

North West Summer CPD

Thursday 16 July to Saturday 18 July 2020
Online



Join the North West Team for three days of CPD for all physics teachers, trainees and technicians. There will be sessions on sound with a key note from Trevor Cox (Salford Acoustics) and an evening of storytelling with Richard Brock (of the 'Stories of Physics' booklets fame!). The last day of the event is 'Sustainability Saturday' focusing on the role of physics in building a more sustainable future.

Programme

Thursday 16 July

9.30am – 10.30am	Pressure in fluids
11am – 12pm	Lego particle physics
12.30pm – 1.30pm	Geogebra
2.30pm – 3.30pm	Poundland physics
4pm – 5pm	Fun with images – help with ray diagrams
6pm start	Evening discussion – 20 years of IOP resources

Friday 17 July

9.30am – 10.30am	Keynote – Now you're talking
11am – 12pm	Curriculum, course and career – Science Capital in action
12.30pm – 1.30pm	Visualising sound
2.30pm – 3.30pm	Physics diversity workshop
4pm – 5pm	Tales from Talk Physics
6pm start	Evening discussion – An evening of physics stories by the fireside

Saturday 18 July

11am – 12pm	Sustainability and energy
2.30pm – 3.30pm	Sustainability in the physics classroom
6pm start	Evening discussion – Tones, tines and tings, extended version

Choosing your workshops - Please read about the workshops below before booking online.

How to Register

Book your place at: <https://www.talkphysics.org/events/north-west-summer-cpd/>

If you have any problems booking or questions about the day, email: education-northwest@iop.org

Overview	
Thursday 16 July	
Pressure in fluids	In this workshop we will explore demonstrations and experiments students could do at home to learn about pressure in fluids. As part of the webinar you will be building your own Pythagoras' cup and you will be able to explain how it works to your students. This and other useful teaching tools and ideas will help your students
KS4 – KS5	
Alessio Bernardelli	

	<p>understand this fascinating topic in an engaging and hands-on way.</p> <p>Please prepare the following equipment before the event:</p> <ul style="list-style-type: none"> – Empty plastic bottle (or a paper or plastic cup) – Plasticine or blue-tack – Straw (ideally bendy – if bendy is not available you can use a small test tube and a straight straw) – Jug of water – Glass or bowl – Scissors
<p>Lego particle physics</p> <p>KS4 – KS5</p> <p>Lewis Matheson</p>	<p>In this workshop there will be an opportunity to explore the ideas of nuclear and particle physics using Lego brick, including a Lego nuclear valley. This workshop will show you videos ready to share with your students. The workshop is suitable for all key stages, although the examples used will be predominantly from the GCSE and A level syllabus.</p>
<p>Geogebra</p> <p>KS4 – KS5</p> <p>Joe Rowing</p>	<p>It is very common to see physics simulations in the classroom, but for those with no real programming background the thought of making customised simulations or doing so as a learning activity seems way out of reach. However it is possible with the right software. This session introduces GeoGebra, an open source software offering ‘dynamic mathematics for teaching and learning’. GeoGebra is freely available for non-commercial users, it is powerful, easy to learn, and versatile. You will learn how to model simple physics concepts in a way that can be used as a classroom activity and as a means to producing teaching resources.</p>
<p>Poundland physics</p> <p>All key stages</p> <p>Kerry Colyer</p>	<p>What do we want, physics demos, and how do we want them, cheap! This session will show a selection of cheap demonstration. Demonstration so cheap that any HoD will fill out the order sheet. With links to examples from Marvin & Milo and other resources.</p>
<p>Fun with images – help with ray diagrams</p> <p>KS3 – KS4</p> <p>David Farley</p>	<p>This session will suit anyone teaching about real and virtual images produced by mirrors and lenses across ages 11-16. There will be demonstrations of simple and fun ideas to use in the lab as well as practical guidance to help teach ray diagrams.</p>
<p>Evening discussion – 20 years of IOP resources</p> <p>All key stages</p> <p>IOP Coaches</p>	<p>This session will show a wealth of Institute of Physics resources that teachers have been using over the years. Hear how IOP coaches have incorporated these resources in teacher workshops. Many of the old resources are available on the new IOPSpark website. Come take a guided tour through the IOP archives.</p>
<p>Friday 17 July</p>	
<p>Keynote – Now you’re talking</p> <p>All key stages</p> <p>Trevor Cox, Salford Acoustics</p>	<p>Drawing on examples from opera to hip-hop, this talk investigates how physics, psychology and neuroscience can help explain diverse singing styles. Trevor Cox is Professor of Acoustic Engineering at the University of Salford where he teaches and researches room acoustics and audio.</p>

Curriculum, course and career – Science Capital in action All key stages IOP Coaches	Career pathways and university courses are an important motivation tool for students. Students see the value of studying a hard subject like physics when they know the opportunities it can provide. Learn how and when to discuss potential degree courses and career ideas with your students.
Visualising sound All key stages Phil Furneaux	Phil Furneaux & Sax - A fast Furneaux transform of a workshop “A journey into visualising music” Phil will explore the harmonics of the Rubens’ tube and ideas on calculations to enhance the teaching of waves. The session will then develop other ideas and equipment to visualise the frequencies of sound, including the timbre of student’s musical instruments. The session will finish with Lancaster Physics Department’s light cube and how it produces a 3D visualisation of the sound produced by different musical instruments.
Physics diversity workshop All key stages Sasa Harper and Deirdre Rodgers	This session will support inclusion and diversity in the classroom. Engaging students at all key stages is important to make sure that the diversity of physics proliferates. How can we increase the uptake of A level physics by girls, leading to a greater representation of girls in physics and engineering roles?
Tales from Talk Physics All key stages IOP Coaches	A collection of the best demonstrations and discussions from the IOP’s TalkPhysics platform: www.Talkphysics.org . This session will include a delve into the Classroom Physics archive, teaching tips and other gems. The demonstrations shown will be replicable in any physics lab.
Evening discussion – An evening of physics stories by the fireside All key stages Richard Brock	Dr Richard Brock has created a collection of amazing, amusing and enlightening ‘Stories in Physics booklets’ for teachers. These are available on the IOPSpark website. The stories will be of interest to any teacher and are ready to use with students to bring the discipline alive and illustrate its reliance on human ingenuity and frailty. Join Richard and friends discussing how these stories can engage students in lessons.
Saturday 18 July	
Sustainability and energy All key stages IOP Coaches	Energy in the physics classroom leads to discussions of power stations and renewable energy. Students of physics will be developing new technologies to create a low-carbon energy. This session will explore these ideas and make links to sustainability.
Sustainability in the physics classroom All key stages Melissa Lord, Ogden Trust	Join Melissa and friends for some great ideas to bring sustainability into the classroom. This is an issue many students are keen to understand and the session will include ideas for projects and experiments and much more.
Evening discussion – Tones, tines and tings, extended version	This session will be full of ideas and demonstrations that focus on aspects of sound waves in the curriculum and beyond, e.g. how to turn a tuning fork and a magnet into

All key stages Dave Cotton	a model guitar pick up! These ideas tell a story based on the development and usage of oscillation and vibration in music and communication. Includes many more ideas using lab equipment and some musical instruments. This presentation has been developed in memory of Anthony Waterhouse, supported by the Fellowship scheme offered annually through the Institute of Physics.
-------------------------------	--

How to Register

Book your place at: <https://www.talkphysics.org/events/north-west-summer-cpd/>

If you have any problems booking or questions about the day, email: education-northwest@iop.org

IOP Institute of Physics

www.iop.org