Games Academy: Computing Subject Area

Induction

Computing Subject Area

Welcome!

You are here because you have enrolled on one of the following courses:

- BA(Hons) Game Development: Programming
- BSc(Hons) Computing for Games
- BSc(Hons) Immersive Computing

All of these courses have a common first-year focused on computing fundamentals and practical projects.

Computing Subject Area

The ACM define the ‘computing professional’ as:

Someone belonging to a broad discipline that crosses the boundaries between mathematics, science, engineering, and business. They embody important professional competencies lying at the foundation of goal-oriented activities requiring, benefiting from, or creating computation. Computation being any type of calculation that includes both arithmetical and non-arithmetical steps following a well-defined model, typically an algorithm.

You are here because you want to become a computing professional.

Computing Subject Area

The discipline consists of five sub-disciplines:

- Computer Engineering
- Computer Science
- Information Systems
- Information Technology
- Software Engineering

Roles such as *games programmer* usually draw on several of these sub-disciplines with different emphases.

Learning Outcomes

By the end of this session, you should be able to:

- **Recognise who** your tutors are
- **Outline what** the Games Academy offers from a computing perspective
- **Explain** the career paths **and** key learning objectives that our computing courses cater to
- **Suggest** some of the kinds of question that excite game scholars within and around the computing discipline
- **Recall** the structure of the course

Learning Outcomes

By the end of this session, you should be able to:

- **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
- **Recall** the role of the DoIT Profiler in identifying individual learning differences

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Course Tutors

Douglas Brown, Director of the Games Academy

Michael Scott, Head of Computing

Ed Powley, Associate Professor of Artificial Intelligence

Norah Lorway

Jamie White

Joan Casas-Roma


Brian McDonald

Kate Bergel


Gareth Lewis


Alcwyn Parker

John Speakman

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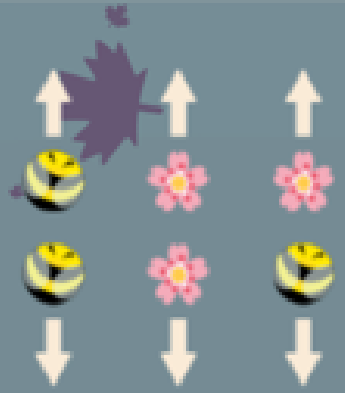
The Games Academy


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

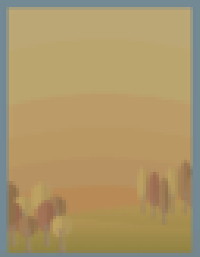
Game design

Hold more than **£2 million** of funds for research in **Artificial Intelligence**, **Procedural Content Generation**, and **Transmedial Aesthetics**

