



FALMOUTH
UNIVERSITY

Games Academy: BSc Computing for Games
Course Induction

Learning Outcomes

By the mid-session break, you should be able to:

- ▶ **Recognise who** your tutors are
- ▶ **Outline what** the Games Academy does
- ▶ **Explore** some of the kinds of question that excite game scholars
- ▶ **Explain** the key learning outcomes **and** career paths that the course caters to
- ▶ **Recall** the structure of the course
- ▶ **Describe** the first-year modules on which you are enrolled on

Learning Outcomes

Between the mid-session break and the end of the session, you should become able to:

- ▶ **Recall** the assignments for the first semester
- ▶ **Contrast** what is expected of students in the higher education context to the compulsory education context
- ▶ **Analyse how** to invest sufficient time in both course activities **as well as** self-regulated deliberate practice to achieve key goals

Your Tutors





Michael Scott working with Monica McGill at an ACM Working Group in Peru



THE UNIVERSITY of York

The games academics

Professor Peter Cowling | Dr Ed Powley | Daniel Whitehouse | Nick S...

With the games development industry in Britain contributing over £1.5 billion a year to the economy, it is vital that the industry is able to maintain its competitive advantage by drawing on some of the best and brightest brains in the country.

As a result, the quest for smarter Artificial Intelligence (AI) to create more intelligent games is seeing new partnerships form between university researchers and some of the most dynamic young companies in the market place.

Ed Powley presenting with Professor Cowling at The Royal Academy of Engineering's Summer Soirée



Al Parker performing in front of 13 screens and 13 P2 cameras



Other Members of Staff in the Games Academy

The Games Academy





World-Leading Research in
Digital Games and **Digital**
Games Technology



Hold more than 2
million of funds for
research in **Artifi-
cial Intelligence,
Procedural Con-
tent Generation,
and Transmedial
Aesthetics**

DIGRA 2015

DIGRA 2

KEYNOTES

Thursday, May 1

Friday, May 1

Saturday, May 2

Sunday,

KEYNOTES

Thursday, May 14

Friday, May 15

Saturday, May 16

Sunday, May 17

Tanya Krzywinska (Falmouth U)

