to the critical theory of games.			
The listed word count covers the individual report only.			

Assessment group R1

	Weighting	Study time	Eligible for self-certification
Video Game	100%		No
The student will create a small video game project according to a set brief, which will differ from the original assessment brief. The assessment will also require a report evaluating the submission according to key evaluation criteria seen in lectures, and relating aspects of the implementation to the critical theory of games. A prototype and Game Design Document are not required for reassessment. (The listed word count covers the individual report only.)			

Feedback on assessment

Written group and individual feedback where appropriate.

Availability

Courses

This module is Optional for:

- Year 2 of UCSA-I1N1 Undergraduate Computer Science with Business Studies

This module is Option list A for:

- Year 2 of UCSA-G500 Undergraduate Computer Science
- UCSA-G503 Undergraduate Computer Science MEng
 - Year 2 of G500 Computer Science
 - Year 2 of G503 Computer Science MEng
- Year 2 of UCSA-I1N1 Undergraduate Computer Science with Business Studies

This module is Option list B for:

- Year 2 of UCSA-G406 Undergraduate Computer Systems Engineering
- Year 2 of UCSA-G4G1 Undergraduate Discrete Mathematics
- UCSA-G4G3 Undergraduate Discrete Mathematics
 - Year 2 of G4G1 Discrete Mathematics
 - Year 2 of G4G3 Discrete Mathematics