

*Teacher Subject Specialism Training (TSST)  
Training Schedule (September 2016 – May 2017)*

Workshop Title	Content and curriculum reference	Date
1. Motion and forces (Edexcel Topic 2) – Part 1	<ul style="list-style-type: none"> <li>Scalars and vectors</li> <li>Distance time graphs</li> <li>Velocity time graphs</li> <li>Acceleration, g, in free fall is <math>10 \text{ m/s}^2</math></li> <li>Newton's 1<sup>st</sup> law of motion</li> <li>Newton's 2<sup>nd</sup> law of motion (<math>F=ma</math>)</li> <li><math>W = mg</math></li> <li>Falling objects</li> <li>Circular motion and centripetal force</li> <li>Newton's 3<sup>rd</sup> law of motion</li> </ul> <p><b>2.19: Core Practical (1): Investigate the relationship between force, mass and acceleration by varying the masses added to trolleys</b></p>	Thursday 15 <sup>th</sup> September 2016
2. Motion and forces (Edexcel Topic 2) – Part 2  <i>Including content from Energy – forces doing work (Edexcel Topic 8)</i>	<ul style="list-style-type: none"> <li>Momentum</li> <li>Conservation of momentum</li> <li>Stopping distances</li> <li>Work done</li> <li>Kinetic energy</li> <li>Dangers of large decelerations</li> <li>Car safety features</li> <li>Calculating stopping distances (<math>KE = \text{work done whilst braking}</math>)</li> </ul>	Thursday 29 <sup>th</sup> September 2016
3. Forces and matter (Edexcel Topic 15)	<ul style="list-style-type: none"> <li>Elastic and inelastic distortion</li> <li><math>F=k \times x</math></li> <li><math>E=1/2 \times k \times x^2</math></li> </ul> <p><b>15.6 Core Practical (8): Investigate the extension and work done when applying forces to a spring</b></p>	Wednesday 5 <sup>th</sup> October 2016
4. Radioactivity (Edexcel Topic 6)	<ul style="list-style-type: none"> <li>Structure of the atom</li> <li>Alpha, beta minus, positron, gamma and neutron emission</li> <li>Background radiation</li> <li>Penetration and ionisation</li> <li>Plum pudding, Rutherford scattering and Bohr model</li> <li>Nuclear equations</li> <li>Half-life</li> </ul>	Thursday 13 <sup>th</sup> October 2016
5. Electricity and circuits (Edexcel Topic 10)	<ul style="list-style-type: none"> <li>Series and parallel circuits</li> <li>Voltage, current and resistance</li> <li>Ohm's law</li> <li>Resistors in series and parallel</li> <li>VI graphs (filament lamp, diode and fixed resistor)</li> </ul> <p><b>10.17 Core Practical (5): Construct electrical circuits to:</b>  <i>a) investigate the relationship between potential difference, current and resistance for a resistor and a filament lamp</i>  <i>b) test series and parallel circuits using resistors and filament lamps</i></p>	Wednesday 2 <sup>nd</sup> November 2016
6. Magnetism and the motor effect (Edexcel Topic 12)	<ul style="list-style-type: none"> <li>Magnetic fields</li> <li>Magnetic field created by a current in a long straight conductor</li> <li>Magnetic field around a solenoid</li> </ul>	Wednesday 7 <sup>th</sup> December 2016

<p>&amp; Electromagnetic induction (Edexcel Topic 13)</p>	<ul style="list-style-type: none"> <li>• A current carrying conductor placed near a magnet experiences a force</li> <li>• Fleming's left hand rule</li> <li>• <math>F = B \times I \times l</math></li> <li>• Force on a conductor in a magnetic field causes rotation in electric motors</li> <li>• Electromagnetic induction</li> <li>• How electromagnetic induction is used in alternators to generate a.c. and in dynamos to generate d.c.</li> <li>• Microphone and loudspeaker</li> <li>• Transformers</li> <li>• Transformer equations</li> </ul>	
<p>7. Light and the electromagnetic spectrum (Edexcel Topic 5) – Part 1</p>	<ul style="list-style-type: none"> <li>• Law of reflection</li> <li>• Refraction</li> <li>• Total internal reflection (TIR) and critical angle</li> <li>• Specular and diffuse reflection</li> <li>• Power of a lens</li> <li>• Converging and diverging lenses</li> <li>• Real and virtual images</li> </ul> <p><b>5.9 Core Practical (3): Investigate refraction in rectangular glass blocks in terms of the interaction of electromagnetic waves with matter</b></p>	<p>Wednesday 11<sup>th</sup> January 2017</p>
<p>8. Light and the electromagnetic spectrum (Edexcel Topic 5) – Part 2 <i>Including content from Waves (Edexcel Topic 4)</i></p>	<ul style="list-style-type: none"> <li>• Frequency and wavelength</li> <li>• Sound waves</li> <li>• Transverse and longitudinal waves</li> <li>• Electromagnetic waves</li> <li>• Effects of differences in velocities of electromagnetic waves in different substances</li> <li>• Effect of temperature of a black body object on its wavelength distribution graph</li> <li>• Harmful effects of electromagnetic radiation</li> <li>• Uses of electromagnetic radiation</li> </ul> <p><b>5.19P Core Practical (4): Investigate how the nature of a surface affects the amount of thermal energy radiated or absorbed</b></p>	<p>Wednesday 25<sup>th</sup> January 2017</p>
<p>9. Particle model (Edexcel Topic 14)</p>	<ul style="list-style-type: none"> <li>• Kinetic theory model</li> <li>• Density</li> <li>• Specific heat capacity</li> <li>• Specific latent heat</li> </ul> <p><b>14.3 Core Practical (6): Investigate the densities of solid and liquids</b> <b>14.11 Core Practical (7): Investigate the properties of water by determining the specific heat capacity of water and obtaining a temperature-time graph for melting ice</b></p>	<p>Thursday 2<sup>nd</sup> March 2017</p>
<p>10. Astrophysics (Edexcel Topic 7)</p>	<ul style="list-style-type: none"> <li>• Mass and weight</li> <li>• Solar system</li> <li>• Circular orbits and gravity</li> <li>• Big bang theory</li> <li>• Life cycle of stars</li> </ul>	<p>Wednesday 15<sup>th</sup> March 2017</p>
<p>11. Review Session</p>	<ul style="list-style-type: none"> <li>• <b>Details to be confirmed</b></li> </ul>	<p><b>Wednesday 29<sup>th</sup> March 2017</b></p>
<p>12. Maths Workshop</p>	<ul style="list-style-type: none"> <li>• Maths requirements in physics lessons/sharing ideas for practical work</li> </ul>	<p><b>Wednesday 26<sup>th</sup> April 2017</b></p>