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 Computing

"Those who can imagine anything, can create the impossible." Alan Turing

Our aim in the Computing department is centred around equipping students for their future, regardless of the individual pathway they may decide to choose, ensuring that students are prepared for the challenge of a rapidly developing and changing technological world. We will equip learners with the key technical skills to support their learning across the curricula, for future studies and ultimately for their chosen career pathway. We believe in delivering a mixture of both ICT and Computer Science in our curriculum to develop core employability skills, such as problem solving and critical thinking. We also develop "Internet Citizens" who understand the importance of being responsible in the digital world. Our curriculum is mapped from KS3 to KS5 ensuring that students have the opportunity to grow both their knowledge and technical skills. We will provide a variety of extra curricula activities including entering national competitions, providing opportunities for students to acquire further technical qualifications and conferences/ visits to inspire students to follow a future in technology.

All teachers will follow the schemes of work 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.

Computing Long Term Overview						
Year Group	**Autumn 1**	**Autumn 2**	**Spring 1**	**Spring 2**	**Summer 1**	**Summer 2**
9	• Introduction to Digital Literacy • Introduction to user interfaces	• Introduction to Programming	• Data Representation • GCSE Pathway Options • E-Safety	• Data Modelling Skills	• Cyber Security	• Get career ready! Students are reset into pathway choices • Computer Science • Festival Consolidation project

Computing: Medium Term Overview

Year 9	*Autumn Term 1*	Unit Title: Digital Literacy & Introduction to User interfaces	No of Lessons: 12
Overview	This unit introduces the students to the fundamental knowledge and skills that underpin the topic of planning for, designing and evaluation a user interface. Students will be given a scenario in which they will apply their understanding of planning techniques, design principles, building user interface models and evaluating their overall project performance.		
Assessment	Students will get verbal feedback on current tasks, staff may add a comment on MS Teams as acknowledgement marking. A task will be STAR marked using the Computing Department template. Students will have a Teams quiz that includes MCQ questions.		

Essential Knowledge (what must students know):

Students will know:

- Types of user interface
- Design principles
- Use of planning tools
- Application of skills set to a scenario
- Evaluation processes

Terminology:
User interface: Command line, Sensor, Speech, Menu/Form, GU**I**
Planning: Mind Map, Mood Board, Gantt Chart.
Design Principles: Colour, Font Style, Font size, Layout, House Style, Images, formatting.
Evaluation: Poof read, Assess, Improve, Strengths, Weaknesses
Skills; Download, Upload, Save As, Folders, Edit, Image

Essential Skills (what must students be able to demonstrate):

Students will be able to:

- Access a number of software
- Choose appropriate software for a given task
- Apply skills in software to produce planning tools (Gantt chart/Test Plans)
- Follow design principles to develop personal ideas and techniques
- Use IT skills to build a working product
- Develop evaluations skills to promote self-reflection and improvement techniques

Lessons:

1. Introduction –System access skills
2. Software skills – Email access/set up
3. Software skills – Teams access/set up
4. Introduction to user interface
5. Types of user interface
6. Careers in computing
7. Kiosk scenario, application skills
8. Planning and collecting assets
9. Design principles
10. Application of design principles
11. Slide master skills
12. Evaluation skills

Careers Links:
Roles in Computing- UI developer

Enrichment:

My Personal Best:
Responsibility, Self-Management, Innovation, Creativity, Evaluation

<table>
<tr><th colspan="4">Computing: Medium Term Overview</th></tr>
<tr><td>Year 9</td><td>Autumn Term 2</td><td>Unit Title: Introduction to Programming</td><td>No of Lessons: 14</td></tr>
<tr><td>Overview/Intent

Assessment</td><td colspan="3">This unit introduces the students to the fundamental knowledge and skills that underpin the GCSE Computer Science. The aim is to introduce students to the concept of computer programming. It covers the National Curriculum content requirements of using two computing languages (Scratch and Python), including one text based language (Python).

Students will get verbal feedback on current tasks, staff may add a comment on MS Teams as acknowledgement marking. A task will be STAR marked using the Computing Department template. Students will have a Teams quiz that includes MCQ questions.
It also includes a formal assessment in assessment week.</td></tr>
<tr><td colspan="2"><u>Essential Knowledge (what must students know):</u>

• How to follow a flowchart
• The meaning of the basic shapes in a flowchart
• Students should be able to identify some coding syntax words.
• Students should understand the need to translate a program for a computer to run it.

