

Learning Programme A-level Physics A OCR 2018-2019

St Ambrose College Lower Sixth

Topic/Content	Objectives/Skills from gov.org	Homework	Assessment	Success Criteria OCR Physics A	Stretch & Challenge (Thirst for Learning)
<p>Progress will be according to the teaching group needs as teachers will use differentiated approaches to tailor delivery appropriately.</p> <p>Below is expected topic delivery timing.</p> <p><u>We are delivering content to enable boys to sit an exam covering modules 1-4 in their summer exam. This is comparable to the AS exams in Physics A.</u></p>	<p>A-level Physics must encourage students to:</p> <ul style="list-style-type: none"> • develop essential knowledge and understanding of different areas of the subject and how they relate to each other • develop and demonstrate a deep appreciation of the skills, knowledge and understanding of scientific methods • develop competence and confidence in a variety of practical, mathematical and problem solving skills • develop their interest in and enthusiasm for the subject, including developing an interest in further study and careers associated with the subject • understand how society makes decisions about scientific issues and how the sciences contribute to the success of the economy and society (HSW). 	<p>Pupils need to spend <u>at least one hour per week consolidating their class work for every hour they have a lesson in school.</u></p> <p>Pupils will also be set topic appropriate tasks and work either on past examination questions to be completed at home or as formal assessment within lessons.</p> <p>Some of these will be via the online Kerboodle.com</p>	<p>Tasks listed below will be teacher assessed with diagnostic feedback. These tasks are to be carried out under exam conditions in lessons where appropriate. All tasks are Exam Board questions or Exam Board practical skills assessments. If pupils are absent for these assessments, if time permits they will complete them upon their return ASAP before data reporting is completed.</p> <p>These will be used to form judgements / interim grades. Final grades will be based using these and the end of unit tests, and end of year examinations.</p>	<p><u>Grade A</u></p> <p><u>Knowledge and Understanding</u></p> <p>Candidates at this level could normally:</p> <ul style="list-style-type: none"> • recall a wide range of the content from all areas of the specification • use detailed knowledge and understanding to explain scientific systems and phenomena, and apply this to novel situations where these were presented to them • select and use appropriate scientific terminology in their descriptions and explanations • select, organise and present information in an ordered and logical manner • show an understanding of the wider implications of science, including its benefits and drawbacks. 	<p>Access to Kerboodle resources and online textbook.</p> <p>Resources on school shared area for boys to stretch and challenge themselves</p> <p>Free access (via registration) to senecalearning.com which uses intelligent algorithms and mind palace skills and is an excellent accelerated learning platform</p> <p>Physics and Engineering Society every week where boys choose topics to present to their peers, and prepare for Q & A sessions after their presentation</p> <p>Boys are encouraged to visit museums such as</p>

	<p>Assessment overview</p> <p>The entire A level course content is in six modules:</p> <ul style="list-style-type: none"> • Module 1 – Development of practical skills in physics (ongoing both years). • Module 2 – Foundations of physics (ongoing both years). • Module 3 – Forces and motion (lower 6th). • Module 4 – Electrons, waves and photons (lower 6th). • Module 5 – Newtonian world and astrophysics (upper 6th). • Module 6 – Particles and medical physics (upper 6th). • <i>Exam 01 assesses content from modules 1, 2, 3 and 5. (37%).</i> • <i>Exam 02 assesses content from modules 1, 2, 4 and 6. (37%).