

St Cuthbert Mayne School Curriculum Map



Department: Design and Technology Department Engineering

Department Intent and overview KS5

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BTEC Engineering Pearsons Level 3 Extended Certificate - KS5

- To develop critical thinking and practical skills and apply scientific and mathematical principles to resolve technical and design
- situations in order to provide students with a breadth and depth of knowledge and skills. To provide students with challenging
- opportunities through the process of working as part of a team to design, plan and produce an engineered product. To cover industry

- standard Computer Aided Design and Manufacture (CAD/CAM) which enables students to actively engage and take responsibility
- for their personal development in the process of engineering design to develop as effective and independent life-long learners.
- Students will learn to make decisions, consider sustainability and combine skills with understanding in order to design and make
- engineered products, exploring ways in which technical, economic and environmental factors interact to shape designing and
- making. Students will develop an understanding of why analysing existing products will help produce practical solutions to needs. By
- understanding the manufacturing process students can then design new and improved products which have an impact on technical
- capability, efficiency, environmental impact and safety factors. The vast nature of disciplines and knowledge which come under the
- umbrella of Engineering, provide endless opportunities for a wide variety of employment and higher education possibilities. This
- course develops pupils' real skills, inspires and motivates, and helps them to prepare for the future and to take the next step towards
- an engineering education and/or career adventure. Engineering is defined as "the profitable application of science, maths and
- technology." In other terms, engineers make products and processes work, and keep them working, in an affordable way. To prepare
- and equip students with the knowledge, understanding and skills to pursue a successful career or further education in the
- Engineering sector.

BTEC Pearsons Level 3 Engineering

Year 12 Academic Year 2024 -2025

Topic/Unit	Unit 1: Engineering Principle	Unit 2: Delivery of Engineering Processes safely as a team
Knowledge (Content covered)	• To recall basic engineering principles and mathematical methods and formulae • To perform mathematical procedures to solve engineering problems • To demonstrate an understanding of electrical, electronic and mechanical principles to solve engineering problems • Analyse information and systems to solve engineering problems • To integrate and apply electrical, electronic and mechanical principles to develop an engineering problem. • Algebrae, Trigonometry, Static engineering systems, Loaded components, Dynamic engineering systems, Fluid and thermo dynamic engineering systems, Static and direct current electricity and circuits, Magnetism and electromagnetic induction, Single phase alternating current	• Examine common engineering processes to create products or deliver services safely and effectively as a team • Develop two-dimensional computer-aided drawings that can be used in engineering processes • Carry out engineering processes safely to manufacture a product or to deliver a service effectively as a team • Health and safety, risk assessments, PPE, COSHH regulations, manual handling, RIDDOR • Human factors - quality, safety, ethics • Orthographic projections, dimensions, tolerances, lettering • 2dD, CAD/CAM • Manufacturing including batch manufacturing and delivery
Skills	Numeracy, Algebrae, Trigonometry, Mathematical principles, Research, Discussion, Communication, Recording, Questioning, Testing, Revising, Applying,	CAD/CAM skills, Filing, cutting, Drilling, Soldering, Research, Discussion, Communication, Planning, Assessing risks, Team work, cooperation, Critical reflection, Feedback to others, Recording, Questioning, Testing, Revising, Applying, Evaluating

Assessment	Assessment 120 GLH External exam in May 2025	60 GLH internal assessment
Gatsby 4 (Linking curriculum learning to careers) GATSBY BENCHMARK 4	Architect, CAD technician, CAD engineer, Design engineer, Illustrator, App developer, Games designer, Software engineer, Digital media designer, Electronics engineer, Civil engineer, Electrician, Website designer	Architect, CAD technician, CAD engineer, Design engineer, Illustrator, App developer, Games designer, Software engineer, Digital media designer, Electronics engineer, Civil engineer, Electrician, Website designer,

