Module Descriptor

Title	Advanced Texturing, Lighting and Rendering		
Session	2025/26	**Status**	
Code	COMP09100	**SCQF Level**	9
Credit Points	20	**ECTS (European Credit Transfer Scheme)**	10
School	**Computing, Engineering and Physical Sciences**		
Module Co-ordinator	Patrick Walder		

Summary of Module

The module is intended for 3rd Year students in Computer Animation Arts, and is concerned with the texturing, lighting and rendering of 3D assets to a high level of detail and quality.

The subject area is addressed from both a technical and an artistic perspective. The technical aspects of the module include the interaction of light with surfaces, shader properties and attributes, physically based materials, render passes and compositing. On a creative level, the use of light, shadow and colour to generate mood and character as well as generate visual interest is explored, along with composition and the effective use of reference material.

By the end of the module, students should be able to develop effective materials and textures for 3D assets, and use appropriate lighting and rendering methods to generate high quality imagery.

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)	

[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

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	Demonstrate knowledge and understanding of shaders and their attributes, lighting models, and rendering algorithms in the context of both rendered animation and game engines
L2	Create high quality material shaders and texture maps for a range of 3D assets
L3	Develop and configure lighting and rendering properties for a 3D scene such that the mood and character of the scene is conveyed effectively
L4	Demonstrate a systematic and professional approach to materials editing, lighting and rendering of 3D assets in order to achieve specified goals in visualisation
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** Knowledge and understanding of material attributes, lighting models, and rendering algorithms, and the relationship between these distinct aspects of 3D production Knowledge and understanding of appropriate workflows for creating textures and materials for 3D assets
Practice: Applied Knowledge and Understanding	**SCQF 9** Application of appropriate workflows for creating textures and materials for 3D assets Implementation of a variety of lighting models and rendering methods to facilitate production of rendered 3D output
Generic Cognitive skills	**SCQF 9** Planning and problem solving associated with the development of materials and lighting setups for a 3D scene
Communication, ICT and Numeracy Skills	**SCQF 9** Creation of shading networks incorporating mathematical relationships between shader properties Transferring data across a range of software tools to facilitate production of rendered 3D output
Autonomy, Accountability and Working with Others	**SCQF 9** Students will engage in individual projects but will be expected to subject their work to review by lecturing staff and their peers.

Prerequisites	**Module Code** COMP08077	**Module Title** Digital Asset Development
	Other Equivalent for direct entry	
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. The module will be delivered by means of lectures and practical lab work aimed at developing relevant knowledge and skills. The lectures will introduce and explore the essential underlying properties of materials and lights in a CG environment, as well as the fundamentals of rendering algorithms for animation and gaming. Differing approaches to materials development and texturing will be covered, and their advantages and challenges discussed. Through these ideas, the overall look development pipeline will be explored, enabling students to view the subject area in a holistic manner. The lab sessions will allow students to put into practice what they have learned. Exercises will primarily be delivered via video tutorials. Student knowledge will be assessed through practical assignments that entail implementation of a range of techniques covered in the module.

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)
Laboratory / Practical Demonstration / Workshop	36
Lecture / Core Content Delivery	12
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: Notes and online resources
(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:** Attendance at all scheduled classes unless with reason for non-attendance. Submission of all coursework including non-graded class exercises. Clear and timely communication with reasons for non-attendance or non-submission of/late coursework. Other areas of measure may also be used, including degree of access to University based online teaching resources. Students should note that the University has a minimum 80% attendance requirement in all modules. 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.
(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	Peter Satera
External Examiner	S Kennedy-Parr
Accreditation Details	
Module Appears in CPD catalogue	☐ **Yes** ☒ **No**
Changes / Version Number	1.10

Assessment (also refer to Assessment Outcomes Grids below)
Assessment 1
Practical (100%) [Two practical assignments, to be submitted in weeks 8 and 13 of the semester] Formative exercises will be incorporated into the lab tasks to enable students to gain feedback on their understanding of the module contents.
Assessment 2

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**
Portfolio of practical work	☒	☒	☒	☐	☐	100	0

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

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**
Update to new descriptor format. Edited Resources section. Added COMP08077 as pre-requisite.	March 2025	Patrick Walder