

# BSc(Hons) Computing for Games Student Handbook

2017-18



*BSc(Hons) Computing for Games — Student Handbook*  
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<https://github.com/Falmouth-Games-Academy/bsc-module-guides>

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## External Examiner's Comments

Now in its second year, the *BSc Computing for Games* course is holding up well. The team have made a number of small improvements to help the incoming students while the pioneers continue. The second-year modules are quite varied in scope and interesting in content. I am amazed students get the to design and make a MUD here! I love this! What a great idea for teaching distributed systems.

The relevancy of computing is on an upwards trajectory. All the while, the currency of the Falmouth award exceeds that of awards at similar institutions.

Employability is written through the degree like Falmouth in a stick of rock. This is a major selling point, and what makes Falmouth's offering so distinctive. Students are treated as if they are already working in a studio. This approach is quite demanding on students, but they are all the better for it. Graduates will have been working in a system sufficiently similar to that of the games industry that it is as if they have years of employment to their credit already.

There is some excellent teaching at Falmouth. Assessments are well designed and the marking is fair. It is also of an astonishingly high quality. I hope the students appreciate this, because it really is an order of magnitude better than what I typically see elsewhere.

— Professor Richard Bartle,  
Essex University

Co-creator of *MUD1*



## **Section 1**

# **Orientation**

## Welcome to Falmouth

First and foremost, a very warm welcome to Falmouth from the *BSc(Hons) Computing for Games* team. We will endeavour to make your time at Falmouth University productive, fun and invigorating. Please don't hesitate to talk to us if you have any questions or issues about your learning experience.

Computing technology has changed our lives; not only in the ways we work and communicate, but also the ways in which we play games. This degree will help you to build the skills you need to create and manipulate the computational technologies that will shape the games of the future.

The creative industries are booming in the UK. With games reaching across a multitude of platforms and attracting new markets there are now a range of employment opportunities, with plenty of room for independent start-ups. Learning how to use and manage computers and information technology creatively and skilfully will, then, equip you with highly-demanded knowledge, skills, and experience; both, within the games industry and further afield. You will learn to apply computing techniques to solve a variety of problems, using a range of programming languages and technologies. You will also learn to take an agile approach to devising computing solutions to game development challenges. Combining elements of creative computing with software engineering, the course leverages the principles of computer science and applies them to the specific challenges and opportunities that digital games present. Along with our emphasis on creativity and enterprise, this ensures that you're able to innovate, develop your own intellectual property and take it to market. With technical competencies in the areas of programming and software development, you'll be able to collaborate with art-based students to develop novel and appealing entertainment software.



## **Meet the Team**

### **Dr Michael Scott, Course Coordinator**

Michael leverages the skills and experience he developed reading Computer Science and Digital Games Theory to investigate game procedurality, accessible game interfaces, and game-inspired educational approaches. He is particularly interested in how ludory perspectives can be applied to teaching computer programming, having completed a PhD in this area. Alongside his teaching role on the Computing for Games programme, he can often be found experimenting with multimedia-based instructional technology.

Michael was previously an indie developer, working with Emotional Robots during the development of iOS FPS title Warm Gun, before embarking on series of international research projects. His research has been published in ACM Multimedia, IEEE Transactions on Education, Computer Standards & Interfaces, as well as the New Review of Hypermedia & Multimedia.

### **Dr Edward Powley, Senior Lecturer**

Joining the teaching team alongside his role as a Research Fellow in Computational Creativity at Falmouth's Academy of Innovation and Research, Ed will be lending his considerable technical knowledge and specialist expertise to the course. His areas of interest include procedural content generation, artificial intelligence, and programming.

Ed's research has been published across a range of peer-reviewed academic publications including Artificial Intelligence, the IEEE Transactions on Computational Intelligence and AI in Games, and the AAAI Conference of Artificial Intelligence and Interactive

Digital Entertainment.

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## **Section 2**

### **Study Block I**



## Principles of Computing

<b>Module Code</b>	COMP110	
<b>Module Credits</b>	20	
<b>Status</b>	Compulsory	
<b>Module Leader</b>	Dr Edward Powley Dr Michael Scott (Moderator)	
<b>Assignments</b>	Worksheet Tasks	80%
	Research Journal	20%
<b>Indicative Hours</b>	Sessions	36 hours
	Directed Reading	18 hours
	Worksheet Tasks	56 hours
	Research Journal	14 hours
	Self-Directed Study	36 hours
	Self-Directed Studio Practice	40 hours
		<b>200 hours</b>

## **Introduction**

This module introduces you to the basic principles of computing in the context of digital games. It is designed to complement the other modules, providing a broad foundation on the theories, methods, models, and techniques in computing which will help you to construct computer programs and be able to make use of relevant scholarly sources.

## **Aims**

This module aims to help you:

- Understand the basic principles, terminology, roles, and software development concept that computing professionals apply within a game development context
- Understand how to apply computing theory to practical programming activities
- Understand how to conduct basic software development tasks

## **Resource List**

<http://resourcelists.falmouth.ac.uk/modules/comp110>

## **Learning Space**

<http://learningspace.falmouth.ac.uk/course/view.php?id=1249>

LO	Learning Outcomes	Assessment Criteria
1	Show a basic understanding of creative computing solutions using professional techniques.	Demonstrate a basic understanding of computing fundamentals. Apply basic knowledge and understanding of the techniques used in software development. Understand the creative value of maker-style and iterative approaches for the generation of innovation.
2	Show a basic understanding of how to communicate effectively with stakeholders in writing, verbally and through adherence to coding standards.	Show a basic understanding of how to communicate effectively with stakeholders in writing, verbally, and through adherence to coding standards. Annotate software to communicate with others effectively.
3	Show a basic development of the ability to reflect critically on and evaluate working methods and solutions.	Analyse critically the strengths and weaknesses of code and develop an ability to respond to the critical judgements of others.
4	Show a basic understanding of the ability to conduct research, present knowledge in an academic format and apply that research to practice.	Research and explain the use of methodologies used in computing, apply knowledge to practice, and present that knowledge where appropriate in an academic format.
6	Show a basic understanding of methods used to help set goals, manage workloads to meet deadlines and to work collaboratively.	Set goals and manage workloads to meet deadlines using set methodologies and present ideas in a variety of situations with appropriate support.