No controller collisions



Guitar Birds



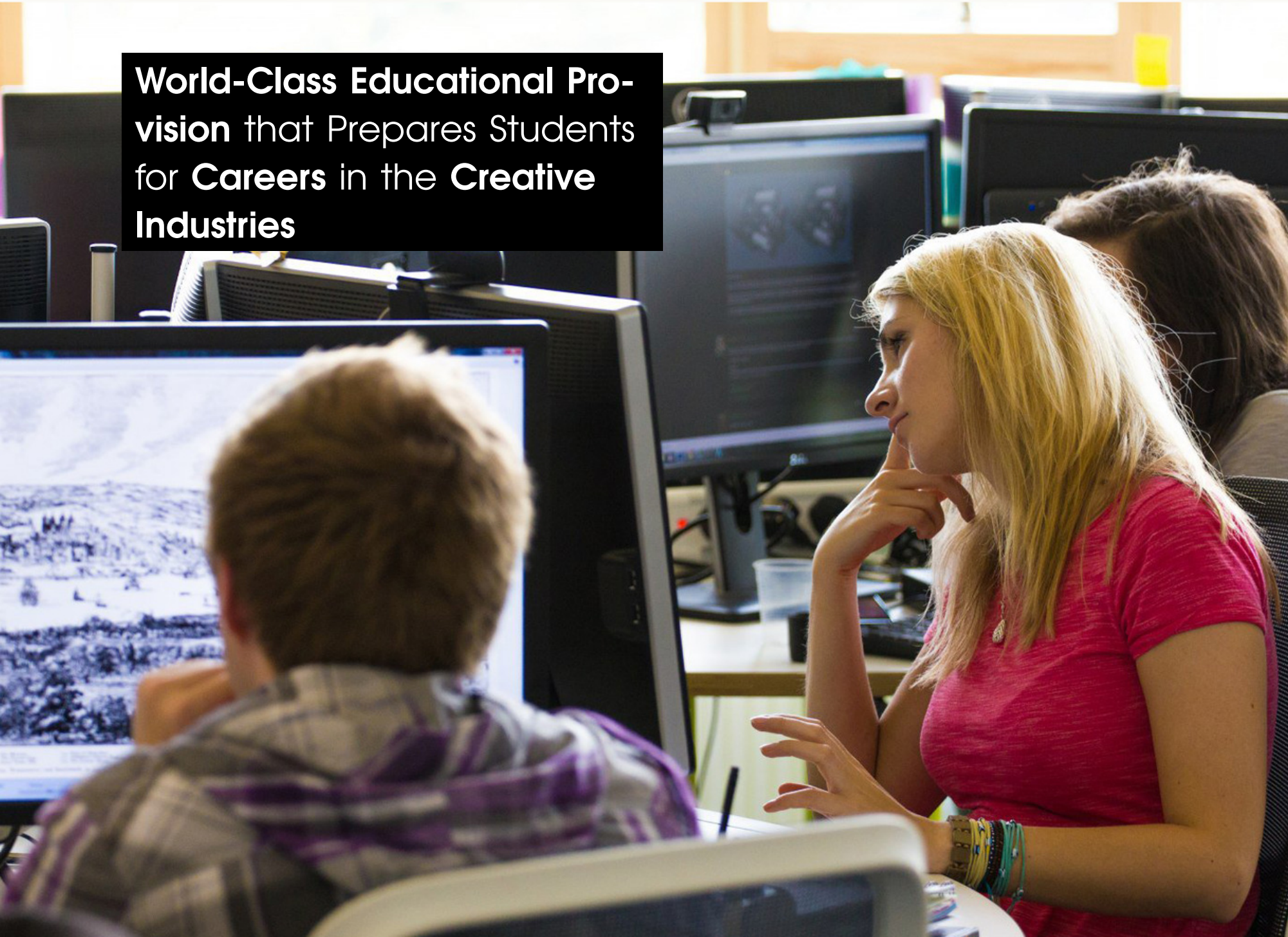
Win: 70pts

Ends: 40s

Lives: 3

And hold a growing level of funding for research into **Extended Reality**

Lead By **World-Renowned Researchers**



World-Class Educational Provision that Prepares Students for **Careers** in the **Creative Industries**

Awarded TEF Gold Status

Teaching Excellence Framework

The Princeton Review®

Undergraduate Courses in **Game Development**

Undergraduate Courses in **Computing for Games**

Undergraduate Courses in **Immersive Computing**


Postgraduate Courses in
Games Entrepreneurship


Distance-Learning Courses in
App Development

Emphasis on **Doing It For Real**


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**


Our Staff Are **Indie Game Developers**

We Attract **Industry Legends** as Visiting Lecturers


We Attract **Industry Legends**
as Visiting Lecturers


And **Our Graduates** Return to
Help Us Out

The UK Creative Industries

VALUE (GVA)

