

Computer Science



Lead Teacher: Mr N. Kakou

Year 7

Computing and computer technology are part of just about everything that touches our lives from the cars we drive, to the movies we watch, to the ways businesses and governments deal with us. Understanding different dimensions of computing is part of the necessary skill set for an educated person in the 21st century. Whether one wants to be a scientist, develop the latest killer application, or just know what it really means when someone says 'the computer made a mistake', studying computing will provide you with valuable knowledge. Computing requires and develops capabilities in solving deep, multidimensional problems requiring imagination and sensitivity to a variety of concerns.

| | Autumn 1 | Autumn 2 |
|----------------------------|--|---|
| Focus/Context for Learning | Using-computers-safely effectively-and responsibly <ul style="list-style-type: none"> · L1 File management · L2 Social networking · L3 Keeping your data safe | A. Understanding computers <ul style="list-style-type: none"> · L1 Elements of a Computer · L2 The CPU · L3 Understanding Binary |
| | Spring 1 | Spring 2 |
| Focus/Context for Learning | B. Understanding computers <ul style="list-style-type: none"> · L4 Binary Addition · L5 Storage Devices | Networks <ul style="list-style-type: none"> · L1 The Internet · L2 Connectivity L3 Topologies · L4 Client-server networks · L5 Encryption |
| | Summer 1 | Summer 2 |
| Focus/Context for Learning | A. Introduction to Python <ul style="list-style-type: none"> · L1 Introducing Python · L2 Numbers and Arithmetic · L3 Input | B. Introduction to Python <ul style="list-style-type: none"> · L4 Selection · L5 Programming Projec |

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Year 8

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| | Autumn 1 | Autumn 2 |
|----------------------------|--|--|
| Focus/Context for Learning | Introduction to Python (2) <ul style="list-style-type: none"> • L1 Selection • L2 Writing algorithms • L3 While loops • L4 Programming project | Algorithms <ul style="list-style-type: none"> • L1 Computational thinking • L2 Searching algorithms • L3 Sorting algorithms • L1 The CPU |
| | Spring 1 | Spring 2 |
| Focus/Context for Learning | A. Systems architecture <ul style="list-style-type: none"> • L1 The CPU • L2 Function and characteristics of the CPU B. Memory & storage <ul style="list-style-type: none"> • L1 Memory • L2 Storage | Data representation <ul style="list-style-type: none"> • L1 Storage units and binary numbers • L2 Binary arithmetic and Hexadecimal • L3 Characters • L4 Images • L5 Sounds |
| | Summer 1 | Summer 2 |
| Focus/Context for Learning | Boolean Logic <ul style="list-style-type: none"> • L1 Logic diagram (AND, OR & NOT) • L2 Truth table | Systems software <ul style="list-style-type: none"> • L1 Operating system software • L2 Utility software |

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Year 9

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| Edexcel | Autumn 1 | Autumn 2 |
|-----------------------------------|--|--|
| Focus/Context for Learning | A. Systems architecture L1 Architecture of the CPU L2 CPU performance L3 Memory L4 Secondary Storage B. Programming techniques (Python) | A. Data Representation • L1 Storage Units & Binary • L2 Binary • L3 Binary arithmetic • L4 Hexadecimal B. Programming techniques (Python) |
| | Spring 1 | Spring 2 |
| Focus/Context for Learning | A. Data Representation • L5 ASCII and Unicode • L6 Images • L7 Sound • L8 Compression B. Programming techniques (Python) | A. Network • L1 Wired and wireless networks • L2 Network topologies • L3 protocols and layers B. Programming techniques (Python) |
| | Summer 1 | Summer 2 |
| Focus/Context for Learning | A. System security B. Systems software C. Programming techniques (Python) | A. Ethical, legal, cultural and environmental concerns B. Programming techniques (Python) C. Past Papers: Paper 1 |

