Module Descriptor

Title	JavaScript Games: Programming Design		
Session	2025/26	**Status**	Published
Code	COMP09121	**SCQF Level**	9
Credit Points	20	**ECTS (European Credit Transfer Scheme)**	10
School	**Please select**		
Module Co-ordinator	Derek Turner		

Summary of Module

This module builds upon the foundations laid in JavaScript Games: Programming Fundamentals module. Students will update and extend their knowledge of the basic functionality of BabylonJS to include more advanced features of the current engine version. Equipped with this, students will work in teams to develop a game design document within the constraints of their game engine practice and implement a playable game hosted online.

The module will provide guided learning on the use of advanced visual features and interactivity programmed in a code editor. Students will be encouraged to extend their knowledge through self-study.

Topics covered will include:

- Game design documentation.
- Detailed use of BabylonJS with TypeScript.
- Deeper dive into BabylonJS
- Design and implementation of a 3D game.
- Code Reusability through Design Pattern techniques and Modularity.
- Code collaboration using version control via GitHub.
- Hosting and Monetisation of Web Games
- Introduction to BabylonJS and WebXR

The module will present independent features of BabylonJS through lab demonstrations from which students can derive prototype scenes to extend their knowledge of the game engine. Students will take the features carried over from the 'fundamentals module together with newly explored features to create a programming resource which they will use to design, program and deploy a playable game.

- This module embeds the key "I am UWS" graduate attributes and in particular: Universal (critical and analytical thinking, Emotionally-intelligent, Collaborative, Research-minded), Work Ready(digitally literate, problem solver, effective communicator, Motivated,

Potential leader, Ambitious) and Successful (Autonomous, Innovative, Driven, Transformational)

Module Delivery Method	**On-Campus**[1] ☒	**Hybrid**[2] ☐	**Online**[3] ☐	**Work -Based Learning**[4] ☐
Campuses for Module Delivery	☐ Ayr ☐ Dumfries	☐ Lanarkshire ☐ London ☒ Paisley	☐ Online / Distance Learning ☐ Other (specify)	

Terms for Module Delivery	Term 1	☐	Term 2	☒	Term 3	☐
Long-thin Delivery over more than one Term	Term 1 – Term 2	☐	Term 2 – Term 3	☐	Term 3 – Term 1	☐

Learning Outcomes	
L1	Present and discuss a practical conceptualisation of a game design idea displaying originality and creativity.
L2	Demonstrate the application of advanced game engine features by the creation of documented scenes, efficiently managing the code and assets using appropriate software tools and techniques.
L3	Document a deployed game using markdown code and video presentation
L4	Test and critically evaluate a completed game.
L5	

Employability Skills and Personal Development Planning (PDP) Skills	
SCQF Headings	**During completion of this module, there will be an opportunity to achieve core skills in:**
Knowledge and Understanding (K and U)	**SCQF 9** Demonstrate and work with a broad knowledge of the relevant programming languages concepts and principles: aware of object oriented and functional approaches to coding which including design patterns applied to the context of web-based games development.

[1] Where contact hours are synchronous/ live and take place fully on campus. Campus-based learning is focused on providing an interactive learning experience supported by a range of digitally-enabled asynchronous learning opportunities including learning materials, resources, and opportunities provided via the virtual learning environment. On-campus contact hours will be clearly articulated to students.

[2] The module includes a combination of synchronous/ live on-campus and online learning events. These will be supported by a range of digitally-enabled asynchronous learning opportunities including learning materials, resources, and opportunities provided via the virtual learning environment. On-campus and online contact hours will be clearly articulated to students.

[3] Where all learning is solely delivered by web-based or internet-based technologies and the participants can engage in all learning activities through these means. All required contact hours will be clearly articulated to students.

[4] Learning activities where the main location for the learning experience is in the workplace. All required contact hours, whether online or on campus, will be clearly articulated to students

Practice: Applied Knowledge and Understanding	**SCQF 9** Use a wide range of the principal professional skills techniques and practices and in the design and implementation of a 3D web-based game.
Generic Cognitive skills	**SCQF 9** Critically define, conceptualise, and analyse a game design and generate a creative response to the problems and issues identified in implementation. Critically evaluate a completed project to extend knowledge skills practice and thinking in web game production.
Communication, ICT and Numeracy Skills	**SCQF 9** Use a wide range of routine and specialised skills to communicate the design and planning of a game and present a video asset demonstrating it.
Autonomy, Accountability and Working with Others	**SCQF 9** Practise in ways that show awareness of own and others' roles and responsibilities in working in a team to produce a product to a given specification. Managing a complex project.

Prerequisites	**Module Code** COMP09090	**Module Title** JavaScript Games: Programming Fundamentals
	Other	
Co-requisites	**Module Code**	**Module Title**

Learning and Teaching	
In line with current learning and teaching principles, a 20-credit module includes 200 learning hours, normally including a minimum of 36 contact hours and maximum of 48 contact hours. Learning materials are provided as live in class presentations, code demonstrations, and recorded video materials. Staff will provide feedback within face-to-face labs to guide and assist students working towards the completion of 3D games implementing their game designs. Students are encouraged to work in small groups, but individual projects are allowed.	
Learning Activities During completion of this module, the learning activities undertaken to achieve the module learning outcomes are stated below:	**Student Learning Hours** (Note: Learning hours include both contact hours and hours spent on other learning activities)
Tutorial / Synchronous Support Activity	12
Laboratory / Practical Demonstration / Workshop	36
Independent Study	152
Please select	
Please select	
Please select	

TOTAL	200

Indicative Resources

The following materials form essential underpinning for the module content and ultimately for the learning outcomes:

Development environment comprising:

Windows subsystem for Linux.

