

## **Academy of Digital Arts | Game and Interactive Media Development**

### **COURSE OUTLINE**

*NQF level 5: 152 credits: one-year full time learning programme, Higher Certificate in Game and Interactive Media Development SAQA #93030: <http://allqs.saqa.org.za/showQualification.php?id=93930>*

#### **1. Purpose of the Qualification:**

This qualification is designed for individuals who seek to learn the essential skills, procedures and theory behind the game design and development process; to gain a thorough grounding in the knowledge and skills required to work in the game and interactive media development industries. Successful completion of the qualification may enable progression into an Advanced Certificate, Diploma or Degree programme in the same or a similar field. Learners will master the latest game industry-related technologies, develop and utilise applied design skills in order to produce professional and appropriate game and interactive media designers, able to skilfully and competently provide efficient working solutions to suit their client's needs. The qualification emphasises general workflow processes and their practical application and includes real-world project applications. Learners will master the tools, practices and terminology required to work in the game design and interactive media development industry and to be confident to apply their skills from pre-production to alpha testing phases. Learners will develop skills and knowledge in theory, technology, scripting, and graphics to produce functional and cohesive aesthetic digital games and interactive experiences, using industry standard applications such as Blender 3D, Unity 3D, Adobe Photoshop, Adobe Illustrator, together with all the essential theory needed to solve a design and development brief.

#### **2. Main Outcomes of the Learning Programme:**

The purpose of this qualification is for learners to demonstrate knowledge and skills needed in key areas of Game and Interactive Media Design; to understand related workflow processes; and to develop an understanding of the key terms, concepts, practices, principles, rules and theories of Game Design and Development. Graduates are fully equipped to enter the game and multimedia industry upon successful completion of their studies. Employers' requirements of a game designer at entry level into industry are:

- Learners must demonstrate an understanding of game theory and the basic workflow required of game planning and game production.
- Learners must understand how to convey applicable research and apply planning and design processes of Game Design Concepts and Game Design Theory properly and find obvious mistakes.
- Learners must apply skills, methodologies and techniques acquired to create optimized 3D game art implementation in the game engine for purposes of interactive media or game development purposes.
- Learners must demonstrate an understanding of game technology and the various industry applications.
- Learners must understand how to implement optimized assets and functional scripts in a real time 3D and 2D environment.
- Learners must apply knowledge in smaller game projects and learn how to plan project milestones, structure scripts, manage game play logic, create interactivity, follow efficient quality assurance processes, and use game engines to their full potential.

- Learners must demonstrate an understanding of how a Game Engine, like Unity 3D, can be used to create games and applications for interactive entertainment.
- Learners must apply the core concepts and design principles of proper user interface design and layouts.
- Learners must apply artistic skills and knowledge, artwork production planning, milestone management and applicable art production tools to complete a project within a scheduled time frame.
- Learners must be knowledgeable communicators, both orally and through visual presentations, who are able to work productively and responsibly to produce effective audio and visual communication.
- Learners must be able to take a brief, define the required deliverables and convey the relevant research into a specified themed topic and apply this research in the context of the client`s needs.
- Learners must be able use computer software applications to execute design and prepare game art content for production.
- Learners must demonstrate the ability to manage pre-production planning, including – asset list specifications, game design document writing and researching relevant reference images, or developing cohesive storyboards and concept art.
- Learners must be able to collaborate with other designers, developers, and professionals relevant to game and multimedia development industry, work effectively in creative teams and be able to communicate effectively using design and development language.
- Learners, when managing a design project, must use the best practices and work in an ethical manner.

### **3. Methodology and Assessment Strategy:**

Theoretical concepts will be gained primarily through contact lectures and independent study with lecturer support through online forum postings and module notes provided on the LMS Moodle. Other learning activities include group work, WIL- projects, research studies, case studies, and practical presentations.

The course consists of both summative and formative assessments, with summative assessment typically allocated a greater weighting. Each module is concluded with a final summative assignment.

