ANIMATION

AUDIO

DESIGN

FILM

GAMES

WEB & MOBILE

GAM111

GAM111 Scripting for Game Developers

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CREATIVE MEDIA INSTITUTE
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GAM111 Scripting for Game Developers

Module Code & Name: GAM111 Scripting for Game Developers

Program: Bachelor of Games Development (Games Programming); Bachelor of Games Development (Games Design); Associate Degree of Games Development

Award Level: AQF Level 7

Module Level: Introductory

Delivery Mode: Face-to-face, blended

Duration: 1 Trimester

Credit Points: 10 / 240

Pre-requisite(s): MDU112 Introduction to Scripting,
MDU113 Rational Problem Solving,
GAM110 Principles of Game Design

Co-requisites: Nil

Student workload:

Facilitated Learning	Supervised studio / lab practice hours per week	Self Directed Learning	Total workload hours per week
3	0	6	9

Module Aims:

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This unit extends the knowledge gained from MDU112 into more advanced scripting possibilities and game specific areas. Common game requirements such as 3D cameras, collision, input control schemes, basic gameplay mechanics and introductory AI are covered in an applied context in an abstracted language. This allows students to build confidence in their abilities.
As a consequence of working in an abstracted, middleware package, students are also exposed to pipeline, version control and bug tracking methodology as used in the contemporary games market. Students approach these topics in both a critical and practical fashion.

Learning Outcomes:

Upon successful completion of this module, you will be able to:

L1	Develop small scale, stand-alone game applications in a middleware package
L2	Demonstrate an applied knowledge of problem solving as it relates to game development
L3	Utilize effective work flow methodologies as they relate to small scale game projects
L4	Identify design limitations based on time and software constraints
L5	Reflect upon project workflow methodologies and demonstrate insight into how personal attributes impact on delivery of a product

Weekly Schedule:

Syllabus	Activities, Readings & Resources
Game Engines - Middleware packages - Assets - Common Features -- Physics -- Audio -- Rendering - Version control Principles of 2D and 3D space	Resources: Provided via Campus Online

Input Devices & hardware Scripting - Collision Detection & response - Basic AI - Camera control - Navigation & character control - Programming techniques -- State Machines -- Events -- Data Driven **Learning Outcomes:** L1: Develop small scale, stand-alone game applications in a middleware package L2: Demonstrate an applied knowledge of problem solving as it relates to game development L3: Utilize effective work flow methodologies as they relate to small scale game projects L4: Identify design limitations based on time and software constraints	

Assessment Overview:

Your results for this module, GAM111 Scripting for Game Developers, are based on these assessment tasks. Each task is given a percentage weighting of your overall grade. Grades for assessment tasks will be reported to you based on a sliding scale from Fail (FF) through to High Distinction (HD).

Late assessment items will be penalised without an approved extension or without approved mitigating circumstances. In such an instance the **assignment will be awarded zero marks**. Students should seek to consult with the Department Coordinator as early as possible if they are unable to meet a due date. A revised submission date should be negotiated as part of the application for special consideration. https://sae.edu.au/about/policies/our-policies-and-procedures/

Assignment	Weighting	LOs	Due

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GAM111.1 Prototype 1 (Brief Driven)	25%	L1, L2, L3, L4	Week 4
GAM111.2 Prototype 2 (Brief Driven)	30%	L1, L2, L3, L4	Week 9
GAM111.3 Prototype 3 (Brief Driven)	30%	L1, L2, L3, L4	Week 13
GAM111.4 Reflective development logbook	15%	L4, L5	Week 2 - 13

Graduate Attributes:

Assignment	Graduate Attributes
GAM111.1 Prototype 1 (Brief Driven)	GA1, GA2, GA3, GA4, GA5, GA6, GA7
GAM111.2 Prototype 2 (Brief Driven)	GA1, GA2, GA3, GA4, GA5, GA6, GA7
GAM111.3 Prototype 3 (Brief Driven)	GA1, GA2, GA3, GA4, GA5, GA6, GA7
GAM111.4 Reflective development logbook	GA1, GA4, GA5, GA6, GA7

Assessment Requirements:

Assignment 1	***GAM111.1 Prototype 1 (Brief Driven)***
Weighting	25%
Submission Format	Electronic Submission via Campus Online