The UK Creative Industries 2014

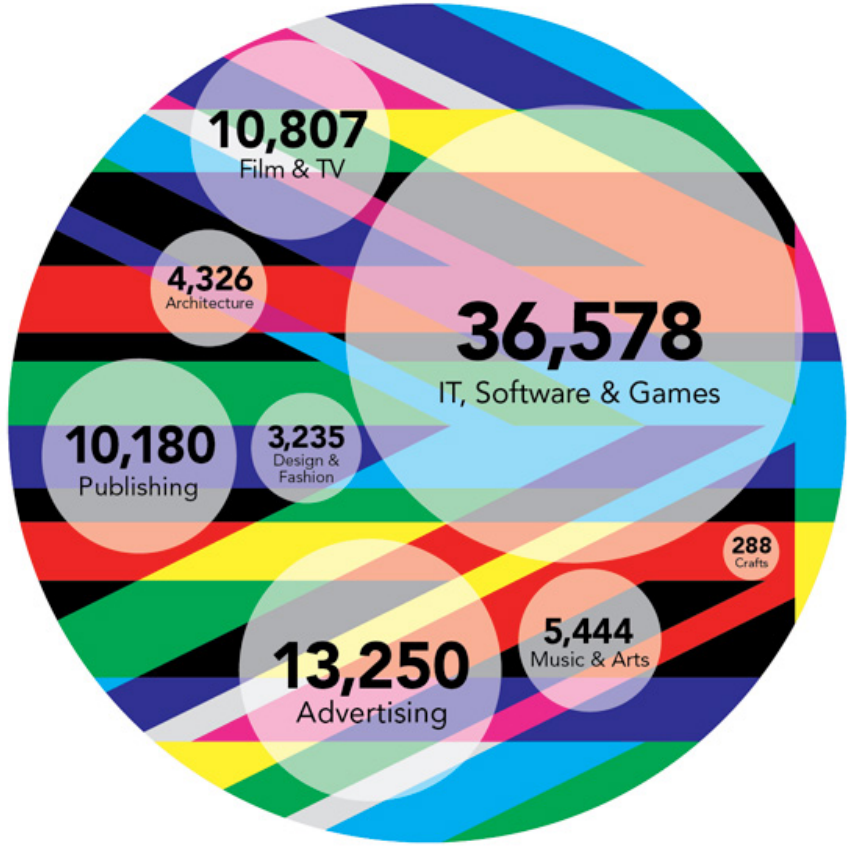
£84.1bn A YEAR

£9.6m AN HOUR

8.9%

INCREASE IN GVA OF THE CREATIVE INDUSTRIES BETWEEN 2013 AND 2014

GVA of UK Creative Industries 2014 (£m) Total £84.1bn



Annual Change in GVA 1997-2014

www.thecreativeindustries.co.uk

Source: DCMS Creative Industries Economic Estimates January 2016

TECH NATION

From TECH CITY UK

In partnership with Nesta

@TechCityUK @nesta_uk

Truro, Redruth & Camborne

Visit: techcityuk.com/technation

GVA GROWTH
Growth in GVA from 2010-2014

£31m

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

TECH NATION

FROM TECH CITY | IN PARNERSHIP WITH Nesta...

DIGITAL TECH ECONOMY

1.56m jobs[1]

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

£50,000

Almost £50K average advertised salary[2]

36%

higher than the national advertised average[2]

41% Digital Tech Economy jobs exist within traditionally non-digital industries[1]

DIGITAL TECH INDUSTRIES

£161bn turnover[3]

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

58,000

identified active digital tech businesses[4]

TOP SECTORS[4]

17%	App & Software Development
12%	Data Management & Analytics
11.5%	Hardware, Devices & Open Source Hardware

DIGITAL TURNOVER TOTAL[3]
LONDON £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%

80%

Over 80% of Tech Nation clusters have seen growth in digital turnover, digital jobs and advertised digital salaries

(See page 32 for definition of cluster)

58,000 digital tech businesses found across the UK

DIGITAL JOBS[1] TOTAL	PRODUCTIVITY[3] (SALES PER WORKER)	DIGITAL SALARY[2] GROWTH (2012-2015)
LONDON 328,223	BRISTOL & BATH £296,340	LEEDS +29%
MANCHESTER 51,901	LONDON £205,390	NEWCASTLE & DURHAM +27%
READING & BRACKNELL 40,440	READING & BRACKNELL £196,800	SUNDERLAND +26%
BIRMINGHAM 36,768	SOUTHAMPTON £171,720	EDINBURGH +26%
BRISTOL & BATH 36,547	OXFORD £170,460	SOUTHAMPTON +25%

1 Annual Population Survey (2014)
2 Burning Glass (2015) refers to advertised digital salary
3 Annual Business Survey/Business Structure Database (2014)
4 GrowthIntel (2015)

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Computing in Creative Industries

Careers for Computing Professionals

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- In small indie studios, you might need to fill multiple roles, including business and design
- Knowledge of effective team-working tactics is essential (though there are many ways of working)

Careers for Computing Professionals

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- Keep up with the fast-paced field of computer technology
- Straddle the arts and sciences, being able to draw together elements from both
- Have expertise in software engineering and computer science, with an ability to conduct independent research