Terminology:
Planning: flowchart, data, input, output, process, decision, terminator.
Logical thinking: patterns, predictions, assumptions.
Syntax: print, while, for,
Programming: Sequence, selection, iteration, variable.</td><td><u>Essential Skills (what must students be able to demonstrate):</u>

Students will be able to:
• Draw a flowchart using the appropriate shapes.
• Demonstrate problem solving.
• Demonstrate logical thinking.
• Follow instructions to create a program using drag and drop code pieces.
• Manipulate provided code to repair or enhance a program.
• Annotate a program to show understanding of the code.</td><td>Lessons:

1. Escape room do/plan
2. Escape room plan/swap and do)
3. BEBRAS
4. BEBRAS
5. Flowcharts
6. How computers work
7. Using Scratch to make a virtual pet game
8. Using Scratch to make a virtual pet game
9. Python intro, magic 8 ball
10. Python password checker
11. Code Combat
12. Assessment
13. Christmas coding activities
14. Christmas coding activities</td></tr>
<tr><td colspan="2"><u>Careers Links:</u>
Students will look at roles within technology development</td><td><u>Enrichment:</u>
Code combat introduced, students able to play outside lesson. Bebras Challenge participation.</td><td><u>My Personal Best:</u>
Resilience, problem solving, self-motivation, collaboration</td></tr>
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<tr><th colspan="4">Computing: Medium Term Overview</th></tr>
<tr><td>Year 9</td><td>Spring Term 1</td><td>Unit Title: Data Representation</td><td>No of Lessons: 7</td></tr>
<tr><td>Overview

Assessment</td><td colspan="3">This unit introduces the students to how the computers stores data, the foundation of the Computer Science GCSE is understanding that computers store data with switches, which can either be on or off. Students have to understand the importance of binary and be able to complete binary to denary conversions.

1 MCQ. 1 STAR Marked task.</td></tr>
<tr><td colspan="2"><u>Essential Knowledge (what must students know):</u>

Students will know:
• That computers store data using switches
• That computers use binary to store data
• Computers store text using ASCII
• The difference between bitmap and raster
• The difference between lossy and lossless compression

Terminology:
Number Systems: Binary, denary
Storing text: ASCII
Storing images: pixel, colour depth, resolution, metadata, pixel density
Storing Sound: Amplitude, frequency, sample
Compression: Lossy, Lossless
Logic: NOT gate, AND gate, OR date</td><td><u>Essential Skills (what must students be able to demonstrate):</u>

Students will be able to:
• Convert binary numbers into denary
• Convert denary numbers into binary
• Use ASCII for conversions
• Identify logic gates</td><td><u>Lessons:</u>

1. Introduction to binary
2. How computers store text
3. How computers store images
4. How computers store sound
5. How computers use compression
6. Introduction to logic
7. Assessment</td></tr>
<tr><td colspan="2"><u>Career links:</u>
Importance of binary as a Computer Scientist</td><td><u>Enrichment:</u></td><td><u>My Personal Best</u>
Resilience, problem solving, active listening, collaboration, empathy, reflection</td></tr>
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<table>
<tr><td colspan="4">Computing: Medium Term Overview</td></tr>
<tr><td>Spring Term 1 Part 2</td><td colspan="2">Unit Title: GCSE Information</td><td>No of Lessons: 3</td></tr>
<tr><td>Overview/Intent

Assessment</td><td colspan="3">Students will be choosing options subjects around this time of the year. Therefore it is important that students have an understanding of which subject would be best for their future path.</td></tr>
<tr><td colspan="2"><u>Essential Knowledge (what must students know):</u>

Students will know:
The difference between the GCSE Computer Science course and the BTEC IT course
Students will have an understanding of the GCSE Business course</td><td><u>Essential Skills (what must students be able to demonstrate):</u>

Students will be able to:
Complete tasks to aid their decision making process for options in KS4</td><td><u>Lessons:</u>

Introduction to Computer Science
Introduction to BTEC IT
Introduction to Business Studies</td></tr>
<tr><td colspan="2"><u>Career links:</u>
Future pathways in CS, ICT and Business</td><td><u>Enrichment:</u></td><td><u>My Personal Best</u>
Innovation, creativity, self-motivation, responsibility</td></tr>
</table>