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Brief	You will be provided the assessment brief 1_A_UG_001_GAM111.1 Assessment Brief_180524.pdf This assessment must be completed individually. You will create a small game prototype that exhibits the following; Core Game Engine features; -Collisions -Triggers -Instantiation -Destruction A 2D gamespace and camera; -Gamespace such as the xy or xz or some other arbitrary plane -Camera a simple track or look at object Feedback rich; -All elements & interactions should have at least 1 of the following; --SFX --Particles --Material changes or effects --Animation or Tweening Basic Enemies; -Specialised enemy behaviours --Such as Turret, chase, leashed, flee Locally persistent high score A full game and menu loop including; -Splash -Main menu -Credits -Game -GameOver/Win Must be playable with the following inputs; -Mouse and Keyboard -Gamepad e.g. xbox360 -This can be either dynamically chosen based on input or chosen by a menu. Note; -Exceptions, application lock ups and crashes will drastically reduce your grade. -You are required to test that your project loads, runs and builds cleanly and correctly on the software installed on the lab's computers. -You are allowed to use existing code bases or assets in your project but you must declare them and clearly indicate them both in your project structure and in the credits of your game.

	--All of these existing 3rd party code bases and assets that you use are not considered during grading. This includes any frameworks provided to you or are the result of an in class exercise or workshop. --In cases where a license is required for a 3rd party asset/tool etc. one must be provided by you to all staff that are required to grade your work.	
Requirements	Your submission must include: -A brief user manual. This file should explain briefly how the application should be used. -A brief credits document. This file should reference all tools used and where all assets not created by you came from. The project, a build, all source code and any additional files required to build and run the application.	
Assessment Criteria	**Element**	**Weighting**
Complete and effective implementation - How much of the required functionality does the submission implement, and does the implemented content demonstrate appropriate, effective and efficient use of techniques that are bug free?		70%
Adherence to standards - How well does the submission conform to the relevant coding standard and/or style guide?		30%

Assignment 2	***GAM111.2 Prototype 2 (Brief Driven)***
Weighting	30%
Submission Format	Electronic Submission via Campus Online

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Brief	You will be provided the assessment brief 1_A_UG_001_GAM111.2 Assessment Brief_180524.pdf This assessment must be completed individually. You will create a small game prototype that exhibits the following; Core Game Engine features; -Animations -3D assets A 2D or trivial 3D gamespace; -Gamespace such as the xy or xz or some other arbitrary plane -A fixed camera that tracks targets Feedback rich; -All elements & interactions should have at least 1 of the following; --SFX --Particles --Material changes or effects --Animation or Tweening Units/Monsters/Tokens; -Movement and attacks are driven by their stats --These stats are loaded and configured via an external data file -Each of these to have at least 3 abilities or modes it can use. -Each with their own visuals and sfx. A full game and menu loop including; -Splash -Main menu -Credits -Game -GameOver/Win Must be playable with the following inputs; -Mouse only, the player should not require a keyboard or gamepad --You can however support keyboard shortcuts or a gamepad, etc. if you wish. Note; -Exceptions, application lock ups and crashes will drastically reduce your grade. -You are required to test that your project loads, runs and builds cleanly and correctly on the software installed on the lab's computers. -You are allowed to use existing code bases or assets in your project but you must declare them and clearly indicate them both in your project structure and in the credits of your game. --All of these existing 3rd party code bases and assets that you use are not

	considered during grading. This includes any frameworks provided to you or created in class. --In cases where a license is required for a 3rd party asset/tool etc. one must be provided by you to all staff that are required to grade your work.	
Requirements	Your submission must include: -A brief user manual. This file should explain briefly how the application should be used. -A brief credits document. This file should reference all tools used and where all assets not created by you came from. -The project, a build, all source code and any additional files required to build and run the application.	
Assessment Criteria	**Element**	**Weighting**
Complete and effective implementation - How much of the required functionality does the submission implement, and does the implemented content demonstrate appropriate, effective and efficient use of techniques that are bug free?		70%
Adherence to standards - How well does the submission conform to the relevant coding standard and/or style guide?		30%

Assignment 3	***GAM111.3 Prototype 3 (Brief Driven)***
Weighting	30%
Submission Format	Electronic Submission via Campus Online
Brief	You will be provided the assessment brief 1_A_UG_001_GAM111.3 Assessment Brief_180524.pdf This assessment must be completed individually.

