Module Specification

Games Tech: 101

Version: 2021-22, v2.0, 01 Jun 2021

Contents

Part 1: Information

Module title: Games Tech: 101

Module code: UFCFJL-30-1

Level: Level 4

For implementation from: 2021-22

UWE credit rating: 30

ECTS credit rating: 15

Faculty: Faculty of Environment & Technology

Department: FET Dept of Computer Sci & Creative Tech

Partner institutions: None

Delivery locations: Frenchay Campus

Field: Computer Science and Creative Technologies

Module type: Standard

Pre-requisites: None

Excluded combinations: None

Co-requisites: None

Continuing professional development: No

Professional, statutory or regulatory body requirements: None

Part 2: Description

Overview: Games Tech 101 looks to explore the core various techniques and technologies used in modern day game development. Many game studios rely on the use of first-party technologies to power their games and this module aims to give students an insight in to the typical demands of a modern day games developer.

Features: Not applicable

Educational aims: Students who pass the module will have a clearer understanding of games development within the context of modern programming languages, technologies and techniques. They will also gain the ability to implement working solutions to game technology related problems. The knowledge acquired from successful completion will provide the foundations for coming years of study. Irrespective of the specalisation the students career follows, the grounding provided in this module will ensure they can be a valuable and versatile asset in any game studio.

Outline syllabus: The following provides an indicative list of module content, which may vary with delivery to respond to current trends:

Introduction to algorithms:
Common algorithms used in a games context
Sorting algorithms
Big O Notation and performance optimisation

Data Structures:
Collation of data in user managed container types
Discussion and implementation of common container types used in the games industry
Discussion of performance and related practical considerations

AI in games:
What we mean by “AI” in the context of gaming and the role of AI in games
The purist vs practical approach to game AI and the trade-off between them
The use of finite state machines to manage state data and model simplistic AI
Implementation and/or illusion of agency in simulated worlds
The black-box model
An introduction to Deep Learning...!

Rendering:
Overview of the typical rasterisation rendering pipeline
Primitive rendering techniques such as points, lines, triangle strips etc

Intro to Shaders
Window management

Part 3: Teaching and learning methods

Teaching and learning methods: Delivery
Lectures will be used to deliver new ideas and concepts to the students.

Studio time will be used throughout the module where students are offered the opportunity to practice the concepts they are introduced to. These sessions will be attended by module staff and are designed to encourage students to think beyond the scope of the materials presented. The scheduled lab sessions will offer the perfect opportunity for formative development, where students can interact with both lecturers and their peers alike.

Module Learning outcomes:

MO1 Use code to show an understanding of core algorithms and data structures used in computer games development

MO2 Explain how games are rendered and the typical pipelines used in these processes

MO3 Identify and implement solutions to common AI related problems faced when developing typical video games

MO4 Reflect on and provide appropriate rationale as to which technologies are applicable to solve a given problem within the domain of games technology

Hours to be allocated: 300

Contact hours:

Independent study/self-guided study = 228 hours

Face-to-face learning = 72 hours

Total = 300

Reading list: The reading list for this module can be accessed at readinglists.uwe.ac.uk via the following link https://uwe.rl.talis.com/modules/ufcfjl-30-1.html

Part 4: Assessment

Assessment strategy: Reaching the outcomes
In order to reach the learning outcomes the students will need to digest the content being delivered throughout the module. They will implement a range of tasks that illustrate their understanding of the learning outcomes. These tasks will be focused around the use of technology in games and will result in students producing a portfolio of work. This will be accompanied by a viva or appropriate equivalent (videos, developer diaries etc.) which the module team will use to ascertain whether the student has engaged and understood the module's content.

Plagiarism
Submission of the tasks will be reviewed to ensure that students work is their own. Additionally, Viva's or appropriate equivalents will be used to confirm both the student's knowledge but also the authenticity of the work they have completed.

Assessment
The assessment has two distinct stages. The first stage is guided, in that students are asked to complete tasks that are well-defined and directly relate to the concepts being taught. Code samples and snippets will be provided to help complete these. These tasks are designed to be undertaken as individuals and correspond directly to the learning outcomes. The second stage sees a higher level of creative freedom allowed, where students will be free to design and implement their own games, within a prescribed framework. This will directly incorporate the concepts covered in both lectures and in the guided tasks. Due to the increased scope of producing a game, small groups will be allocated. It is important to note that each student will be graded individually.

Formative feedback

During all studio sessions the module team will be present. The team will look to engage with students as they progress throughout the semesters, providing support and guidance on the work being produced. By providing continual support and feedback, students should be better able to produce quality of work sufficient to pass the assessment.

Referrals
Students will be expected to produce a technical report that will describing and evaluate the various technologies covered within the module. This report will be used to determine their understanding of the learning outcomes. This replaces the portfolio they've worked on previously, as production of a new portfolio in a short space of time is not realistic.

Assessment components:

Portfolio - Component A (First Sit)
Description: Portfolio
Weighting: 100 %
Final assessment: No
Group work: No
Learning outcomes tested: MO1, MO2, MO3, MO4

Portfolio - Component A (Resit)
Description:
Weighting: 100 %
Final assessment: No
Group work: No
Learning outcomes tested: MO1, MO2, MO3, MO4

Part 5: Contributes towards

This module contributes towards the following programmes of study:

Games Technology {Foundation} [Sep][FT][Frenchay][4yrs] BSc (Hons) 2020-21

Games Technology {Foundation} [Sep][SW][Frenchay][5yrs] BSc (Hons) 2020-21