****

**TSST COURSE AUDIT FORM**

**This form is designed to allow community based panels of teachers to evaluate each other's course, facilitated by the Institute of Physics.**

**Courses which meet the required standard will be deemed to have received IOP-enabled community approval.**

**Evaluators will be primarily looking at consistency between course objectives/outcomes and mode of delivery. The audit form is designed to test the coherence of the course as described. Individual courses may vary in length and it is for individual participants to decide which advertised length suits their needs best.**

**However, based on community feedback, it was felt that it would be helpful to provide some guidance as to specific aspects. Most specific recommendations are given in the Notes columns. In addition it was felt that a TSST course securing IOP approval would normally be expected to take 30-50 hours to complete, excluding unmonitored independent learning time. Please note that a course submitted for auditing will not be penalised if it does not meet a stated guideline. However, the approval panel will expect to see some justification.**

**Institute of Physics will publish details of all community approved courses on the IOP website.**

|  |  |
| --- | --- |
| **Name of lead school** | GORSE SCITT |
| **Lead contact** | Dan Hannard [dan.hannard@morley.leeds.sch.uk](mailto:dan.hannard@morley.leeds.sch.uk) |
| **Date submitted** | September 2018 |

|  |  |
| --- | --- |
| **Course summary** | **Notes** |
| The course is intended to give the skills and guidance needed for qualified teachers to be able to teach students well up to GCSE Physics level, and beyond. We aim to enhance the physics subject knowledge of established science teachers who are new to teaching physics, NQTs without a Physics specialism, and returning teachers of physics. The initial cohort for the course would be non-specialists across our Trust, primarily NQTs/RQTS. The impact would be to have staff who are more confident and skilful at teaching Physics, with an improvement to pupil outcomes.  The course set-up consists of direct instruction and hands-on experience of Physics content and practical work, supported by experienced Physics teachers. There is also independent learning for the TSST applicants, including guided further reading and problem solving practice.  Overall, we hope that the course enables our participants to deliver effective, enjoyable and memorable Physics lessons for all of their pupils. | Short description of the course (e.g. objectives and expected outcomes) |