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	You will create a small game prototype that exhibits the following; Core Game Engine features; -3D audio -Navigation Non-Trivial 3D gamespace and camera; -Gamespace that makes use of xyz -First or Third person camera --Must be aware of the space it is in and should actively avoid clipping and obscuring the player's view. Feedback rich; -All elements & interactions should have at least 2 of the following; --SFX --Particles --Material changes or effects --Animation or Tweening State based AI; -Discreet behaviour for different states --Such as Idle, Alerted, Seeking, Attacking, Fleeing, Dying, Afraid, Happy, Following --Recommend use of FSM or Behaviour Tree -Player must be able to tell which state an enemy/NPC is in Events; -Use and creation of events within your game either locally or globally to allow AI or other systems to subscribe to or listen for. Note: -Exceptions, application lock ups and crashes will drastically reduce your grade. -You are required to test that your project loads, runs and builds cleanly and correctly on the software installed on the lab's computers. -You are allowed to use existing code bases or assets in your project but you must declare them and clearly indicate them both in your project structure and in the credits of your game. --All of these existing 3rd party code bases and assets that you use are not considered during grading. This includes any frameworks provided to you or are the result of an in class exercise or workshop. --In cases where a license is required for a 3rd party asset/tool etc. one must be provided by you to all staff that are required to grade your work.
Requirements	Your submission must include: -A brief user manual. This file should explain briefly how the application should be used. -A brief credits document. This file should reference all tools used and where all assets not created by you came from.

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	-The project, a build, all source code and any additional files required to build and run the application.	
Assessment Criteria	**Element**	**Weighting**
Complete and effective implementation - How much of the required functionality does the submission implement, and does the implemented content demonstrate appropriate, effective and efficient use of techniques that are bug free?		70%
Adherence to standards - How well does the submission conform to the relevant coding standard and/or style guide?		30%

Assignment 4	***GAM111.4 Reflective development logbook***
Weighting	15%
Submission Format	Electronic Submission via Campus Online
Brief	Development blogs are a common practice throughout industry - both internal and external. These record the process of development. This exercise will also help students to track their own learning as well as fostering solid development practice. A blog post must be written every 2 weeks throughout the trimester. These may vary in length inline with required discussion, the average length is expected to be around 500 words. Each blog should explain what was planned for the week, key milestones achieved, any setbacks experienced and ways they have been / will be overcome. Alternatively, they may take the form of a post-mortem following a Prototype

	Submission. These blogs must be legible, correctly formated and should not contain spelling errors or grammatical errors. All sources of information should be correctly referenced using APA, including software, hardware, images /videos and texts. These blog posts should be made in a available via your online presence/portfolio, in a public space such as Wordpress, Squarespace, Blogspot, custom website, etc. A final collected document containing all blogs is required to be submitted via Campus Online->Assessments in Week 13. Essential: -Blogs are of relevance to development project. Posts should track goals, achievements, setbacks and solutions to problems encountered. -Blog posts should refer to specific terminology, techniques or other content from the unit as they applied to the assessment tasks. -Blogs are of sufficient length and posted regularly. -Blogs are well presented and conform to academic formats used in all other units. See CIU110 materials for clarification.	
Requirements	Your submission must include: -A document with a link to each logbook entry posted online -An offline pdf or html version of your posts	
Assessment Criteria	**Element**	**Weighting**
Blog Content -Synthesis of knowledge -Quality of sources (relevant, authority) -Depth and sophistication of engagement -Evaluation versus description -Chronology of posts is clear -Tone and language is appropriate for professional audiences		60.00%
Enhancements & Curatorship -Referencing is citation is in accordance with APA standards. -Curated content is of a high quality and supports your writing		20%

Community -You have actively contributed back to the blogging community by providing insightful commentary and criticism. -You acknowledge multiple viewpoints and differentiate fact from opinion. -Posts use appropriate etiquette.	20%

Prescribed Reading(s):

Unity Technologies. (2015). Unity Tutorials. Retrieved February 10th, 2016 from http://unity3d.com/learn/tutorials

Blackman, S. (2011) *Beginning 3D game development with Unity: all-in-one, multi-platform game development.* New York, NY: Springer Science+Business Media.

Recommended Reading(s):

Blackman, S. (2011) Beginning 3D Game Development with Unity: All-in-one, multi-platform game development. New York: Springer Science+Business Media.

Van Verth, J. M., Bishop, L. M. (2008). Essential Mathematics for Games and Interactive Applications, Second Edition: A Programmer's Guide (Second Edition). Burlington: Morgan Kaufmann.

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Mayo, J. (2016). C# Succinctly. Retrieved February 10th, 2016 from http://www.csharp-station.com/Tutorial.aspx

McConnell, S. (2004). Code Complete: Second Edition. Redmond: Microsoft Press.

Microsoft. (2015). C# Tutorials. Retrieved February 10th, 2016 from https://msdn.microsoft.com/en-us/library/aa288436%28v=vs.71%29.aspx

Tremblay, C. (2004). Mathematics for Game Developers. Boston: Thomson Course Technology.