## Creative Computing: Tinkering

<b>Module Code</b>	COMP120	
<b>Module Credits</b>	20	
<b>Status</b>	Compulsory	
<b>Module Leader</b>	Brian McDonald Dr Michael Scott (Moderator)	
<b>Assignments</b>	Code Repurposing I — Tinkering Graphics	30%
	Code Repurposing II — Tinkering Audio	70%
<b>Indicative Hours</b>	Sessions	36 hours
	Directed Reading	18 hours
	Graphics Programming	21 hours
	Audio Programming	49 hours
	Self-Directed Programming Practice	36 hours
	Self-Directed Studio Practice	40 hours
		<b>200 hours</b>

## Introduction

This module is designed to help you learn different ways of engaging with code using practical and explorative methods. You will learn the value of taking a creative approach to computing, taking existing code and modifying it in creative ways. The module will introduce you to the core principal of rapid iteration, where tinkering with existing code can provide the basics on which something new can be built.

## Aims

This module aims to help you:

- Understand computing for games
- Understand how to re-purpose and augment code to build something new
- Apply programming skills creatively

## Resource List

<http://resourcelists.falmouth.ac.uk/modules/comp120>

## Learning Space

<http://learningspace.falmouth.ac.uk/course/view.php?id=1250>



LO	Learning Outcomes	Assessment Criteria
1	Show a basic understanding of creative computing solutions using professional techniques.	Focusing on software engineering, show ability to modify and repurpose existing code and create demonstrations of digital programming in response to briefs.
2	Show a basic understanding of how to communicate effectively with stakeholders in writing, verbally and through adherence to coding standards.	Annotate software clearly, articulate clearly, and succinctly your evaluation of your working practice.
3	Show a basic development of the ability to reflect critically on and evaluate working methods and solutions.	Evaluate your working practice showing that you understand the analytical approach required to learn from your practical work.
5	Show a basic understanding of how to approach computing problems to create innovative solutions.	Show ability to creatively repurpose existing code appropriately and understand the fundamentals of a creative approach to computing.
6	Show a basic understanding of methods used to help set goals, manage workloads to meet deadlines and to work collaboratively.	Show understanding of agile methods and meet deadlines by planning available time effectively.



## Game Development Practice

<b>Module Code</b>	COMP150	
<b>Module Credits</b>	20	
<b>Status</b>	Compulsory	
<b>Module Leader</b>	Dr Michael Scott Dr Edward Powley (Moderator) Brian McDonald (Moderator)	
<b>Assignments</b>	Agile Essay	30%
	Pre-Production Tasks	40%
	Game Design Pitches	10%
	CPD Tasks	20%
<b>Indicative Hours</b>	Sessions	36 hours
	Supervised Studio Practice	42 hours
	Directed Reading	12 hours
	Agile Essay	21 hours
	Pre-Production Tasks	28 hours
	Game Design & Pitch Preparation	7 hours
	CPD Tasks	14 hours
	Self-Directed Studio Practice	40 hours
		<b>200 hours</b>

## **Introduction**

This module addresses the foundational principles and processes of computer game development. You will gain a practical understanding of how a playable game comes together according to the agile development philosophy and industry practice. You will also gain a 'first principles' understanding of how games are designed with a target market in mind, as well as how creative computing contributes to the process.

## **Aims**

This module aims to help you:

- Recall the basic principles, terminology, roles, tools, and pipelines used in the development of digital games
- Apply foundational management skills in order to organise and execute a game development project
- Communicate and implement version control effectively within a software development team

## **Resource List**

<http://resourcelists.falmouth.ac.uk/modules/comp150>

## **Learning Space**

<http://learningspace.falmouth.ac.uk/course/view.php?id=1090>

LO	Learning Outcomes	Assessment Criteria
1	Show a basic understanding of creative computing solutions using professional techniques.	Apply basic knowledge and understanding of the professional techniques used to create digital games and employ elementary principles of game development to devise a simple game concept using Agile and iterative methods.
2	Show a basic understanding of how to communicate effectively with stakeholders in writing, verbally and through adherence to coding standards.	Organise your ideas and material to communicate clearly with others; have a working knowledge of Agile methods.
3	Show a basic development of the ability to reflect critically on and evaluate working methods and solutions.	Identify and appraise the main strengths and weakness of your working methods and solutions.
4	Show a basic understanding of the ability to conduct research, present knowledge in an academic format and apply that research to practice.	Research uses of Agile methods and supports within the context of game development.
5	Show a basic understanding of how to approach computing problems to create innovative solutions.	Show a basic understanding of the commercial and enterprise context of the games industry and the professional qualities needed for decision-making within that context.
6	Show a basic understanding of methods used to help set goals, manage workloads to meet deadlines and to work collaboratively.	Deliver a collective game concept on time and to brief, responding appropriately to problems and changes in direction. Choose appropriate means to convey your development ideas.