The Gamification of the Ga

Astrid Esselink (Banger Universi

Videogames as Unnatural H

Karen Palmer (i-Interactive Fi

Is Hacking the Brain the Fa

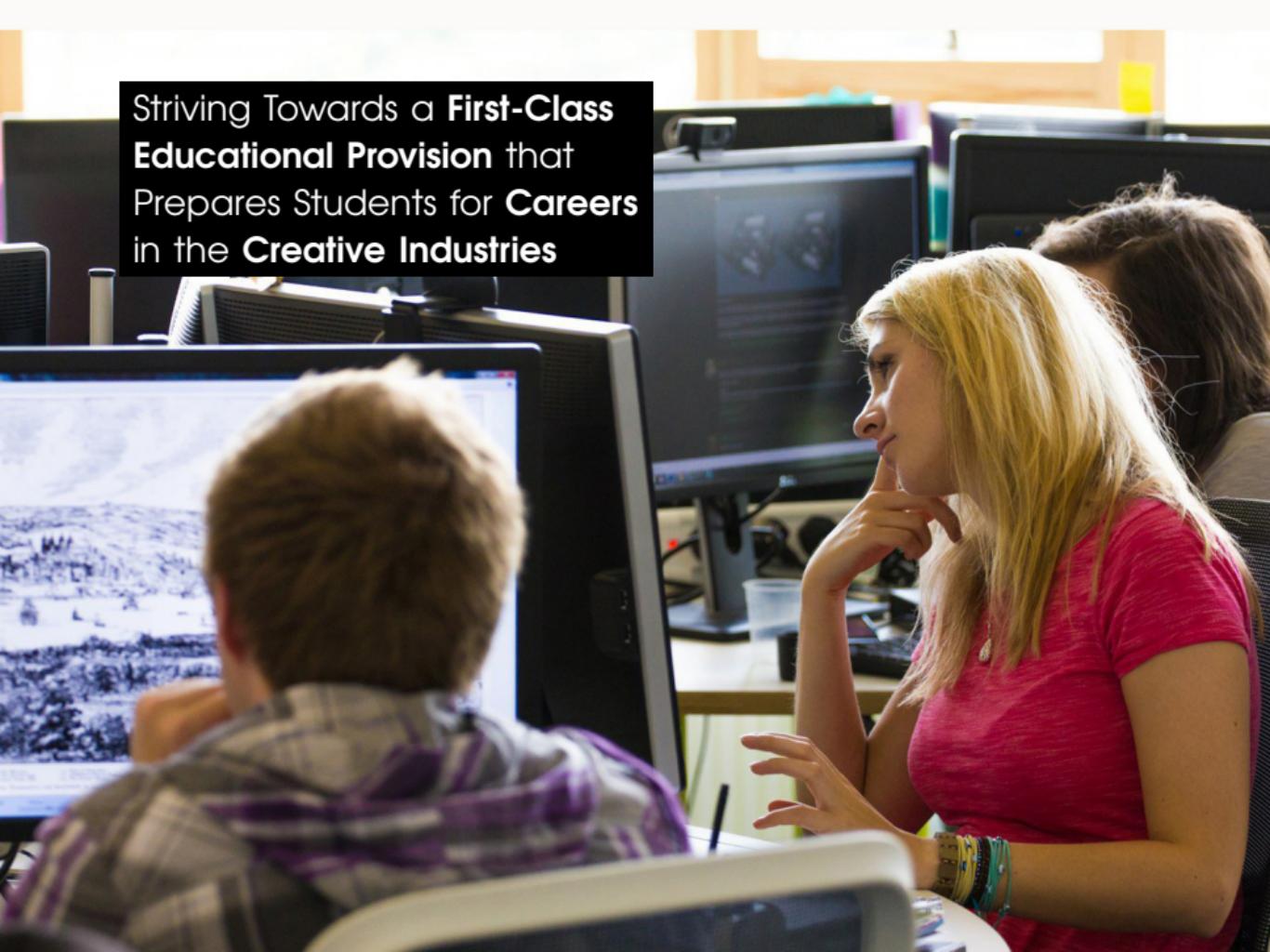
Markus Rautzenberg (Freie U

Dealing with Uncertainty, U

Lead By World-Renowned
Researchers



**Lead By World-Renowned
Researchers**

A photograph showing students in a classroom environment, focused on their work at computer monitors. In the foreground, a student with blonde hair, wearing a red t-shirt, is looking intently at her screen. Behind her, another student's back is visible, showing a plaid shirt. The room contains several other computer stations, suggesting a technology-rich learning environment.

Striving Towards a **First-Class**
Educational Provision that
Prepares Students for **Careers**
in the **Creative Industries**

TECH NATION 2016



From
**TECH
CITY**

@TechCityUK

In partnership with
Nesta...

@nesta_uk

Truro, Redruth & Camborne

Visit: techcityuk.com/technation



127%

GVA GROWTH
Growth in GVA
from 2010-2014



£31m

TOTAL GVA
Total output (good
or service) minus
value of inputs

TECH NATION 2016 IN NUMBERS

FROM
TECH CITY

IN PARTNERSHIP WITH
Nesta...

