

## Biddulph High School Curriculum Intent

To deliver a broad and enriching curriculum through engaging and challenging lessons that provide a wide range of opportunities for all students to achieve their potential.

Students will all be prepared to take their next steps in a diverse and ever changing future ready to make a positive contribution to society.

Through a broad programme of extracurricular activities students will have the opportunities to showcase their talents and experience new challenges.

We value individuals and all that they can offer as well as supporting each other with kindness and empathy.

### Curriculum Intent for Science:

**The lessons in the Science department provoke students' curiosity through exciting lessons; creating an environment where students will need to critically think and provide logical reasoning using various methods of investigation, such as observation, comparison, experimentation, and mathematical manipulation of data.**

All teachers will follow the schemes of work and resources provided by the department. This will ensure that all students receive the same high-quality provision. All units of work will provide a clear outline of the knowledge and skills required and assessments will ensure that this knowledge has been retained and that skills can be evidenced.

Teachers will ensure that gaps are closed through regular monitoring within the classroom. DINT activities will allow for interleaving and recap of previous learning. Misconceptions will be identified through effective questioning and the regular inspection of student work.

Physics Long Term Overview						
Year Group	Autumn 1	Autumn 2	Spring 1	Spring 2	Summer 1	Summer 2
9	KS3 Energy, Calculations and transfers	KS3 Renewables, generating electricity, Magnets and waves	KS3 Colour and filters KS3 Review P1.1 – P1.2.4	P1.2.1-1.3.5 OCR P1 Quiz OCR P1 Review	P3.1.1 -3.2.7 Electricity	OCR P3 Quiz OCR P3 Review PAG 1 Materials PAG 5 Specific heat capacity
10	Magnetism P4 4.1.1 – 4.2.6	Magnetism test and review. Begin module P2 Forces P2.1- 2.2 5	Forces P2.2.6-2.3.6 Module 2 OCR Review	Forces intervention Waves P5.1.1- 5.2.3	Waves P5.3.1-5.3.3 Mock preparation	Mock examinations QLA intervention
11					Examinations	
12						
13						

Physics Medium Term Overview			
Year 11	Autumn Term 1	Unit Title: Radioactivity and Energy	No of Lessons: 15
Overview	Students will look at radioactivity and the atom. This body of work will also cover radioactive half-life and its implications. How radiation is used in medicine and the principles of nuclear fission and nuclear fusion. This work will then be assessed with the use of the OCR module 6 review. Students will then move onto Module 7 which focuses on energy, its transfers and uses.		

Assessment	Students will be assessed through a series of small tests to identify any misconceptions and the correct use of key scientific terminology.	
<p><b>Essential Knowledge (what must students know):</b> Students will be able to answer the following questions: What is an isotope? What is an Alpha particle? What is a Beta particle? What is gamma radiation? What happens to electrons within an atom when they interact with radiation?</p> <p><b>Terminology:</b> <b>Key terms:</b> isotope, alpha particle, beta particle, gamma radiation, penetration, ionisation, half-life, fission, fusion, nuclei</p> <p><b>Practical skills:</b> analysing the safe handling of radioactive sources</p> <p><b>Examination technique:</b> understanding key command words within examination style questions to build confidence in student responses</p>	<p><b>Essential Skills (what must students be able to demonstrate):</b></p> <p>Students will be able to:</p> <ul style="list-style-type: none"> <li>• Define the term isotope</li> <li>• Describe the penetrative powers of Alpha, Beta and Gamma</li> <li>• Describe the ionising properties of Alpha, Beta and Gamma</li> <li>• Explain electron excitation within an atom</li> <li>• Describe and explain the effects of radiation on the human body</li> <li>• Explain how radiation can be used for medical diagnostics</li> <li>• Explain the process of nuclear fission</li> <li>• Explain the process of nuclear fusion</li> </ul>	<p><b>Lessons to cover</b></p> <ol style="list-style-type: none"> <li>1. 6.1.1 Atoms and isotopes</li> <li>2. 6.1.2 Alpha, Beta and Gamma</li> <li>3. 6.1.3 Nuclear equations</li> <li>4. 6.1.4 Half-life</li> <li>5. Nuclear equations questions</li> <li>6. 6.1.5 Radiation in and out of atoms</li> <li>7. 6.2.1 Radiation and the human body</li> <li>8. 6.2.2 Nuclear fission</li> <li>9. 6.2.3 Nuclear fusion</li> <li>10. Module 6 review</li> <li>11. Intervention post module 6 review</li> <li>12. 7.1.1 Energy stores</li> <li>13. 7.1.2 Energy and forces 1</li> <li>14. 7.1.3 Energy and forces 2</li> <li>15. Work done and energy questions</li> </ol> <p><b>Homework</b></p> <p>Students will be asked throughout the scheme of work to access a series of Seneca learning tasks. These will assess prior knowledge and continue to develop the work completed in class.</p>
<p><b>Careers Link</b> A series of careers slides are used throughout this module including the topics of: Radiation and the human body Nuclear fission</p>	<p><b>Enrichment</b></p>	<p><b>MY PB</b> <b>Social Me- active listening, speaking effectively, working with others</b> Practical work will require aspects of the social me strand <b>Thinking Me – evaluating &amp; creativity</b></p>

