Year

10

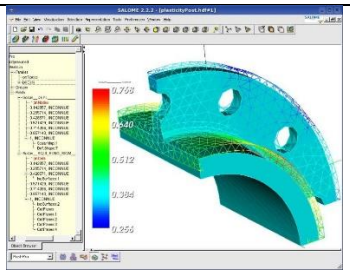
What will I be studying in Year 10?

During the course of your first year with us at the Energy Coast UTC, you will study various subjects, details of which can be found below. If you have any questions about any aspect of your courses, please speak to your subject teacher or your Form Tutor.

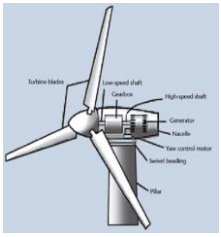
ENERGY COAST UTC

EMPOWERING FUTURE GENERATIONS

Engineering



In Engineering this year, you will be preparing to sit the online exam for Unit 1: "The Engineered World." This unit will include elements such as identifying the different engineering sectors and developing your understanding of different elements of production and manufacture. You will then go on to look at CAD/CAM and modern production practices and the environmental impact of engineering including green energy, developing your understanding of 3D printing, laser cutting and using CAD programs such as Cura and Fusion 360.



During the Spring term of Year 10, you will continue to consolidate your knowledge of "The Engineered World." You will be independently developing a bearing housing and turbine to make a simple wind turbine using Fusion 360 and then realising your designs using the 3D printers. These designs will then be tested for efficiency and accuracy of manufacture. You will also be focusing on revising and developing your knowledge for the Unit 1 external assessed, online exam.

Finally, in the Summer term you will be completing Unit 2 "Investigating an Engineered Product". You will assemble and disassemble a typical engineering tool (DTI and magnetic stand) and suggest alternative means of manufacture, considering why certain materials are used and the fitness for purpose of the product.

Throughout the year, you will be assessed in Engineering in a variety of ways including accuracy to specification and assessment of key skills. At the end of the Spring term you will have sat and received a grade for Unit 1 which is externally moderated by BTEC. Any student who fails to complete any of the above units at Level 1 or above will not be able to achieve a grade at the end of the two-year course. It is therefore imperative that all unit deadlines are met and that your work is submitted on time.

Engineering – workshop sessions

During your practical Engineering sessions in our workshops you will cover a range of skills to complete a lamp project. This will cover a range of hand skills, fabrication, manufacturing, electrical and CAD/CAM design. You will also complete a range of units in tutor time to compliment these activities for a further qualification.

Digital Engineering
(DEC! – Design Engineer Construct)

In DEC! this year, you will start by studying "Defining a sustainable construction project" which will include such elements as identifying the contextual needs of the client, recording project requirements and client expectations and establishing a budget in relation to the agreed clients' needs. You will then go on to look at "Formulation of project briefs", developing your understanding of how to outline the functional requirements of the project and establishing quality objectives.

During the Spring term of Year 10, you will investigate "An understanding of the constraints of the project "and "Developing the ability to draft feasible and realistic plans" during which you will deepen your awareness of testing ideas against planning protocol, carrying out a feasibility study and creating draft project plans, to name just a few.

Finally, in the Summer term, you will explore "How to develop a sustainable construction project "and "Producing technical support collateral for the project". You will be given opportunities to learn about various aspects of DEC! such as communicating the concept design to the project team, using the 3D environment to test the design in virtual locations and explaining the environmental and climate change reduction strategies.

Throughout the year, you will be assessed in DEC! in a variety of ways including tracking progress during lessons, verbal feedback, specific written feedback for you to respond to and submission of work to external moderators for confirmation that assessment criteria have been met. The year will end with a formal written mock exam in June which will be your chance to prove how much you know and understand, evaluating your DEC! subject knowledge gained during the course so far.

Combined Science

In science this year you will explore a range of topics related to Life Sciences and Physical Sciences.

In the Autumn term you will study: atoms, elements and compounds. This will enable you to develop fundamental skills when decoding the periodic table. Focusing on the biology aspect of the course you will learn how to classify and identify eukaryotic and prokaryotic cells to further your understanding of gene and cell manipulation.

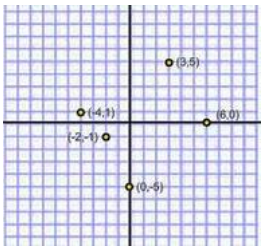
In the Spring term you will focus heavily upon acids and bases, making salts and endothermic and exothermic reactions. You will also apply cross curricular links with engineering when resolving a parallelogram of forces and resultant forces.

Finally, in the Summer term you will explore magnetic fields, magnetic field manipulation and electromagnetism. You will also have the opportunity to use our new free fall experiment kit as well learning about the nuclear industry through alpha, beta and gamma radiation. You will engage in a minimum of 18 required practical, spanning all three major science disciplines: biology, chemistry and physics.

Throughout the year in science you will be assessed in a variety of ways including exam style questions and practical experiments. The year will end with formal written mock exams in June which will be your chance to demonstrate how much you know and understand, evaluating your science subject knowledge that you have gained throughout the course.