DIGITAL TECH ECONOMY

1.56m jobs¹

Job creation **2.8x** faster than the rest of the economy (2011-2014)



£50,000

Almost £50K average advertised salary²

36%

higher than the national advertised average²

41%

Digital Tech Economy jobs exist within traditionally non-digital industries¹

DIGITAL TECH INDUSTRIES

£161bn turnover³

32%

Grew 32% faster than the rest of the economy (2010-2014)³

58,000

Identified active digital tech businesses⁴

TOP SECTORS⁴

17% App & Software Development

12% Data Management & Analytics

11.5% Hardware, Devices & Open Source Hardware

DIGITAL TURNOVER TOTAL³

£62.4bn

READING & BRACKNELL

£10bn

BRISTOL & BATH

£8.2bn

MANCHESTER

£2.2bn

BIRMINGHAM

£1.8bn

DIGITAL TURNOVER GROWTH (2010-2014)³

SOUTHAMPTON

+180%

TRURO, REDRUTH & CAMBORNE

+153%

DUNDEE

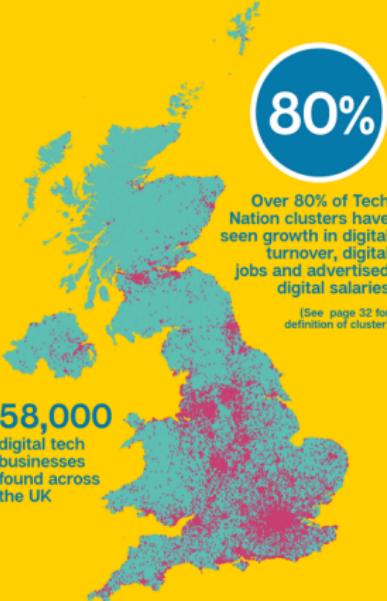
+129%

LONDON

+101%

BRISTOL & BATH

+53%



58,000

digital tech businesses found across the UK

DIGITAL JOBS¹ TOTAL

LONDON

328,223

MANCHESTER

51,901

READING & BRACKNELL

40,440

BIRMINGHAM

36,768

BRISTOL & BATH

36,547

PRODUCTIVITY³ (SALES PER WORKER)

BRISTOL & BATH

£296,340

LONDON

£205,390

READING & BRACKNELL

£196,800

SOUTHAMPTON

£171,720

OXFORD

£170,460

DIGITAL SALARY² GROWTH (2012-2015)

LEEDS

+29%

NEWCASTLE & DURHAM

+27%

SUNDERLAND

+26%

EDINBURGH

+26%

SOUTHAMPTON

+25%

¹ Annual Population Survey (2014)

² Burning Glass (2015) refers to advertised digital salary

³ Advertised digital turnover based on Advertised Digital Businesses (2014)

⁴ Growth (2015)



Undergraduate Courses in
Digital Games

A group of six students are gathered in a game development studio. In the foreground, a student wearing a VR headset sits on a red sofa, holding a controller. To their right, another student sits on the sofa holding a smartphone. In the background, three more students stand or sit, looking towards the camera. The wall behind them is covered with various game design documents, including a calendar, character sketches, and sections labeled "INTERFACE", "STYLE GUIDE", "MECHANICS", "RELATIONS", "UNITS", and "HOG BOARD".