</i> • <i>Exam 03 assesses content from all modules (1 to 6). (26%).</i> <p>All include synoptic assessment.</p> <p>Students sit three exams in May / June 2020 and complete the Practical component (PAGs) through the course to pass.</p>	<p>system we have subscribed to so all students must have a working login for this system.</p>	<p>Other tasks will be set in lessons and homework that will be self or peer assessed, and the marks will be recorded. These will be appropriate to the teaching group and the topic being delivered at the time.</p> <p><u>First half term</u></p> <p>Exam questions based on Unit 2,3 and 4</p> <p>Scalars and Vectors assessment</p> <p>Forces topic test</p> <p>PAG 3</p> <p><u>Second half term</u></p> <p>Exam questions based on Unit 2,3 and 4</p> <p>Motion topic test</p> <p>Charge and current topic test</p> <p>PAG 1</p>	<p><u>Application of knowledge and understanding, analysis, synthesis and evaluation</u></p> <p>Candidates at this level could normally:</p> <ul style="list-style-type: none"> • plot graphical data accurately, and describe trends in data • perform complex calculations involving more than one step • interpret and analyse data presented to them and relate this to their knowledge and understanding of content in the specification • understand the development of scientific ideas • sequence scientific concepts and processes in a logical and orderly manner • use extended writing in their responses to questions. <p><u>Experiment and Investigation</u></p> <p>Candidates at this level could normally:</p> <ul style="list-style-type: none"> • plan and safely carry out investigations based on a sound 	<p>MOSI, and the University of Manchester.</p> <p>Joining central Manchester library is encouraged.</p> <p>A trip to CERN for L6th is planned for the end of June 2019.</p> <p>Boys can plan activities for the KS3 Science Society run on Thursday lunchtimes, for younger boys.</p> <p>Students encouraged to volunteer as mentors for GCSE students struggling with their physics studies.</p>
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<p>Note – in L6th each class currently has different lesson split between Teacher 1 and 2.</p> <p><u>First half term</u></p> <p><u>Teacher 1 PR</u></p> <p><u>Unit 2</u> Commencing with Quantities and units. Complete unit 2.</p> <p><u>Unit 3</u> Commencing with Motion</p> <p><u>Teacher 2 SQ/PH</u></p> <p><u>Unit 4</u> Commencing with Charge and Current</p> <p><u>Second half term</u></p>	<p>Content Overview</p> <p>Content is in six modules, each divided into key topic areas:</p> <p>Module 1 – Development of practical skills in physics 1.1 Practical skills assessed in a written examination 1.2 Practical skills assessed in the practical endorsement</p> <p>Module 2 – Foundations of physics 2.1 Physical quantities and units 2.2 Making measurements and analysing data 2.3 Nature of quantities</p> <p>Module 3 – Forces and motion 3.1 Motion 3.2 Forces in action 3.3 Work, energy and power 3.4 Materials 3.5 Newton’s laws of motion and momentum</p> <p>Module 4 – Electrons, waves and photons 4.1 Charge and current 4.2 Energy, power and resistance 4.3 Electrical circuits 4.4 Waves</p>		<p>PAG 4</p> <p><u>Christmas break</u></p> <p><u>Third half term</u></p> <p>Exam questions based on Unit 2, 3 and 4</p> <p>Work and Power topic test</p> <p>Circuits topic test</p> <p>PAG 2</p> <p>PAG 5</p> <p><u>Fourth half term</u></p> <p>Exam questions based on Unit 2, 3 and 4</p> <p>Materials topic test</p> <p>Waves topic test</p> <p><u>Easter break</u> <i>Mock revision</i></p>	<p>knowledge and understanding of the specification content</p> <ul style="list-style-type: none"> • interpret their results fully, using a variety of techniques • evaluate the results of their investigations and the methods used • produce a wide range of relevant results and use appropriate statistical techniques to analyse them. <p><u>Synthesis of knowledge, understanding and skills</u></p> <p>Candidates at this level could normally:</p> <ul style="list-style-type: none"> • produce sophisticated responses to questions, drawing on the scientific knowledge and understanding set out in the specification • apply their knowledge and understanding successfully to unfamiliar contexts and data <p><u>OCR Physics Assessment Objectives</u></p> <p><u>A01</u></p> <p>Demonstrate knowledge and understanding of scientific ideas,</p>	