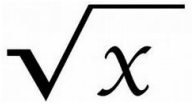
Maths (Foundation Tier)

In Foundation Maths this year, you will start by studying number properties, decimals, percentages, and basic algebra. Your work will include elements such as problem solving and real life scenarios including the use of money and time. You will then go on to look at ratios and proportion, sequences and graphs, developing your understanding of grouped data, statistical analysis and plotting co-ordinates.



During the Spring term of Year 10, you will investigate solving equations, angles, compound measures and area and perimeter during which you will deepen your awareness of graphical manipulation, calculator skills and algebraic manipulation.

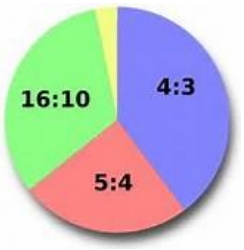
Finally, in the Summer term, you will explore indices, transformations, Pythagoras theorem and trigonometry.



Throughout the year, you will be assessed in Foundation Maths in a variety of ways including completing past papers and looking at past examination questions. The year will end with formal written mock exams in June which will be your chance to prove how much you know and understand, enabling you to evaluate your Foundation Tier Maths course so far.

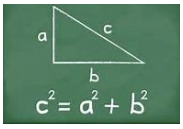
Maths (Higher Tier)

In Higher Maths this year, you will start by studying number properties of fractions, decimals and percentages, as well as indices and surds. Your work will include elements such as problem solving and real life scenarios including exploring the links between Maths and Engineering. You will then go on to look at quadratics, sequences and graphs, developing your understanding of grouped data, statistical analysis and plotting co-ordinates.



During the Spring term of Year 10, you will investigate ratio, angles, standard form, compound measures and congruence during which you will deepen your awareness of graphical manipulation, calculator skills and algebraic manipulation.

Finally, in the Summer term, you will explore algebraic fractions, Pythagoras theorem, probability and trigonometry.



Throughout the year, you will be assessed in Higher Maths in a variety of ways including completing multiple past papers and looking at past examination questions. The year will end with formal written mock exams in June which will be your chance to prove how much you know and understand enabling you to evaluate your Higher Tier Maths course so far.

English Language

In English Language this year, you will start by studying English Language Paper 1 which will include evaluating 19th Century fiction extracts. You will continue to study all aspects of the assessment criteria including fictional writing skills ranging from character development, plot structure and integration of metaphorical imagery to develop your creative writing skills further.

During the Spring term of Year 10, you will investigate English Language Paper 2, during which you will explore text type, genre, audience and purpose as well as analysing and comparing a range of non-fiction texts.

Finally, in the Summer term, you will explore non-fiction and transactional writing skills before turning to revise for both English Language Paper 1 and 2. You will be given opportunities to learn about various aspects of English Language such as fictional and transactional writing.

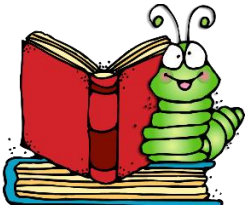
Throughout the year, you will be assessed in English Language by regularly completing questions from English Language Papers 1 and 2 from previous years. This will make sure that you're familiar with this style of paper and will ensure that any areas for development can be targeted and improved upon prior to the end of year mocks. The year will end with formal written mock exams in June which will be your chance to prove how much you know and understand, allowing you to evaluate your English Language course so far and set personalised targets for the next academic year.

English Literature

In English Literature this year, you will be given opportunities to learn about various aspects of English Literature, such as evaluating the overall presentation of characters and themes, authorial intentions and the influencing contextual factors which directly impact upon the presentation of key themes and characters throughout each of the specified texts. You will begin by studying 'A Christmas Carol', thinking about the presentation of Dickens' message and how he intended to influence his audience within the Victorian era.

During the Spring term of Year 10, you will direct your learning to studying Shakespeare's tragedy play 'Macbeth'. You will analyse his choice of language, structure and form considering how they would impact upon different audiences at different times with links to influencing contextual factors such as The Divine Rule of Kings and The Gun Powder Plot.

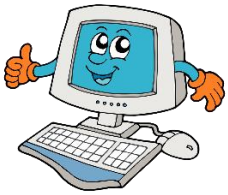
Finally, in the Summer term, you will explore the morality play 'An Inspector Calls'. You will evaluate the presentation of the different characters and themes with predominant links to socialism and capitalism. You will analyse the context of play's setting and how it influenced not only the writer, before turning to consider how Priestley's message was received by audiences in the immediate aftermath of World War 2.



Throughout the year, you will be assessed in English Literature by regularly completing exam style questions from previous years. This will make sure that you are familiar with the assessment objectives and that any areas for development can be targeted and improved upon to progress. The year will end with formal written mock exams in June which will be your chance to demonstrate your understanding, allowing you to evaluate the Literature course so far and set personalised targets for the next academic year.

Computer Science

In Computer Science this year, you will start by studying 'Problem Solving, Models, Hardware and Software', which will include elements such as learning how to use 'pseudocode' and 'using decomposition to design a solution'. You will then go on to look at programming which will develop your understanding of flowcharts and Boolean operators.



