



Bishop Ullathorne Catholic School



A Journey into Engineering

Name:.....

Keep this booklet in a safe place

Introduction

Engineering courses at most universities offer a range of specialisms in which, after a common first or second year, the choice of specialism is made. Maths and physics provide the basis of all Engineering degrees. Researching the profession and finding opportunities for work experience starts in Year 12. This small booklet will help you make the best application, demonstrating your understanding of the skills and knowledge to become a qualified engineer. University Admission Officers are seeking to find applicants who have identified their strengths and experiences which match those qualities.

Prior to applying

Engineering is a profession where one has to handle complex concepts and theories and therefore an understanding of how they are applied to projects. It is necessary to be aware of the personal qualities and skill set required.

- Motivation to study Engineering; passion for science and technology
- Problem-solving skills; to be able to think logically and accurately
- Critical thinking skills; the ability to approach things differently
- Creative thinking skills; engineers are not just problem solvers but pioneers
- Mathematical competence; structural analysis understanding
- Communication and Leadership; express ideas confidently and clearly.
- Teamwork; thrive working in a team
- Organisational skills; work is likely to be time sensitive
- Work ethic; resilience and a determination to overcome difficult situations

Action

Background research from **Engineering Council UK (ECUK) Statement**

- Recent developments in the engineering profession and regulations that govern registration as a professional engineer (UK-SPEC) mean that M.Eng and bachelor's degrees are typical academic routes to becoming registered.
- Chartered Engineers (C.Eng) develop solutions to engineering problems, using new or existing technologies, through innovation, creativity and change. They might develop and apply new technologies, promote advanced designs and design methods, introduce new and more efficient production techniques, marketing and construction concepts, and pioneer new engineering services and management techniques.
- Incorporated Engineers (IEng) act as exponents of today's technology through creativity and innovation. They maintain and manage applications of current and developing technologies, and may be involved in engineering design, development, manufacture construction and operation.

Both Chartered and Incorporate Engineers are variously engaged in technical and commercial leadership and possess effective interpersonal skills.

NB: Most courses offer BEng and MEng degrees. MEng defers the minimum requirements to take the Initial Professional Development (IDP) training with an employer in order to obtain Chartered Engineer status, while BEng does not. However, students taking a BEng may be able to switch onto a MEng

course, as the first three years are broadly similar to a BEng. Another route for BEng students is to subsequently undertake an MSc, which allows access to IPD and Chartered Engineering status.

Useful Websites

www.scicentral.com

www.engc.org.uk

<https://epsrc.ukri.org>

www.etrust.org.uk

Engineering Specialisms

Consider and research which Engineering specialism would suit you.

Engineering Science: Courses which explore the science behind engineering

Acoustics and Sound Engineering:

These courses focus on sound and vibration engineering, which covers many aspects of society, such as the motor industry, airlines, the environment, underwater communication, ultra sound as used in medicine, and all communication systems.

Aeronautical and Aerospace Engineering:

These courses cover the manufacture of military and civil aircraft, theories of mechanics, thermodynamics, electronics computing and design.

Chemical Engineering:

Chemical Engineers explore solutions to problems across the whole spectrum of industries involving oil and gas, petroleum, pharmaceuticals, cosmetics, food and drink, biotechnology bioengineering and biomedical engineering.

Civil Engineering:

Civil Engineers translate the work of architectural designs into reality, dealing with large scale projects such as high rise buildings, bridges, dock and harbour projects, roads, railways, dams, water supplies and reservoirs.

Communications Engineering:

Communications engineering impacts on many aspects of the engineering and business world. Courses overlap considerably with Electronic, Computer, Digital, Media and Internet Engineering. They provide graduates with expertise in such fields as telecommunications, mobile communications and microwave engineering, optoelectronics, radio engineering and internet technology.

Computer, Control, Software and Systems Engineering:

The design and applications of modern computer systems is fundamental to a wide range of disciplines which also include electronic, software and computer-aided engineering. Most courses give priority to reinforcing the essential transferable skills consisting of management techniques, leadership skills, literacy, presentation skills, business skills and time management.