## Interfaces & Interaction

<b>Module Code</b>	COMP210	
<b>Module Credits</b>	20	
<b>Status</b>	Compulsory	
<b>Module Leader</b>	Alwyn Parker Dr Michael Scott (Moderator) Erik Gheelhoed (Guest Lecturer) Johnny Pope (Guest Lecturer)	
<b>Assignments</b>	Interface Tasks	30%
	AR/VR Tasks	60%
	Research Journal	10%
<b>Indicative Hours</b>	Sessions	36 hours
	Directed Reading	18 hours
	Interface Task	21 hours
	Integration into Collaborative Game	20 hours
	AR/VR Task	34 hours
	Research Journal	7 hours
	Self-Directed Study	24 hours
	Self-Directed Studio Practice	40 hours
		<b>200 hours</b>

## Introduction

On this module you will engage with interface technologies which are changing the way that we play games. You will undertake a series of practical and creative engagements with emergent technologies, such as augmented and virtual reality devices, working iteratively to produce an innovative solution. You may tie this work into either your individual or collaborative game development project.

## Aims

This module aims to help you:

- Gain in understanding of writing software of interface technologies
- Acquire knowledge of designing for a specific platform to create innovation.
- Develop understanding of managing an iterative development process

## Resource List

<http://resourcelists.falmouth.ac.uk/modules/comp210>

## Learning Space

<http://learningspace.falmouth.ac.uk/course/view.php?id=1254>

LO	Learning Outcomes	Assessment Criteria
1	Show a basic understanding of creative computing solutions using professional techniques.	Understand how to write software for AR/VR interfaces and how to design efficaciously for a specific platform.
2	Show a basic understanding of how to communicate effectively with stakeholders in writing, verbally and through adherence to coding standards.	Communicate intention and context for a solution clearly and effectively. Present effectively your design and solution for an audience in pitch form.
3	Show a basic development of the ability to reflect critically on and evaluate working methods and solutions.	Analyse critically the strengths and weaknesses of your solution and development process. Make use of a range of methods to organise and execute a computing solution.
4	Show a basic understanding of the ability to conduct research, present knowledge in an academic format and apply that research to practice.	Apply research in emergent interfaces and modes of interaction to the development of novel user interfaces.
6	Show a basic understanding of methods used to help set goals, manage workloads to meet deadlines and to work collaboratively.	Show an understanding of how to plan and manage time and solution execution. Meet deadlines by planning available time to deliver solution effectively.



## Graphics & Simulation

<b>Module Code</b>	COMP220	
<b>Module Credits</b>	20	
<b>Status</b>	Compulsory	
<b>Module Leader</b>	Brian McDonald Dr Edward Powley (Moderator)	
<b>Assignments</b>	Portfolio of Game Engine Components	90%
	Research Journal	10%
<b>Indicative Hours</b>	Sessions	36 hours
	Directed Reading	18 hours
	Portfolio of Game Engine Components	55 hours
	Integration into Collaborative Game	20 hours
	Research Journal	7 hours
	Self-Directed Study	24 hours
	Self-Directed Studio Practice	40 hours
		<b>200 hours</b>



## Introduction

On this module you will develop your understanding of 3D graphics rendering and physics simulation used in modern computer games. Using Modern Graphics APIs, you will develop your coding skills in the context of graphics technologies and pipelines. You will also engage practically and creatively to develop physics simulation and rendering pipelines in order to support your individual or group game concept.

## Aims

This module aims to help you:

- Gain an understanding and knowledge of graphics and simulation technology
- Build an understanding of rendering and physics pipelines
- Gain experience of how to creatively leverage the capabilities of graphics and simulation technologies

## Resource List

<http://resourcelists.falmouth.ac.uk/modules/comp220>

## Learning Space

<http://learningspace.falmouth.ac.uk/course/view?id=1255>

LO	Learning Outcomes	Assessment Criteria
1	Show a basic understanding of creative computing solutions using professional techniques.	Change the way that a graphics engine behaves and demonstrate an understanding of graphics rendering engines.
2	Show a basic understanding of how to communicate effectively with stakeholders in writing, verbally and through adherence to coding standards.	Show a basic understanding of how to communicate effectively with stakeholders in writing, verbally, and through adherence to coding standards. Annotate software to communicate with others effectively.
3	Show a basic development of the ability to reflect critically on and evaluate working methods and solutions.	Reflect critically on the behaviour change intended and its visual structure and explain the rationale for working method and graphics-based solution.
4	Show a basic understanding of the ability to conduct research, present knowledge in an academic format and apply that research to practice.	Understand and apply knowledge of rendering pipelines used to produce changes in graphics engine behaviour.
6	Show a basic understanding of methods used to help set goals, manage workloads to meet deadlines and to work collaboratively.	Show understanding of how to plan and organise time to meet deadlines and fulfil a brief.



## Game Development I: Pre-Production

<b>Module Code</b>	COMP230	
<b>Module Credits</b>	20	
<b>Status</b>	Compulsory	
<b>Module Leader</b>	Dr Michael Scott Alcywn Parker (Moderator)	
<b>Assignments</b>	Ethics & Professionalism Essay	30%
	Pre-Production Tasks	40%
	Project Pitches	10%
	CPD Tasks	20%
<b>Indicative Hours</b>	Sessions	24 hours
	Supervised Studio Practice	30 hours
	Directed Reading	18 hours
	Ethics & Professionalism Essay	21 hours
	Pre-Production Tasks	28 hours
	Pitch Preparation	7 hours
	CPD Tasks	14 hours
	Self-Directed Study	18 hours
	Self-Directed Studio Practice	40 hours
		<b>200 hours</b>

## Introduction

This module forms the first part of a year-long game development project. You will consolidate your knowledge of computing for games in a practical way by applying techniques and methods to build a unique and innovative 'indie'-style game. All the while, reflecting upon the professional and ethical implications of your working practice as well as the socio-cultural implications of the games that you design.

