Computing and Mathematics

School and College Outreach Offer

CONTENTS

Computing and Mathematics

This booklet outlines the outreach activity we can offer in Computing and Mathematics. We can provide hands-on masterclass activities for you across all the following areas to increase students' knowledge, understanding and provide an insight into university courses and life in Higher Education.

- AI and Robotics
- Computer Games Programming
- Computer Science and Software Engineering
- Cyber Security and Digital Forensics
- IT and Business
- Mathematics

We also offer a general course talk on the pathways in the discipline. Activities can be combined into full taster days. All masterclass sessions can be between 45-75 minutes long and are limited to around 25 students per session due to PC lab size on campus.

Activity can be arranged both on and off campus, and all sessions are suitable for KS5 students. For KS3 and KS4 students, please get in contact to see what opportunities are available.

To book or enquire about any activity, please contact the team at sclo@shu.ac.uk

AI and Robotics

Robotic devices and automation are finding more uses in business and everyday lives. This is due, in part, to more autonomous robotics using breakthroughs in real-time artificial intelligence solutions. Interfacing logical 1s and 0s with noisy real-world sensors and devices present their own challenges, especially interpreting that data to do something useful. This is where AI and Robotics sits, bringing software and hardware together to create smarter control for robotic devices.

Computer Games Programming

Who doesn't like to play games? Games are a great way of passing some time, perhaps socialising with friends, and entering a world beyond. But computer games are just software, no different to any app you have in your mobile. However, they do require a level of special skill to develop them, especially for modern games consoles. Game development involves working in multidisciplinary teams that include coders, artists, music composers, designers, and testers. Computer Games Programming focuses on the code of a computer game that makes everything happen on screen.

Computer Science and Software Engineering

Software development / programming / coding lies at the heart of our digital infrastructure – practically everything interacts with software, from traffic lights to smart phones and devices, to websites, to the operating systems of our computers. Someone needs to write that software, and that is the job of Computer Scientists and Software Engineers. Artificial Intelligence solutions are themselves software solutions that are being deployed in ever increasing areas. This area trains the next generation of programmers and AI engineers.

Cyber Security and Digital Forensics

Computers contain a lot of information about us, and they are more connected than ever before. For all the good those systems do to improve our everyday life, there are bad-actors that want to take advantage for their own personal gain. This field looks at how we can protect ourselves from cyber-attacks and keep our infrastructure safe from a whole infrastructure perspective. Forensics are important to understand emerging attack vectors to aid defence against them, while also preparing evidence for law enforcement agencies. This area trains specialists able to keep our digital futures safe.
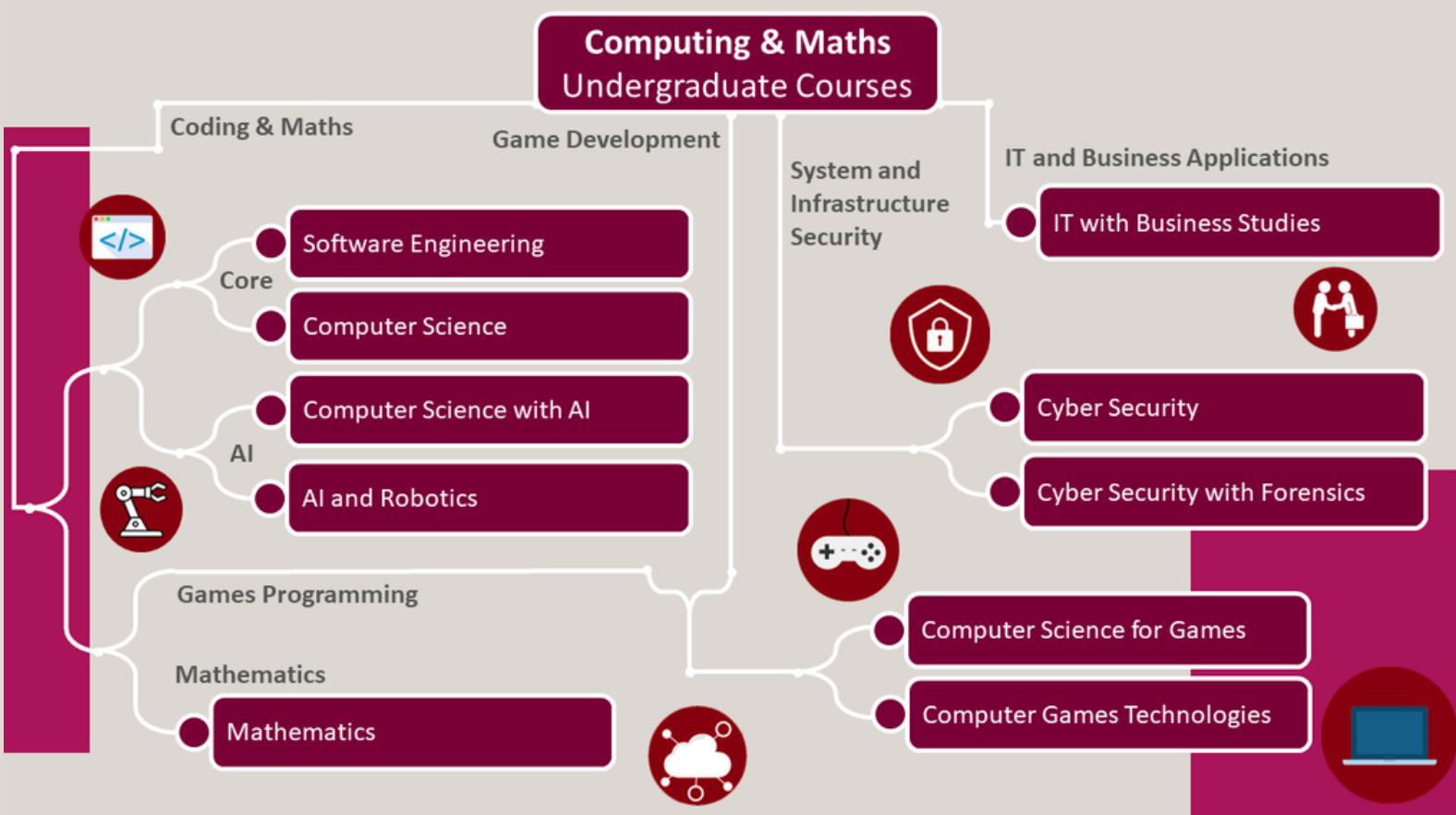
IT and Business