Tutorials Point. (2015). C# Tutorial. Retrieved from Tutorials Point: http://www.tutorialspoint.com/csharp/

Unity Technologies. (2014). Unity Manual. Retrieved February 10th, 2016 from http://docs.unity3d.com/Manual/index.html

Unity Technologies. (2015). Unity Tutorials. Retrieved February 10th, 2016 from http://unity3d.com/learn/tutorials

Resources and Facilities:

You will need access to a computer with a broadband Internet connection. In addition, you will use the resources listed below:

Course specific Integrated Development Environment

Course specific art asset creation tool

Access to a blog similar to Wordpress

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Group Work Statement

This statement outlines the individual team roles, responsibilities and risk mitigation strategies for students working in a group. It is essential that all group members read and understand this before undertaking group work. These guidelines look at four key responsibilities for team members:

- equity
- communication
- deliverables
- learning

Your Responsibilities: Equity in Project Management

You agree to contribute equitably to all tasks given. If you are appointed as a group leader, then you agree to manage your team members in a fair and equitable way and assist them to reach their deliverables. Alternatively, if you are working under the guidance of a team leader, you agree to diligently follow their instructions and work through any concerns that you may have in a professional way.

Recommendations for Equity in Project Management

An equitable allocation of tasks and subsequently a strong culture of teamwork begins with sound time and project management. The list below is a guide to help your team work effectively, efficiently and fairly:

- Appoint team leaders early. Most groups without leadership struggle to meet key deliverables.
- Create a list of key deliverables and assign tasks to individual team members early on in the project.
- Agree to delivery dates and formats, allowing enough time for team leaders to aggregate all group deliverables.
- For team leaders: when scheduling dates and formats, allocate an appropriate amount of time for team management before committing to a share of the project deliverables
- Create a and use a group-based project management system such as Google Docs or MS Project.

Your Responsibilities: Communication

You understand that it is your duty to communicate professionally with all team members and SAE staff. All communications both verbal and written will adhere to the Code of Conduct. You will keep your team informed of the status of your deliverables and report any issues that may prevent you from contributing equitably to the group in a timely manner.

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Recommendations for Communication

- Take notes and send a follow up email of any important verbal communication – this will serve as a historic record of communications within your team.
- Use online collaborative tools like Google Docs or similar. Agree as a team on a set of collaborative tools early in the project, learn how it operates and commit to using it.
- Assign a team member to take and distribute minutes of all group meetings.

Your Responsibilities: Deliverables

You agree to be a diligent worker and ensure that all your allocated project deliverables are created in a timely manner and to a high standard. You understand that failure to deliver tasks on time and to an appropriate and agreed quality will adversely impact other members within your team and the outcome of the final deliverable.

Late Submission of Assessment & Assessment Resubmissions Late **a**ssessment items will not be accepted without an approved extension or without approved mitigating circumstances. In such an instance the **assignment will be awarded zero marks**. Students should seek to consult with the Department Coordinator as early as possible if they are unable to meet a due date. A revised submission date should be negotiated as part of the application for special consideration.

Recommendations for Deliverables

- Use a repository system like Tortoise SVN or Perforce. This will allow you to break down a large deliverable into smaller tasks and have your team members work on them piece by piece. This repository should be centralised and accessible online. Other platforms like Google Drive and Drop Box enable you to custom your storage solutions.
- Use a form of version control. As a minimum, you should use international date stamps at the end of your work to make sure that you aren't incorporating out of date work into a project.
- Decide on standard file formats and associated considerations (including technical pipeline issues) for your project early. Pre-planning your deliverable framework is imperative.
- Be realistic when critiquing your work – perfectionism can quickly disrupt even the most well scheduled project.

Your Responsibilities: Transferable Skills

You understand that group work is not just about breaking a large task down into smaller pieces; it is about learning the skills required to work effectively in professional environments. By working in a group, you agree to actively engage in the development of your skills in the following:

- building a strong work ethic
- maintaining a positive attitude
- effective communication
- time management practices
- problem solving
- team work
- self-confidence
- understand and utilise the value of constructive criticism
- flexibility and adaptability

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- working under pressure

Recommendations for Transferable Skills

If you are feeling overwhelmed by a task, then it often comes down to poor time management, project planning or communication. Don't be afraid to contact your team members to discuss not only what you are working on, but how you are structuring your personal approach to meeting your responsibilities.

Log of Changes to Module Guide

Version Number and Trimester of Introduction	Updates to LOs	Updates to Assessment	Updates to Content
105-14T3	X	X	X
108 - 17T3		X	X
109 - 18T1			X
110 - 18T2		X	

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