Electrical and Electromechanical Engineering:

Electrical and Electromechanical Engineering courses provide a sound foundation for students looking for a career in electricity generation and transmission, communications and control systems, including robotics.

Manufacturing and Production Engineering:

Manufacturing Engineering is sometimes referred to as production engineering. It is a branch of the subject concerned with management aspects of engineering such as industrial organisation, purchasing, and the planning and control of operations. Manufacturing Engineering courses are therefore geared to providing the student with a broad-based portfolio of knowledge in both the technical and business areas.

Mechanical Engineering:

Mechanical Engineering is one of the most wide-ranging engineering disciplines. All courses involve the design, installation and maintenance of equipment used in the industry. While Automotive Engineering deals with all forms of transport, specialisms are also offered in Motorsport Engineering and Mining Engineering at some universities.

Medical Engineering:

Biomedical engineering lies in the interface between engineering, mathematics, physics, chemistry, biology and clinical practice. This makes it a branch of engineering that has the most direct effect on human health. Biomedical Engineers work in fields as diverse as neurotechnology, fluid mechanics of the blood and respiratory systems, bone, and joint biomechanics, biosensors, medical imaging, synthetic biology and biomaterials.

Professional Engineering/ Engineering Science Associations

Energy Institute: www.energyinst.org

Institute for Manufacturing: www.ifm.eng.cam.ac.uk

Institute of Acoustics: www.ioa.org.uk

Institute of Marine Engineering, Science and Technology: www.imarest.org

Institute of Agricultural Engineers: www.iagre.uk

Institute of Civil Engineers: www.ice.org.uk

Institute of Engineering Designers: www.institution-engineering-designers.org.uk

Institute of Engineering and Technology: www.theiet.org

Institute of Mechanical Engineers: www.imeche.org

Nuclear Institute: www.nuclearinst.com

Royal Aeronautical Society: www.aerosociety.com

Choosing your University, things to question:

- Type and length of course
- Course structure: consider how the teaching and research is underpinned by industrial collaborations and facilities
- Placements, internships, year in industry,
- Sponsorships
- Research opportunities
- Size and location
- Super-curricular activities
- Student support system

Investigate:

- Entry requirements and A Level profile criteria
- What are they looking for in a personal statement?

Work experience, hands-on skills. An interest in solving mathematical problems related to physical concepts. Enjoyment of devices or components. Evidence of interest in a particular specialism illustrated through an appreciation of engines, structures, dynamics, fluid flow or efficient use of materials.

- Hobbies, participation in competitions and the ability to think creatively.

Visits to museums, historical places that highlight engineering achievements. For example: The Coventry Transport Museum, The Science Museum. London. The National Space Centre, Leicestershire. National Trust: Cragside, the home of Lord Armstrong who had a passion for engineering and innovation.

NB: Visits during the pandemic can be virtual and many museums have tours and lectures on specific exhibitions.

Keep a Diary or use your Enrichment Logbook:

- Participation in projects
- Articles read and the challenges that face different engineering/construction areas. Think about the creative energy used to build the Nightingale Hospitals or the large container ship which blocked the Suez Canal.
- Engineering breakthrough linked to space travel, air travel.
- Record your practical lab experiments/investigations

- Record of discussions with engineers
- Books you have read

Reading/ Podcasts/ Lectures

- Cats' Paws and Catapults by Steven Vogel - an introduction to biomechanics
- The New Science of strong Materials: Or Why You Don't fall Through the Floor by J E Gordon-explores the general properties of all materials.
- Mathematical Methods for Science Students by George Stephenson
- How to Read Bridges: a crash course spanning the centuries by Dr Ian Stewart
- Exactly: How Precision Engineers Created the Modern World by Simon Winchester
- Fundamentals of Aerodynamics by John D Anderson, a reflection on Fluid Dynamics
- Engineering Journals, for example Professional Engineer
- Gresham Lectures: <https://www.gresham.ac.uk/lectures>
- Speakers for Schools
- Podcasts
- Ted Talks

