



Module Specification

Key Information			
Module title	Games Development		
Level	6	Credit value	15
Member Institution	Goldsmiths	Notional study hours and duration of course	150
Module lead author/ Subject matter expert	Jeremy Gow		
Module co-author			

Rationale for the module
<p>Video games are a critical application area for computer science, and the games industry forms a significant part of the creative economy. It is a complicated subject, drawing on other areas such as computer graphics, interaction design and artificial intelligence. This module builds on other modules in the programme, and through it, you will gain experience in the video game development toolkit and process.</p>

Aims of the module
<p>This module will introduce you to i) industry standard tools for game development, such as game engines, and ii) the process of game development, including prototyping and playtesting. You will undertake a short series of game development projects, each lasting a set number of weeks and with a specific brief. For each project, you will propose a game that fits the brief, and then you will implement it. You are expected to deliver the proposed game and document it thoroughly. Through this process, you will develop an awareness of intended audience and the use of media for documentation.</p> <p>Contemporary video game production draws on a range of techniques from artificial intelligence (AI) to perform tasks such as controlling virtual agents and generating novel game content. This module will also introduce crucial game AI concepts. Compared to mainstream AI, the emphasis is less on optimal problem solving and more on entertaining the player with limited computational resources. This module gives students practical experience of programming game AI systems and an understanding of the relevant theory.</p>

Topics covered in this module:

The topics listed here are an approximation of what will be covered. The topics presented may be slightly revised to ensure currency and relevance. Students will be advised of any changes in advance of their study.

1. Introduction to game development, the games industry and game engines
2. Creating sprite based 2D
3. Scripting game interaction
4. 2D physics and collision
5. Game Design
6. Developing a game project
7. State Machines
8. Pathfinding
9. Behaviour Trees
10. Recap and review

Approximately 10-12 hours of study will be required per topic. The remaining study time is intended for coursework and examination preparation.

Learning outcomes for the module

Students who successfully complete this module will be able to:

1. Explain and critically evaluate the types of software used in games development, e.g. games engines, middleware, development tools
2. Explain and critique the development practices used in the games industry, as well as examples of games
3. Use game development tools to develop video games to a specific brief
4. Apply the principals of game design to designing games
5. Understand, explain and use standard AI concepts and techniques relevant to modern video game production
6. Carry out, document and report on the process of short projects

Assessment strategy, assessment methods

Summative and Formative Assessments

The module will contain a range of summative and formative assessments. Summative assessments are assessments which contribute directly towards your final grade. Formative assessments do not count directly towards your final grade. Instead, they provide you with opportunities for low stakes practice, and will often provide some sort of feedback about your progress. For example, a practice quiz might provide you with feedback about why a particular answer was wrong.

Assessment Activities

The table below lists the assessment activity types you might encounter taking the module. It also states if that type of assessment can be automatically graded. For example, multiple choice quizzes can be automatically graded, and so can some programming assignments. It also states if that type of assessment will be found in the summative coursework and the summative examination. More details about the summative assessments are provided below.

Assessment activity type	Can it be automatically graded with feedback in some cases?	Coursework	Examination
Quiz	X	X	X
Writing task		X	X
Programming task	X	X	X
Video task		X	
Peer review task		X	

Pass Mark

In order to pass this module, you must achieve at least 35% in each element of summative assessment and an overall weighted average of 40%, subject to the application of rules for compensation. Please refer to the programme regulations for more information.

Summative Assessment Elements

As this is a module that has a significant amount of theory it is assessed as a theory-based module. This means that the summative assessment is composed of two elements, whose weightings are listed in the table below.

Summative Assessment Component	Percentage of final credit	Deadline
Coursework	50%	Mid session
Examination	50%	End of session

The coursework comprises a variety of practical exercises and quizzes which in total will take up to 25 hours of study time to complete. The examination will be two hours long, and consist of written answer and multiple choice questions.

Learning resources

The module will draw on a number of different, largely web-based, public resources as well as the resources produced as bespoke material for this module. The standard text book(s) for the module will be:

Mat Buckland, *Programming Game AI by Example*, Worldware, 2005.

Ian Millington & John Funge, *Artificial Intelligence for Games* (2nd edition), Morgan Kaufmann 2009.

Stuart Russell & Peter Norvig, *Artificial Intelligence: A Modern Approach* (3rd edition), Pearson 2013.