Docker desktop (for containerised development environment featuring Vite development server, Nodejs and typescript)

GitHub desktop as a convenient interface between local PC and cloud repository.

BabylonJS Editor

Visual Studio Code as a code editor (IDE)

Visual Studio Code extensions:

- Prettier as a code formatter
- Remote development which incorporates:

o WSL

o Dev Containers: allowing local code to be run and edited in a container

o Remote SSH

o Remote Tunnels

- Live server for website development

GIT to facilitate VSC connection to code repository.

Online Resources:

BaylonJs current documentation at http://Doc.babylonjs.com

Course notes available via UWS VLE and external links.

Recommended textbooks:

Text-books are not available for Babylon version 8. Some students might find books useful as a supplementary reference such as:

Elster, J. and Catuhe, D. (2022). Going the Distance with Babylon.js. Packt Publishing Ltd.

Moreau-Mathis, J. (2016) Babylon.js Essentials, Packt Publishing

(N.B. Although reading lists should include current publications, students are advised (particularly for material marked with an asterisk*) to wait until the start of session for confirmation of the most up-to-date material)

Attendance and Engagement Requirements

In line with the Student Attendance and Engagement Procedure, Students are academically engaged if they are regularly attending and participating in timetabled on-campus and online teaching sessions, asynchronous online learning activities, course-related learning resources, and complete assessments and submit these on time.

For the purposes of this module, academic engagement equates to the following:

Presentation of a conceptual game design at the planning stage. Submission of 3D scenes based on course presentations and online playable game with well-structured and formatted

evaluation document accompanied by a demonstration video. Active participation in 80% of scheduled sessions.

The School of Computing, Engineering and Physical Sciences considers attendance and engagement to mean a commitment to attending, and engaging in, timetabled sessions. You will scan your attendance via the scanners each time you are on-campus and you will login to the VLE several times per week. Where you are unable to attend a timetabled learning session due to illness or other circumstance, you should notify the Programme Leader that you cannot attend. Across the School an 80% attendance threshold is set. If you fall below this, you will be referred to the Student Success Team to see how we can best support your studies.

Equality and Diversity
The University's Equality, Diversity and Human Rights Procedure can be accessed at the following link: UWS Equality, Diversity and Human Rights Code. This module is suitable for any student. The assessment regime will be applied flexibly so that a student who can attain the practical outcomes of the module will not be disadvantaged. If required suitable adjustments can be made, taking advice if required from Learning Support. Aligned with the University's commitment to equality and diversity, this module supports equality of opportunity for students from all backgrounds and learning needs. Using the VLE, material will be presented electronically in formats that allow flexible access and manipulation of content. This module complies with University regulations and guidance on inclusive learning and teaching practice. This module has lab-based teaching and as such you are advised to speak to the Module Co-ordinator to ensure that specialist assistive equipment, support provision and adjustment to assessment practice can be put in place, in accordance with the University's policies and regulations.
(N.B. Every effort will be made by the University to accommodate any equality and diversity issues brought to the attention of the School)

Supplemental Information

Divisional Programme Board	**Computing**
Overall Assessment Results	☐ **Pass / Fail** ☒ **Graded**
Module Eligible for Compensation	☒ **Yes** ☐ **No** **If this module is eligible for compensation, there may be cases where compensation is not permitted due to programme accreditation requirements. Please check the associated programme specification for details.**
School Assessment Board	Creative Computing
Moderator	Thomas Hainey
External Examiner	Professor Sylvester Arnab
Accreditation Details	TIGA
Module Appears in CPD catalogue	☐ **Yes** ☒ **No**
Changes / Version Number	

Assessment (also refer to Assessment Outcomes Grids below)
Assessment 1

Game Design Document (group)
Assessment 2
Web game implementaiton with documentation (group)
Assessment 3
(N.B. (i) Assessment Outcomes Grids for the module (one for each component) can be found below which clearly demonstrate how the learning outcomes of the module will be assessed. (ii) An indicative schedule listing approximate times within the academic calendar when assessment is likely to feature will be provided within the Student Module Handbook.)

Component 1							
Assessment Type	**LO1**	**LO2**	**LO3**	**LO4**	**LO5**	**Weighting of Assessment Element (%)**	**Timetabled Contact Hours**
Written Documentation	☒	☐	☐	☐	☐	20	2

Component 2							
Assessment Type	**LO1**	**LO2**	**LO3**	**LO4**	**LO5**	**Weighting of Assessment Element (%)**	**Timetabled Contact Hours**
Creative output/ Documented Game	☐	☒	☒	☒	☐	80	4

Component 3							
Assessment Type	**LO1**	**LO2**	**LO3**	**LO4**	**LO5**	**Weighting of Assessment Element (%)**	**Timetabled Contact Hours**
	☐	☐	☐	☐	☐		
Combined total for all components						100%	hours

Change Control

What	**When**	**Who**