Making the Application

Choices

- **Five** choices: Remember that there are many combinations of Engineering degrees that can be considered as well as a single honours degree
- Aim to have your application ready to be submitted by October half term

Completing the UCAS form

- Fill in the form carefully and completely
 - Declare accurately all certified and pending results
 - Explain gaps in education.
- Personal statement structure
 - Address the required qualities of engineering professionals (page 6)
 - Use your personal statement workshop notes to help
 - Remember it is your opportunity to convince the university to offer you a place. It needs to include work experience, voluntary work, academic commitment and super curricular activities
 - Grammatically correct illustrating excellent communication skills
 - Confidentiality and ethical awareness.

- Advice from admissions offices
 - Do not plagiarise
 - Discuss articles which interest you on your application
 - Try to visit an engineering firm relevant to your choice of specialism.
- Academic reference is a personalised reference which will highlight general and specific ability.
 - Personal qualities and contribution to the school and community
 - Mitigating circumstances
 - Students preparation for the application (anything that address the specific criteria for Engineering)
 - Credibility in predicted grades.

Interviews

Not all universities use interviews. Some interview as a matter of process, while others only interview where clarification of the application may be required. Remember your science A Level background play an important part in providing a foundation for Engineering. Therefore if called for interview it is probable that questions will be asked on the application of these subjects.

How to prepare:

- Know about the course and location on the University campus
- Research engineers who are linked to the Engineering Faculty and the specific collaborations with industrial partners
- Re-read your personal statement
- Re-read any reflection diaries
- Keep up to date with news and engineering developments
- Think about the possible questions you might be asked and prepare a few of your own questions
- Examples of questions:
 - Where does your interest in Engineering stem from?
 - Discuss the applications of robots in industry?
 - Can you describe Newton's Law?
 - How does a fridge work?
 - A wing tip is vibrating; what device could be used to measure the velocity of the wing tip?
 - What mechanical objects have you examined and/or tried to repair?
 - Give some examples of process industries that might employ Chemical Engineers?
- Remember at an interview you will need to demonstrate:
 - Academic ability
 - Capacity to deal with the rigours of the course
 - Commitment to a career in Engineering

- Logic and reasoning ability
- Knowledge and enthusiasm for the engineering specialism.

Read the invite carefully, locate any documents that you might need

- Contact the university immediately if there are any issues
- Check the location, the campus and travel directions
- Travelling on the day? Have you allowed for travel delays?
- Create a file to take to interview:
 - Copy of original email letter inviting you to interview
 - Emergency contacts for the university
 - Original certificates and/or copies
 - Photo ID
 - Work experience log book / diary.

Key advice

Start Early

- Interview preparation starts with your **work experience**. Identify what you want to achieve from it and reflect on what you did achieve (record in diary).
- Talk to engineering students, reflect on open days, taster days, summer schools, online forums
- Developing confidence
 - Being well prepared
 - Activities to develop depth of thinking and response.

Example: consider the following questions. Can your response demonstrate an understanding engineering as well as your skills and aptitude for the subject and profession?

- During work experience what was the most important thing you learned about yourself?
- Why did you choose the Engineering Faculty and university?
- What element of Engineering/Automotive/Chemical/Electronic/Mechanical/Civil interests you most?

A skill that is required for a successful interview is ACTIVE LISTENING

- Hearing what is said
- Interpreting the message
- Evaluating the message
- Responding to the message
- Whole body listening
- Controlling emotional triggers

The interview

Interviews can be a structured panel interview or a more informal one to one interview.

Interview day

- Make sure you know the venue and arrive early
- Smart but comfortable clothes; if there is a dress code, follow it
- Listen carefully/ follow instruction
- Try to relax and be yourself
- Demonstrate appropriate body language
- Be calm, appropriate preparation means you have a good chance
- Be respectful
- Reflect
- Be aware of 'Competition'

Post Interview

Students often have to wait until March before receiving the outcome from all their applications. You will be able to attend further Applicants Days or Subject specific days. Remember that only 2 days can be taken during school time.