## Aims

This module aims to help you:

- Understand the design and implementation of innovative software products targeted at the games industry
- Consolidate your knowledge of game development practices and software engineering over a longer project period
- Understand the notion of professional practice and its ethical implications

## Resource List

<http://resourcelists.falmouth.ac.uk/modules/comp230>

## Learning Space

<http://learningspace.falmouth.ac.uk/course/view.php?id=1256>

LO	Learning Outcomes	Assessment Criteria
1	Show a basic understanding of creative computing solutions using professional techniques.	Apply principles of computing creatively to build iteratively an effective computing solution relevant to the development of games.
2	Show a basic understanding of how to communicate effectively with stakeholders in writing, verbally and through adherence to coding standards.	Show a basic understanding of how to communicate effectively with stakeholders in writing, verbally and through adherence to coding standards. Annotate software to communicate with others effectively.
3	Show a basic development of the ability to reflect critically on and evaluate working methods and solutions.	Work iteratively on the basis of on-going evaluation and analyse critically the strengths and weaknesses of your iterations.
4	Show a basic understanding of the ability to conduct research, present knowledge in an academic format and apply that research to practice.	Create a solution for which there is a market and for which you can show need. Research the platform and market for a solution.
5	Show a basic understanding of how to approach computing problems to create innovative solutions.	Based on research and iterative process produce an innovative solution.
6	Show a basic understanding of methods used to help set goals, manage workloads to meet deadlines and to work collaboratively.	Make use of a range of methods to organise and execute a computing solution and meet deadlines, plan and organise your work flow effectively.



## Legacy Game Systems

<b>Module Code</b>	COMP310	
<b>Module Credits</b>	20	
<b>Status</b>	Compulsory	
<b>Module Leader</b>	Dr Edward Powley Brian McDonald (Moderator)	
<b>Assignments</b>	Constrained Development Task	80%
	Research Journal	20%
<b>Indicative Hours</b>	Sessions	27 hours
	Directed Reading	18 hours
	Constrained Development Task	56 hours
	Integration into Collaborative Game	20 hours
	Research Journal	15 hours
	Self-Directed Study	24 hours
	Self-Directed Studio Practice	40 hours
		<b>200 hours</b>

## Introduction

On this module you build on your experience and knowledge of programming by engaging with the underlying computer technology in greater depth through an exploration of legacy game systems. You will learn the importance of disciplined programming practice while using low-level languages to create a simple game prototype. You'll demonstrate this using an emulator for a legacy game platform.

## Aims

This module aims to help you:

- Acquire knowledge and understanding of professional software engineering in the context of legacy technology.
- Understand low-level computing principles and processor architectures.
- Apply low-level computing knowledge to the development of games and game-related software.

## Resource List

<http://resourcelists.falmouth.ac.uk/modules/comp310>

## Learning Space

<http://learningspace.falmouth.ac.uk/course/view.php?id=???>

LO	Learning Outcomes	Assessment Criteria
1	Show a basic understanding of creative computing solutions using professional techniques.	Understand the fundamental use of cross-platform development tools and how constraints vary between different platforms.
2	Show a basic understanding of how to communicate effectively with stakeholders in writing, verbally and through adherence to coding standards.	Understand the importance of legibility at all levels of software development.
3	Show a basic development of the ability to reflect critically on and evaluate working methods and solutions.	Analyse critically the strengths and weaknesses of assembly code.
4	Show a basic understanding of the ability to conduct research, present knowledge in an academic format and apply that research to practice.	Apply basic research methodologies to understand historical developments in legacy platform capabilities and evolution.
6	Show a basic understanding of methods used to help set goals, manage workloads to meet deadlines and to work collaboratively.	Meet deadlines by planning available time effectively.





## Research Practice

<b>Module Code</b>	COMP320	
<b>Module Credits</b>	20	
<b>Status</b>	Compulsory	
<b>Module Leader</b>	Dr Edward Powley Dr Michael Scott (Moderator)	
<b>Assignments</b>	Prototype Research Artefact	30%
	Research Review & Proposal	70%
<b>Indicative Hours</b>	Sessions	24 hours
	Research Supervision	4 hour
	Directed Reading	12 hours
	Prototype Research Artefact	20 hours
	Integration into Collaborative Game	20 hours
	Research Review & Proposal	40 hours
	Self-Directed Study	40 hours
	Self-Directed Studio Practice	40 hours
		<b>200 hours</b>

## Introduction

You are required to deliver a major research project as part of your degree; either in the form of empirical research relating to computing for games, or practice-based research related to game development. Individually, you explore a field that interests you, and for which there is a clearly identified need. This module forms the first part of this project and provides the opportunity to conduct a literature review, as well as to collect and analyse data using appropriate methods and statistics.

## Aims

This module aims to help you:

- Develop a research question and analyse methods of research appropriate to that question.
- Consolidate knowledge and experience of how to organise and execute a non-trivial computing project.
- Professional apply research methods in computing.

## Resource List

<http://resourcelists.falmouth.ac.uk/modules/comp320>

## Learning Space

<http://learningspace.falmouth.ac.uk/course/view?id=???>

LO	Learning Outcomes	Assessment Criteria
1	Show a basic understanding of creative computing solutions using professional techniques.	Apply principles of computing creatively to build iteratively an effective computing solution relevant to the development of games.
2	Show a basic understanding of how to communicate effectively with stakeholders in writing, verbally and through adherence to coding standards.	Communicate in an academic format.
3	Show a basic development of the ability to reflect critically on and evaluate working methods and solutions.	Analyse critically the strengths and weaknesses of your iterations and work iteratively on the basis of on-going evaluation.
4	Show a basic understanding of the ability to conduct research, present knowledge in an academic format and apply that research to practice.	Create a solution for which there is a market and for which you can show need.
6	Show a basic understanding of methods used to help set goals, manage workloads to meet deadlines and to work collaboratively.	Make use of a range of methods to organise and execute a computing solution, meet deadlines, plan and organise your work flow effectively.