Undergraduate Courses in Computing for Games



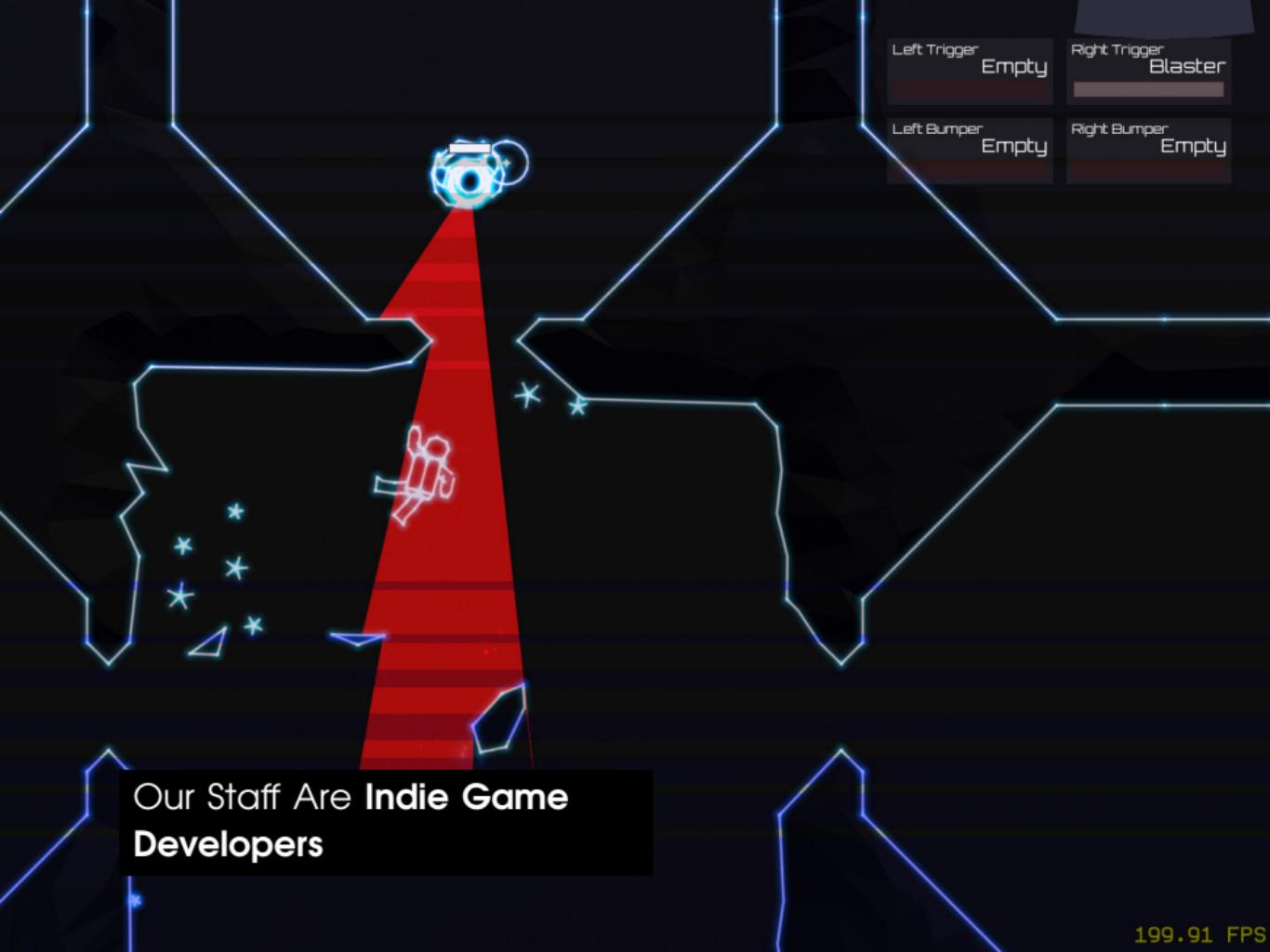
Postgraduate Courses in
Games Entrepreneurship



Distance-Learning Courses in
Creative App Development



A Innovative **Interdisciplinary**
Approach To Education



Left Trigger

Empty

Right Trigger

Blaster

Left Bumper

Empty

Right Bumper

Empty

Our Staff Are **Indie Game**
Developers

199.91 FPS



Our Staff Are **Indie Game**
Developers

ROUND TABLE GAMES PRESENTS



We Work
Closely with
Cornwall's
Largest Game
Studios



WWW.RTGSTUDIO.CO.UK

COMING SOON



WWW.ANTIMATTERGAMES.COM

RISINGSTORM 2



We Work
Closely with
Cornwall's
Largest Game
Studios



We Attract **Industry Legends**
as Visiting Lecturers

The Meta-Game



The Games Meta-Game

Setup:

- ▶ Self-organise into groups of 3-4 players
- ▶ You will each receive two sets of card: game cards and question cards.
- ▶ While you are waiting for your cards, identify the youngest player. They will be the first critic.
- ▶ All actions are clockwise from the critic.

