Continuing Professional Development (CPD) for Teachers of Physics

**Practical Work and Laboratory Techniques applicable to**

**Higher and Advanced Higher Physics, 30th May / 31st May 2019**

The Physics Department of the University of Aberdeen will host two professional development days for Teachers of Physics. The course will follow very similar lines to that of the previous two years. It is practically based and will provide an opportunity to try experiments suitable for AH investigations, AH course work and Higher Physics. It is hoped some new experiments and new kits can be introduced. More details about the course will follow in future mailings.

 The programme for both days will have the same format and an outline version is given below. A later version will contain more detail.

 If the event is heavily subscribed, it may be necessary to restructure either or both of the days but every attempt will be made to retain all the ingredients.

# Aims:-

* To provide ideas for AH investigations using a limited budget
* To introduce some alternative pupil experiments and teacher demonstrations
* To extend teachers’ practical knowledge and expertise
* To network with other teachers and course providers

# Programme: -

 0900 – 0915 Registration

 0915 – 1030 Laboratory practical work

 1030 – 1100 Coffee, discussion and display of kits

 1100 – 1250 Continued laboratory practical work

 1300 – 1345 Lunch and discussion (Networking)

 1345 – 1520 Continued laboratory practical work

1. Depart

**Demonstrations**

There are some new demonstrations this year. Demonstrations will be fitted in to the day’s programme at appropriate times.

**New Additions to Event**

**Mathematica & Ardunio’s**

*Presented By:* ***Prof Bjoern Schelter & Prof Marco Thiel [Personal Chairs, Physics] &***

 ***Prof Benjamin Martin [Personal Chair, Mathematical Science]***

Mathematica is a powerful tool to introduce computational thinking, data acquisition and analysis into the curriculum. It can be used as an enabling technology to make teaching more interactive and help pupils to explore new concepts in STEM subjects and beyond.

During the CPD event we will offer a short presentation to highlight the possibilities that Mathematica offers and have 5 experimental setups on show. We will show how to measure and analyse data measured with Arduinos – microcontrollers that sell at £6 or so. This can be used in different subjects such as physics, chemistry and mathematics, but also to support learning modern languages and in the humanities.

# Laboratory practical work

Prior to the 2018 event it was the practice to choose an in-depth experiment before the event. This year, one of each of the popular in-depth experiments will be available and can be tried in its entirety or in part during any of the laboratory sessions.

Short and mini experiments will be available in a similar manner to that of 2018. However there will be fewer mini-experiments to allow space and time for teachers to sample a programmable experimental aid which could be used to process data from a wide range of sensors.

### Fee:

### 1 Day:

### The course will cost £125.00 per person, this includes lunch and refreshments.

**2 Days:**

The course will cost £200.00 per person, this includes lunch and refreshments.

**Contact:** Further information is attached. Should you like further information relating to this programme of events, please contact CPD Services, Research and Innovation, University of Aberdeen, Room 28, University Office, King’s College, Aberdeen. Tel: 01224 272523. Fax: 01224 272319.

Email: cpdservices@abdn.ac.uk

## Please complete the registration form below on the next page.

##  REGISTRATION FORM

## Deadline for Registration - 24th May 2019

## Professional Development for Physics Teachers

##  Thursday 30th May 2019 & Friday 31st May 2019

## Title: First Name:



Surname:



Job Title: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_Organisation: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Address: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Country: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Postcode: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Telephone: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Fax: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Email address for correspondence: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Any special needs – e.g. dietary/mobility/sensory awareness?

**Please choose one of the following options which best describes you:**

*This information will enable us to help shape the course to suit your requirements.*

[ ]  I am a teacher of physics with a physics background

[ ]  I am a teacher of physics with a different science background

**Please choose which day(s) you wish to attend:**

[ ]  Thursday 30th May 2019

[ ]  Friday 31st May 2019

### Fee:

### 1 Day:

### The course will cost £125.00 per person, this includes lunch and refreshments.

2 Days:

The course will cost £200.00 per person, this includes lunch and refreshments

### Payment Details

Please invoice my organisation: [ ]

The purchase order number is: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

VAT no: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**Please complete and send the registration form to:**

**Email:** cpdservices@abdn.ac.uk

**Or fax** 01224 272319

**Or post:** CPD Services, Research and Innovation, Room 28 University Office, University of Aberdeen, King’s College, Aberdeen, AB24 3FX

**Joining Instructions** (including a map of the University campus) will be emailed out approximately 2 weeks prior to the event to the registered email address given above.