The Sixth Form team will support you throughout the process.

Career Note

Many institutions offer sandwich courses and firms also offer valuable sponsorships. Graduates can also use their qualification as a route to register as a professional engineer.

NB: For Higher Degree Apprenticeships, refer to the Higher Apprenticeship Booklet

Engineering Personal Statement: Coventry University

Studying engineering will give me the qualifications to be part of a creative industry, and integrate technology with our everyday lives to make a tangible difference. I love to challenge myself with questions and ideologies and take various approaches towards a theory to find unique solutions. I have the ambition and motivation to succeed and be the best I can in the discipline that I respect. I have adapted quickly to the demands of A levels and sought opportunities to develop my engineering interest. Participation in the 'Scrap Heap Challenge' at Coventry University provided hands-on exposure to apply creative and problem solving skills. The aim was to build an aerodynamic motorbike from limited materials and then test it in a wind tunnel. Evaluating the design to find a solution under timed conditions, while effectively debating ideas with my team was paramount. Success was rewarded by the team being judged first in the competition.

During the summer I visited the ESRF in France, after winning an essay writing competition about Kathleen Lonsdale, where I was able to see how engineers implement fundamental principles and design in their work. The most interesting part was seeing how mechanics is applied in biology labs and how robots are used to separate the proteins from solution.

Witnessing cutting edge technology developed my interest in how things work and how engineers create our future, and confirmed my choice of further study. My Nuffield Research Project at Coventry University was based on the effects of an aircraft's angle of attack and how it varies at different points of the plane. I also used MATLAB to write a code which could measure the angle at different velocity values recorded. I explored how aerofoils create lift through Newton's laws and Bernoulli's principle. This experience introduced me to aerodynamics and I enjoyed applying theory into practice, which led me to complete a Gold Crest Award.

A visit to the Advanced Technology Manufacturing Centre through the Social Mobility Foundation gave me further access to innovative technology such as 3D metal printing, which uses non-conventional, additive ways of manufacturing. This new technology excites me, and is something that I want to work on in the future. Through Mensa's Science Special Interest Group, I became interested in an article 'Mars' Atmosphere' by Jonathan Amos. It explained how its atmosphere was 'lost' due to the solar winds, which abraded the gases because of the planets lack of a magnetic field, unlike Earth. This inspired me to produce an independent study on exploring our and exoplanets atmospheres and how space travel by the likes of the Alcubierre Warp Drive can be achieved. I also researched whether terraforming Mars to live sustainably is a feasible option which, with current technology, I think would be unachievable as we currently do not know if we can increase the atmospheric pressure on a large scale. My efforts in this were recognised by being awarded the Physicist of the Year Award by the Ogden Trust.

I enjoyed completing my Bronze Duke of Edinburgh Award and working creatively with the police to strengthen social relations through community programmes 'Speak for Yourself' and 'Unity Jam' which led me to receive the High Sheriffs Award. The process encouraged me to be more objective, and to look at social and engineering problems from a different angle, making me more analytical; something I believe Samuel Florman conveyed in his book, 'The Existential Pleasures of Engineering'. He gives the example of how misguided prepositions by ignorant characters led to the downfall of its golden age, stunting innovation and doubting its integrity. Being a Muslim woman in today's society has taught me how stereotypes influence opinions towards certain individuals but also how to rise above and overcome these apprehensions, which gives me the determination to work hard and achieve my goals.