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

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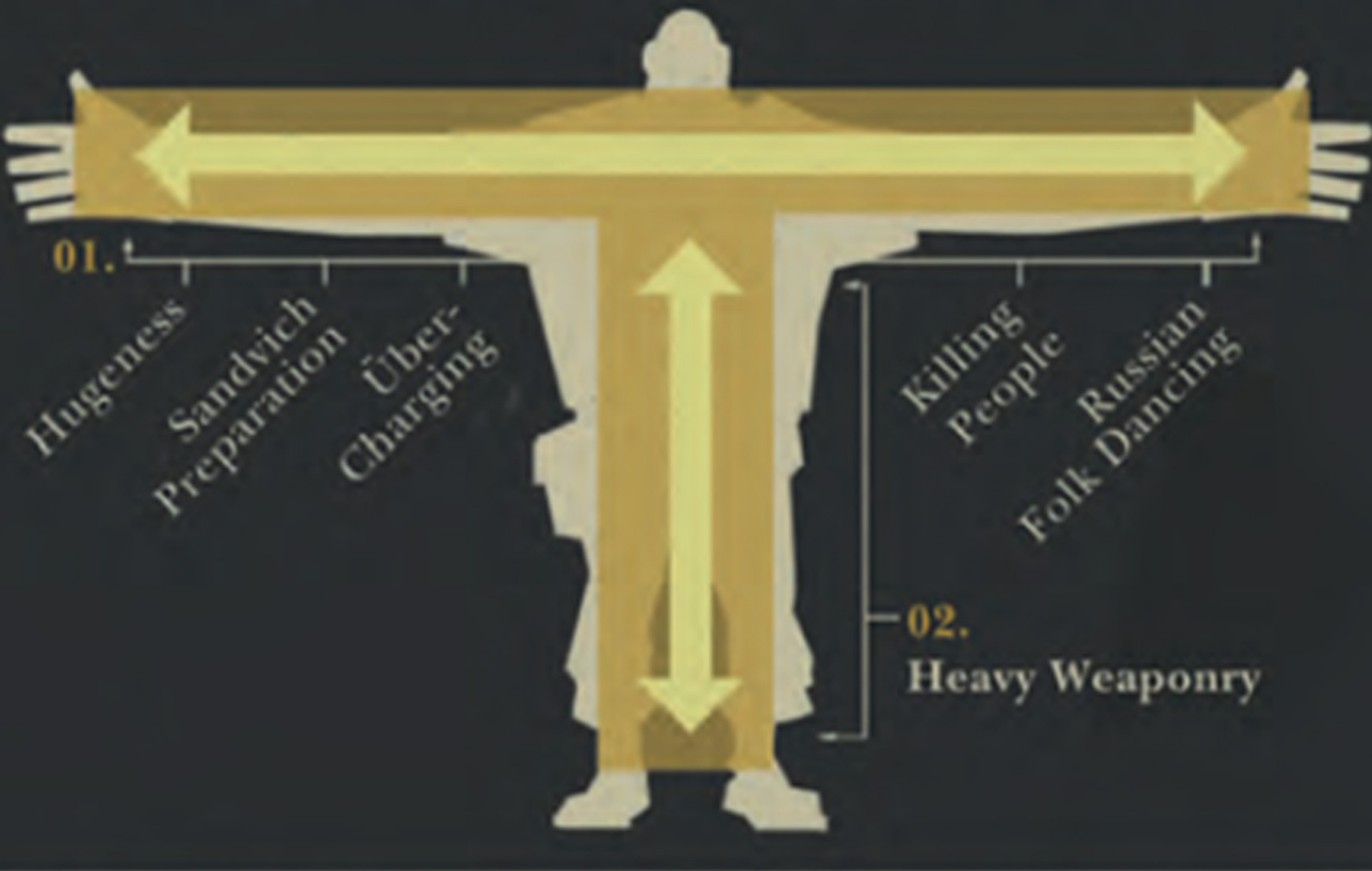
- **Manage**: insight into how software developers practice their craft will make you better at managing them in a studio context (and perhaps even garner some respect)
- **Administrate**: the games industry isn't just about development, there is a huge range of other career paths, such as human resources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

T-SHAPED MODEL: EMPLOYEE



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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.