## Game Development II: Pre-Production

<b>Module Code</b>	COMP330	
<b>Module Credits</b>	20	
<b>Status</b>	Compulsory	
<b>Module Leader</b>	Dr Michael Scott Alcwyn Parker (Moderator)	
<b>Assignments</b>	CV & Professional Website	30%
	Pre-Production Tasks	40%
	Project Pitches	10%
	CPD Tasks	20%
<b>Indicative Hours</b>	Sessions	24 hours
	Supervised Studio Practice	33 hours
	Directed Reading	18 hours
	CV & Professional Website	8 hours
	Pre-Production Tasks	44 hours
	Pitch Preparation	7 hours
	CPD Tasks	14 hours
	Self-Directed Study	12 hours
	Self-Directed Studio Practice	40 hours
		<b>200 hours</b>

## **Introduction**

This module allows you consolidate your multi-disciplinary collaborative game development experience to work on a substantial development project over the course of two study blocks. You will develop your knowledge of computing for games in a practical way using techniques and methods that help you to take a creative approach to building an innovative and marketable game.

## **Aims**

This module aims to help you:

- Consolidate your knowledge and experience of creating marketable games in a collaborative context.
- Apply knowledge and experience of computing for games as one part of a larger project.
- Demonstrate independence in identifying a non-trivial computing problem and working iteratively and collaboratively towards a computing solution.

## **Resource List**

<http://resourcelists.falmouth.ac.uk/modules/comp330>

## **Learning Space**

<http://learningspace.falmouth.ac.uk/course/view.php?id=???>

LO	Learning Outcomes	Assessment Criteria
1	Show a basic understanding of creative computing solutions using professional techniques.	Apply computing principles and processes to produce collaboratively an effective computing solution of use within a game development context.
2	Show a basic understanding of how to communicate effectively with stakeholders in writing, verbally and through adherence to coding standards.	Communicate clearly and appropriately when working in a group.
3	Show a basic development of the ability to reflect critically on and evaluate working methods and solutions.	Work iteratively on the basis of on-going evaluation in a collaborative context and analyse critically the strengths and weaknesses of your collaborative iterations.
4	Show a basic understanding of the ability to conduct research, present knowledge in an academic format and apply that research to practice.	Create a solution for which there is a market and for which you can show need.
5	Show a basic understanding of how to approach computing problems to create innovative solutions.	Create an innovative solution tailored to a known market appropriate to platform.
6	Show a basic understanding of methods used to help set goals, manage workloads to meet deadlines and to work collaboratively.	Understand and use effectively methods for organising and executing a game development project in a collaborative context. Show an understanding of how to plan, organise and execute a substantial, collaborative project.

## **Section 3**

### **Study Block II**



## Creative Computing: Codecraft

<b>Module Code</b>	COMP140	
<b>Module Credits</b>	20	
<b>Status</b>	Compulsory	
<b>Module Leader</b>	Brian McDonald Alcywn Parker Martin Cooke (Moderator)	
<b>Assignments</b>	Code Combination I — API Tasks	30%
	Code Combination II — Individual Game & Controller	70%
<b>Indicative Hours</b>	Sessions	36 hours
	Directed Reading	18 hours
	API Tasks	24 hours
	Individual Game & Controller	46 hours
	Self-Directed Study	36 hours
	Self-Directed Studio Practice	40 hours
		<b>200 hours</b>



## Introduction

This module enables you to further develop confidence with object-orientated programming in C/C++ and the creative approach to computing in the games development context. You will take code in multiple contexts, and learn ways and methods for bringing these together in synthesis in order to build more interesting and complex systems. Part of this will involve 'hacking' together different sets of open-source code, hardware, and web services together; all the while considering issues such as intellectual property law.

## Aims

This module aims to help you:

- Understand professionalism in the games industry
- Understand how to organise, repurpose, and augment code from multiple sources to build a unified solution
- Understand how to generate innovation at a basic level

## Resource List

<http://resourcelists.falmouth.ac.uk/modules/comp140>

## Learning Space

<http://learningspace.falmouth.ac.uk/course/view?id=1252>

LO	Learning Outcomes	Assessment Criteria
1	Show a basic understanding of creative computing solutions using professional techniques.	To modify and repurpose existing code from multiple sources and apply the basic principles of software engineering to solve problems.
3	Show a basic development of the ability to reflect critically on and evaluate working methods and solutions.	Evaluate your working practice showing that you understand the analytical approach required to learn from your practical work.
5	Show a basic understanding of how to approach computing problems to create innovative solutions.	To creatively repurpose existing code from multiple sources towards a unified solution and use a combination of sources to generate ideas and new solutions.
6	Show a basic understanding of methods used to help set goals, manage workloads to meet deadlines and to work collaboratively.	Meet deadlines by planning available time effectively and show an understanding of how to plan and manage time.