		<p>Evaluation will be utilised when assessing data from the energy investigations</p> <p><b>This is Me – Resilience, responsibility, self-motivation, integrity, self-management</b></p> <p>Students will need to demonstrate resilience and self-management when looking at the assessed points across the lessons</p>
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<b>Physics Medium Term Overview</b>			
<b>Year 11</b>	<b>Autumn Term 2</b>	<b>Unit Title: Energy and mock season one</b>	<b>No of Lessons:15</b>
<b>Overview</b>	<p>This unit continues the work on Energy started in autumn term 1. Students will look at energy and efficiency, energy transfers with current and thermally. Once module 7 has been completed students will revise ahead of the first round of Year 11 mock examinations.</p>		
<b>Assessment</b>	<p>Students will be assessed through a series of small tests to identify any misconceptions and the correct use of key scientific terminology, as well as an assessment task at the end of the unit</p>		
<p><b><u>Essential Knowledge (what must students know):</u></b>            Students will be able to answer the following questions:            How is energy transferred with a current?            How is energy transferred thermally?            How do you calculate efficiency?</p> <p><b>Terminology:</b></p> <p><b>Key terms:</b> thermal, current efficiency, wasted energy, useful energy, insulation, thermogram</p> <p><b>Practical skills:</b> planning a method, collecting reliable data, evaluating the data and its merits/drawbacks</p>	<p><b><u>Essential Skills (what must students be able to demonstrate):</u></b></p> <p><b>Students will be able to:</b></p> <ul style="list-style-type: none"> <li>• Explain how energy is transferred by means of an electrical current</li> <li>• Explain how energy is transferred between objects thermally</li> <li>• Evaluate how efficient energy transfers are</li> <li>• Revisit topics from year 9 and 10 and complete examination questions on these topics</li> </ul>	<p><b>Lessons to cover</b></p> <ol style="list-style-type: none"> <li>1. 7.1.4 Energy and forces 3</li> <li>2. 7.2.1 Energy and efficiency</li> <li>3. Energy analysis current</li> <li>4. Energy analysis heat</li> <li>5. Energy analysis questions</li> <li>6. Mock revision</li> <li>7. Mock revision</li> <li>8. Mock revision</li> <li>9. Mock revision</li> <li>10. Mock Week</li> <li>11. Mock Week</li> <li>12. Mock Week</li> <li>13. Mock week</li> <li>14. 7.2.4 Walls and insulation</li> <li>15. 7.2.5 Efficiency</li> </ol>	

<p><b>Examination technique:</b> understanding key command words within examination style questions to build confidence in student responses</p>		<p><b>Homework</b> students will be asked to access a number of seneca assignments designed to consolidate their knowledge of concepts in class.</p>	
<p><b>Careers Link</b> A series of careers slides are used throughout this module including the topics of: Efficiency</p>	<p><b>Enrichment</b></p>	<p><b>MY PB</b> <b>Social Me- active listening, speaking effectively, working with others</b> Practical work will require aspects of the social me strand <b>Thinking Me – evaluating &amp; creativity</b> Evaluation will be utilised when assessing data from the practical work <b>This is Me – Resilience, responsibility, self-motivation, integrity, self-management</b> Students will need to demonstrate resilience and self-management when looking at the assessed points across the lessons</p>	
<p><b>Physics Medium Term Overview</b></p>			
<p><b>Year 11</b></p>	<p><i>Spring Term 1</i></p>	<p><b>Unit Title: Energy and Global challenges</b></p>	<p><b>No of Lessons:13</b></p>
<p><b>Overview</b></p>	<p>This unit builds consolidates the work in this year on energy. Students will then move onto the final physics module ‘Global challenges’ this covers a range of topics taught throughout the course and offers students the opportunity to tie these physics principles to real world applications.</p>		
<p><b>Assessment</b></p>	<p>Students will be assessed through a series of small tests to identify any misconceptions and the correct use of key scientific terminology, as well as an assessment task at the end of the unit</p>		
<p><b>Essential Knowledge (what must students know):</b></p> <p><b>Terminology:</b> <b>Key terms:</b> elastic limit, plastic deformation, joule, moment, lever, pulley, pressure, force and area.</p>	<p><b>Essential Skills (what must students be able to demonstrate):</b></p> <p>Students will be able to:</p> <ul style="list-style-type: none"> <li>• Calculate</li> <li>•</li> </ul>	<p><b>Lessons to cover</b></p> <ol style="list-style-type: none"> <li>1. Module 7 revision</li> <li>2. Module 7 OCR review</li> <li>3. Intervention post module 7 test</li> <li>4. 8.1.1 Everyday motion</li> <li>5. 8.1.2 Reaction time and thinking distance</li> <li>6. 8.1.3 Braking and stopping distance</li> <li>7. 8.1.4 Forces in a collision</li> </ol>	