The main goal of formative assessment at ADA is to monitor a student`s ongoing learning. During formative assessment, feedback is continually provided to advance learning, to help identify specific improvement areas, and to prepare students for summative assessments. Formative assessment furthermore assists lecturers in recognizing areas in which students might be struggling, so that these challenges can promptly be addressed.

During Summative assessment, which typically happens at the completion of a module or subject, your achieved learning is evaluated and compared with the learning programme`s standards and outcomes. Summative assessment usually contributes to a higher weighting towards your course total.

Students are required to achieve minimum of 50% for each module of the course to submit their final summative assignment and to achieve the qualification. This involves attending all contact sessions, working through the prescribed course notes, completing weekly exercises and tasks, completing assignments or group projects; and presenting final completed work to the class for feedback and assessment. Should students fail any of their projects,

assignments, subjects, or modules, they will need to refer to their academic guide as to the proper processes and rules that apply.

Once their Final Project has been submitted and passed, learners are given the opportunity to participate in the Student Showcase event, which highlights and displays graduating student work to both industry leaders, family, and friends. As well as, industry leaders who are invited able to interact with them.

#### **4. Attendance**

Learners are expected to attend a minimum of 80% of all contact sessions in each module, and arrive on time to classes. Any learner who falls below this threshold will need to provide a medical letter or other formal evidence of an emergency and will need to arrange with their lecturer and HoD to catch up the missed work. Any unexcused absences dropping attendance below 80%, will result in the student receiving an automatic failure (49% - or less, depending on other work done) for that module. That module will then need to be redone in the following year to graduate.

#### **5. Student Showcase**

At the end of the year, after the Final Project has been submitted, learners who have passed all modules are given the opportunity to participate in the graduate student showcase event on campus (usually the second-last Thursday of November) This event is extremely important as industry leaders are invited to see the student work and interact with them. Many graduates receive their first job offers because of this event.

Throughout the year, all your best work should be kept, forming part of your showcase presentation at this event. Your final project will be the centrepiece of this display. Your lecturers will discuss this event in more detail with you closer to the time.

## 6. Modules included in the programme with credit allocation:

All modules contained in the learning programme are core compulsory modules and contribute credits towards the qualification, excluding the first four modules which are entirely introductory with no credits assigned. Modules are taught over the period of the entire academic and each has a specific summative assessment associated with it, excluding the first four modules which are purely for introductory purposes.

MODULES				DESCRIPTION
NO.	CODE	NAME	DURATION (WEEKS)	
1	GTH00	Game Theory Introduction	1	Good games require more than just good code and graphics, they require careful and deliberate design that appeals to players on many different levels. This week will introduce the topic of Game Theory where students will learn about game design thinking, developing an idea into a concept, and game production in general.
2	GRPH00	Game Graphics Introduction	1	This module is an introduction to game graphics covering an introduction to the 3d digital environment and the core concepts of 3D modelling and animation. An introduction to basic animation functionality for simple shape-key animation. An overview of the role of a game graphic artist, essential tools, and skills development. An overview of each game graphic subject. An introduction to process-driven workflow and time management, developing portfolio content and industry application and specialisation.
3	GTECH00	Game Technology Introduction	1	This module is a general introduction to game technology and what it can be used for. It will cover what game engines are, what belongs in the field of game technology, and how game technology is used in many different areas, outside of creating games for entertainment. It will give a first introduction into the Unity Game engine.
4	GSCRI00	Game Scripting Introduction	1	This module will look at the concept of computational thinking. This will build the foundation of the approach we will take when problem solving which allows scripting to be a tool.
5	GRPH01	Game Graphics 01 - 3D Modelling Basics	2	This module is a complete overview of efficient workflow methodologies and techniques for developing optimized, low poly mesh models. This covers the correct approach and technical skill development of a simple rigid and organic form using example exercises with product design, vehicle design and environment design; aiming to build on basic skills leading to efficient character modelling processes and methodologies.
6	GTH01	Game Theory 01 - Game Design Basics	1	This module focuses on the designing of game systems and gameplay loops, how to set up a game design pyramid, and how to focus your design mechanisms
7	GTH02	Game Theory 02 - Game Content Basics	1	This module looks at the crafting of game content, characters, world and narrative, and how to create depth to your game, and align these with your systems.
8	GSCRI01	Game Scripting 01 - Scripting Basics	2	This module covers at C# 'C sharp' and object oriented programming as a whole. Just as a director uses a script to define how a scene plays out in a movie; a programmer uses script to define how a scene plays out in an application
9	GTECH01	Game Technology 01 - Game Engine Basics	3	This module will explain the basic functions of the Unity game engine. You will learn how to create scenes, setup lighting and atmospheric effects, particle systems and all other essential tools for game or interactive media development in Unity. The module will end with a team work game development project during the last week.
10	GTECH02	Game Technology 02 - Creating In-Game Assets	1	The module is a complete overview of the correct workflow process to prepare 3D models, 3D animations, 2D bitmaps, Level of Detail groups and audio assets for correct import and implementation in the Unity game engine. This will include the correct setup for materials and textures for efficient and optimised implementation.