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Your Course

Student Voice

Courses in the computing subject area are rated:

- **#7** Teaching (4.3 / 5.0)
- **#7** Learning Opportunities (4.4 / 5.0)
- **#6** Assessment and Feedback (4.4 / 5.0)
- **#11** Academic Support (4.4 / 5.0)
- **#7** Organisation and Management (4.3 / 5.0)
- **#5** Learning Resources (4.4 / 5.0)
- **#5** Learning Community (4.4 / 5.0)
- **#5** Student Voice (4.3 / 5.0)
- **#10** for Overall Student Satisfaction (89%)

(Out of 68 other undergraduate courses)

Student Voice

- I want the course to be **#1** in every measure, so please engage with us!
- Over 80% of the `COMP` modules we offer are in the top-10% of all modules Falmouth offers, as rated by student evaluations
  - COMP250: Artificial Intelligence in top-1%
- Over 33% contact-time on all modules

You will soon be asked nominate someone to represent your interests in the student-staff liaison group. There are representatives for each cohort. Establishing a working democracy is vital important to the health of your student experience. You *shape* the course!

You Said, We Did

Improvements this year based on NSS data:

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  - Briefs are more open-ended with new rubrics to show how to access marks and reach higher attainment

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- "My course has challenged me to achieve my best work" (-13)
  - Briefs are more open-ended with new rubrics to show how to access marks and reach higher attainment
- "My course has provided me with opportunities to bring information and ideas together from different topics" (-1)
  - Module leaders now coordinate topics and assignments to better highlight synergies

You Said, We Did

- "I have been able to contact staff when I needed to" (-12)
  - New policy to respond to email within 24-hours on working days during term time
  - Personal tutors can now be booked for meetings in their office hours via the main course page
  - Screens now show who is on-duty for studio supervision.
  - Technicians have extended studio hours

You Said, We Did

- "The course is well organised and running smoothly" (-2)
  - The *Making the Curriculum Clearer* project now implemented.
  - Simplified course structure, fewer assignments, and more sharing of modules across the Academy.

You Said, We Did

You Said, We Did

- "The timetable works efficiently for me." (-10)
  - Administrative processes previously leading to group activity mis-allocation revised.
  - Everyone in a group shares the same group project module with the same sequence of activities.
  - Fewer critiques, with emphasis on more meaningful group activities and play-testing.

Course Objectives

By the end of this year, you should be confidently able to:

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- **Advocate**: identify and describe legal, social, ethical, and professional issues that could affect creative projects
- **Research**: identify and articulate a position on an issue using appropriate sources and academic conventions
- **Reflect**: identify professional attributes and illustrate how they are relevant to your practice

Learning Objectives

The objectives of this course are to facilitate the development of your:

- **Collaborate**: evidence an ability to use suitable development practices, project management approaches, and version control tools in the execution of a collaborative project

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Learning Objectives

The objectives of this course are to facilitate the development of your:

- **Collaborate**: evidence an ability to use suitable development practices, project management approaches, and version control tools in the execution of a collaborative project
- **Pitch**: identify and express your role within a creative studio culture
- **Deliver**: describe how to iteratively ideate, create, and test prototypes to deliver an interesting experience

Philosophy

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- Emphasis on developing community, and discourse/peer-review within that community
  - Do it together and learn from each other, before doing it alone
  - Critique each others' work and discuss what constitutes good practice

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  - Do it together and learn from each other, before doing it alone
  - Critique each others' work and discuss what constitutes good practice
- Emphasis on feed-forward over just feed-back
  - Early milestones, earlier start, more learning
  - Get advice on how to improve your own practice *before* you submit your work

Philosophy

- Emphasis on highly structured assignments
  - Formative work across the study block
  - Guaranteed 40% pass for successfully completing all in-class activities with basic competence and submitting on-time
  - Face-to-face feedback and discussion

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  - Formative work across the study block
  - Guaranteed 40% pass for successfully completing all in-class activities with basic competence and submitting on-time
  - Face-to-face feedback and discussion
- Emphasis on continuing personal development
  - Personal growth over hitting a benchmark
  - Journey to professional competency and beyond, rather than hitting a grade
  - Rubrics and qualitative feedback (at least, at first)

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Course Map

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Course Map

YEAR 1

SEMESTER 1	SEMESTER 2
DEVELOPMENT PRINCIPLES **GAM110** Core 20 credits	**MULTIDISCIPLINARY DEVELOPMENT PRACTICE** **GAM130** Core 40 credits
PRINCIPLES OF COMPUTING **COMP110** Core 20 credits	
CREATIVE COMPUTING **COMP120** Core 20 credits	**INDIVIDUAL CREATIVE COMPUTING PROJECT** **COMP140** Core 20 credits

