

<b>Module Code:</b>	COM456
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<b>Module Title:</b>	Games Technology
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<b>Level:</b>	4	<b>Credit Value:</b>	20
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<b>Cost Centre(s):</b>	GACP	<b>JACS3 code:</b>	I600
		<b>HECoS code:</b>	101267

<b>Faculty:</b>	Arts, Science and Technology	<b>Module Leader:</b>	Richard Hebblewhite
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Scheduled learning and teaching hours	48 hrs
Guided independent study	152 hrs
Placement	NA hrs
<b>Module duration (total hours)</b>	<b>200 hrs</b>

<b>Programme(s) in which to be offered (not including exit awards)</b>	Core	Option
BSc (hons) Computer Game Development	✓	<input type="checkbox"/>

<b>Pre-requisites</b>
None

**Office use only**

Initial approval: 12/04/2019

Version no:1

With effect from: 01/09/2019

Date and details of revision: APSC approved April 19

Version no:

**Module Aims**

This module is designed to introduce concepts and systems that contribute to Game Development through varying technical roles. The emphasis of this module will be to demonstrate these concepts and systems and their relevance to the gaming industry, furthering creativity and problem solving for future projects.

Students will engage in ongoing coursework utilising problem solving skills to relate concepts, theories and methods to real-world and virtual scenarios. These will revolve around industry standard tools, hardware and software.

**Intended Learning Outcomes**

Key skills for employability

- KS1 Written, oral and media communication skills
- KS2 Leadership, team working and networking skills
- KS3 Opportunity, creativity and problem-solving skills
- KS4 Information technology skills and digital literacy
- KS5 Information management skills
- KS6 Research skills
- KS7 Intercultural and sustainability skills
- KS8 Career management skills
- KS9 Learning to learn (managing personal and professional development, self-management)
- KS10 Numeracy

At the end of this module, students will be able to:

Key Skills

At the end of this module, students will be able to:		Key Skills	
1	Identify computing fundamentals in relation to software development	KS3 KS4	KS10
2	Describe the interaction between development technologies and mathematical concepts	KS3 KS4 KS5	KS10
3	Demonstrate knowledge of software and hardware in relation to current industry standard technologies.	KS3 KS4 KS5	KS6

**Transferable skills and other attributes**

Students will gain the ability to apply mathematical knowledge whilst devising solutions to industry related game design and development problems. They will also develop a range of hardware and technology skills that can be applied to practical projects and the development/support of PC and gaming hardware systems.

**Derogations**

N/A

**Assessment**

Coursework will take place throughout the module indicatively using 6-8 scenarios based upon current technologies in game development. Students will be required to demonstrate their knowledge of applied mathematics and system hardware through questioning and demonstration surrounding these scenarios. These could be real-world or virtual scenarios but will represent applied theory according to the nature of games and software development.

The assessment scenarios will include levels of challenge where deeper understanding of task criteria will be required to achieve higher grades in the individual scenarios, demonstrating achievement of learning outcomes. Each student will be required to attempt all scenarios to achieve a final coursework grade.

Assessment number	Learning Outcomes to be met	Type of assessment	Weighting (%)	Duration (if exam)	Word count (or equivalent if appropriate)
1	1, 2, 3	Coursework	100%	N/A	4000

**Learning and Teaching Strategies**

The module will be indicatively taught in bi-weekly sections to incorporate different areas of the module. These will be comprised of content heavy lectures and facilitative tutorial sessions for students to work through the current coursework scenarios. Collaboration and peer learning will be implemented to enhance the problem-solving and applied nature of the coursework. Flipped teaching may be used to enhance the facilitative experience to construct meaning through applied coursework-based tasks.

**Syllabus outline**

- Algebra and Number Systems
- Statistics and Probability in Gaming
- Geometry and Trigonometry
- Linear Algebra and 3D space
- Hardware Architecture
- Optimisation in Game Development
- Artificial Intelligence
- 3D tools and technology
- Implementation in Game Engines
- Render Pipeline

**Bibliography**

Essential reading

Ash, J. (2015). *The Interface Envelope: Gaming, Technology, Power*. London: Bloomsbury Academic.

Engelstein, G. (2017). *Gametek: The Math and Science of Gaming*. New York: Bookbaby.

Other indicative reading

Costello, R. (2017). *Gaming Innovations in Higher Education: Emerging Research and Opportunities*. Hershey: IGI Global.

Roderiguez, A., Bruno, M. (2018) *Probability, Decision and Games*. Hoboken: Wiley.