**Campus Parking** – please note that parking on-campus is on a first come first serve basis in designated areas only displaying a valid parking permit. Alternative means of transport is preferred however if you are to take your car, please contact us in advance for a parking permit and further details.

**Terms & Conditions -** By registering for this event you agree to the University of Aberdeen’s Terms and Conditions for Delegates.

**Terms and Conditions for Delegates**

The following conditions apply from the date we receive confirmation of a booking from you, for an “event” being hosted by the University of Aberdeen (hereinafter the “University” or “us” or “we”). In these conditions you are the person, firm or company making the booking (hereinafter the “Delegate” or “You”).

1. **Health & Safety**

Delegates will at all times abide by the conditions of the University’s health and safety regulations. Whilst attending an event at the University Delegates must comply with reasonable instructions given by the event organisers or other University staff.

1. **Data Protection**

Information provided by Delegates is confidential and will be held by the University in accordance with the Data Protection Act 2018; it will be used for course administration purposes. The University may send you details of similar courses which we feel may be of interest to you or your colleagues, if you would like to receive this additional information please sign here: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

1. **Payment**

The University will issue an invoice on registration of the Delegate. Such invoice shall be paid within thirty (30) days of receipt. Payment can be made by cash, cheque, banker’s draft or a credit card the University accepts. Cheques should be made payable to The University of Aberdeen as specified on the invoice. VAT, where applicable, shall be chargeable at the prevailing rate.

The University reserves the right to charge interest at the rate of 2.5% for each month or part thereof that the invoice remains outstanding. The terms and conditions of the University’s credit policy shall apply.

1. **Cancellations**

In the event of cancellation a refund of the registration fee, less an administrative charge will be made, provided that notice is received in writing no less than 30 days before the event. It is regretted that cancellations received after this time will be liable for the full Delegate fee. Substitute delegates may be made at any time however an administration charge may apply. If the University cancels the event, you will receive a full refund.

1. **Delegates Responsibilities**

5.1 You shall act in a proper and orderly manner, leave promptly at the appropriate time and comply with all reasonable requests the University staff or the venue’s staff may make of You while at the event. If you do not comply with this condition, you will pay the University compensation for any loss that this causes the University, including any legal fees reasonably incurred.

5.2 You promise us you shall not bring any food or drink into the premises where the event is held (“Premises”) or consume at the Premises any prize won during the event (unless we specifically allow you, in writing, to do so and we will have no liability whatever in respect of the consumption at the event of any food or drink which we or the venue have not supplied.

5.3 Any property that you bring onto the Premises is brought entirely at your risk and we will not assume custody of any such items. Subject to the Hotels Proprietors Act 1956, the owners of the Premises will not accept any liability for damage or loss to items of property that are left unattended or overnight within the Premises.

1. **Force Majeure**

The University shall not be liable for performing its obligations under this Contract by circumstances beyond its reasonable control. Such performance shall be suspended, and where the obligations of the University cannot be completed within a reasonable time the event will be cancelled with the repayment of Delegate fees for any uncompleted element of the event program. The University will not be liable for any costs associated with such cancellation other than the fee paid by the Delegate hereunder

1. **Accuracy of Information**

Whilst the University shall endeavour to ensure the accuracy and relevance of any information or materials provided to Delegates as part of any event, the University shall not be liable for and the Delegate shall be entirely responsible for the use to which it puts such information or materials. No representation or warranty of any kind is made or given by the University as to the suitability of any information or materials for use for any particular purpose.

1. **Liability and Indemnity**

The University will not accept responsibility for death, injury, disease, theft or damage to property unless the University or its employees are found to be at fault.

**9. Law**

This Contract shall be governed and construed in accordance with the Law of Scotland. All disputes arising hereunder shall be subject to the exclusive jurisdiction of the Scottish Courts

The University of Aberdeen is a charity registered in Scotland, No: SC013683