## Game Architecture & Engineering

<b>Module Code</b>	COMP130	
<b>Module Credits</b>	40	
<b>Status</b>	Compulsory	
<b>Module Leader</b>	Dr Michael Scott Dr Edward Powley (Moderator) Brian McDonald (Moderator)	
<b>Assignments</b>	Software Engineering Essay	30%
	Production Tasks	40%
	Game Demo	10%
	CPD Tasks	20%
<b>Indicative Hours</b>	Sessions	48 hours
	Supervised Studio Practice	94 hours
	Directed Reading	36 hours
	Software Engineering Essay	42 hours
	Production Tasks	56 hours
	Game Demo Preparation	14 hours
	CPD Tasks	28 hours
	Self-Directed Game Development Practice	42 hours
	Self-Directed Studio Practice	40 hours
		<b>400 hours</b>

## Introduction

This module extends your game development practice by getting you to engage with the principles of professional software engineering in the context of a collaborative multi-disciplinary project. All the while, researching the importance of software quality and applying your findings to shape, measure, and improve the computing solutions that you integrate into your game.

## Aims

This module aims to help you:

- Acquire knowledge of professional software architecture and engineering in the context of games.
- Apply metrics and re-factoring practices to the evolution of a game architecture in a collaborative context.
- Implement software design principles and engineering practices at a foundational level.

## Resource List

<http://resourcelists.falmouth.ac.uk/modules/comp130>

## Learning Space

<http://learningspace.falmouth.ac.uk/course/view.php?id=1251>

LO	Learning Outcomes	Assessment Criteria
1	Show a basic understanding of creative computing solutions using professional techniques.	Understand the fundamental use of development tools, how games vary between different architectures, and the importance and methods of reuse and scalability within professional software engineering.
2	Show a basic understanding of how to communicate effectively with stakeholders in writing, verbally and through adherence to coding standards.	Show a basic understanding of how to communicate effectively with stakeholders in writing, and through adherence to coding standards. Annotate software to communicate with others effectively.
3	Show a basic development of the ability to reflect critically on and evaluate working methods and solutions.	Analyse critically the strengths and weaknesses of your code and develop an ability to respond to the critical judgements of others. Identify recurring problems across diverse examples in order to build collective solutions.
4	Show a basic understanding of the ability to conduct research, present knowledge in an academic format and apply that research to practice.	Apply basic research methodologies to draw upon existing bodies of knowledge in professional software engineering to understand developments in game architectures, notably design patterns as they occur in games development.
5	Show a basic understanding of how to approach computing problems to create innovative solutions.	Demonstrate an understanding of the commercial and enterprise constraints that game markets place on technical decisions through requirements to engineer extensible and adaptable solutions.
6	Show a basic understanding of methods used to help set goals, manage workloads to meet deadlines and to work collaboratively.	Show an understanding of how to plan and manage time, meet deadlines by planning available time effectively.



## Artificial Intelligence

<b>Module Code</b>	COMP250	
<b>Module Credits</b>	20	
<b>Status</b>	Compulsory	
<b>Module Leader</b>	Dr Edward Powley Dr Michael Scott (Moderator)	
<b>Assignments</b>	Portfolio of AI Instances	90%
	Research Journal	10%
<b>Indicative Hours</b>	Sessions	36 hours
	Directed Reading	18 hours
	Portfolio of AI Instances	55 hours
	Integration into Collaborative Game	20 hours
	Research Journal	7 hours
	Self-Directed Study	24 hours
	Self-Directed Studio Practice	40 hours
		<b>200 hours</b>

## **Introduction**

This module will help you to learn how AI is used in the context of games. You will gain in understanding and experience of the technical dimension of AI and how it might be used in the particular expressive context within game development. You will apply your learning in a practical context where you will design AI for a game in a live brief format, taking as your cue the game concepts developed by development teams across the academy.

## **Aims**

This module aims to help you:

- Gain in understanding of AI technology and techniques and their relation to games
- Acquire knowledge and experience of the expressive uses of AI in games contexts
- Apply AI solutions for specific game contexts

## **Resource List**

<http://resourcelists.falmouth.ac.uk/modules/comp250>

## **Learning Space**

<http://learningspace.falmouth.ac.uk/course/view.php?id=1258>

LO	Learning Outcomes	Assessment Criteria
1	Show a basic understanding of creative computing solutions using professional techniques.	Demonstrate an understanding of the technical principles of AI in a games context. Select and deploy appropriate AI techniques within the context of games development to create an expressive and appropriate solution.
2	Show a basic understanding of how to communicate effectively with stakeholders in writing, verbally and through adherence to coding standards.	To communicate in a collaborative context to generate an innovative AI concept. Create AI for an existing game and generate an expressive and appropriate use of AI that communicates with its audience.
3	Show a basic development of the ability to reflect critically on and evaluate working methods and solutions.	Analyse critically the strengths and weaknesses of your code and develop an ability to respond to the critical judgements of others.
4	Show a basic understanding of the ability to conduct research, present knowledge in an academic format and apply that research to practice.	Demonstrate a working knowledge of AI techniques literature and its application to games. Apply that appropriately that knowledge to identify and create AI for an expressive purpose.
6	Show a basic understanding of methods used to help set goals, manage workloads to meet deadlines and to work collaboratively.	Show an understanding of how to plan and manage time. Meet deadlines by planning available time to deliver solution effectively.





## Distributed Systems

<b>Module Code</b>	COMP260		
<b>Module Credits</b>	20		
<b>Status</b>	Compulsory		
<b>Module Leader</b>	Brian McDonald Dr Michael Scott (Moderator)		
<b>Assignments</b>	Worksheet Tasks		80%
	Research Journal		20%
<b>Indicative Hours</b>	Sessions		36 hours
	Directed Reading		18 hours
	Distributed Processing Task		22 hours
	Client-Server Game Task		34 hours
	Integration into Collaborative Game		20 hours
	Research Journal		12 hours
	Self-Directed Study		18 hours
	Self-Directed Studio Practice		40 hours
			<b>200 hours</b>

## Introduction

This module will help you to gain a deeper understanding of distributed systems, computer networking, and database technology. You will learn about the use of these technologies in the context of games and further game practical experience of applying that learning to a collaborative development of a multi-player game.