Personal Statement: Electrical Engineering at Warwick

Studying Electrical Engineering would give me the opportunity to help integrate technology in our lives to make a difference, beneficial for the society. One of the crucial tasks of engineering is centred on resolving issues to make more efficient solutions, which in consequence creates new challenges and requires various approaches to actualize a unique theory. I am determined to explore new technological concepts to succeed as an engineer. I am inspired by development of electric vehicles as electrical advances produce competition to innovate. More companies have decided to invest time and workforce into improvement of hybrid vehicles due to their environmental advantages including saving energy resources and reducing gas emissions. Electric vehicles also have cheaper production costs which can allow for higher investments into further development to maximise power efficiency. New theories can be fundamental into the research of manufacturing better designs so I am excited to explore innovative engineering systems for the various routes engineers can take. Studying maths, further maths and physics has helped me appreciate how the disciplines complement each other. They are the necessary foundation for understanding both, theoretical and practical modern applications.

A visit to a Warwick University Conference provided me an insight to the constant innovation of engineering. It was attended by many enthusiastic students creating a highly motivated atmosphere as there were professionals giving a lecture about automation and its future in engineering. It gave me a perception of how automation has given drones the ability to deliver products for use in ecommerce or medical needs. Ideas like these drones are a path to the future of industrial advancement. They would require precise calculations and manufacturing to work efficiently in all circumstances, however a completed model has the ability to resolve problems such as slow delivery times and reliability. It was inspiring to see how automation would be more sustainable and efficient with a lower margin of error.

I have previously volunteered to help in the maths department to prepare younger students for exams. My enthusiasm can be replicated studying engineering as I strive to master techniques and I demonstrate a passion to problem solving.

One opportunity I have experienced includes participating in the 'Scrap Heap Challenge' at Coventry University, where teams were instructed to design an aerodynamic spoiler from scrap materials under timed conditions. These spoilers had to be adapted in such a way, that they could be mounted onto a model car as well as withstand a wind tunnel, where calculations took place to find drag and lift. Successfully, my team were able to communicate our ideas together and merge them to calculate results. I noticed that my team would debate the positives and negatives of each idea, which can represent a realistic engineering situation, since different approaches can help decide what suggestion is best.

Participating in the Warwick Scholars programme has increased my motivation to study electrical engineering as a degree and be part of an outstanding academic environment. I would be excited to attend various workshops, lectures and research facilities while developing my independent learning. The degree would give me the necessary academic skills to become a successful engineer, allowing me to be familiar with how electrical energy conversion works and where I would be able to use this knowledge for new applications. I look forward to the challenges ahead.

Personal Statement: Aerospace Engineering Coventry University

Engineering is a perfect choice for me as I have always had a fascination in building model cars and planes. The satisfaction from finishing one encouraged me to keep going with my hobby and nurture it to what it is today. I also am intrigued with space and to know that one day I may be able to contribute to space travel increase my passion even further.

I attended an Engineering lecture at Warwick University which gave me an appreciation of how much technology has advanced in recent years and how exponentially it is evolving. One of the most interesting things discussed was the idea of how short distance air travel was likely to increase for commutes to work. On reflection this was before the pandemic which has devastated the air industry. However it was fascinating to see how they described data modelling to forecast timelines; it underpinned the use of maths in engineering industry. I also participated the Scrap Heap Challenge at Warwick University which gave me experience of working with a team on a project; as a group my group were challenge to make an aerodynamic spoiler, to reduce drag, for a model car in a wind tunnel using scrap materials. We realised our plan required smother surface of the materials but none were available, so we had to improvise by removing the top surface layers.

Initially I was introduced to the manufacturing process involved in engineering through participating in workshops at Coventry University, run by BMW and Aston Martin. I learned the basics of building a vehicle with a motor and a foam body frame. It helped me understand that engineers have to work to a budget when designing a car. The Aston Martin presentation explained the CAD process and the skilled craft involved in building the car. An intriguing article in The Professional Engineering Journal highlights Navid Khordehghah journey in becoming an aerospace engineer and his design of making a more efficient wing by reducing drag. I also recently watched a Ted Talk on space "The Curious World of an Aerospace Engineer" by Tracy Drain where she gave her views on space and engineering. She encouraged her audience to look at space with a different perspective, to think more creatively. This made me reflect on my approach to problem solving.

