

## 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 10	Autumn Term 1	Unit Title: Magnetism	No of Lessons: 15
Overview	This unit builds on the work from Y9. It teaches a range of skills that will be used throughout the GCSE specification that follows. Students will look at 'Magnetism'. Students will look at magnets and magnetic fields, currents, fields and forces, motors, electromagnetic induction and generators. This will lead to students questioning the interactions between permanent and		

<b>Assessment</b>	<p><b>induced magnetic fields, understanding the theory that allows a motor to work and to see how this principle in reverse is used to produce electricity.</b></p> <p><b>Students will be assessed through a series of small tests to identify any misconceptions and the correct use of key scientific terminology.</b></p>	
<p><b><u>Essential Knowledge (what must students know):</u></b>  Students will be able to answer the following questions:  What is energy?  How is energy transferred thermally?  What are the different types of energy?  How do we assess energy transfers practically?</p> <p><b>Terminology:</b>  <b>Key terms:</b> induced magnetism, permanent magnet, Domain theory, split ring commutator, slip ring commutator, alternating current, direct current, transformer, efficiency.</p> <p><b>Practical skills:</b> building and testing a motor to understand the need for a split ring commutator</p> <p><b>Examination technique:</b> understanding key command words within examination style questions to build confidence in student responses</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>• Describe permanent magnetic fields.</li> <li>• Explain fields around current carrying wires.</li> <li>• Explain the motor effect.</li> <li>• Practically test the structure of a motor.</li> <li>• Explain the principle of electromagnetic induction.</li> <li>• Describe the difference between a generator and a dynamo.</li> <li>• Describe and explain the construction of transformers</li> <li>• Describe the principles behind microphones and loudspeakers</li> </ul>	<p><b>Lessons to cover</b></p> <ol style="list-style-type: none"> <li>1. 4.1.1 magnets and magnetic fields</li> <li>2. 4.1.2 currents and fields</li> <li>3. 4.2.1 currents and forces</li> <li>4. 4.2.2 motors theory and practical</li> <li>5. Motors test</li> <li>6. Intervention lesson</li> <li>7. 4.2.3 Electromagnetic induction</li> <li>8. 4.2.4 Generators</li> <li>9. 4.2.5 Transformers</li> <li>10. 4.2.6 Microphones</li> <li>11. Module 4 OCR review</li> <li>12. Intervention lesson</li> <li>13. Module 4 broadsheet Knowledge organiser</li> <li>14. Module 4 exam style questions</li> <li>15. Live modelling of Exam technique</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><u>Careers Link</u></b>  Students will look at the importance of motors in everyday life. They will be able to see where magnetism is utilised in industry and why it is a</p>	<p><b><u>Enrichment</u></b></p>	<p><b><u>MY PB</u></b>  <b>Social Me-</b> active listening, speaking effectively, working with others</p>

<p>useful tool for mankind. They will also begin to look at the national grid when studying transformers and this can again be tied to the important energy infrastructure of the UK.</p>		<p>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 energy 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>
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Physics <b>Medium Term Overview</b>			
Year 10	<i>Autumn Term 2</i>	Unit Title: Magnetism consolidation and beginning Forces P2	No of Lessons:15
<p><b>Overview</b></p> <p><b>Assessment</b></p>	<p>This unit builds on the work from Y9. Students move on to study ‘Forces’ in module 2. This module teaches a range of skills that will be utilised in the GCSE specification that follows. Students will look at ‘Forces and their effects’. Students will look at distance time and speed, vector and scalar quantities, acceleration, motion graphs and equations of motion.</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> Students will be able to answer the following questions: What is a force? What are the different types of forces? What is a scalar quantity? What is a vector quantity? What are Newton’s laws of motion?</p> <p><b>Terminology:</b></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>• Explain the difference between vector and scalar quantities</li> <li>• Define a resultant force</li> <li>• Distinguish the difference between distance/time graphs and velocity/time graphs.</li> </ul>	<p><b>Lessons to cover</b></p> <ol style="list-style-type: none"> <li>1. 2.1.1 Distance, time and speed</li> <li>2. 2.1.2 Vectors and scalars</li> <li>3. 2.1.3 Acceleration</li> <li>4. Motion test</li> <li>5. 2.1.4 Distance time graphs</li> <li>6. 2.1.5 Velocity time graphs</li> <li>7. 2.1.6 Equations of motion</li> <li>8. 2.2.1 Forces and their interactions</li> <li>9. 2.2.2 Free body diagrams</li> <li>10. 2.2.3 Newton’s 1<sup>st</sup> Law</li> <li>11. 2.2.4 Newton’s 2<sup>nd</sup> Law</li> <li>12. 2.2.5 Forces and their effects</li> </ol>	

