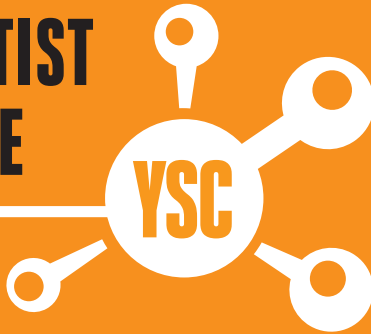


UCLAN AND ROYAL INSTITUTION

YOUNG SCIENTIST CENTRE



THE UCLAN AND RI YOUNG SCIENTIST CENTRE



The YSC is a collaboration between the University of Central Lancashire and Royal Institution of Great Britain. It is a vibrant laboratory space located within the Preston campus of the University, where we offer interactive, hands on workshops covering all areas of STEM.

WORKSHOPS

All workshops at the UCLan and Ri YSC can be tailored according to the group's age and ability.

Unless otherwise stated in the workshop description all of our workshops have:

Maximum capacity: 30 students

Duration: 4 hours including breaks

Cost: £150 per workshop

Cosmetic Chemistry

KS2

During this workshop students will make their own bath bombs and lip balms! The workshop gives students a chance to learn about acids and alkalis whilst experimenting neutralisation reactions and producing their own personalised bath bombs. The students will then investigate the properties of materials and states of matter whilst making their own bespoke lip balm.

"This was really fun. I learned some amazing things." – Year 4 student, Cosmetic Chemistry workshop

What is Colour?

KS2

Students will try and answer the question 'What is colour?' through experimentation. They will investigate how light behaves and how our eyes detect colour. Students will then use separation (centrifugation and chromatography) to investigate dyes. During the workshop students will make their own natural dyes using berries and algae and dye multi-fibre cloths they can take away. Finally, students will get a chance to use microscopes to observe the algae they used to make their dyes.

"I really liked it because we get to take the material strips home!" – Year 4 student, What is Colour? workshop

Mission Mars

Upper KS2

Students will be divided into research teams and tasked with the mission of investigating the surface of Mars. During the workshop students will learn to program LEGO Mindstorm robotic rovers and plan and program their rover's route across the YSC's model of the Mars surface. Whilst programming, the students will use sequences of commands to control their rover and be introduced to switches and loops. Their rovers will also use sensors as inputs that can affect the rover's outputs.

"It was fun and I want to come back here again." – Year 6 student, Mission Mars workshop

Extracting DNA

Upper KS2/KS3

Duration: 2 hours

Students will extract their own DNA and walk away with a small piece of it in a necklace for them to wear. Students will also get a chance to see where their DNA has come from by staining their cheek cells and view them under the microscope. This workshop is a great introduction to DNA, genes and inheritance.

"I am more interested now in science, because today I found this very interesting!" – Year 6 student, Extracting DNA workshop

Pollution Solution

KS3 KS4

Students will investigate why fish in a local river are dying by analysing water nitrate levels, microbe-content and pH. This session focuses on how science works, with students making and testing predictions. Students will get a chance to use equipment usually found at university level, including micro-pipettes and colorimeters. In the session students learn new techniques, enjoy independent investigation and use data interpretation to draw their own conclusions.

"I loved this visit!" – Year 8 student, Pollution Solution workshop

Forensic Investigation

KS3 KS4

During this workshop students get to experience what it would be like to work in a forensics lab investigating a fictional murder. They will evaluate the crime scene and suspect DNA samples using fibre analysis and modern molecular biological techniques including restriction digests and gel electrophoresis. This workshop is a great introduction to genetics and forensic analysis.

"It was really fun investigating a crime and coming to an overall conclusion." – Year 10 student, Forensic Investigation workshop

3D Future

KS3 KS4

In this session each student will design and print out their own 3D model. We will take students through how to use the free CAD software, SketchUp, to design their models, which will then be printed out on the YSC's suite of 3D printers during the session. Whilst the models are being printed, students will be set engineering challenges, with prizes to be won.

"Let us come again and do other stuff like [this]!" – Year 8 student, 3D Future workshop

Life on Mars

KS3 KS4

In this workshop students will learn to program LEGO Mindstorm robotic rovers and they will plan and execute a route across our model of the Mars surface. The students use teamwork, maths and programming to successfully navigate and 'drill' Mars. In the second half of the workshop the students will analyse the samples they have collected from Mars for signs of life. This workshop has strong links with current research and space missions.

"I would like to study science and space now because I found the workshop really interesting. I would definitely recommend it to other students." – Year 9 student, Life on Mars workshop

Colour Chemistry

KS4 KS5

Max group size: 20

In this workshop students will discover what a colour actually is, understand how objects become coloured, and how chemists can manipulate these aspects to produce both natural and synthetic dyes. The students then discover how chemical bonding can lead to colour, and they produce both a natural and synthetic dye. The final part of the workshop pitches the students against a 'real-life' analytical chemistry scenario during which they will devise their own experiment using aspects of pH and colourimetry to solve a colourful problem.

"Workshop overall was amazing, interactive and very engaging." – Year 12 student, Colour Chemistry workshop

A Question of Taste

KS5

Duration: 6 hours

Max group size: 20

Price: £200

In this genetics workshop, students will extract and test their own DNA using modern molecular biological techniques to compare their phenotype with their genotype. The workshop demonstrates evolution and genetic diversity by analysing the students' ability to taste phenylthiocarbamide (PTC), a chemical found in vegetables such as sprouts and broccoli. The students will perform a polymerase chain reaction (PCR), restriction digests and gel electrophoresis in the analysis of their DNA.

"I would like to thank University of Central Lancashire staff for making it fascinating and enjoyable and would recommend it to anyone." – Year 12 student, Question of Taste workshop

TEACHER COMMENTS

SECONDARY KS3:

"This was a fantastic session. I've run many trips and this was probably the best. The students have engaged and the activities linked to the current research. The activities stretched them and the numeracy was really good. The presenters were excellent."

"We've had a super day. We brought pupils to inspire them and we observed several 'light bulb' moments throughout the session. Your staff were excellent. We have had a very enjoyable day. Thank you, we will be back."

SECONDARY KS4:

"A brilliantly planned, engaging workshop – Very good pace and variation of activities."

"The session was excellent, from the initial contact [to] the practical part of the event, [it] was very well organised and all the students were totally engaged with the set activities, WONDERFUL."

PRIMARY KS2:

"Thank you for a wonderful day. The children have learnt lots and thoroughly enjoyed themselves."

"Welcoming and friendly staff quickly set the children at their ease. The children are already asking when they can come back. Thank you for a fab day."



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