**TED- Technology, Engineering and Design.**

Our engineering curriculum at the Academy aims to allow students to explore skills from a range of Design and Engineering sectors. Our choice of projects and qualifications develop problem solving and contextualise the subject content in relevant and engaging activities. We aim to challenge our young designers and engineers to enable them to become independent, resilient, solution focused learners.

**KS3**

As a specialism at the Bourne Academy, all students in year 7 and 8 study 2 hours of Technology Engineering and Design per week. This enables students to develop skills in a range of design, problem solving and manufacturing areas.

Our curriculum covers 5 different projects each year that focus directly on developing key practical skills alongside a securing knowledge and understanding for engineering and design principles. Project areas include Graphics, Electronics, Traditional workshop skills, Metal Casting and CAD Design. Modern technology is utilised to support students in the production of high-quality outcomes using our laser cutter, 3D printer and industry standard CAD software.

Home learning at KS3 will largely be cementing knowledge learnt in class through revision quizzes and short activities set through Show My Homework. Student progress, knowledge and understanding is assessed through Mid and End of year assessments and success with their project outcomes.

The use of Knowledge organisers is used as part of our ‘do now’ retrieval practice to support retention of knowledge. A Question Level Analysis is provided after each assessment point which allows us to understand the strengths and weaknesses of each child and support future planning.

**KS4**

For students who have opted to take a TED subject at GCSE and wish to continue their educational pathway within technology, engineering and design, we offer the following 3-year GCSE and Vocational courses that start in year 9.

**OCR GCSE Design and Technology (Year 9, 10, 11)** - The GCSE D&T course is 5 hours per fortnight and designed to engage students actively in the processes of design and technology alongside developing effective and independent learners. During the course students will study a range of design, manufacturing and material areas which are current, career focused and inspiring in their content. 50% of the course focuses on an extensive final design and make project, and 50% is an externally assessed written exam taken towards the end of the course.

Progress is assessed through mock examinations, past paper questions and design and make activities. A Question Level Analysis is provided after each assessment point which allows us to understand the strengths and weaknesses of each child and support future planning.

Home learning will engage students in past paper questions, revision tasks, coursework activities and design tasks.

Topics areas include Materials, Manufacturing methods, User requirements, Sustainability, Mechanical systems, Electronics, Math skills.

**Btec Engineering Tech Award (Current year 11)** – This vocational engineering course is built up of three components. Each component allows students to explore different aspects of engineering in industry context. Unit 1 and 2 and internally assessed coursework components which explore practical manufacturing methods, material understanding, engineering design principles and engineering sectors. Unit 3 is an externally assessed two-part exam which tests students’ problem solving, analytical and design skills. Internal units are worth 60% of their qualification and external units 40%. This course is studied for 5 hours per fortnight.

Progress is assessed through mock examinations, past paper questions and design and make activities. A Question Level Analysis is provided after each assessment point which allows us to understand the strengths and weaknesses of each child and support future planning.

Home learning will engage students in past paper questions, revision tasks, coursework activities and design tasks.

Topics areas include: Materials, Design principles, Manufacturing methods, Quality control techniques, Engineering industries.

**OCR Cambridge Nationals-Engineering Manufacture (Current year 9, 10)** - This vocational engineering course is also built up of three components. The two internal coursework components are each worth 30% of the qualification. These two units explore manufacturing techniques using both traditional engineering skills and computer-controlled packages and machinery. The external examination component is worth 40% of the overall qualification. The written exam explores principles in design engineering, understanding of materials, manufacturing methods, quality control and Globalisation.

Progress is assessed through mock examinations, past paper questions and design and make activities. A Question Level Analysis is provided after each assessment point which allows us to understand the strengths and weaknesses of each child and support future planning.

Home learning will engage students in past paper questions, revision tasks and coursework activities.

**OCR GCSE Product Design: Three-Dimensional Design (Year 9, 10, 11)** - This GCSE course is designed to allow students to explore a wide range of design and manufacturing applications. The course focuses on students learning skills that allow them to creatively solve problems and develop design solutions. During the course students will study a range of design, manufacturing and material areas which are current, career focused and inspiring in their content. 60% of the course focuses on a design and make portfolio, and 40% is a classroom based, 2-day, design and make examination.

Students explore designers, sculptures, architecture, job sectors, design movements, the history of design, design techniques and manufacturing methods.

Progress is assessed through mock examinations and research/design/make activities.

Home learning will engage students in research and sketchbook design activities.

**KS5**

**OCR A-Level Design and Technology** **(Year 12,13)**– This A-level is a natural progression from GCSE design and technology courses and will provide students with an opportunity to develop innovation and creativity through research, designing and making.

The course consists of 50% coursework and 50% written exam. The coursework will be an individually tailored design and make project that allows students to develop solutions to real world problems in an area of interest. Skills explored include research methods, design development, prototype modelling, CAD modelling and workshop manufacturing methods. The written examination is split into two papers which explore problem solving and theory principles in design and technology. Pathways can lead into higher education at university and employment opportunities through apprenticeships.

Progress is assessed through mock examinations, past paper questions and design and make activities. A Question Level Analysis is provided after each assessment point which allows us to understand the strengths and weaknesses of each child and support future planning.

Home learning will engage students in past paper questions, revision tasks, coursework activities and design tasks.

Topics areas include: User requirements, Exploring existing products, Wider issues in D&T, Design thinking and communication, Material considerations, Manufacturing techniques, Technical understanding and Health and Safety.

***If you have any questions about the curriculum within Technology, Engineering and Design, please email the Director of Technology, Engineering and Design; Mike.dunn@thebourneacademy.com***