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| |  |  |  |  |  |  |  | | --- | --- | --- | --- | --- | --- | --- | |  | **Subject area (indicate number of hours)** | | | | | | | **Mode of delivery** | Energy | Motion & Forces | Waves | Electricity & electromagnetism | Matter & Space | Other, if any, specified below: | | Face to Face (Presentations, lectures, guided group tutorial work with tutor present) | 2 | 2 | 2 | 4 | 2 | Radioactivity 2 | | Practical (Hands on use of apparatus working individually or small groups. Observation of demonstrations is not deemed to be practical work) | 1 | 1 | 1 | 2 | 1 | Required Practicals 2 | | Coaching/ Mentoring (One to one or small group sessions involving coaching, mentoring or allied techniques led by an experienced practitioner.) |  |  |  |  |  | 5 hrs KS3 Physics, 5 hrs KS4 Physics | | Monitored independent learning (e.g. online tutorial work) |  |  |  |  |  | 2 x 5hrs schools experience observing experienced teachers of physics.    At least 8 hours using Isaacphysics.org online, covering all of the listed areas. | | Other modes (please specify below) |  |  |  |  |  |  | | **Total hours** | 3 | 3 | 3 | 6 | 3 | OTHER = 32  TOTAL HOURS = 50 |  |  |  | | --- | --- | | **Please provide further *brief* detail on the following aspects of the course** | **Notes** | | **Practical Work** | Specify what nature is – e.g. embedded in related session/standalone/skills focussed, work in pairs/groups. Also include Health and Safety measures in place. | | Hands-on work in pairs/ small groups to be embedded within each subject-specific session. These will include key practicals for use at KS3 and KS4, as well as hints and tips for novel teaching approaches to enliven the teaching of each topic area.  There will also be a stand-alone session on the Required Practicals for GCSE, which will include alternative approaches. This is important as not all centres have access to the same equipment/ apparatus, so we aim to make these skills transferable.  Health and Safety considerations and assessment of risk will be included within each session. These sessions will be further supported with links to online resources such as the videos from the STEM learning centre and the Practical Physics website. | | **Subject knowledge** | Please give more details on methodology of subject knowledge (e.g. lecture, practice questions, peer tutorial, diagnostic testing) | | Methodology will be by direct instruction from experienced physics teachers. This will also include small-group discussion, hands-on experience of key practical techniques and approaches.  This will take place as regular Twilight CPD sessions, initially (but not limited to) held at the Lead School. Each session will focus on a particular aspect of the subject, as listed below. We will also offer the applicants the opportunity to attend further CPD targeted at teaching Physics to both KS3, KS4 and KS5 which will follow a similar format. We will employ diagnostic questioning in various formats, including carefully structured multi-choice questioning and ranking exercises. Each session will be supported with a Topic Handbook containing Overarching Principles, Key Knowledge quizzes, links to specifications and examples of exam-style questions. Key resources used will also be shared with participants.  Further support will be available using online resources such as the IoP SPT resources. An isaacphysics group will be set up and monitored for each cohort, enabling key problems to be set and the progress of the group monitored. Online tutorial support will be available, for email discussion of problems and solutions. | | **Pedagogical Content Knowledge** | Give further details on methodology used (e.g. pupils, misconceptions/naïve conceptions) | | Alongside the specific topics listed below, the course will have several key threads running throughout the sessions:  How to support pupils to develop their personal “schema” for physics, in order to link discrete facts;  Modelling of the problem-solving process;  Identifying and tackling common misconceptions.  Workshop sessions include:    Radioactivity: Making the abstract concrete through practical models; models of the atom and their development; safe demonstration of sources; Why two half-lives don’t make a whole.   Circuits: Getting the right words in the right order- the importance of definitions; Modelling PD and current, with explicit evaluation of models; confidence with Practicals.   Forces:  translating Newton’s Laws for the classroom; balanced and unbalanced forces and their effects; tackling “common sense” misconceptions; structuring your language for understanding.   Motion:  The importance of “changes”; linking motion explicitly to forces; step-by-step teaching the process rather than the answer; Stretch & challenge - making links with Maths.   Waves: Solid foundations, the differences between longitudinal and transfers and why this matters; opening our eyes to the invisible EM spectrum; exploring sounds.   Energy: Why “stores and pathways” is more than just different labels; the importance of start and end points; accountancy and problem solving; conservation and making links.   Particle model: Why heat and temperature aren’t the same thing; Kinetic Theory isn’t as complex as it sounds; being Specific about Heat Capacity.   Practicals: Why we should say “Required techniques” rather than “required Practicals”; set up, logistics and Physics emphasis.  A-level content will be offered as an optional extra, through our colleagues at Elliott Hudson College.  Each session will be supported with a Topic Handbook containing Overarching Principles, Key Knowledge quizzes, links to specifications and examples of exam-style questions. Key resources used will also be shared with participants. | | **Research Informed Practice** | How do you propose to embed the results of research informed best practice (e.g. access to research articles) | | Regular links to relevant SPT resources following each session.  Each school should already receive PhysEd, proposal to change mailing address so it is delivered straight to applicant within department if possible.  Set up of mailing list and use of social media to disseminate research-based ideas and best practice.  The GORSE Teaching School already has close links with the University of Sunderland, for sharing evidence-based practice. | | **Handling of Mathematical Requirements** | e.g. handling of graphical techniques, proportionality, errors | | This will be embedded within each subject area. Topics to be explicitly covered include the modelling of solutions for:  Calculation of half-life, forces and motion, efficiency and changes to energy stores;  Proportionality;  Percentage changes;  Plotting and interpreting graphs;  Uncertainties, ranges and means;  Basic differential calculus to enhance understanding of rates of change.  There will be opportunity to practice the mathematical requirements through the problems set through isaacphysics.org.  We will also have a partnership with TSST Maths within the Lead School so that a common approach to mathematical techniques can be developed. | | **Participant Assessment Arrangements** | Use of various modes e.g. lesson observation, portfolio, diagnostic testing, etc. | | Rigorous lesson observation by programme leads, along with input from Host Teachers during classroom experience phase. Online Subject Knowledge Audit to be undertaken at the start and end of the course, paired with a self-reflective journal. Use of diagnostic questioning during subject sessions to assess participants’ understanding of the content covered.  Participants will be expected to present to their trainers and peers at the celebration event at the end of the course, reflecting on what they have gained from the process. | | **Quality Assurance Mechanisms** | Mention use of any form of quality assurance – use of validated material, external validation or accreditation. Please include qualifications of staff. | | IoP Community would provide external accreditation for the course. As part of the GORSE Teaching School, we have shared systems with GORSE SCITT (Outstanding Provider). This support enables the TSST to share in the same rigorous approach to QA that is followed by the SCITT, in terms of QA of course materials, standards of CPD delivery and ongoing support for participants.  TSST Lead Professional is Dan Hannard, experienced Teacher of Physics, and Deputy Director of Science and Yorkshire region IoP Network Coordinator. | | **Individualisation for Participants** | Mention any separate routes possible, and how those routes are decided. | | An initial pre-course audit will establish the needs of each individual participant. As such, it will be possible to offer different routes for returning teachers compared to NQTs, as sessions can be tailored to participants’ needs. Some CPD may be delivered within teacher’s own departments if this is most appropriate, by experienced colleagues, to support centrally-delivered CPD. | | **Course Evaluation Mechanism** | Mention evaluation by participants, or external body, if you intend to publish survey results etc. | | All participants will complete evaluation forms for each session. This would cover feedback on appropriateness of content, clarity of delivery, quality of learning environment, quality of course materials, ongoing support offered. There will be opportunity to feedback at the celebration event at the end of the course. | | **Lifelong Learning of Participants** | The TSST courses are inevitably of limited duration. Explain how participants are enabled to acquire the skills for autonomous learning beyond the course itself. | | Ongoing support from TSST Mentors available, both face-to-face with regular CPD offered to all participants, and online through email. As TSST Lead is also local IoP Network coordinator, participants will be offered access to regular IoP Network events, eg Twilight CPD, Leeds Day for Physics Teachers.  Registration with talkphysics.org will be strongly recommended. Resources from the sessions will be shared with the participants, and they will be encouraged to share resources between themselves as they develop further through the course.  Participants to be set guided gap tasks to improve impact in the classroom between each session. Guided further reading will be provided, followed-up by discussion. | |  |  |  |  |  |  |  |  |