**Modules table continued:**

MODULES				DESCRIPTION
NO.	CODE	NAME	DURATION (WEEKS)	
11	GRPH02	Game Graphics 02 - Rigging and Animation	2	This module is a complete overview of efficient workflow process, methodologies and techniques for character rigging and animation.
12	GSCRI02	Game Scripting 02 - Physics Basics	2	This module is an introduction to game physics and object interaction mechanics. This module will provide the concepts and tools for creating simulation software.
13	GUI01	Game User Interfaces and Layouts	1	This module is a complete overview of core design principles and theories with a process-driven approach to creating clear and coherent user interfaces; whilst ensuring a high-quality immersive experience. This module will include: Navigation and design planning process overview and considerations for coherent asset creation.
14	GTECH03	Game Technology 03 - Game Engine 2D Basics	2	This module will explain the basic functions of the Unity game engine's powerful 2D game development feature. Building on previously covered knowledge, you will learn how to use sprites, create 2D animations for characters, build levels, use 2D physics and all other essential tools for desktop or mobile applications. The module will end with a team work game development project during the last week.
15	GRPH03	Game Graphics 03 - Sculpting and Retopology	2	This module is a complete overview of efficient workflow-processes, methodologies and techniques for creating high poly sculpted character models and retopology methods. The objective is to create low poly overlay 3D models to generate normal and occlusion maps which can be implemented in a game engine as high detailed optimized game art.
16	GSCRI03	Game Scripting 03 - Scripting Advanced	2	This module is an introduction to optimization for script and engine work. This will emphasize writing modular systems using the SOLID principals.
17	GTH03	Game Theory 03 - Concept Development and Pitch	1	This module covers work ethic and approach with clients to design a specific game experience to achieve a designated outcome. This includes working with a client brief, conducting practical research and putting together and presenting a game project proposal pitch.
18	GTH04	Game Theory 04 - GDD Structure and Writing	1	This module looks at the refining process of design, once a concept is accepted. The systems and content are formalised into a game design document (GDD) which can then be used as a reference during the development process.
19	GTECH04	Game Technology 04 - Game Prototyping	3	This module will cover the development of a game prototype. The module is entirely team work driven and will be based on a game design concept that the class has developed in a previous module. Simulating a development team each student will be part of the production process and do his or her part to develop a playable prototype as a proof of concept based on the game design document and production plans created.
20	FXP01	Final Exam Project - Research	2	Game Technology is constantly evolving. Researching new techniques, technologies and approaches to problem solving will be a part of your career from now on. The research project's purpose is to let the students show how to convey research on a topic related to their specialisation and capable they are of presenting the results of that research to others. When you can make statements backed by good research you will be more successful in convincing team members, clients and employers.
21	FXP02	Final Exam Project - Practical	6	This the students specialisation project. Based on research, preparation and working mentors students have the chance of focusing entirely on building what shows their skills and knowledge the best way possible. This will be the center piece of the students portfolio.