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<tr><td colspan="3">Computing: Medium Term Overview</td></tr>
<tr><td>Spring Term 1 Part 2</td><td>Unit Title: E-Safety</td><td>No of Lessons: 4</td></tr>
<tr><td>Overview/Intent

Assessment</td><td colspan="2">Students need to be understanding of the online world, the risks and how to stay safe online.</td></tr>
<tr><td><u>Essential Knowledge (what must students know):</u>

Students will know:
• The risks in the online world
• What to do if they are worried
• They must take responsibility in the online world
• The online world is no different to the real world

Terminology:
Content: Pornography, misogyny, self-harm, racism
Contact: bullying, catfishing,
Conduct: Responsibility
Staying Safe: Report it, childline, school staff</td><td><u>Essential Skills (what must students be able to demonstrate):</u>

Students will be able to:
• Identify online risks
• Know how to get help and support
• Take responsibility for their own actions
• Identify consequences of inappropriate use</td><td><u>Lessons:</u>

1. Online content
2. Online contact
3. Online conduct
4. Staying safe online</td></tr>
<tr><td><u>Career links:</u>
Future pathways in CS, ICT and Business</td><td><u>Enrichment:</u>
Opportunity to enter a house competition</td><td><u>My Personal Best</u>
Responsibility, integrity, self-management</td></tr>
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<tr><th colspan="4">Computing: Medium Term Overview</th></tr>
<tr><td>Year 9</td><td>Spring Term 2</td><td>Unit Title: Spreadsheets</td><td>No of Lessons: 8</td></tr>
<tr><td>Overview

Assessment</td><td colspan="3">This unit introduces the students to the fundamental knowledge and skills that underpin future studies and careers. The BTEC Digital IT course has a module dedicated to development of key data modelling skills.

1 MCQ and a STAR marked task.</td></tr>
<tr><td colspan="2"><u>Essential Knowledge (what must students know):</u>

Students will know:
• Basic formatting techniques
• Basic formulae and functions
• The difference between formulae and functions
• How to create a professional document

Terminology:
Formatting: borders, fill, bold, underline, centre, merge
Formula: Sum, max, min, average
Conditional Formatting
Graphs: Bar Chart, pie chart
Setting up: import, absolute cell reference, relative cell reference</td><td><u>Essential Skills (what must students be able to demonstrate):</u>

Students will be able to:
• Formatting techniques
• Functions (addition, subtraction, multiplication, division)
• Formulas (min, max, average, sum)
• Conditional formatting
• Creating graphs</td><td><u>Lessons:</u>

1. Formatting data
2. Formulas and Functions
3. Importing data and setting up data
4. Graphs and conditional formatting
5. Creating a spreadsheet
6. Creating a spreadsheet
7. Creating a spreadsheet for business
8. Creating a spreadsheet for budgeting</td></tr>
<tr><td colspan="2"><u>Career links:</u>
Spreadsheets are a key skill for future study and jobs.</td><td><u>Enrichment:</u></td><td><u>My Personal Best</u>
Resilience, creativity, collaboration</td></tr>
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<tr><th colspan="4">Computing: Medium Term Overview</th></tr>
<tr><td>Year 9</td><td>Summer Term 1</td><td>Unit Title: Cyber Security</td><td>No of Lessons: 10</td></tr>
<tr><td>Overview

Assessment</td><td colspan="3">This unit introduces students' cyber security. It teaches the origins of cyphers as well as a range of ways in which data can be accessed by unwanted means and what can be done to defend data. This unit helps students develop an understanding of the ever changing problems that happen in computing.

MCQ of key terminology. Assessment in assessment week.</td></tr>
<tr><td colspan="2"><u>Essential Knowledge (what must students know):</u>

Students will know:
• Some history of cyphers
• What cyber security is
• Some keys terms
• Risks

Terminology:
Cipher
Encryption
Virus
SSL/TLS
Phishing
Firewall
DDOS</td><td><u>Essential Skills (what must students be able to demonstrate):</u>

Students will be able to:
• How to protect data
• Use key terms to describe cyber security
• Refer to past events when talking about code breaking and cyphers</td><td><u>Lessons:</u>

1. Watch Imitation Game
2. Watch Imitation Game
3. Watch Imitation Game
4. History of Alan Turing and his impact on cyber security.
5. History of Cyphers and coding
6. Encryption Methods
7. Difference between data and information, key terms, risks
8. Social Engineering
9. Assessment</td></tr>
<tr><td colspan="2"><u>Career links:</u>
Careers in Cyber Security</td><td><u>Enrichment:</u>
Imitation Game video</td><td><u>My Personal Best</u>
Self-management, integrity, empathy.</td></tr>
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<tr><th colspan="4">Computing: Medium Term Overview</th></tr>
<tr><td>Year 9</td><td>Summer Term 2</td><td>Unit Title: Careers</td><td>No of Lessons: 2</td></tr>
<tr><td>Overview

Assessment</td><td colspan="3">This unit supports students to prepare for work experience.