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<p><u>Teacher 1 PR</u></p> <p>Unit 3 continue with Forces in Motion</p> <p><u>Teacher 2 SQ/PH</u></p> <p>Unit 4 Continue with Electrical Circuits</p> <p><u>Christmas break</u></p> <p><u>Third half term</u></p> <p><u>Teacher 1 PR</u></p> <p>Unit 3 continue with Work, Energy and Power</p> <p><u>Teacher 2 SQ/PH</u></p> <p>Unit 4 continue with Waves 1</p>	<p>4.5 Quantum physics</p> <p>Module 5 – Newtonian world and astrophysics</p> <p>5.1 Thermal physics</p> <p>5.2 Circular motion</p> <p>5.3 Oscillations</p> <p>5.4 Gravitational fields</p> <p>5.5 Astrophysics and cosmology</p> <p>Module 6 – Particles and medical physics</p> <p>6.1 Capacitors</p> <p>6.2 Electric fields</p> <p>6.3 Electromagnetism</p> <p>6.4 Nuclear and particle physics</p> <p>6.5 Medical imaging</p> <p>Students gain practical skills throughout the course. These are assessed in the written examinations and in the practical endorsement (component 4). Activities that could count towards the practical endorsement are indicated in the specification</p> <p><u>External exam details for end of U6th</u></p> <p>Modelling Physics (Paper1) Marks: 100 Duration: 2 hours 15 mins Weighting: 37%</p>		<p><u>Fifth half term</u></p> <p>Exam questions based on Unit 1, 2, 3 and 4</p> <p>Newton’s Laws topic test</p> <p>Waves 2 topic test</p> <p>Mock May 13th week 2019</p> <p>PAG 6</p> <p><u>Sixth half term</u></p> <p>Exam review questions based on appropriate analysis of mock exam</p> <p>Questions to improve/stretch after end of year exam based on Paper 1</p> <p><i>Work Experience follow-up where relevant</i></p>	<p>processes, techniques and procedures.</p> <p>31-34% at A-level</p> <p><u>A02</u></p> <p>Apply knowledge and understanding of scientific ideas, processes, techniques and procedures:</p> <ul style="list-style-type: none"> • in a theoretical context • in a practical context • when handling qualitative data • when handling quantitative data <p>40-43% at A-level</p> <p><u>A03</u></p> <p>Analyse, interpret and evaluate scientific information, ideas and evidence, including in relation to issues, to:</p> <ul style="list-style-type: none"> • make judgements and reach conclusions 	
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<p><u>Fourth half term</u></p> <p>Teacher 1 PR</p> <p>Unit 3 continue with Materials; aim to complete.</p> <p>Teacher 2 SQ/PH</p> <p>Unit 4 continue with Waves 2</p> <p><u>Easter break</u></p> <p><u>Fifth half term</u></p> <p>Teacher 1 PR</p> <p>Unit 3 complete if not done so; Unit 2 and 3 review ahead of mocks</p> <p>Teacher 2 SQ/PH</p>	<p>Assesses content from modules 1, 2, 3 and 5</p> <p>Exploring Physics (Paper2) Marks: 100 Duration: 2 hours 15 mins Weighting: 37%</p> <p>Assesses content from modules 1, 2, 4 and 6</p> <p>Unified physics (Paper3) Marks: 70 Duration: 1 hour 30 mins Weighting: 26%</p> <p>Assesses content from all modules (1 to 6)</p> <p>Practical endorsement in physics (4) - L6th & U6th Pass / Fail by April of U6th Non-exam assessment</p>			<ul style="list-style-type: none"> • develop and refine practical design and procedures <p>25-28% at A-level</p>	
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<p>Unit 4 complete with Quantum and review unit 4 ahead of mocks</p> <p><i>Mock exam based on units 1-4</i></p> <p><u>Sixth half term</u></p> <p><u>Teacher 1 PR</u></p> <p>Mock evaluation and review</p> <p><u>Teacher 2</u> <u>SQ/PH</u></p> <p>Mock evaluation and review</p> <p><i>Prepare for U6th – cosmology presentation research and delivery</i></p>					
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