

**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.**

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| **Name of lead school** | Arthur Mellows Village College |
| **Lead contact** | Roger Watson |
| **Date submitted** | September 2018 |

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| **Course summary** | **Notes** |
| Course objectivesTo improve the subject knowledge and pedagogy for teaching physics up to GCSE in teachers with other specialisms.To improve practice and confidence in the teaching of physics topics.To improve the learning of physics topics for students and enhance the learning experience.To improve progress in physics and access to higher levels of physics education for students.OutlineThe course will run across 7, 4-hour face to face sessions focusing on the 7 main areas of the physics curriculum at KS3 and KS4; with interim reading, practice and assessment tasks to support learning.The sessions will be based on reviewing and updating participants’ physics knowledge with specific application to teaching in the classroom, e.g. highlighting common misconceptions, tools and tricks for advancing students’ understanding and the use of practicals to enhance learning. Participants will take part in practical activities to enhance their understanding, develop an understanding of how students experience practical sessions and learn how to troubleshoot effectively during practical lessons.Students will be expected to use differentiated materials provided between sessions to build up skills and to complete a reflective journal tracking their own progress and setting personal learning targets. IOP diagnostic tests will be used pre and post session for evaluation of progress.During each session there will be the opportunity for small group work to discuss and share experiences in the classroom and to plan for implementation of skills and knowledge gained during the sessions. | Short description of the course (e.g. objectives and expected outcomes) |

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|   | **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) | 1 hour(Will also tie in to other areas)  | 90mins  | 90mins  | 90mins  | 90mins matter1 hour space | Fields (will tie into Electricity and magnetism) 90 mins   |
| Practical (Hands on use of apparatus working individually or small groups. Observation of demonstrations is not deemed to be practical work) | 1 hour  | 90 mins | 90 mins | 90 mins | 90 mins matter, 1 hour space  |  90 mins  |
| Coaching/ Mentoring (One to one or small group sessions involving coaching, mentoring or allied techniques led by an experienced practitioner.) | Up to 4 hours per participant, spread across whole course.      |
| Monitored independent learning (e.g. online tutorial work) |   |   |   |   |   |    |
| Other modes (please specify below) | Small group work30 mins Self assessed and tutor marked assignments1 hour |  Small group work60 mins Self assessed and tutor marked assignments2 hours | Small group work60 mins  Self assessed and tutor marked assignments2 hours | Small group work60 mins  Self assessed and tutor marked assignments3 hours | Small group work120 mins  Self assessed and tutor marked assignments2 hours |  Small group work60 mins  Self assessed and tutor marked assignments2 hours |
| **Total hours** | 7.5 | 6 | 6 | 7 | 9 | 6 |

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| **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.  |
| Practical work is embedded in each taught session. This will concentrate on GCSE required practicals and on experiments to aid understanding, e.g. rope modelling for electricity, skittles and foam models for modelling radioactive decay, and setting up and getting the most from complex set ups e.g. CRO experiments and data loggers.A key emphasis on the practical work is safety related to using such apparatus with students in the classroom. The teachers will be encouraged to work independently and imagine themselves as their students in terms of what excites and where the challenges lie with a specific practical. They work in pairs and small groups to think through the work and share their skills to gain confidence. |
| **Subject knowledge** | Please give more details on methodology of subject knowledge (e.g. lecture, practice questions, peer tutorial, diagnostic testing) |
| Subject knowledge is developed through pre and post session reading, including use of selected readings from IOP SPT materials and references to Physics for You. Face to face sessions develop subject knowledge and understanding through discussion, practical work, AfL tasks before, during and after sessions. Subject knowledge development will be assessed by using pre and post session/course testing using IOP diagnostic testing materials. Handling of subject knowledge follows guidelines from IOP and from experience working with teachers as an IOP school based physics coach. |
| **Pedagogical Content Knowledge** | Give further details on methodology used (e.g. pupils, misconceptions/naïve conceptions) |
| Pedagogical content is based on the course tutor’s experiences as a teacher of physics at all levels for over 30 years and experience working with teachers as an IOP school based physics coach. Participants will be encouraged to use their own classroom experience to identify areas of misconception in students and diagnostic testing to identify their own misconceptions. All participants will complete a reflective journal, highlighting their classroom experiences and encouraging discussion points for face to face sessions.Discussion during sessions will be aimed at sharing experiences and applications to classroom practice. |
| **Research Informed Practice** | How do you propose to embed the results of research informed best practice (e.g. access to research articles)  |
| Specific websites and YouTube videos related to informed best practices are embedded into the learning materials and act as part of the workshop resources. All teachers will strongly encouraged to make use of lesson observations in their own establishments and reflected on in their journals. The use of IOP coaches will be encouraged. |
| **Handling of Mathematical Requirements** | e.g. handling of graphical techniques, proportionality, errors |
| Mathematical content will be covered during physics content sessions and applied in context, eg using a calculator will taught when we are solving momentum questions, rearranging equations during the forces sessions.The following mathematical techniques are covered at least once at some point: rearranging equations (basic and advanced), memorising equations, using a calculator, decimal places, significant figures, converting between dimensions (for example $m^{3}$ and $mm^{3}$), estimating errors, drawing graphs, interpreting graphs, proportional reasoning, standard form, exponentials and logarithms, trigonometry.Separate maths for physics practice will be available as required by individuals. |
| **Participant Assessment Arrangements** | Use of various modes e.g. lesson observation, portfolio, diagnostic testing, etc.  |
| Assessment will be based on the IOP diagnostic testing materials. Pre and post course tests will indicate progress for each session and across the whole course.Self and tutor assessed tasks will be set between face to face sessions, with individuals setting their own targets within their reflective journals.Each student will be offered the opportunity for up to two lesson observations and feedback by the course tutor in their own school. |
| **Quality Assurance Mechanisms** | Mention use of any form of quality assurance – use of validated material, external validation or accreditation. Please include qualifications of staff.  |
| The course tutor is a member of the IOP and works as a school based physics coach and tutor at summer school. Internal QA will be carried out by the Director of the Teaching School by observation and regular discussion on progress.External validation for community approval will be by the IOP. |
| **Individualisation for Participants** | Mention any separate routes possible, and how those routes are decided. |
| Participants will have pre and post session tests to evaluate their own learning and opportunities to reflect on their progress through their reflective journal. They will use this to decide the level of practice and reading between sessions to reach targets set by themselves, in discussion with the course tutor.Practice questions and tasks will be set at different levels, e.g. from Isaac Physics tasks, with participants choosing where to start and when they are ready to progress to the next level. |
| **Course Evaluation Mechanism** | Mention evaluation by participants, or external body, if you intend to publish survey results etc.  |
| Evaluation sheets will be completed by students after each session and at the end of the course. These will be collated and used to inform each session. Evaluations of sessions will form a part of the internal QA mechanism, shared with the Director of Teaching School. |
| **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.  |
| All participants will be encouraged to register as associate members of the IOP and to register at www.stem.org.uk to gain access to many free materials to support student learning. They will also be encouraged to access the Talk Physics forum where they can network with other physics teachers.Participating schools will be encouraged to become partner schools for Supporting Physics Network or Future Physics Learners through the IOP. |

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