Studying Maths and Science A levels has developed my independent learning. Maths has helped me develop my problem solving skills, while Chemistry gives me an insight on how complex the world is. It has nurtured my interest in different materials and fuels. Physics has increase my understanding of different aspects of engineering.

The future learn course "Technical report writing for engineers" by the University of Sheffield gave me an insight on the management side of engineering and how to communicate the ideas I have in a digestible way. Someone who has personally inspired me, is Elon Musk and his company space x and how he had, at the time of writing this, finished the Starlink project which wants to connect the entire world to the internet. My Sri Lankan cultural background, with my parents coming to the UK in the 90s, has given me an appreciation of how important that project is.

My university application excites me as my parents did not have the same opportunities. Participating, in the Realising Opportunities programme has given me an insight of the academic environment and I look forward to being part of the student community.

Personal Statement: Electronic Engineering Foundation Birmingham City University

My Interest in Robotics and AI comes from seeing how the science involved can be used to create human and animal like machines and be very efficient in doing so. Marc's Raibert TED talk "Meet Spot, the robot dog that can run, hop and open doors" explains how his team at Boston Dynamics have built the most advanced robots. His talk explains how this robot was inspired by animal like agility and dexterity. "Spot" uses self-learning algorithms which enables it to respond to an unexpected problem just like a real-life animal would do.

I have also completed the "Begin Robotics" Future Learning Course by The University of Reading and found it fascinating. I have learned how to determine the appropriate commands to allow a robot to achieve tasks using information from sensors and appreciate how aspects of robotics can be applied in many different scenarios. It led me to start planning out my own robot project and learn the basics of Java-Script on Grasshopper. I have also studied two courses on Brilliant.org "Computer Science Fundamentals" which taught me the key ideas about computer science. It helped me to see a way to program my robot to include self-learning or AI to its system. "Introduction to Neural Networks" gave me an opportunity to understand how a machine can create patterns or solutions to different tasks by learning its failures and adapting its strategy. This would explain how a basics self-learning algorithm can be made.

A Level Math and Physics have developed my problem-solving skills and I can see how they are used in every engineering process.

Physics has developed my understanding of electronics and have helped me to build a well-designed circuit board to include different components. For example, as capacitors to use for timing of the circuit or to create massive voltage using a Marx generator.

I attended a Warwick Engineering Conference and listened to an interesting presentation about Drones and how they can be used for transport or delivering packages. The engineering process to build a sustainable artificial communication system for all the drones to communicate is so necessary to avoid crashing into each other.

I enjoy being the DIY person at home who fixes electronic devices, and I am confident using a variety of tools including the soldering iron. All these experiences encourage me to make this application.

I am a hardworking individual who strives to complete every task to the best of my ability. I am very motivated and learn from solving problems. I am hoping to gain the qualifications to study on a foundation course which would lead to a degree programme.

Personal statement: Manufacturing Engineering Loughborough University

My aptitude for mathematics and physics has cemented my desire to pursue a career within the field of Engineering. As a Coventrian I am aware that it is home to the UK's largest aerospace cluster (the Midlands Aerospace Alliance) and two National Catapult Centres. I have seen how close family members have excelled in engineering roles within many of those leading manufacturing companies in the area; a positive inspiration for my degree choice.

My interest in engineering has been developed through secondary school learning about the fundamental pieces of the universe. Physics gives me an insight into the mechanics of everyday objects that we take for granted. Looking at technology advance throughout recent years has grabbed my attention and leads me to think about the further development of humanity. I take an independent approach to extra-curricular activities having completed several Future Learn online programmes including; How to Survive on Mars, The Science of Nuclear Energy, The Secret Power of Brands, Biosecurity and Bioterrorism: Public Health Dimensions, Teaching Practical Science: Physics. I very much enjoyed the opportunity to take part in Coventry University's Scrap Heap Challenge which involved using everyday objects to engineer an aero-dynamic spoiler and to put it to the test in a wind tunnel. To have the opportunity to work together with fellow peers and lecturers on an engineering project, exploring new concepts, was something which has inspired me.

