



**WYCHWOOD**

SCHOOL • OXFORD

**STEAM: 'Cracking the Code'**



# STEAM: 'Cracking the Code'

**Dates:** 22<sup>nd</sup> - 26<sup>th</sup> July 2024

**Age:** 13-15 years

**Programme size:** 24 (split into two groups)

**Package fee:** £300

## Package includes:

- Hands-on workshops: learn through interactive lessons
- Expert tuition
- All course materials
- Lunch and snacks

## What you can expect:

- **Gain hands on practical experience in the lab** with interactive lessons with Oxford University qualified tutors.
- **Small class sizes** for individual attention.
- **Make lasting friendships** with students from all over the world, creating memories that will last a lifetime.



## Programme Overview

Learn to think like an **Oxford Scientist!**

This programme will enable you to think differently. You will move beyond the school curriculum using science and mathematical skills in creative ways to solve problems. By learning new skills in **science, technology, engineering, art** and **mathematics** you will be able to work in a team to **crack codes**. You will learn from expert teachers whilst collaborating with other students on the course.

Each day during the week is broadly split into three sections – one **laboratory** based practical session where you will develop your laboratory skills, one **mathematical** session where you will explore the theme mathematically, and one **creative** session where you will produce artwork inspired by the key scientific and mathematical ideas you have encountered.

### About the course:

- **Discover the world of cryptography** and explore ciphers and codes.
- **Understand how to use a range of analytical techniques** to discover the identity of unknowns.
- **Solve a mystery** through teamwork.
- **Learn how to create a stenographic image** (an image that conceals a hidden message or picture).

### Programme Tutors: Abigail Stacey and Andrew Stacey

Abigail is the Academic Deputy Head at Wychwood School, Oxford and has worked for many years teaching science both in the UK and overseas in Norway and the US. She has an honours degree in Chemistry from the University of Oxford and a Master's Degree in Education from Oxford Brookes University where her thesis explored academic buoyancy and students' ability to persist with their learning when things get difficult.

Andrew is the Head of Mathematics at Oxford High School. He has a Master of Mathematics degree from the University of Oxford and a Ph.D. from the University of Warwick. As a teacher, his goal is to enable his students to understand the richness of mathematics, and to experience its depth and beauty for themselves.



## Sample Timetable

	Monday	Tuesday	Wednesday	Thursday	Friday
<b>9:00am-10:30 am</b>	Science 1: Test Tube Analysis	Maths 2: Cracking Ciphers	Science 3: Density and Resistance	Maths 4: Enigma - building and testing enigma machines	Maths 5: Can you solve the mystery?
<b>Break</b>	Breaktime	Break time	Break time	Break time	Break time
<b>11:00am-12:30pm</b>	Maths 1: Constructing Ciphers and Sending Messages	Science 2: Titrations	Maths 3: Frequency Analysis - using this mathematical technique to crack substitution ciphers	Science 4: Chromatography - investigating the components in a mixture by experiment	Can you solve the mystery?
<b>Lunch</b>	Lunch	Lunch	Lunch	Lunch	Lunch
<b>1.30pm-3:30pm</b>	Art 1: Where's wally? - creating a piece of artwork with a series of hidden figures	Art 2: Magic Eye - creating a piece of magic eye art	Art 3: Create a Stenographic Image	Art 4: Nanograms - reconstruction of a piece of artwork from partial information and logic	Conclusions from the evidence room



## Wanting to do more?

Like all our programmes, our STEAM 'cracking the code' programme can be combined with other programmes to make a 2, 3 or 4 week programme.

If you are interested in further developing your skills in science, we would recommend combining with the **Introduction or Practical Science** programme or **STEAM: 'Symmetry'** programme.

It is also possible to combine with our **Rugby** or **World of Football** programme if something more sporting takes your fancy.

Please see our Programmes page for more information.





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[info@wychwoodinspires.org](mailto:info@wychwoodinspires.org)

[wychwoodschoo.org](http://wychwoodschoo.org)

Phone: 01865 557 976