

University of the West of Scotland

Module Descriptor

Session: 2024/25

Title of Module: JavaScript Games: Programming Design			
Code: COMP10057 – needs recoding to L9	SCQF Level: 10 (Scottish Credit and Qualifications Framework)	Credit Points: 20	ECTS: 10 (European Credit Transfer Scheme)
School:	School of Computing, Engineering and Physical Sciences		
Module Co-ordinator:	Derek Turner		
Summary of Module			
<p>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.</p> <p>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.</p> <p>Topics covered will include:</p> <ul style="list-style-type: none"> • 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 <p>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.</p> <ul style="list-style-type: none"> • 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

Face-To-Face	Blended	Fully Online	HybridC	Hybrid 0	Work-Based Learning
<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
See Guidance Note for details.					

Campus(es) for Module Delivery						
The module will normally be offered on the following campuses / or by Distance/Online Learning: (Provided viable student numbers permit) (tick as appropriate)						
Paisley:	Ayr:	Dumfries:	Lanarkshire:	London:	Distance/Online Learning:	Other:
<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Add name

Term(s) for Module Delivery					
(Provided viable student numbers permit).					
Term 1	<input type="checkbox"/>	Term 2	<input checked="" type="checkbox"/>	Term 3	<input type="checkbox"/>

Learning Outcomes: (maximum of 5 statements) These should take cognisance of the SCQF level descriptors and be at the appropriate level for the module. At the end of this module the student will be able to:	
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.
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)	<p>SCQF Level 9</p> <p>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.</p>

	Detailed and specialised critical knowledge of current technologies and design principles for the production of 3D web-based games.	
Practice: Applied Knowledge and Understanding	SCQF Level 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 Level 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 Level 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 Level 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.	
Pre-requisites:	Before undertaking this module the student should have undertaken the following:	
	Module Code: COMP09090	Module Title: JavaScript Games: Programming Fundamentals
	Other:	
Co-requisites	Module Code:	Module Title:

*Indicates that module descriptor is not published.

Learning and Teaching	
<p>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.</p> <p>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.</p>	
Learning Activities During completion of this module, the learning activities undertaken to achieve the module learning outcomes are stated below:	Student Learning Hours (Normally totalling 200 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
	200 Hours Total

****Indicative Resources: (eg. Core text, journals, internet access)**

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.

Visual Studio Code as a code editor (IDE)

Visual Studio Code extensions:

- Prettier as a code formatter
- Remote development which incorporates:
 - WSL
 - Dev Containers: allowing local code to be run and edited in a container
 - Remote SSH
 - 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 Aula and external links.

Recommended textbooks:

Text-books are not available for Babylon version 7. 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

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Please ensure the list is kept short and current. Essential resources should be included, broader resources should be kept for module handbooks / Aula VLE.

Resources should be listed in Right Harvard referencing style or agreed professional body deviation and in alphabetical order.

(**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 75% of scheduled sessions.

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.

(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
Assessment Results (Pass/Fail)	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>
School Assessment Board	Creative Computing

Moderator	Thomas Hainey
External Examiner	N Whitton
Accreditation Details	e.g. ACCA Click or tap here to enter text.
Changes/Version Number	<p>Module summary revised to focus onto deeper dive BabylonJS materials and to encourage self-study.</p> <p>Module Delivery method set to face-to face (key presentations will be redcorded for later access)</p> <p>Learning outcome 1 moves to a presentation rather than document. Learning outcome 4 slight rewording to include testing.</p> <p>PDP skills added awareness of functional programming approach.</p> <p>Learning and teaching minor rewording to emphasise face to face as the main learning context.</p> <p>Updated learning resources.</p> <p>Engagement requirements adjusted to match submitted materials.</p> <p>Assessment updated with change of ratio from 30:70 to 40:60 reflecting the addition of a presentation and deeper dive BabylonJS features.</p> <p>Level moved from L10 to L9 and term from 1 to 2</p>

Assessment: (also refer to Assessment Outcomes Grids below)

This section should make transparent what assessment categories form part of this module (stating what % contributes to the final mark).

Maximum of 3 main assessment categories can be identified (which may comprise smaller elements of assessment).

NB: The 30% aggregate regulation (Reg. 3.9) (40% for PG) for each main category must be taken into account. When using PSMD, if all assessments are recorded in the one box, only one assessment grid will show and the 30% (40% at PG) aggregate regulation will not stand. For the aggregate regulation to stand, each component of assessment must be captured in a separate box.

Please provide brief information about the overall approach to assessment that is taken within the module. In order to be flexible with assessment delivery, be brief, but do state assessment type (e.g. written assignment rather than “essay” / presentation, etc) and keep the detail for the module handbook. [Click or tap here to enter text.](#)

Assessment 1 Conceptual Design & Advanced Techniques: In class presentation – group based conceptual design of a web game and supporting documentation game design 10%

Practical Coursework - working a small group (or individually) to the implementation of individual scenes demonstrating the techniques and practices discussed in the module – 30%

Assessment 2 Game and evaluation: Practical Written Assignment – group-based game, implementation, presentation, testing and evaluation. (Working in a small group or individually)

- Final game 40%
- Annotated Video walkthrough (10%)
- Testing and evaluation document (10%)

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.)

Assessment Outcome Grids (See Guidance Note)

Component 1							
Assessment Type (Footnote B.)	Learning Outcome (1)	Learning Outcome (2)	Learning Outcome (3)	Learning Outcome (4)	Learning Outcome (5)	Weighting (%) of Assessment Element	Timetabled Contact Hours
Presentation	✓					10	0.5
Creative output/ Audiotapes/ Videotapes/ Games/ Simulations		✓				30	3

Component 2							
Assessment Type (Footnote B.)	Learning Outcome (1)	Learning Outcome (2)	Learning Outcome (3)	Learning Outcome (4)	Learning Outcome (5)	Weighting (%) of Assessment Element	Timetabled Contact Hours
Creative output/ Audiotapes/ Videotapes/ Games/ Simulations			✓			50	4
Documentation				✓		10	0

Component 3							
Assessment Type (Footnote B.)	Learning Outcome (1)	Learning Outcome (2)	Learning Outcome (3)	Learning Outcome (4)	Learning Outcome (5)	Weighting (%) of Assessment Element	Timetabled Contact Hours
Combined Total for All Components						100%	6 hours