## Aims

This module aims to help you:

- Gain in understanding of distributed systems through networking technology and databases
- Acquire knowledge and experience of networking and database technologies as applied to games
- Gain understanding and experience of how to apply networking and database technology in a specific game development context

## Resource List

<http://resourcelists.falmouth.ac.uk/modules/comp260>

## Learning Space

<http://learningspace.falmouth.ac.uk/course/view.php?id=1249>

LO	Learning Outcomes	Assessment Criteria
1	Show a basic understanding of creative computing solutions using professional techniques.	Work with the principles of networking, database, and parallel processing technology as applied to games and apply those technologies in a game development context.
2	Show a basic understanding of how to communicate effectively with stakeholders in writing, verbally and through adherence to coding standards.	Demonstrate the ability to listen and understand what is required for a networking/database solution in a live development context. Ascertain the aims of a group's game development concept to provide an appropriate networking or database solution.
3	Show a basic development of the ability to reflect critically on and evaluate working methods and solutions.	Analyse critically the strengths and weaknesses of your code and develop an ability to respond to the critical judgements of others.
4	Show a basic understanding of the ability to conduct research, present knowledge in an academic format and apply that research to practice.	Demonstrate a working knowledge of distributed systems and their application to games. Apply that appropriately that knowledge to identify and create servers for a game.
6	Show a basic understanding of methods used to help set goals, manage workloads to meet deadlines and to work collaboratively.	Show an understanding of how to plan and manage time. Meet deadlines by planning available time effectively.



## Game Development I: Production

<b>Module Code</b>	COMP240	
<b>Module Credits</b>	20	
<b>Status</b>	Compulsory	
<b>Module Leader</b>	Dr Michael Scott Brian McDonald (Moderator)	
<b>Assignments</b>	Market Evaluation & Business Case	30%
	Production Tasks	40%
	Project Pitches	10%
	CPD Tasks	20%
<b>Indicative Hours</b>	Sessions	24 hours
	Supervised Studio Practice	30 hours
	Directed Reading	18 hours
	Market Evaluation & Business Case	21 hours
	Production Tasks	28 hours
	Demo Preparation	7 hours
	CPD Tasks	14 hours
	Self-Directed Study	18 hours
	Self-Directed Studio Practice	40 hours
		<b>200 hours</b>

## Introduction

This module allows you to work on a game development project over its course. You will develop your knowledge of computing for games in a practical way, using techniques and methods that help you to take a creative approach to building an innovative product or solution to a game development challenge. Further to this, you will reflect more deeply upon the commercial prospects of your project.

## Aims

This module aims to help you:

- Understand the design and implementation of innovative software products targeted at the games industry
- Consolidate your knowledge of game development practices and software engineering over a longer project period
- Understand markets and business models associated with the games industry

## Resource List

<http://resourcelists.falmouth.ac.uk/modules/comp240>

## Learning Space

<http://learningspace.falmouth.ac.uk/course/view.php?id=1257>

LO	Learning Outcomes	Assessment Criteria
1	Show a basic understanding of creative computing solutions using professional techniques.	Apply principles of computing creatively to build iteratively an effective computing solution relevant to the development of games.
2	Show a basic understanding of how to communicate effectively with stakeholders in writing, verbally and through adherence to coding standards.	Communicate clearly and appropriately when working in a group.
3	Show a basic development of the ability to reflect critically on and evaluate working methods and solutions.	Analyse critically the strengths and weaknesses of your interactions. Work iteratively on the basis on on-going evaluation to produce an appropriate solution.
4	Show a basic understanding of the ability to conduct research, present knowledge in an academic format and apply that research to practice.	Create a solution for which there is a market and for which you can demonstrate need.
5	Show a basic understanding of how to approach computing problems to create innovative solutions.	Leverage research to produce an innovative solution.
6	Show a basic understanding of methods used to help set goals, manage workloads to meet deadlines and to work collaboratively.	Make use of a range of methods to organise and execute a computing solution and meet deadlines, plan and organise your work flow effectively.



## Algorithms & Optimisation

<b>Module Code</b>	COMP350	
<b>Module Credits</b>	20	
<b>Status</b>	Compulsory	
<b>Module Leader</b>	Brian McDonald Dr Edward Powley (Moderator)	
<b>Assignments</b>	Optimisation Task	50%
	Porting Task	30%
	Research Journal	20%
<b>Indicative Hours</b>	Sessions	27 hours
	Directed Reading	18 hours
	Optimisation Task	36 hours
	Porting Task	20 hours
	Port Changes to Collaborative Game	20 hours
	Research Journal	15 hours
	Self-Directed Study	24 hours
	Self-Directed Studio Practice	40 hours
		<b>200 hours</b>

## Introduction

On this module you will focusing on methods for creating efficient and optimised code. You will acquire greater knowledge of how savings can be made and how to trade-off various elements to create optimisation. You will grow in your understanding and experience of how to predict outcomes of various approaches and how to evaluate possible strategies requisite for professional practice. You will also investigate the optimisations that required when porting an application to mobile or console platforms.

## Aims

This module aims to help you:

- Gain an understanding of techniques used professionally in the management of computing resources.
- Acquire knowledge and experience of concepts used to predict and model resource use.
- Acquire the knowledge and experience to critically evaluation the trade-offs between optimisations and efficiency.