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Year 10

Computing and computer technology are part of just about everything that touches our lives from the cars we drive, to the movies we watch, to the ways businesses and governments deal with us. Understanding different dimensions of computing is part of the necessary skill set for an educated person in the 21st century. Whether one wants to be a scientist, develop the latest killer application, or just know what it really means when someone says 'the computer made a mistake', studying computing will provide you with valuable knowledge. Computing requires and develops capabilities in solving deep, multidimensional problems requiring imagination and sensitivity to a variety of concerns. Computing:

- Enables you to make a positive difference in the world.
- Computing offers many types of lucrative careers.
- Computing jobs are here to stay, regardless of where you are located.
- Expertise in computing helps even if your primary career is something else.
- Computing offers great opportunities for true creativity and innovativeness.
- Computing has space for both collaborative work and individual effort.
- Computing is an essential part of well-rounded academic preparation.
- Future opportunities in computing are without boundaries.

| Edexcel | Autumn 1 | Autumn 2 |
|-----------------------------------|---|--|
| Focus/Context for Learning | A Algorithms <ul style="list-style-type: none"> • L1 Computational Thinking • L2 Searching Algorithms • L3 Sorting Algorithms B. Programming techniques (Python) | A. Algorithms <ul style="list-style-type: none"> • L4 Pseudocode • L5 Flowchart • L6 Interpret, correct or complete algorithms B. Programming techniques (Python) |

| | Spring 1 | Spring 2 |
|-----------------------------------|--|--|
| Focus/Context for Learning | A. Programming <ul style="list-style-type: none"> • L1 Programming Concepts • L2 Sequence and selection • L3 Iteration • L4 Arrays B. Python Programming <ul style="list-style-type: none"> • Producing robust programs | A. Programming <ul style="list-style-type: none"> • L4 Procedures and functions • L5 Records and files • L6 Introduction to SQL B. Python Programming <ul style="list-style-type: none"> • Producing robust programs |

| | Summer 1 | Summer 2 |
|-----------------------------------|---|--|
| Focus/Context for Learning | A. Logic and languages <ul style="list-style-type: none"> • L1 Logic diagrams and truth tables • L2 Defensive design • L3 Errors and testing • L4 Translators and facilities of languages B. Python Programming <ul style="list-style-type: none"> • Producing robust programs | A. Programming Project B, Exam Styled Programming Challenges C. Past Papers: Exam Styled Questions |

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Year 11

| Edexcel | Autumn 1 | Autumn 2 |
|-----------------------------------|---|---|
| Focus/Context for Learning | <p>A. Revision 1</p> <ul style="list-style-type: none"> Systems architecture Memory & storage Storage Units & Binary Binary Binary arithmetic Hexadecimal ASCII and Unicode Images, Sound and Compression <p>B. Past Papers - Programming Project (Python)</p> | <p>A. Revision 2</p> <ul style="list-style-type: none"> Wired and wireless networks Network topologies protocols and layers System security Systems software <p>B. Past Papers - Programming Project (Python)</p> |
| | Spring 1 | Spring 2 |
| Focus/Context for Learning | <p>A. Revision 3</p> <ul style="list-style-type: none"> Ethical, legal, cultural and environmental concerns Computational Thinking Searching Algorithms Sorting Algorithms <p>B. Past papers - Programming Project (Python)</p> <ul style="list-style-type: none"> Producing robust programs | <p>A. Revision 4</p> <ul style="list-style-type: none"> Programming Concepts Sequence and selection Iteration Arrays Procedures and functions Records and files Introduction to SQL <p>B. Past papers - Programming Project (Python)</p> <ul style="list-style-type: none"> Producing robust programs |
| | Summer 1 | Summer 2 |
| Focus/Context for Learning | <p>A. Revision 5</p> <ul style="list-style-type: none"> Logic diagrams and truth tables Defensive design Errors and testing Translators and facilities of languages <p>B. Past papers - Programming Project (Python)</p> | <p>A. Exam Styled Programming Challenges</p> <p>B. Exam Styled Questions</p> |