



# Getting Ahead – Summer Work

#Brock

## Engineering Technical Baccaulaureate Level 3 Extended Diploma

The summer holiday can itself leave gaps in knowledge that can be difficult once the course starts, and the extended period this year is likely to make this problem worse so students could be less prepared for the considerable demands of level 3 Engineering.

Engineering requires both Maths and English skills. Our Engineering course will include exams in Maths and Physics-type units – so confidence in these areas is particularly vital to success. But also being able to write clear, structured explanations and arguments is very important – and some students with weaker English skills find this difficult and so struggle to achieve Merits and Distinctions.

To help prepare for the Engineering course, we suggest:

- Continue to review maths topics and do exam questions regularly – even if you think you know it. (See list of topics below.)
- Write/type a planned explanation or description related to engineering (at least a page of A4). (See ideas for possible written tasks below.)

### Your Tasks

Task one: Research a historical engineer (e.g. Isambard Kingdom Brunel, Henry Ford, Leonardo Da Vinci, Elon Musk, James Dyson etc.) and explain in your own words what they achieved and their contribution to the modern day.

Task two: Research into an area of engineering that you are most interested in (e.g. modern trains, supercars, the longest bridges in the world, the development of the personal computer etc.) and write an extended report in your own words of what you have learned, including explaining how some detailed technology works.

Task three: Investigate the engineering design process, and write a clear explanation of the different stages in your own words. Also compare the design process in different companies. We suggest you start by checking <https://dysonthedesigner.weebly.com/design-process.html>.

Task four: Type up a 250-300 word description of what interests you most about engineering.

Task five: Keep your Maths skills up to date – keep doing GCSE Maths question and papers – especially questions on:

- Adding, subtracting, multiplying and dividing fractions



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- Using the rules of indices
- Factorising and multiplying out brackets (FOIL)
- Quadratic equations
- Simultaneous equations
- Straight-line equations ( $y=mx+c$ ) and calculating gradients
- Calculating areas and volumes
- Pythagoras & Trigonometry – for right-angled triangles
- Sine Rule and Cosine Rule – for non-right-angled triangles
- Plotting graphs

Task six: Take a simple product at home consisting of at least three parts – e.g. a torch, ball-point pen, or a child's toy. NOTE: Be careful that the product doesn't carry live electricity or include sharp components. On a single A4 page sketch an "exploded diagram" and add lots of annotations to explain how the product works or is assembled.

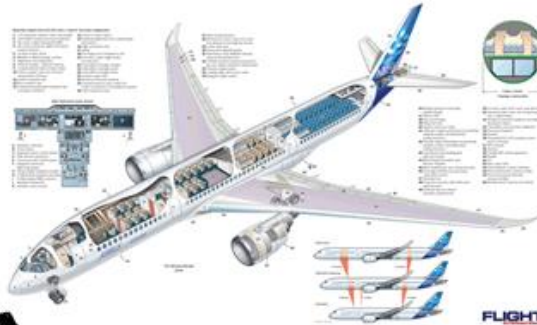
Task seven: You will be completing work experience/placement during the year. Start to investigate companies in your area (e.g. google maps / yell) and make a list of potential work experience opportunities that you might be interested in. Once you start your course, you will be given instructions about how to contact them and the dates/times you would need.

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#BrockFreshers

## Develop an interest in a field of engineering.

Find out about current aircraft technology, or the latest developments in F1, or become an “expert” in graphene or some other new technology. What do you know that other people don’t? This will impress others and helps demonstrate a genuine interest in engineering.



Brockenhurst College

## How Can I Prepare for Engineering at Brock and a Career Beyond?

**Practice Using Maths in everyday situations** – for example, if stuck in traffic, estimate how far you could walk in the time assuming a walking pace of 5 kilometres per hour, or if travelling abroad, convert the speed limit signs from km/h to mph. Can you recite your 13 times table? Estimating or doing calculations without a calculator will improve your mental maths skills and help you to become a better engineer. So don’t throw your school maths/science notes away!



**Build something that takes time and skill** – it could be something as small and simple as a detailed cardboard model or an Airfix kit, or as large and complicated as a go-kart. This will develop your practical skills, improving your attention to detail and increasing your patience and determination to help overcome future challenges.

Read up about the latest news about the engineering sector in the UK – look at the apprenticeship website: (<https://www.findapprenticeship.service.gov.uk/apprenticeshipsearch>) and find out which companies are recruiting and what they are looking for. This will make you more aware of where future employment opportunities are.



Apprenticeships



If you are considering going to university after Brock – find out what Universities might be possible, do they require A-level Maths or what grades they require. If you can’t find this out easily contact a university or find out when their open days are. This will help make sure you can get onto the course you are interested in.

**Investigate local engineering companies who might offer possible engineering Work Experience placements** – is there anywhere in particular that you would like to go to for the W.E. weeks in Jan/Feb that you can easily get to? Give them a call and explain that you are starting an engineering course at Brockenhurst College. Showing interest might help give you an advantage for future employment.



Remember that college is more like employment – you will be expected to meet the challenges of real life and demonstrate **employability skills** including:

- Being reliable – we will expect 100% attendance and punctuality
- Being prepared for work – organising yourself and make your work a priority
- Showing initiative – dealing with issues promptly and seeing teachers outside class if needed
- Treating others at college professionally at all times
- Meeting every deadline – using your study periods to complete assignments.