GAMES ACADEMY | FALMOUTH UNIVERSITY

Course Map

YEAR 2

SEMESTER 1			SEMESTER 2
WORLD CREATION PROJECT: PRE-PRODUCTION **GAM220** Core 20 credits			**WORLD CREATION PROJECT: PRODUCTION** **GAM240** Core 40 credits
MATHS FOR 3D WORLDS & SIMULATIONS **COMP270** Core for *BSc* 20 credits	**OR**	**FORM & EXPERIENCE** **GAM210** Core for *BA* 20 credits	
SPECIALISMS IN CREATIVE COMPUTING **COMP280** Core 20 credits			**INDIVIDUAL SPECIALIST COMPUTING PROJECT** **COMP2*** Option 20 credits

Computing for Games
Graphics & Simulation
Interfaces & Interaction
Distributed Systems
Artificial Intelligence

Game Development: Programming
Interfaces & Interaction
Distributed Systems
Artificial Intelligence

Immersive Computing
XR/VR Project

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Course Map

YEAR 3

SEMESTER 1			SEMESTER 2		
MAJOR GAME PROJECT **GAM320** Core for *Games* 40 credits	**OR**	**MAJOR XR/VR PROJECT** **VR310** Core for *Immersive* 40 credits	**MAJOR GAME PROJECT** **GAM330** Core for *Games* 40 credits	**OR**	**MAJOR XR/VR PROJECT** **VR320** Core for *Immersive* 40 credits
R&D: PRACTICE **COMP230** Core for *BSc* 20 credits	**OR**	**PROF. PRACTICE** **GAM340** Core for *BA* 20 credits	**R&D: DISSERTATION** **COMP360** Core for *BSc* 20 credits	**OR**	**PREPARING FOR THE FUTURE** **GAM310** Core for *BA* 20 credits

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Timetable

Timetable

Live Demo

The timetable can be found on:

`http://mytimetable.falmouth.ac.uk`

Check the timetable every day! Sessions can, and often do change. Once you are allocated into groups for your collaborative game development projects, meeting times with tutors will change and extra sessions may appear!

This is a full-time course. Any time you are not scheduled to be with a tutor, you are expected to be working on your projects in the studio.

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Assignments

Assignment Structure

100% Coursework

Assignment Structure

Assessments are designed to reflect professional practice:

- Items for your Portfolio
- Collaborative Games Projects
- Pitches
- Papers

Relative importance of each will depend on your career trajectory


Collaborative Approach with
Arts Students

Follows an **Incubation Model**:
Make Games For Real


Studio-based Course: 9-5 in the Studio Working on Games

Industry Involvement: Show-off your work to professionals at our expo

https://basiliskstudios.github.io/nebulaknights/trailer.mp4

Assignments

Live Demo

All assignment briefs will be found on:

`learningspace.falmouth.ac.uk`

Enjoy freshers week. Read them very carefully on Monday!

LearningSpace is also where you submit the final "summative" versions of your assigned coursework tasks!

Assignments

You will usually submit your work as a single `.zip` archive.
Please use the following convention:

module_assignmentNumber_studentID

For example:

comp110_1_0601210

We use anonymous marking where possible.

Assignments

All assignment deadlines can be found next week on:

`myfalmouth.falmouth.ac.uk`

Take note of these carefully! A single second late, and your work will be capped at the minimum passing grade.

Assignments

In the absence of extenuating circumstances (i.e., you are seriously ill and stuck in hospital):

You MUST submit something for EVERY assigned coursework task!

In the eyes of university policy, not submitting anything is *the same as withdrawing from your studies*. Even if your work is unfinished, submit it! Even submitting a blank piece of paper is better than not submitting anything!

If you forget to submit, there is a grace period of 5 working days after the deadline. If you fail, you get a second attempt.

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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 do 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, **EVERY** week across the two 15-week study blocks
- If you can't commit to this—see us ASAP to discuss your options

Expectation

Typically, study blocks have the following structure:

- 5 Weeks - Sessions with Tutors
- 1 Week - Assessments and Self-Directed Studio Practice with Team
  - **NOT** a vacation
- 5 Weeks - Further Sessions with Tutors
- 1 Week - Assessments and Self-Directed Studio Practice with Team
- Vacation Period
- 1 Week - Assessments and Self-Directed Studio Practice with Team
- 2 Weeks - Workshops Festival
  - **NOT** a vacation

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: DoIT Profiler

You **MUST** complete the following activity:

`https://doitprofiler.net/Account/ClientLogin`

Client code: `fal15mar`

Activity: Time Management

Please complete the following activity:

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.