# Technology

At Alamiyah the study of Technology is approached in a systematic way and through the use of creativity with a STEAM approach through three main strands shown in the overview table below. The curriculum plan contained in this document is aimed at the 9-11 age group covering upper primary age 9-11.

## Computing

Children will be introduced to using computational thinking and creativity to understand and change the world. Computing has deep links with Mathematics, Science, and Design and Technology, and provides insights into both natural and artificial systems. The core of computing is computer science, in which children are taught the principles of information and computation, how digital systems work, and how to put this knowledge to use through programming.

Children will build on this knowledge through hands on practical activities to create programs, systems and a range of content. Children will also develop their understanding to express their ideas through, information and communication technology and as active participants in the digital world.

### Computing Long Term Curriculum Plan

| Area | Topics | Recommended Ages and Stages |
|---|---|---|
| Computer Science | Design, write and debug programs that accomplish specific goals, including controlling or simulating physical systems<br><br>solve problems by decomposing them into smaller parts<br><br>Use sequence, selection, and repetition in programs; work with variables and various forms of input and output<br><br>Use logical reasoning to explain how some simple algorithms work and to detect and correct errors in algorithms and programs | 9-11<br>Y5-6 |

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|---|---|---|
| | Understand computer networks including the internet; how they can provide multiple services, such as the World Wide Web<br>Appreciate how [search] results are selected and ranked | |
| Digital Literacy | Understand the opportunities [networks] offer for communication and collaboration<br>Be discerning in evaluating digital content<br>Use technology safely, respectfully and responsibly; recognise acceptable/unacceptable behaviour; identify a range of ways to report concerns about content and contact | 9-11<br>Y5-6 |
| Information Technology | Use search technologies effectively<br>Select, use and combine a variety of software (including internet services) on a range of digital devices to design and create a range of programs, systems and content that accomplish given goals, including collecting, analysing, evaluating and presenting data and information<br>Unplugged activities | 9-11<br>Y5-6 |

## Electronics

Electronics is an inspiring and practical subject. Using creativity and imagination, pupils will design and make products that solve real and relevant problems within a variety of contexts, considering their own and others' needs, wants and values. Children will draw on disciplines such as mathematics, science, engineering and computing.

Electronics is the science of controlling electrical energy electrically, in which the electrons have a fundamental role. Children will learn about how to deal with electrical circuits that involve active electrical components and interconnection technologies.

## Electronics Long Term Curriculum Plan

| Area | Topics | Ages |
|---|---|---|
| **Components** | Electronics Components:<br>• LED<br>• Diodes<br>• Resistors<br>• Buzzers<br>• Switches<br>• Motors<br>• Batteries<br>Conductive material<br>Health and Safety | 9-11<br>Y5-6 |
| | Sensors<br>Actuators<br>Transducers | 9-11<br>Y5-6 |
| **Control systems** | Input, Process and Output<br>Electricity, AC & DC<br>How electricity works | 9-11<br>Y5-6 |
| | Circuits<br>Series and Parallel Circuits | 9-11<br>Y5-6 |
| **Development** | Creating an electronic system<br>Using inputs to triggers sensors to activate output<br>Students will apply their understanding of computing to program, monitor and control their electronic products | 9-11<br>Y5-6 |

## Product Design

Product Design is an inspiring, rigorous and practical subject. Using creativity and imagination, children design and make products that solve real and relevant problems within a variety of contexts, considering their own and others' needs, wants and values. Children will draw on disciplines such as Mathematics, Science, Engineering, Computing and Art. Children learn through the main four principles: Design, Make, Evaluate and Technical Knowledge.

Children will learn how to take risks, becoming resourceful, innovative, enterprising and capable citizens. Through a variety of creative and practical activities, pupils will be taught the knowledge, understanding and skills needed to engage in an iterative process of designing and making. Also, through the evaluation of the product, children will develop a critical understanding of its impact on daily life and the wider world. They will work in a range of relevant contexts [for example, the home, school, leisure, culture, enterprise, industry and the wider environment].

### Product Design Long Term Curriculum Plan

| Area | Topics | Ages |
|---|---|---|
| Design | Design purposeful, functional, appealing products<br>Iterative Design<br>Generate, develop, model and communicate their ideas through talking, drawing, templates, mock-ups annotated sketches | 9-11<br>Y5-6 |
| | Use research and develop design criteria<br>Develop and generate cross-sectional and exploded diagrams, prototypes, pattern pieces and computer-aided design | 10-11<br>Y6 |
| Make | Making a product that meet a specific design criteria | 9-11<br>Y5-6 |

| | | |
|---|---|---|
| | Select from and use a wide range of materials and components, including construction materials according to their characteristics<br><br>Select from and use a wider range of tools and equipment to perform practical tasks [for example, cutting, shaping, joining and finishing], accurately | 9-11<br>Y5-6 |
| Evaluate | Explore and evaluate a range of existing products | 9-11<br>Y5-6 |
| | Evaluate their ideas and products against design criteria and consider the views of others to improve their work<br><br>understand how key events and individuals in design and technology have helped shape the world | 9-11<br>Y5-6 |
| Technical Knowledge | Build structures, exploring how they can be made stronger, stiffer and more stable | 9-11<br>Y5-6 |
| | Understand and use mechanical systems in their products [for example, gears, pulleys, cams, levers and linkages] | 10-11<br>Y6 |
| | Apply their understanding of how to strengthen, stiffen and reinforce more complex structures<br><br>Understand and use mechanical systems in their products | 9-11<br>Y5-6 |
| Health & Safety | Safe Use of materials and tools | 9-11<br>Y5-6 |
| | Safe Use of materials, tools and machinery | 9-11<br>Y5-6 |


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Learning To Read The Universe