The Games Meta-Game

Instructions:

1. **Question:** The critic draws a question card.
2. **Answer:** The *remaining players* (i.e., not the critic!) submit their best game card, to answer the question, face-up.
3. **Justification:** The *remaining players* justify the game card they have selected.
4. **Selection:** The critic selects the most suitable game card answering the question. That player ‘wins’ the round, keeping the question card as a scoring token and becomes the next critic.
5. **Repeat** from step 1, for approximately 20 minutes.

Careers in the Games Industry



Careers for Computing Professionals

It is important to note that:

- ▶ Games are complex and therefore require significant knowledge and skills to produce

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- ▶ Each role requires very specific skills, mastered in considerable depth
- ▶ Teamwork is essential (though there are many ways of working)

Careers for Computing Professionals

Computing professionals tend to:

- ▶ Deal with the technical side of games development

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- ▶ Be people who are comfortable with mathematics and science
- ▶ Keep up with the fast-paced field of computer technology
- ▶ Have a science degree rather than an arts degree, with an ability to conduct independent research
- ▶ Experts in programming and software engineering

Careers for Computing Professionals

There is a wide range of technical roles in game studios:

- ▶ Technical Director / CTO / Lead
- ▶ Gameplay Programmer
- ▶ Engine Programmer
- ▶ Physics Programmer
- ▶ AI Programmer
- ▶ Network Programmer
- ▶ Graphics Programmer
- ▶ Tools Programmer
- ▶ UX / UI Programmer
- ▶ Middleware / Technology Developer
- ▶ Porting Programmer
- ▶ Level Scripter
- ▶ Audio Engineer
- ▶ Data Scientist

What About Other Careers?

Naturally, your degree does not pre-determine your career path:

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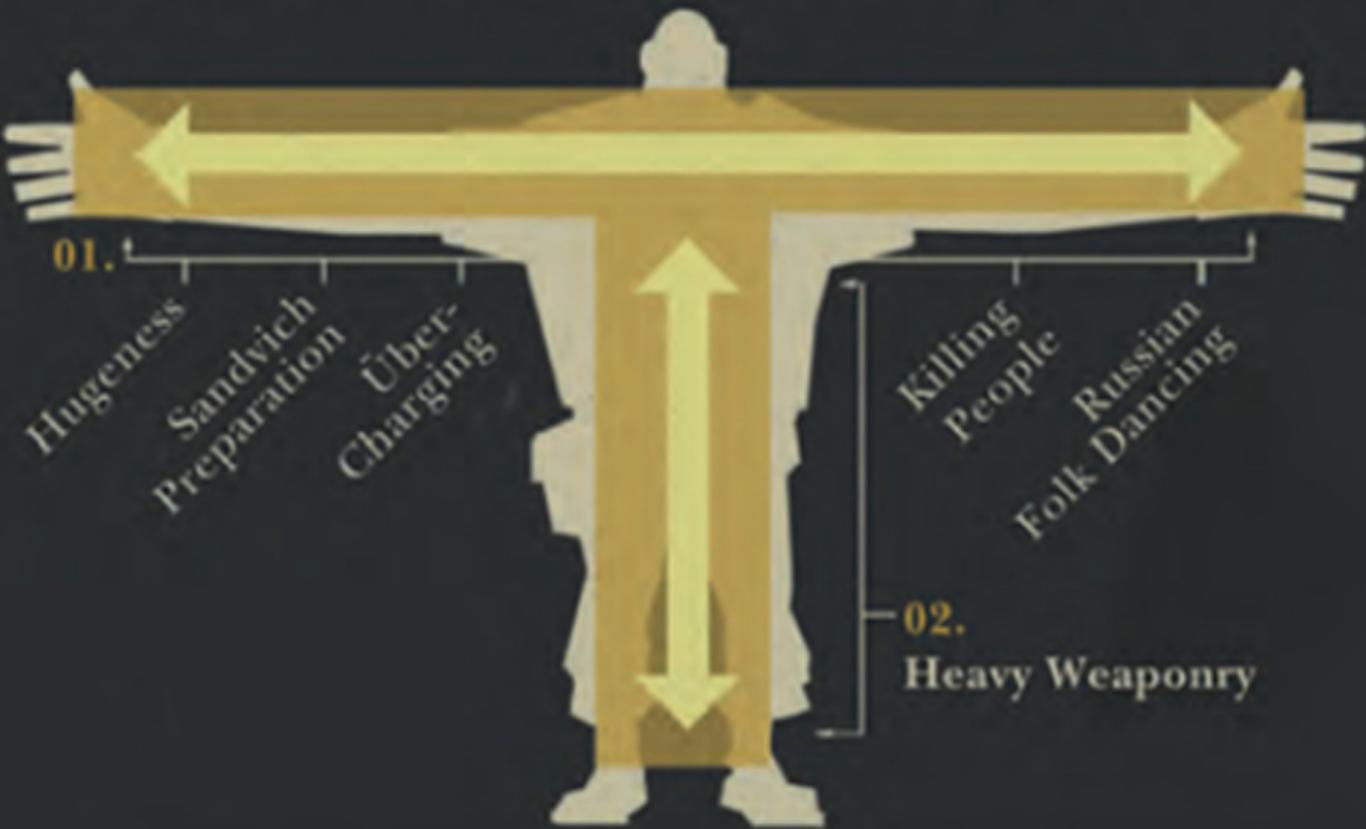
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- ▶ **Management:** insight into how software developers practice their craft will make you better at managing them in a studio context (and perhaps even garner some respect)
- ▶ **Administration & Commerce:** the games industry isn't just about development, there is a huge range of other career paths, such as human resources and IT