In addition to the above, I understand the importance of gaining valuable employability skills and have recently achieved the ECDL Level 2 qualification to demonstrate competence using Microsoft Applications (Word, Excel and PowerPoint). I am also a keen sportsman and play football for both my school and Sunday League teams which is great for both teamwork and maintaining my fitness levels.

This summer (July 2018) I was selected by The Sutton Trust to attend a residential Physics Summer School at The University of Warwick. I was able to discover many things from superconductivity and magnetism to ultrasound and non-destructive testing and I had the privilege to go to the National Space Centre. The placement also gave me further insight into an academic environment, living and studying as a university student. I had the opportunity to build social skills and confidence in 2017, as I participated in National Citizenship Service at Coventry University. This three week experience broadened my knowledge of other cultures and heritages. I took part in a social project learning about sickle cell disease which raised my awareness of hereditary blood disorders. I worked as a team member to raise funds and participated in a group presentation building my team working, public speaking and confidence skills.

I secured a work placement in July 2018 at National Grid HQ in Warwick gaining an insight into engineering in practice. Spending time in the Gas National Control Centre gave me a sound understanding of how the UK's gas is transported from beach to meter. The technology to enable the compressors to maintain the correct pressure relies on the expertise of engineers to resolve any complications. It broadened my knowledge of engineering and commercial regimes. It was interesting to see the commercial aspects of the industry where, again, engineers play a crucial role in coping with the supply and demand of gas.

My own engineering interest is currently in the area of Defence Engineering. To have the opportunity to work within engineering teams on some of the most progressive and complex technologies in the world is of great interest to me. In order to progress into my chosen path, I look forward to gaining a solid foundation of the main engineering disciplines at a top-class University providing world-class engineering degrees

Personal Statement: Biomedical Engineering University of Bolton

An interest in engineering has always played a key role throughout my life. I have worked with my father on many of his projects from a young age both restoring and modifying classic cars for shows and for fund raising events. This has developed my practical skills whilst applying theoretical physics to help solve some mechanical issues. It has required resilience and patience but has given me great satisfaction, with the motivation to furthermore develop my knowledge within engineering subjects.

My methodical and analytical approach to science has helped to strengthen my abilities in Maths, Physics and Biology which are areas I enjoy and have given me an appreciation of the theoretical and physical aspects. Potential opportunities in the medical industry have brought forward connections I can apply with both Physics and Biology, allowing me to combine the both for engineering applications in medicine. I had been inspired by a young family member who had an above knee amputation through bone cancer. Engineering and resilience gave him the means to continue much loved sports and outdoor activities for the short while he was able to do so. I wish to apply my skill set to this precise area through this course.

Helping others has always been important to me and I have been involved through the years in several events ranging from raising money for children's charities through Sporting Bears and supporting a winter homeless shelter for Hope at a local church. My favourite experience was giving out presents to children in hospital when Santa came to visit, making me realise just how fortunate I am and pleased to see how happy they were. These experiences have inspired me to enter a career where helping people is key and I believe I can achieve that through this degree.

Throughout my A levels I expanded upon my interests. An opportunity to take part in a Scrap Heap Challenge hosted by Jaguar Land Rover at Coventry University gave me the chance to utilise my abilities. The task of creating the most aerodynamic transport model we could make from random materials was undertaken by our team. The task was completed, and we were able to win the competition, beating several other sixth forms and some university teams. The challenge was very enjoyable as well as the prior lecture and university experience.

A passion for Rugby Union is a very important part of my life. As a member of our local team for 9 years now, my personal abilities have been improved to a high standard as well as my fitness. Multiple skills have been developed which are transferable into all areas such as communication, discipline and working closely as a team. This will be particularly important for researching, working in and managing large projects.

I am using my gap year to help finance my degree study. Working in both DX's offices and warehouse I have a variety of responsibilities including the secure processing of legal documents and leading new employees to complete tasks efficiently. I am looking forward to the challenge of undergraduate study and know that I have gained the responsibility and enthusiasm necessary for success.

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