The digital age we live in is exciting and ever evolving, but they fit within something of a defined business setting – unless a business feels it can make money from a technological marvel, it is unlikely to exist; most investment in technology comes from businesses seeing an opportunity. How can business take advantage of digital technologies to make their processes more efficient and effective, while also giving new insight into stakeholders, for example, and deliver to market goods and services that are appropriate. This area trains students to work in the hybrid world of digital transformation.

Mathematics

The world is a series of mathematical challenges to be solved that evolve our knowledge in all areas of our life – computers wouldn't exist without solutions that maths gives us, airplanes couldn't fly without understanding maths, much of the physical infrastructure such as bridges and towers are all underpinned by maths to ensure they are safe, and the list is endless about how maths touches every part of our world and lives. Mathematicians are the architecture of those processes, and this area teaches students those skills, as well as mathematical modelling, to solve real-life challenges and continue to push our core understanding.

Pathways in Computing and Mathematics Talk

Discover the importance and relevance of computing and mathematics in our everyday lives and explore the different courses that lead to a variety of highly skilled careers, and what those career pathways mean in the context of the digital revolution.

Computing & Maths
Undergraduate Courses

Coding & Maths

Game Development

System and Infrastructure Security

IT and Business Applications

IT with Business Studies

Software Engineering

Core

Computer Science

Computer Science with AI

AI

AI and Robotics

Cyber Security

Cyber Security with Forensics

Games Programming

Computer Science for Games

Mathematics

Mathematics

Computer Games Technologies

HE Workshops and Talks

Sheffield Hallam University offer talks and workshops to support students to make an informed decision regarding higher education. Below is an overview of what schools and colleges can access, these can be stand alone sessions or incorporated into a subject taster day.

TALKS

Our talks, tailored for Y12, Y13, and mature students, can be delivered either in classrooms or assembly sessions.

- SHOULD I GO TO UNIVERSITY?
- SHOULD I GO TO UNIVERSITY AS A MATURE LEARNER?
- HOW DO I APPLY FOR UNIVERSITY?
- CAN I AFFORD TO GO TO UNIVERSITY?
- WHAT IS A DEGREE APPRENTICESHIP?
- WHAT IS IT LIKE BEING A STUDENT AT SHEFFIELD HALLAM UNIVERSITY?

WORKSHOPS

Designed for Y12 and Y13 students. Suitable for classroom delivery with a maximum of 30 students. Access to table-top desk space is required.

- WHICH COURSE SHOULD I DO?
- FEELING OVERWHELMED BY YOUR STUDIES?
- WHAT MAKES A GOOD PERSONAL STATEMENT?
- HOW DO I BUDGET AT UNIVERSITY?
- HOW DO I APPLY FOR A DEGREE APPRENTICESHIP?
- AM I UNIVERSITY READY?

Access Support at Hallam

SHU Progress

SHU Progress provides support for applicants whose personal circumstances might mean that there are barriers to going to university. The scheme provides additional support in the year of application and throughout the application process, including the transition to becoming a university student.

How to join
In order to join the scheme, students must be nominated by a professional (such as a teacher, social worker, support worker, etc.) who knows the applicant and their background. You can find the nomination form, as well as further details on eligible groups and the support on offer, by scanning the QR code. Alternatively, visit **shu.ac.uk/shuprogress**

If you have any questions, you can email the team at:
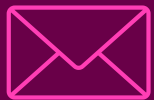**SHU-Progress@shu.ac.uk**
or call **0114 225 4777**

Black British Applicant Support

As a university we recognise the additional barriers that many prospective students face when pursuing higher education. As part of the response to this, our Access team also provide additional support for black British applicants, with tailored support throughout the application and transition process.

For more information, you can email the team at **access@shu.ac.uk**