T-SHAPED MODEL: EMPLOYEE



Learning Objectives

The learning objectives of the course are:

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- ▶ **Communication:** communicate effectively with stakeholders in writing, verbally, and through adherence to standards and conventions in documentation
- ▶ **Critical Evaluation:** reflect critically on, and evaluate, the quality of working methods and solutions

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- ▶ **Research:** engage in activities that may create new knowledge, present that knowledge in an academic format, and apply it to practice
- ▶ **Enterprise & Innovation:** provide opportunities for enterprise through innovation, invention, and creativity
- ▶ **Professionalism:** set goals, manage workloads to meet deadlines, work efficiently and effectively in teams, and accommodate change

Course Map



Course Map

YEAR 1

SEMESTER 1	SEMESTER 2
PRINCIPLES OF COMPUTING COMP110 Core 20 credits	GAME ARCHITECTURE COMP150 Core 20 credits
CREATIVE COMPUTING: TINKERING COMP120 Core 20 credits	CREATIVE COMPUTING: HACKING COMP140 Core 20 credits
GAME DEVELOPMENT PRACTICE COMP130 Core 20 credits	SOFTWARE ENGINEERING COMP160 Core 20 credits

Course Map

YEAR 2

SEMESTER 1	SEMESTER 2
INTERFACES & INTERACTION COMP210 Core 20 credits	ARTIFICIAL INTELLIGENCE COMP250 Core 20 Credits
GRAPHICS & SIMULATION COMP220 Core 20 credits	DISTRIBUTED SYSTEMS COMP260 Core 20 credits
GAME DEVELOPMENT I: PRE-PRODUCTION COMP230 Core 20 credits	GAME DEVELOPMENT I: PRODUCTION COMP240 Core 20 credits

Course Map

YEAR 3

SEMESTER 1	SEMESTER 2
LEGACY GAME SYSTEMS COMP310 Core 20 credits	ALGORITHMS & OPTIMISATION COMP340 Core 20 credits
GAME DEVELOPMENT II: PRE-PRODUCTION COMP320 Core 20 credits	GAME DEVELOPMENT II: PRODUCTION COMP350 Core 20 credits
RESEARCH PRACTICE COMP330 Core 20 credits	RESEARCH DISSERTATION COMP360 Core 20 credits

First Year Modules



COMP110: Principles of Computing

This module is designed to introduce you to the basic principles of computing and programming in the context of digital games.