### **6.1.1 Module 01: GTH00 | Game Theory 00\_Game Theory Introduction**

The first module will provide learners with an understanding of what role game designers play in the development process and the process-driven application of design and creativity; including core concepts of game design and theoretical elements to consider for an all-encompassing, immersive gaming experience. An introduction to the professional approach of how to navigate effective interaction between the game designer and client.

#### *Module Assessment*

In this module, students will not be required to complete an assessment as it is purely an introductory module to provide students with an overview of what to expect for the academic year ahead.

### **6.2.1 Module 02: GRPH00 | Game Graphics 00\_Game Graphics Introduction**

This module is an introduction to game graphics covering an introduction to the 3D digital environment and the core concepts of 3D modelling and animation. This includes an overview of the applied skills and the role of a game graphic artist within a game studio, portfolio development and industry application specialisation.

#### *Module Assessment*

In this module, students will be required to complete an assessment as self-improvement task to be completed outside of class hours to put into practice the foundation skills that will be covered in this introductory module. This module also provides students with an overview of what to expect for the academic year ahead. This is a formative assessment.

### **6.3.1 Module 03: GTECH00 | Game Technology 00\_Game Technology Introduction**

This module is a general introduction to game technology and what it can be used for. It will cover what game engines are, and how the knowledge and application of these skills gained in the field of game technology is used in many different areas, outside of creating games for entertainment. It will give a first introduction into the Unity Game engine.

#### *Module Assessment*

In this module, students will not be required to complete an assessment as it is purely an introductory module to provide students with an overview of what to expect for the academic year ahead.

### **6.4.1 Module 04: GSCRI00 | Game Scripting 00\_Game Scripting Introduction**

This module is an introduction to scripting in the Unity Game Engine with C# as the language. Practice in executing specific actions in specific situations via script. Text information logging will represent actions to be implemented in later modules.

#### *Module Assessment*

In this module, students will not be required to complete an assessment as it is purely an introductory module to provide students with an overview of what to expect for the academic year ahead.

### **6.5.1 Module 05: GRPH01 | Game Graphics 01\_3D Modelling Basics**

This module is a complete overview of efficient workflow methodologies and techniques for developing optimized, low poly mesh models for game engine implementation.

#### *Module Assessment*

This module has a single summative assessment. The students will have to complete a low poly modelling project applying all the principles, methodologies and workflow processes introduced in the introductory weeks, as well as during this module.

### **6.6.1 Module 06: GTH01 | Game Theory 01\_Game Design Basics**

This module will cover the process of conceptualising a game from scratch. It will provide learners with an understanding of the design process and the process and concepts aimed at creating a cohesive gameplay experience and how each element contributes to the overall experience.

#### *Module Assessment*

This module has a single summative assessment. This assessment will take the form of a practical project within a team dynamic with the objective to create a game design concept, as a first step in the design process.

### **6.7.1 Module 07: GTH02 | Game Theory 02\_Game Content Basics**

This module covers the range of content that needs to be created for different types of games, and how best to go about developing this. It also considers aspects such as writing for games, character and world design, environmental design, and essential user experience considerations.

#### *Module Assessment*

This module has a single summative assessment. This assessment will take the form of a practical team project to build the previous system design project, which will form the foundation for this assignment. Students will need to design game content appropriate for their design, covering game world design, game character design and game narrative design.

### **6.8.1 Module 08: GSCRI01 | Game Scripting 01\_Game Scripting Basics**

This module covers the range of basic logic and scripted control of a scene.

#### *Module Assessment*

This module has a single summative assessment. This submission will require students to script that provides an interactive loading scene for all future projects.

### **6.9.1 Module 09: GTECH01 | Game Technology 01\_Game Engine Basics**

This will teach the basics of the game engine's functions, the setup of new projects regarding the project's target platform, how prefabs and imported objects are used, the rendering setup and everything else needed to work in the game engine efficiently.