## Resource List

<http://resourcelists.falmouth.ac.uk/modules/comp350>

## Learning Space

<http://learningspace.falmouth.ac.uk/course/view.php?id=???>



LO	Learning Outcomes	Assessment Criteria
1	Show a basic understanding of creative computing solutions using professional techniques.	Apply professional approach to resource management in the context of constraint.
3	Show a basic development of the ability to reflect critically on and evaluate working methods and solutions.	Profile algorithms to make informed and effective choices about trade-offs to ensure optimisation and efficiency.
6	Show a basic understanding of methods used to help set goals, manage workloads to meet deadlines and to work collaboratively.	Meet deadlines by planning available time effectively plan and manage time to produce a solution efficiently and by the deadline.



## Research Dissertation

<b>Module Code</b>	COMP360	
<b>Module Credits</b>	20	
<b>Status</b>	Compulsory	
<b>Module Leader</b>	Dr Michael Scott Dr Edward Powley (Moderator)	
<b>Assignments</b>	Research Artefact	30%
	Research Dissertation	70%
<b>Indicative Hours</b>	Sessions	24 hours
	Research Supervision	4 hour
	Directed Reading	12 hours
	Research Artefact	20 hours
	Integration into Collaborative Game	20 hours
	Research Dissertation	40 hours
	Self-Directed Study	40 hours
	Self-Directed Studio Practice	40 hours
		<b>200 hours</b>

## Introduction

You will work on a major research project over the course of the year. You either work on empirical research relating to computing for games, or engage in practice-based research related to game development. This is an individual project so you can explore a topic or develop a solution in an area that interests you personally, but which also has a clearly identified market/industry need. This module forms the second part of your major research project and will equip you with knowledge of academic writing, information analysis and presentation, as well as research dissemination that you will then apply in the undertaking of the project.

## Aims

This module aims to help you:

- Consolidate understanding of generating innovative computing solutions at a professional level through a major project.
- Consolidate knowledge and experience of how to organise and execute a computing project over a longer period.
- Build on experience of methods used to identify a problem that requires a solution and work iteratively towards that solution.

## Resource List

<http://resourcelists.falmouth.ac.uk/modules/comp360>

## Learning Space

<http://learningspace.falmouth.ac.uk/course/view.php?id=???>

LO	Learning Outcomes	Assessment Criteria
1	Show a basic understanding of creative computing solutions using professional techniques.	Apply principles of computing creatively to build iteratively an effective computing solution relevant to the development of games.
2	Show a basic understanding of how to communicate effectively with stakeholders in writing, verbally and through adherence to coding standards.	Communicate in an academic format.
3	Show a basic development of the ability to reflect critically on and evaluate working methods and solutions.	Analyse critically the strengths and weaknesses of your iterations and work iteratively on the basis of on-going evaluation.
4	Show a basic understanding of the ability to conduct research, present knowledge in an academic format and apply that research to practice.	Create a solution for which there is a market and for which you can show need.
6	Show a basic understanding of methods used to help set goals, manage workloads to meet deadlines and to work collaboratively.	Make use of a range of methods to organise and execute a computing solution, meet deadlines, plan and organise your work flow effectively.



## Game Development II: Production

<b>Module Code</b>	COMP340	
<b>Module Credits</b>	20	
<b>Status</b>	Compulsory	
<b>Module Leader</b>	Dr Michael Scott Brian McDonald (Moderator)	
<b>Assignments</b>	Market Evaluation & Business Case	30%
	Production Tasks	40%
	Collaborative Game Demo	10%
	CPD Tasks	20%
<b>Indicative Hours</b>	Sessions	24 hours
	Supervised Studio Practice	33 hours
	Directed Reading	12 hours
	Market Evaluation & Business Case	14 hours
	Production Tasks	44 hours
	Pitch Preparation	7 hours
	CPD Tasks	14 hours
	Self-Directed Study	12 hours
	Self-Directed Studio Practice	40 hours
		<b>200 hours</b>

## Introduction

You will consolidate your multi-disciplinary collaborative game development experience to work on a substantial development project over the course of two study blocks. You will develop your knowledge of computing for games in a practical way using techniques and methods that help you to take a creative approach to building an innovative and marketable game. This second module focuses on the production and launch of your game.

## Aims

This module aims to help you:

- Consolidate your knowledge and experience in the context of creating a professional, innovative computing solution in a collaborative context.
- Consolidate knowledge and experience of how to independently organise and execute a computing project over a longer period and in a collaborative context.
- Demonstrate independence in identifying a problem that requires a solution and work iteratively and collaboratively towards that solution.

## Resource List

<http://resourcelists.falmouth.ac.uk/modules/comp340>

## Learning Space

<http://learningspace.falmouth.ac.uk/course/view?id=???>

LO	Learning Outcomes	Assessment Criteria
1	Show a basic understanding of creative computing solutions using professional techniques.	Apply computing principles and processes to produce collaboratively an effective computing solution of use within a game development context.
2	Show a basic understanding of how to communicate effectively with stakeholders in writing, verbally and through adherence to coding standards.	Communicate clearly and appropriately when working in a group.
3	Show a basic development of the ability to reflect critically on and evaluate working methods and solutions.	Work iteratively on the basis of on-going evaluation in a collaborative context and analyse critically the strengths and weaknesses of your collaborative iterations.
4	Show a basic understanding of the ability to conduct research, present knowledge in an academic format and apply that research to practice.	Create a solution for which there is a market and for which you can show need.
5	Show a basic understanding of how to approach computing problems to create innovative solutions.	Create an innovative solution tailored to a known market appropriate to platform.
6	Show a basic understanding of methods used to help set goals, manage workloads to meet deadlines and to work collaboratively.	Understand and use effectively methods for organising and executing a game development project in a collaborative context. Show an understanding of how to plan, organise and execute a substantial, collaborative project.