<p><b>Key terms:</b> Force, vector, scalar, distance, displacement, acceleration, resultant force, gradient.</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>	<ul style="list-style-type: none"> <li>• Describe an objects motion in terms of speed, direction, distance or displacement.</li> <li>• Understand how equations of motion can help to explain an objects movement.</li> </ul>	<p><b>13. Newton’s laws questions</b>  <b>14. Intervention lesson</b>  <b>15. Live exam question modelling and DIRT</b></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:  Vectors and scalars  Equations of motion  Momentum  Stretching materials</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 10</b></p>	<p><i>Spring Term 1</i></p>	<p><b>Unit Title: continuation of P2 Forces</b></p>	<p><b>No of Lessons:13</b></p>
<p><b>Overview</b></p>	<p>This unit builds on the work from Autumn term 2. Students continue to study ‘Forces’ in module 2. This module teaches a range of skills that will be utilised in the GCSE specification that follows. Students will look at ‘Forces and their effects’. Students will look at momentum, work and power, stretching springs and materials, potential energy and simple machines.</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>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>Essential Skills (what must students be able to demonstrate):</b></p> <p><b>Students will be able to:</b></p> <ul style="list-style-type: none"> <li>• Calculate work done by a given force in a known distance</li> <li>• Carry out and explain the practicals associated with Hooke’s law</li> <li>• Calculate the gravitational potential energy of an object within a gravitational field based upon its mass and height</li> <li>• Explain the principle of mechanical advantage in terms of simple machines</li> <li>• Have a broad and balanced knowledge of forces and their effects</li> </ul>	<p><b>Lessons to cover</b></p> <ol style="list-style-type: none"> <li>1. 2.2.6 Momentum</li> <li>2. 2.2.7 Work and power</li> <li>3. 2.3.1 Stretching springs</li> <li>4. 2.3.2 Stretching materials</li> <li>5. 2.3.3 Gravitational and potential energy</li> <li>6. 2.3.4 Turning forces</li> <li>7. 2.3.5 Simple machines</li> <li>8. 2.3.6 Hydraulics</li> <li>9. Module 2 broadsheet</li> <li>10. Module 2 retrieval questions</li> <li>11. Module 2 OCR quiz</li> <li>12. Intervention post module 2 test</li> <li>13. Live modelling and DIRT</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>Careers Link</b></p> <p>A series of careers slides are used throughout this module including the topics of:  Turning forces  Hydraulics</p>	<p><b>Enrichment</b></p>	<p><b>MY PB</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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Physics <b>Medium Term Overview</b>			
Year 10	<i>Spring Term 2</i>	Unit Title: Module 5 Waves	No of Lessons:12
<b>Overview</b>	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.		
<b>Assessment</b>	Students will be assessed through a series of small tests to identify any misconceptions and the correct use of key scientific terminology.		
<u>Essential Knowledge (what must students know):</u>  <b>Terminology:</b> <b>Key terms:</b> Crest/Peak, trough, amplitude, frequency, wavelength, period, medium, velocity,  <b>Practical skills:</b> evaluating the equipment used to measure and interpret pressure  <b>Examination technique:</b> understanding key command words within examination style questions to build confidence in student responses	<u>Essential Skills (what must students be able to demonstrate):</u>  <b>Students will be able to:</b> <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>	<b>Lessons to cover</b> <ol style="list-style-type: none"> <li>1. 5.1.1 Wave behaviour</li> <li>2. 5.1.2 Wave velocity</li> <li>3. 5.1.3 Sound uses and properties</li> <li>4. Formal assessment</li> <li>5. Wave basic questions</li> <li>6. Intervention lesson</li> <li>7. 5.1.4 Sounds in solids and the ear</li> <li>8. 5.2.1 The electromagnetic spectrum</li> <li>9. 5.2.2 Uses and dangers of EM radiation</li> <li>10. 5.2.3 Imaging with EM waves</li> <li>11. EM spectrum questions</li> <li>12. Intervention lesson</li> </ol>	<b>Homework</b>  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 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 10	<i>Summer Term 1</i>	Unit Title: Module P5 waves	No of Lessons:9
Overview	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.		
Assessment	Students will be assessed through a series of small tests to identify any misconceptions and the correct use of key scientific terminology.		
<b><u>Essential Knowledge (what must students know):</u></b>	<b><u>Essential Skills (what must students be able to demonstrate):</u></b>	Lessons to cover 1. 5.3.1 Waves and matter	