Your learning will complement the other modules through providing a broad foundation on the different methods and techniques which will help you to be able to construct computer programs and able to use relevant scholarly sources.

COMP120: Tinkering

This module is designed to help you learn different ways of engaging with code using practical and exploratory methods.

You will learn the value of taking a creative approach to computing and become acquainted with some of the principles behind Creative Computing.

COMP150: Game Dev Practice

This module introduces you to the founding principles and processes of professional game development.

You gain an understanding of the way that the different components of game development come together to make playable games and how those components are organised through the development pipeline. You also gain a ‘first-principles’ understanding of how games are designed with a target market in mind and have a strong underlying concept.

COMP130: Game Architecture

This module helps you to understand the ways in which the architecture of games shape the types of computing solutions that one might build.

Your contextual understanding of game architecture is then brought into sharper focus practically through practical worksheet and research tasks.

COMP140: Hacking

The module allows you to develop further a creative approach to computing within the context of building solutions used to develop games.

You will begin to bring different elements together, taking existing code from multiple sources and learn ways and methods for bringing these together in synthesis in order to build more creative and robust solutions.

COMP160: Software Engineering

This module helps you build on your experience of game development by engaging in depth with the principles of professional software engineering.

You will learn the importance of reuse and scalability when creating solutions and how to identify recurring problems within a specific domain. You'll demonstrate this both by applying existing design patterns and by creating your own reusable solutions.

Coffee Break



Coffee Break

Please return at 5 minutes past the hour.

Assignments



Assignment Structure

Each Semester, you will complete **six** assignment 'tracks':

- ▶ Collaborative Game Development Project
- ▶ Academic Essay
- ▶ 2x Small Programming Projects
- ▶ Small Portfolio Pieces and/or Worksheets
- ▶ Research Journal
- ▶ Continuing Personal Development Tasks and Reflective Report

Assignments

Live Demo

All assignment briefs can be found on:

learningspace.falmouth.ac.uk

Read them very carefully!

Expectations in Higher Education



Socrative FALCOMPMIKE

List THREE key differences between expectations in the higher education and compulsory education contexts.

- ▶ In pairs.
- ▶ Discuss for 2-minutes what 'expectations' means. Then, discuss how they differ between higher and compulsory education.
- ▶ **List** the differences. Avoid overlap.

Expectations

Please note the following:

- ▶ This is a full-time course
- ▶ You are expected to engage 1200-hours of study per academic year
- ▶ Approximately 1/3 of that will be contact time
- ▶ Approximately 2/3 of that will be 'self-directed study'
- ▶ This means you are expected to study 40 hours per week over 15 weeks

Expectation

Please note the following:

- ▶ There are 24 weeks of sessions (12 in each semester)
- ▶ Further to this, there are 6 weeks of independent practice:
 - ▶ C++ worksheets (3 weeks around Christmas)
 - ▶ Independent portfolio development (3 weeks in the Summer)

But what actually ‘counts’ as study?

Socrative FALCOMPMIKE

Give THREE activities that count as 'self-directed study'.

- ▶ In pairs.
- ▶ Discuss for 2-minutes what 'self-directed study' means. Then, discuss what counts as self-directed study.
- ▶ **List** the differences. Avoid overlap.



Activity: Time Management

Please complete the following activity:

[http://www.learnhigher.ac.uk/
learning-at-university/time-management/
getting-organised/](http://www.learnhigher.ac.uk/learning-at-university/time-management/getting-organised/)

Questions & Answers

Thank you for listening.

Please feel welcome to ask questions or raise concerns.