

## **Session Outlines**

### **1A – Electric circuits – Alan Baugh (TLC)**

We'll develop a sound model for basic circuits that help teachers and students develop an understanding and appreciation of the underlying principles and processes of electric circuits. This will help teachers teach and technicians support this vital topic.

Teachers and technicians

### **1B – RAF100 IOP/HA STEM activities programme – Taj Bhutta (IOP)**

The IOP has produced a series of practical activities, for use primarily in STEM clubs, to support the commemoration of the 100<sup>th</sup> anniversary of the formation of the RAF, in collaboration with the Historical Society. Dr Bhutta will introduce the comprehensive package of materials, activities and events. You will have the chance to try out some of the practical activities and learn how to fly! (KS3/4)

Teachers and technicians

### **1C – Magnetism and Electromagnetism – Niloufar Wijetunge (TLC)**

After a brief revision of basic magnetism we'll look at Electromagnets, the catapult field and motor effect, Electromagnetic induction and generators, Transformers, the use of Fleming's Rules. All will be based on experiments you can do in the classroom.

Teachers (Technicians welcome)

### **1D – Radioactivity: Getting a feel for Radioactivity – Gerard Hallows (TLC)**

Is radioactivity dangerous? What do we need to be careful of, and how can we avoid communicating half-truths? How is radioactivity detected, and what practical activities can we offer students to enhance our teaching? This workshop will put the risks in context and let you try out practical activities.

Teachers and technicians

## 2A – **Waves and the Electromagnetic Spectrum** – Elizabeth Hutchins (TLC)

We will be looking at the general properties of waves and how different types of waves are used. The emphasis will be on practical activities and demonstrations. Teachers and technicians welcome. (KS3/4)

## 2B – **Core Physics Practicals at GCSE (Part 1)** – Sharron MacKenzie (TLC)

An opportunity to have a hands-on experience of most of the core practicals required for GCSE. To provide sufficient time to cover the topic *this session will continue after lunch in 3B*

## 2C – **'A' Level Practicals (Part 1)** – Steve Long (TLC)

These sessions, *2C and 3C*, will give the opportunity to practise some of the most common practical activities required at this level. ***This session continues after lunch*** to give you more time to become familiar with the apparatus and discuss the best ways to use it.

## 2D – **Whole School Equality** – Eleanor Wylie (TLC)

Enabling all of our students to realise their full potential is the aim of all good teachers. The SPN now provides dedicated staff, materials and activities to help engage all students engage with science. Our Gender Balance Officers also work intensively with schools across their whole curriculum to remove barriers to uptake and success. Some of these materials and the techniques for use in the classroom will be explained and demonstrated here today.

### 3A – **Fault Finding Electric Circuits** – Alan Baugh (TLC)

The bane of many science teachers' existence – 'Please Miss/Sir, my bulb isn't working!' – The most common problems, how to identify them and how to avoid (some of) them. (All KS!)

Teachers and technicians

### 3B – **Core Physics Practicals at GCSE (Part 2)** – Sharron MacKenzie (TLC)

### 3C - **'A' Level Practicals (Part 2)** – Steve Long (TLC)

### 3D – **Forces and Motion** – Alex Hasthorpe (SPC)

Pupils often believe that forces are required simply to 'keep things moving'. The alternative conceptions which pupils have surrounding forces and their relation to motion will be addressed and a possible teaching route through to a more useful (and correct) understanding of forces and motion will be developed.

This workshop is aimed at non-specialist teachers of physics and will demonstrate and allow them to gain experience of practical activities, using some simple apparatus, which support effective teaching & learning of this topic. (KS3/4)

Teachers and technicians

#### 4A – **Earth and Space: To Boldly Go...** – Gerard Hallows (TLC)

Space is an engaging topic. Many children are fascinated by it and eager to learn about it. It's also rife with misconceptions. This workshop will address some of those misconceptions and explore the many practical alternatives to project work that are possible in this topic.

#### 4B – **Ultra-sound Make and Take** – Niloufar Wijetunge (TLC)

You will make an ultrasound transmitter and receiver to take back to your school. This can be used mainly for a number of experiments and demos at KS4 and KS5, for example demonstrating absorption and reflection of waves and making an analogue of Young's double slits. (KS4/5)

#### 4C – **Engaging Physics** – Elizabeth Hutchins (TLC)

This session provides an opportunity to look at some ways to make physics more engaging using a selection of toys, demonstrations and the IOP Marvin and Milo Cartoons. (KS3/4)

#### 4D – **Isaac Physics** – Nicki Humphry-Baker

Isaac Physics aims to improve the problem solving skills of Physics GCSE and A-level students. In this session, you will see how you can use Isaac Physics materials in your teaching. You'll also learn how to set (FREE) online homework assignments for your students and see their marks before you get into the next lesson!

Time	Programme			
9.15 – 9.45	Registration and refreshments			
9.45 – 9.55	Welcome. Brief introduction to SPN, the school and today's programme			
10.00 – 11.10 Workshop 1	1A – Electric Circuits (KS3/4) Alan Baugh	1B – RAF100 (KS3/KS4) Taj Bhutta	1C – Magnetism and Electromagnetism. (KS3/4) Niloufar Wijetunge	1D – Radioactivity (KS4/5) Gerard Hallows
11.15 – 12.25 Workshop 2	2A – Waves and the Electromagnetic Spectrum (KS3/4) Liz Hutchins	2B – GCSE Core Practicals (KS4) Sharron MacKenzie	2C – A Level Practicals (KS5) Steve Long	2D - - Whole school Equality (All KS) Eleanor Wylie
12.25 – 13.25	Lunch			
13.35 – 14.45 Workshop 3	3A – Fault-Finding Electric Circuits. (KS3/4) Alan Baugh	3B – GCSE Core Practicals - <u>Continued from 2B.</u> Sharron MacKenzie	3C-A Level Practicals – <u>Continued from 2C.</u> Steve Long	3D – Forces (KS3/4) Alex Hasthorpe (SPC)
14.45 – 15.55 Workshop 4	4A – Earth and Space (KS3) Gerard Hallows	4B – Ultra-sound (Make and Take) (KS3/4) Niloufar Wijetunge	4C - Engaging Physics (KS3/4) Liz Hutchins	4D - Isaac Physics – <i>Now supports GCSE as well as A-Level Physics.</i> Nicki Humphry-Baker
16.00 – 16.15	Evaluations and farewells			