During the Spring term of Year 10, you will investigate networks and logic, where you will deepen your awareness of LANs and WANs, the environmental impact of technology and data representation.

Finally, in the Summer term, you will explore network security and graphics. You will be given opportunities to learn about various aspects of Computer Science such as data representation, subprograms and network topologies.

Throughout the year, you will be assessed in Computer Science in a variety of ways including presentations, multiple choice tests and practicals. The year will end with a formal written mock exam in June which will be your chance to prove how much you know, understand and can evaluate your Computer Science course so far.

BTEC Sport

Year 10 Sport Science

This year you will study Sport Science which provides you with a direct route to our Level 3 BTEC qualification. Below are the units you will study; the first unit is the external examination element and every other unit is assignment based.

Reducing the risk of sports injuries

You will learn how to prepare participants to take part in physical activity so that they minimise the risk of injuries. You will also learn how to respond to common sporting injuries and how to recognise the symptoms of some common medical conditions.

Applying principles of training

You will develop knowledge and understanding of the principles of training and how to keep performers in peak physical condition. You will be able to apply practical skills in fitness testing and in designing bespoke training programmes to suit individual requirements.

The body's response to physical activity

You will explore how the body changes and responds to physical activity. You will develop knowledge and understanding of the musculoskeletal and cardio-respiratory systems and some of the changes that occur in response to physical activity, both short term and long term.

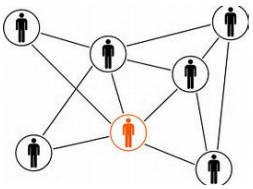
Sport psychology

Finally you will look at some of the key elements of sport psychology and the strategies and techniques used to help sports performers maintain an effective balance between being relaxed and focused when performing under pressure.

Business Studies

In Business Studies this year, you will take your first steps towards a career win the business world. You will learn essential skills such as business enterprise, project management, product development and financial awareness.

All businesses rely upon enterprising employees to drive their organisations forward; to have ideas and initiatives to instigate growth, and to ensure that businesses survive in this fast-changing world. Enterprise is a key government focus, and is set to form an important part of the UK's global economic status, both now and in the future. Enterprise skills provide a fantastic progression pathway into a number of roles in an organisation, and are transferable into all businesses. You will study…



Unit 1 – Designing your own Business Proposal:

- examine how companies use market segmentation to decide a suitable customer target;
- explore how market research helps enterprises meet customer needs and understand competitor behaviour;
- investigate the factors that contribute to the success of an enterprise.
- Design and create a product for a select target market
- Calculate and analyse cost implications for the product
- Explore the promotional methods used by enterprises and the factors that influence how enterprises identify and target their market, inclusive of financial documents and how to use them to monitor and improve the performance of an enterprise in order to make decisions and recommend strategies for the success of an enterprise.

Unit 2 – Marketing Concepts:

- Develop a greater understanding of the key business terms;
- Investigate a range of business concepts

Throughout the year, you will be assessed in Business Studies in a variety of ways including report writing, giving presentations and producing promotional materials that would impress any employer or customer. The year will end with a formal written mock exam in June which will be your chance to prove how much you know, understand and can evaluate your Business Studies course so far.

PE (Core)

In PE this year, you will start by focusing on rugby which will include elements such as lateral passing and formations. You will then go on to look at basketball and netball to develop your ball familiarisation skills, shooting and positioning.

During the Spring term of Year 10, you will take part in fitness and hockey during which you will deepen your awareness of the components of fitness, basic technique and leadership.

Finally, in the Summer term, you will explore tennis and softball. You will be given opportunities to learn about various aspects of Core PE such as gameplay, sportsmanship, analysis of performance and formations.

Throughout the year, you will be assessed in PE based on our "Hands, Heart and Head" criteria which will be explained as the year progresses. There will be no formal written assessments in Core PE.

Design and Technology (Product Design)

In Product Design this year, you will start by studying consumer products, applications and marketability. Your work will include elements such as product materials and their component including exploration of uses in industrial and commercial practices of product development. You will then progress on to develop a core understanding of Design and Technology principles, analysing materials in further depth and an Iterative Design Challenge, which will form part of your assignment component.

In the autumn term you will explore the social, cultural, moral and economic factors that affect the way a product is developed, designed and produced. You will develop a critical understanding of how new and emerging technologies can influence and inform design decisions, considering both contemporary and future developments. You will also begin to develop your analytical skills when developing design briefs, enabling you to respond to the demands of clients, generating ideas and designs from given scenarios.

In the spring term you will analyse products and consider how socioeconomic backgrounds can influence the design and manufacturing process independently. You will then progress on to gain specialist knowledge of the subject, developing an understanding of how cultural backgrounds can affect the materials chosen.

Finally, in the summer term, you will begin to produce prototypes of a given scenario, based on your design brief and technical specifications. You will also investigate factors that influence the characteristics and properties of the specialist chosen material. You will have the opportunity to work with your specialist material to develop a greater understanding of the manufacturing process.

Throughout the year, you will be assessed in Product Design in a variety of ways including assignment-based work, exam style questions and practical skills. The year will end with a formal written mock exam in June which will be your chance to prove how much you know, understand and can evaluate your Product Design course so far.