<p><b>Practical skills:</b> planning a method, collecting reliable data, evaluating the data and its merits/drawbacks</p> <p><b>Examination technique:</b> understanding key command words within examination style questions to build confidence in student responses</p>		<p><b>8. Thinking, braking and stopping distance questions</b></p> <p><b>9. 8.2.1 Energy sources</b></p> <p><b>10. 8.2.2 Using resources</b></p> <p><b>11. 8.2.3 The national grid</b></p> <p><b>12. 8.2.4 Mains electricity</b></p> <p><b>13. Resources and electricity questions</b></p> <p><b>14. 8.3.1 The big bang</b></p> <p><b>15. 8.3.2 The solar system</b></p> <p><b>Homework</b></p> <p>Seneca topic based homework to be set every fortnight. This will be selected to consolidate current learning and to retrieve past content. Over the course of the module the number of retrieval questions will increase, if the Students that achieve blow expectations will be issued with an additional assignment</p>
<p><b><u>Careers Link</u></b></p> <p>A series of careers slides are used throughout this module including the topics of:</p> <p>Turning forces</p> <p>Hydraulics</p>	<p><b><u>Enrichment</u></b></p>	<p><b><u>MY PB</u></b></p> <p><b>Social Me- active listening, speaking effectively, working with others</b></p> <p>Practical work will require aspects of the social me strand</p> <p><b>Thinking Me – evaluating &amp; creativity</b></p> <p>Evaluation will be utilised when assessing data from the density and specific heat capacity investigations</p> <p><b>This is Me – Resilience, responsibility, self-motivation, integrity, self-management</b></p> <p>Students will need to demonstrate resilience and self-management when looking at the assessed points across the lessons</p>

Year 11	Spring Term 2	Unit Title: Global challenges and revision	No of Lessons:12
<p><b>Overview</b></p> <p><b>Assessment</b></p>	<p>This unit builds on the work from Y9. Students move on to study 'Waves' in module 5. This module teaches a range of skills that will be utilised in the GCSE specification that follows. Students will look at 'waves and the electromagnetic spectrum'. Students will look at wave behaviour, sound uses and properties, the ear, the electromagnetic spectrum, waves in matter and light and colour.</p> <p>Students will be assessed through a series of small tests to identify any misconceptions and the correct use of key scientific terminology.</p>		
<p><b>Essential Knowledge (what must students know):</b></p> <p><b>Terminology:</b>  <b>Key terms:</b> Crest/Peak, trough, amplitude, frequency, wavelength, period, medium, velocity,</p> <p><b>Practical skills:</b> evaluating the equipment used to measure and interpret pressure</p> <p><b>Examination technique:</b> understanding key command words within examination style questions to build confidence in student responses</p>	<p><b>Essential Skills (what must students be able to demonstrate):</b></p> <p>Students will be able to:</p> <ul style="list-style-type: none"> <li>• Identify the key features of wave diagrams</li> <li>• Describe how sound is produced and then analysed by the ear</li> <li>• Know the parts of the electromagnetic spectrum in order</li> <li>• Describe uses for each part of the electromagnetic spectrum</li> <li>• Explain the risk of exposure to ionising forms of radiation</li> </ul>	<p><b>Lessons to cover</b></p> <ol style="list-style-type: none"> <li>1. 8.3.3 Satellites</li> <li>2. 8.3.4 Radiation and temperature</li> <li>3. 8.3.5 Inside our planet</li> <li>4. Module 8 revision</li> <li>5. Module 8 OCR review</li> <li>6. Practical task review module 1</li> <li>7. Practical task review module 2</li> <li>8. Practical task review module 3</li> <li>9. Practical task review module 4</li> <li>10. Practical task review module 5</li> <li>11. Practical task review module 6</li> <li>12. Practical task review module 7</li> <li>13. Practical task review module 8</li> <li>14. Examination questions based upon practical work</li> <li>15. Examination questions based upon practical work</li> </ol> <p><b>Homework</b></p> <p>Seneca topic based homework to be set every fortnight. This will be selected to consolidate current learning and to retrieve past content. Over the course of the module the number of retrieval questions will increase, if the</p>	