#### *Module Assessment*

This module has a single summative assessment. The students will work within a team dynamic, simulating a working studio environment and split into respective.

### **6.10.1 Module 10: GTECH02 | Game Technology 02\_Creating In-Game Assets**

A complete overview of the correct workflow process to prepare all asset types for game engine implementation, including the correct and efficient setup of asset types.

#### *Module Assessment*

This module has a single summative assessment. The students will have to complete a knowledge test comprising of multiple-choice questions and referencing sample scenes setup in a project.

### **6.11.1 Module 11: GRPH02 | Game Graphics 02\_Rigging and Animation**

This module is a complete overview of efficient workflow process, methodologies and techniques for character rigging and animation. This covers the software-based skills and knowledge required for full implementation of a working and smooth animation from planning and preparation phases.

#### *Module Assessment*

This module has a single summative assessment. The students will have to completely rig and animate a sourced character of their choice and apply all the principles, methodologies and workflow processes introduced in the introductory weeks, as well as this module.

### **6.12.1 Module 12: GSCRI02 | Game Scripting 02\_Physics Basics**

This module is an introduction to physics concepts and setting up physically reactive scenes in the game engine using built-in features that are exposed to physics scripters.

#### *Module Assessment*

This module has a single summative assessment. For this submission students will be required to provide a physically interactive 3D scene for all future projects.

### **6.13.1 Module 13: GUI01 | Game User Interfaces 01\_User Interfaces and Layout**

This module is a complete overview of core design principles and theories with a process-driven approach to creating clear and coherent user interfaces whilst ensuring a high-quality immersive experience.

#### *Module Assessment*

This module has a single summative assessment. Students will complete a written knowledge test in the form of a quiz. This will test their knowledge and understanding of the theories, core principles and artistic strategies for a successful immersive experience through interaction with a user interface.

### **6.14.1 Module 14: GTECH03 | Game Technology 03\_ Game Engine 2D Basics**

This module includes cross-discipline aspects which will incorporate 2D graphics, scripting, and game engine implementation, with a strong focus on UI design and development.

#### *Module Assessment*

This module has a single summative assessment. The students will work within a team dynamic, simulating a working studio environment and split into respective.

### **6.15.1 Module 15: GRPH03 | Game Graphics 03\_Sculpting and Retopology**

This module is a complete overview of efficient workflow processes, methodologies, and techniques for creating high poly sculpted character models and retopology methods to create low poly overlay 3D models to generate bitmaps which can be implemented in a game engine as high detailed optimized game art.

#### *Module Assessment*

This module has a single summative assessment. The students will have to completely sculpt and retopologise a researched character of their choice and apply all the principles, methodologies and workflow processes introduced in the introductory weeks, as well as this module.

### **6.16.1 Module 16: GSCRI03 | Game Scripting 03\_Scripting Advanced**

This module will cover how to optimize scripts and game scenes to maximise the ease of reading and integrating scripts, the ease of asset management, the performance for the device it will run on and hardware resource usage efficiency.

#### *Module Assessment*

Students are to submit a summative assessment. This requires students to apply knowledge and skills gained during learning sessions to successfully optimize scripts and game scenes.

### **6.17.1 Module 17: GTH03 | Game Theory 03\_Concept Development and Pitch**

This module covers work ethic and approach with clients to design a specific game experience to achieve a designated outcome.

#### *Module Assessment*

This module has a single summative assessment. This assessment will take the form of a pitch presentation, accompanied by a proposal document.

### **6.18.1 Module 18: GTH04 | Game Theory 04\_GDD Structure and Writing**

This module covers working with an approved game concept, together with client feedback and how to turn a design concept into a Game Design document (GDD) for practical use in a project.

#### *Module Assessment*

This module has a single summative assessment. This assessment will take the form of a team project with a written Game Design Document (GDD) with each student providing a single individual written submission which all contributes to the main Game Design document.