NA</td></tr>
<tr><td colspan="2"><u>Essential Knowledge (what must students know):</u>

Students will know:
• Importance of a CV

Terminology:</td><td><u>Essential Skills (what must students be able to demonstrate):</u>

Students will be able to:
• Create a professional CV
• Create a letter of interest for work experience</td><td><u>Lessons:</u>

1. Creating a CV
2. Research and creating a letter</td></tr>
<tr><td colspan="2"><u>Career links:</u>
Preparation for work experience
Creating a CV and letter</td><td><u>Enrichment:</u>
Bebras Challenge completed in lessons</td><td><u>My Personal Best</u>
Self-management, responsibility.</td></tr>
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<tr><th colspan="4">Computing: Medium Term Overview : Computer Science Students</th></tr>
<tr><td>Year 9</td><td>Summer Term 2</td><td>Unit Title: CS Pathway</td><td>No of Lessons: 12</td></tr>
<tr><td>Overview

Assessment</td><td colspan="3">This unit is the start of the GCSE Computer Science course

MCQ knowledge test</td></tr>
<tr><td colspan="2"><u>Essential Knowledge (what must students know):</u>

Students will know:
Input, process, output sequence
If statements (sequence)
Loops (iteration)
Conversions and why they are used
Terminology:
Sequence: input, process, output
Selection: If statements
Iteration: Loops, for loop, while loop
Binary: Denary, binary, conversion
Hexadecimal: Denary, binary, conversion</td><td><u>Essential Skills (what must students be able to demonstrate):</u>

Students will be able to:
Demonstrate Python Programming language (input, output, if statements, nested if statements, loops)
Binary/ hexadecimal / denary conversions (both ways)</td><td><u>Lessons:</u>

1. Sequence (2 lessons)
3. Selection (4 lessons)
7. Iteration (4 lessons)
8. Binary Conversions
9. Hexadecimal Conversions</td></tr>
<tr><td colspan="2"><u>Career links:</u>
Future careers in CS. Next steps – A Levels</td><td><u>Enrichment:</u>
Code Combat</td><td><u>My Personal Best</u>
Innovation, evaluation, creativity</td></tr>
</table>

<table>
<tr><th colspan="4">Computing: Medium Term Overview. BTEC IT Students</th></tr>
<tr><td>Year 9</td><td>Summer Term 2</td><td>Unit Title: Preparation for BTEC IT</td><td>No of Lessons: 12</td></tr>
<tr><td>Overview</td><td colspan="3">This unit introduces the students to the BTEC DIT course for KS4. It also consolidates the knowledge covered in year 9.</td></tr>
<tr><td>Assessment</td><td colspan="3">1 item of STAR Marked work</td></tr>
<tr><td colspan="2"><u>Essential Knowledge (what must students know):</u>

Students will know:
• How to search the internet effectively
• How to format a letter professionally
• How to use design tools to create consistent documents

Terminology:
Logo: Colour scheme, number of colours
Advert: Placement, sizing
Moodboard: Images
Mindmap: Node, arrows
Internet Search: Critieria, AND, OR
Promotion: Shapes, text, tools
Letter: Subject, signature</td><td><u>Essential Skills (what must students be able to demonstrate):</u>

Students will be able to:
• Create a logo for a given company
• Create a moodboard
• Create a mindmap
• Create a suitable interface</td><td><u>Lessons:</u>

1. Research festivals
2. Logo
3. Advert
4. Moodboard/ mindmap
5. Internet Searches
6. Item of promotion
7. Letter
8. Interface (3 lessons)
11. Spreadsheets (2 lessons)</td></tr>
<tr><td colspan="2"><u>Career links:</u>
Computing in the future</td><td><u>Enrichment:</u></td><td><u>My Personal Best</u>
Creativity, Self-management, Self- motivation</td></tr>
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