<p>Students will be able to answer the following questions:          what is the law of reflection?          What happens to light as it moves from a less dense to a denser medium?          How do filters work with light?          What are the primary colours of light?          What are the secondary colours of light?          What happens to light passing through a convex lens?          What happens to light passing through a concave lens?</p> <p><b>Terminology:</b>  <b>Key terms:</b> medium, concave, convex, converging, diverging, focal point, focal length, ray diagram.</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>• Explain the law of reflection</li> <li>• Carry out practical work to assess reflection and refraction</li> <li>• To draw lens diagrams for both concave and convex lens types</li> <li>• Explain how filters work</li> <li>• Recall and explain the primary and secondary colours of light</li> <li>• Test their recall of key concepts taught in year 9</li> <li>• Access a series of past paper questions to evaluate possible curriculum gaps prior to the Year 10 mock examinations</li> </ul>	<ol style="list-style-type: none"> <li>2. 5.3.2 Lenses theory</li> <li>3. 5.3.2 Lenses practical</li> <li>4. 5.3.3 Light and colour</li> <li>5. Module 5 broadsheet</li> <li>6. Module 5 OCR quiz</li> <li>7. Intervention post module 5 test</li> <li>8. DIRT and Cornell notes</li> <li>9. Module 1 revision</li> <li>10. Module 2 revision</li> <li>11. Module 3 revision</li> <li>12. Module 4 revision</li> <li>13. Paper 1 walk through live modelling</li> <li>14. Paper 1 walk through live modelling</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 below 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:          lenses</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></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>
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<b>Physics Medium Term Overview</b>			
<b>Year 10</b>	<b>Summer Term 2</b>	<b>Unit Title: Consolidation</b>	<b>No of Lessons: 10</b>
<b>Overview</b>	<p>Following the mock examinations students will have feedback identifying keys areas of the curriculum that they need to address. Time in this block of work will be allocated to independent review as well as misconceptions or areas of development being taught on a whole class level. Students will receive question level analysis of their mock performance, be guided to resources and questions to practice these areas and have live modelling by the teacher to improve their understanding and in term outcomes</p>		
<b>Assessment</b>			
<p><b><u>Essential Knowledge (what must students know):</u></b>            Students will be able to answer the following questions:            What are my curriculum gaps?            What should I be doing to close these gaps?</p> <p><b>Terminology:</b>  <b>Key terms:</b>            Concentration on command words in examinations            Describe            Explain            Define</p> <p><b>Practical skills:</b> planning a method, collecting reliable data, evaluating the data and its merits/drawbacks assessed with the use of key examination questions</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>• Identify key areas of the curriculum they must develop to ensure success in year 11</li> <li>• Draw conclusions from data collected experimentally</li> <li>• Use QLA to develop an independent approach to their understanding of the curriculum</li> </ul>	<p><b>Lessons to cover</b></p> <ol style="list-style-type: none"> <li>1. Mock Week</li> <li>2. Mock Week</li> <li>3. Mock Week</li> <li>4. Mock Week</li> <li>5. Mock Week</li> <li>6. QLA review independent</li> <li>7. QLA class topics</li> <li>8. Intervention Module 1</li> <li>9. Retrieval questions Module 1</li> <li>10. Intervention Module 2</li> <li>11. Retrieval questions Module 2</li> <li>12. Intervention Module 3</li> <li>13. Retrieval questions Module 3</li> <li>14. Intervention Module 4</li> <li>15. Retrieval questions Module 4</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></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 below expectations will be issued with an additional assignment</p>
<p><b>Careers Link</b></p> <p>Electrical engineering – these principles form the basic understanding to go on and study to become an electrician/ to progress into the world of electrical engineering. This is highlighted through the future pathway slides in the Physics scheme of work</p> <p>Materials selection in construction – specific heat capacity of water is important in its selection for use in plumbing due to its high specific capacity.</p>	<p><b>Enrichment</b></p> <p>End of year trips that are based in science – physics of theme park rides</p> <p>The big bang science fair</p>	<p><b>MY PB</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>