### **6.19.1 Module 19: GTECH04 | Game Technology 04\_Game Prototyping**

This module is a live project where students will work as a team on an actual client project. The students, after having prepared the game design concept in the game theory modules, must combine their knowledge and skill to plan, execute and finish the game prototype version for the live project.

#### *Module Assessment*

This module has a single summative assessment. The students will work within a team dynamic, simulating a working studio environment and split into respective departments.

### **6.20.1 Module 20: FXP01 | Final Exam Project Research**

This module is entirely practical and requires students to carry out topic-based research within the specialisation of game theory, game graphics, game technology or game scripting. The research is to be presented before an audience.

#### *Module Assessment*

The module assessment will require students to apply all skills and knowledge gained throughout all modules relevant to their specialisation where they would convey applicable research as part of their preparation for the module FXP02 Final Exam practical project.

### **6.21.1 Module 21: FXP02 | Final Exam Project Practical**

The module is entirely practical and requires students to apply the research presented in a practical portfolio project focused on their chosen area of specialisation in one of the four fields, game theory, game scripting, game graphics or game technology. This will form part of the student showcase in November.

#### *Module Assessment*

The module assessment will require students to apply all skills and knowledge gained throughout all modules relevant to their specialisation where they would simulate a practical project based on their findings in the FXP01 research project.

## **7. Software used in practice:**

- 3D Modelling Software packages
- Image Editing Software packages
- Code Editors
- Game Engine packages
- Office Software packages

The following are provided during class:

- Lecturer slides and class notes uploaded to Moodle and the internal Server.
- Links, video and additional notes, comments and feedback on the various student platforms and communication channels.
- Class handouts and additional notes– are available on the Learner Management System.

## **8. Resources & Materials**

Contact sessions for this course are held in a computer lab on campus, and each student will have a dedicated PC and a student log-in account. This setup gives students full access to the essential software used in the course, including the Adobe package, Unity and Blender. In addition, each student has access to the student library and lab on campus for out-of-class project work. Internet access is provided to all students, but this is not to be abused through excessive personal use such as watching YouTube or other online activities not related to the coursework. See the student academic guide and code of conduct for further details on this.

Students will be provided with digital notes in pdf format via the learning management system (Moodle). Notes are provided for each subject covered in every module.

Additional sources such as online tutorials, guides and support sites will be shared by lecturers in class and links can be provided via the LMS as well.

Further sources are available in the student library, including:

<i>A Theory of Fun: for game design</i>	Raph Koster
<i>An Introduction to Music Technology</i>	Dan Hosken
<i>Character Development and Storytelling for Games</i>	Lee Sheldon
<i>Creating 3D Worlds</i>	Simon Danaher
<i>Game Character Creation: With Blender and Unity</i>	Chris Totten
<i>Gaming Addiction</i>	Ace McCloud
<i>Holistic Game Development: with Unity</i>	Penny de Byl
<i>Inside the Video Game Industry</i>	Judd Ruggil <i>et al</i>
<i>Interactive Stories and Video Game Art</i>	Chris Solarski
<i>Level Design: Concept, Theory &amp; Practice</i>	Rudolf Kremers
<i>Making Deep Games</i>	Doris C. Rusch
<i>Multimedia: From Wagner to Virtual Reality</i>	Randall Packer & Ken Jordan
<i>The Complete Guide to Game Audio</i>	Aaron Marks
<i>The Diminishing Returns of Modern Game Design</i>	Daniel Mercier
<i>The Game Narrative Toolbox</i>	Tobias Heussner <i>et al</i>
<i>The Pioneers of Game Art: From ArsDoom to SimBee</i>	Mathias Jansson
<i>Music: A Very Short Introduction</i>	Nicholas Cook
<i>Postmodern Music - Postmodern Thought</i>	Judy Lochhead & Joseph Auner
<i>Complete Guide to Film Scoring</i>	Richard Davis
<i>World Music: A Global Journey</i>	Terry Miller & Andrew Shahriari
<i>An Introduction to Music Technology</i>	Dan Hosken

Additional sources including online- and magazine articles, will be added over the course of the year.