		Students that achieve low expectations will be issued with an additional assignment
<p><b><u>Careers Link</u></b></p> <p>A series of careers slides are used throughout this module including the topics of: Imaging with Em waves</p>	<p><b><u>Enrichment</u></b></p>	<p><b><u>MY PB</u></b></p> <p><b>Social Me- active listening, speaking effectively, working with others</b> Practical work will require aspects of the social me strand</p> <p><b>Thinking Me – evaluating &amp; creativity</b> Evaluation will be utilised when assessing data from the density and specific heat capacity investigations</p> <p><b>This is Me – Resilience, responsibility, self-motivation, integrity, self-management</b> Students will need to demonstrate resilience and self-management when looking at the assessed points across the lessons</p>

Physics <b>Medium Term Overview</b>			
Year 11	<i>Summer Term 1</i>	Unit Title: Examinations	No of Lessons:9
Overview	<p>Summer term 1 will focus on the completion of Module 5. This will build on the knowledge from the previous term. Students will look at how waves interact with matter, lenses in terms of how they work in theory and practice as well as looking into the theory of light and colour. Lessons will then focus upon retrieval ahead of the Year 10 mock examination window.</p>		
Assessment	<p>Students will be assessed through a series of small tests to identify any misconceptions and the correct use of key scientific terminology.</p>		
<b><u>Essential Knowledge (what must students know):</u></b>	<b><u>Essential Skills (what must students be able to demonstrate):</u></b>	<p>Lessons to cover</p> <ol style="list-style-type: none"> <li>1. P1 review</li> <li>2. P1 WAGOLL and exam questions</li> </ol>	



<p>Students will be able to answer the following questions:</p> <p><b>Terminology:</b> <b>Key terms:</b></p> <p><b>Practical skills:</b> planning a method, collecting reliable data, evaluating the data and its merits/drawbacks</p> <p><b>Examination technique:</b> understanding key command words within examination style questions to build confidence in student responses</p>	<p><b>Students will be able to:</b></p> <ul style="list-style-type: none"> <li>• <b>Explain</b></li> </ul>	<ol style="list-style-type: none"> <li>3. <b>P2 review</b></li> <li>4. <b>P2 WAGOLL and exam questions</b></li> <li>5. <b>P3 review</b></li> <li>6. <b>P3 WAGOLL and exam questions</b></li> <li>7. <b>P4 review</b></li> <li>8. <b>P4 WAGOLL and exam questions</b></li> <li>9. <b>P5 review</b></li> <li>10. <b>P5 WAGOLL and exam questions</b></li> <li>11. <b>P6 review</b></li> <li>12. <b>P6 WAGOLL and exam questions</b></li> <li>13. <b>P7 review</b></li> <li>14. <b>P7 WAGOLL and exam questions</b></li> <li>15. <b>P8 review</b></li> <li>16. <b>P8 WAGOLL and exam questions</b></li> </ol> <p><b>Homework</b></p> <p>Seneca topic based homework to be set every fortnight. This will be selected to consolidate current learning and to retrieve past content. Over the course of the module the number of retrieval questions will increase, if the Students that achieve blow expectations will be issued with an additional assignment</p>
<p><b>1. <u>Careers Link</u></b></p> <p>A series of careers slides are used throughout this module including the topics of:</p>	<p><b><u>Enrichment</u></b></p>	<p><b><u>MY PB</u></b></p> <p><b>Social Me- active listening, speaking effectively, working with others</b> Practical work will require aspects of the social me strand</p> <p><b>Thinking Me – evaluating &amp; creativity</b> Evaluation will be utilised when assessing data from the density and specific heat capacity investigations</p> <p><b>This is Me – Resilience, responsibility, self-motivation, integrity, self-management</b></p>



		Students will need to demonstrate resilience and self-management when looking at the assessed points across the lessons
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