Year 13 Academic Year 2023 - 2024

Topic/Unit	Unit 12: Supporting Individuals with Additional Needs	Unit 19: Nutritional Health	Unit 4: Enquiries into Current Research in Health and Social Care	Unit 8: Promoting Public Health
Knowledge (Content covered)	Diagnosing or determining additional needs, diagnostic procedures, standards of practice, specialists, Prognosis, Impairment Cognitive and learning needs, Dyspraxia, Dyslexia, ADHD, ASD, Inherited conditions, Down's syndrome, HD, Dementia, Older people's needs, Physical and health needs, Mental illness, Sensory disabilities, Accidents, Infectious diseases, Social and emotional needs, Elderly, Learning environment, Disability, Environmental and social challenges, Barriers, Personal challenges, Attitudes, Current practice and professionals, Support and equipment, Therapies, Financial support, Statutory provision, EHC's, Person centred care,	Healthy eating, Eatwell guide, Malnutrition, Food processing, Food preparation, Nutrition, Macronutrients, Micronutrients, Functions, Food sources, BMI, DRV, RNI, Dietary deficiencies, Children, Young people, Adults, Older people, Pregnant, Breast feeding, Dietary habits, Lifestyle factors, Socio-economic factors, Cultural factors, Education, Food labelling, Legislation, Diabetes, CHD, IBS, Crohn's disease, Allergies and intolerances, Coeliac, Lactose intolerance, NGT, PEG, IVI, TPN, Activity levels,	Research in Health and Social Care. Provision and Issues in H&SC. Health conditions, lifestyle factors. Social care and welfare needs. Research methodologies. Qualitative and quantitative data. Analysis of data. Conducting effective literature searches. Identifying, analysing and evaluating source material. Planning research. Modifying and monitoring research. Ethical issues. Confidentiality. Data protection. Human rights and research. Research skills. Numerical data. Reading techniques. Reviewing and evaluating research.	Origins and aims of public health policy. Strategies for developing PH policies. Monitoring the health status of the population. Groups that influence PH policy. Factors affecting health - environmental, genetic, lifestyle. Socio-economic impact of improving health. The role of health promoters. Protecting PH and well being. Environmental controls. Disease prevention and control methods. Features of health promotion campaigns. Barriers to participating and challenging indifference. Behaviour change.
Skills	Researching, Explaining,	Researching, Explaining,	Researching, Explaining, Producing,	Researching, Explaining,

	Describing, Assessing, Analysing, Justifying, Evaluating,	Producing, Comparing, Assessing, Analysing, Justifying, Evaluating	Comparing, Assessing, Analysing, Justifying, Evaluating,	Producing, Comparing, Assessing, Analysing, Justifying, Evaluating,
Assessment	60 GLH Internal assessment	60 GLH Internal assessment	120 GLH External assessment - 3 hour exam in May 2025	90 GLH Internal assessment
	Nursing, Midwifery, Paramedics, Dental nurse, Medical receptionist, Medical Secretary, Pharmacy technician, School nurse, Speech and language therapist, Hospital staff, Health care assistant, Care assistant, Care manager, Sports physiotherapist, Social work, Physiotherapy, Occupational Therapist, Community Health administrator, Environmental Health Practitioner, Health Records administrator, Sports development officer, Youth worker, Counsellor, Ward clerk, Laboratory technician, ICU technician, Health and fitness instructor, Support workers. Any jobs and careers related to working with babies, children, teenagers, adults, elderly, people with disabilities, mental health.	Nursing, Midwifery, Paramedics, Dental nurse, Medical receptionist, Medical Secretary, Pharmacy technician, School nurse, Speech and language therapist, Hospital staff, Health care assistant, Care assistant, Care manager, Sports physiotherapist, Social work, Physiotherapy, Occupational Therapist, Community Health administrator, Environmental Health Practitioner, Health Records administrator, Sports development officer, Youth worker, Counsellor, Ward clerk, Laboratory technician, ICU technician, Health and fitness instructor, Support workers. Jobs related to working with babies, children, teenagers, adults, elderly, disabilities, mental health.	Nursing, Midwifery, Paramedics, Dental nurse, Medical receptionist, Medical Secretary, Pharmacy technician, School nurse, Speech and language therapist, Hospital staff, Health Care Assistant, Care assistant, Care manager, Sports physiotherapist, Social work, Physiotherapy, Occupational Therapist, Community Health administrator, Environmental Health Practitioner, Health Records administrator, Sports development officer, Youth worker, Counsellor, Ward clerk, Laboratory technician, ICU technician, Health and fitness instructor, Support workers. Any jobs and careers related to working with babies, children, teenagers, adults, elderly, people with disabilities, mental health.	Nursing, Midwifery, Paramedics, Dental nurse, Medical receptionist, Medical Secretary, Pharmacy technician, School nurse, Speech and language therapist, Hospital staff, Health Care Assistant, Care assistant, Care manager, Sports physiotherapist, Social work, Physiotherapy, Occupational Therapist, Community Health administrator, Environmental Health Practitioner, Health Records administrator, Sports development officer, Youth worker, Counsellor, Ward clerk, Laboratory technician, ICU technician, Health and fitness instructor, Support workers. Any jobs and careers related to working with babies, children, teenagers, adults, elderly, people with disabilities, mental health.

