CAREERS IN ELECTRICAL ENGINEERING

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Resource Pack

2016

In association with:

LEONARDO

ALMOST EVERYTHING WE DO LINKS TO ELECTRONICS.YOUR COMPUTER, MOBILE PHONE, THE COUNTRY'S DEFENCE SYSTEMS, WEATHER SATELLITES AND THE CONTROL UNITS AROUND YOUR HOUSE. THESE THINGS HELP KEEP US SAFE, INFORMED AND CONNECTED

To live, work and enjoy leisure time we need **power**, **lighting** and **communications**. These essentials are constantly improved thanks to the various engineering disciplines.

In the UK, the engineering sector as a whole is a **major employer**.

In 2015 alone, there were over 5.5m people working in engineering-related jobs. And it gets better. One engineering job generates two more, in other support services and supply chains. This helps the economy grow and gives us all security.

Working in electrical engineering puts you at the heart of **modern life**. Your **ideas**, **research**, **development** and **practical** skills will improve lives.

Now is a great time to consider this industry.

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DAY IN THE LIFE OF AN ELECTRICAL ENGINEER...

Inventing, manufacturing and maintaining hi-tech equipment sounds fantastic, but **what could an electrical engineer do each working day?**

• We all need power. Whether that's from coal, gas, oil or nuclear plants it must connect to the national grid. Or your TV won't work!

• As environmental concerns grow, we must think about renewable energies. Solar panels, wind turbines and hydro-electric systems all need upgrading and maintaining.

• Each month in the news we hear about the need for new housing. These developments requireprofessionals to install power, lighting and ventilation systems.

• Travel is important for business and leisure. Someone needs to maintain air traffic control technology, motorway information systems and train signalling equipment.

• And let's not forget what you can't see or touch! Satellite connections give us weather notifications, but also keep vital defence forces up-to-date as they seek to keep us safe.

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YOUR ROUTE INTO ELECTRICAL ENGINEERING

Every business needs people with skills and qualifications. The demand for engineers of all disciplines increases each year. In 2015 several surveys show that over the next few years there will be shortages in engineering, science and technology research. Now is a fantastic time to equip yourself for a rewarding career.

UNIVERSITY TECHNICAL COLLEGES

This is the new kid on the block. Between the ages of 14-18 you can now start to specialise. At a UTC you will combine studies with hands-on work experience. You get the chance to plan your career early. This is done with great links to local and national employers. You can find out more and watch informative videos at http://www.utcolleges.org/

APPRENTICESHIPS

There are many openings in the Engineering sector straight from school. If you are practical, enjoy solving problems and have good skills with machinery and electronics, an apprenticeship will allow you to earn while you learn. You will usually need a minimum 5 GCSEs, in particular maths and sciences. Get A* - C grades to give yourself the best chance of selection.

During your training you can collect UCAS points (for entry to university in later life), gain Technical Certificates recognised by industry, study at college or continue working towards promotion.

One example of a good apprenticeship provider is Leonardo, a leading engineering company in aerospace, defence and security, plus business information systems. Over 4,000 people work at their UK sites.

The company offersTechnical Apprenticeships that utilise cutting-edge systems. Leonardo ES encourages learning while you work, allowing you to explore advances in science and technology.

Strong links are maintained with colleges and universities, so that you can make the best choices as you look to specialise within the company. The training has been recognised as "Outstanding" by Ofsted.

Find out more about Leonardo apprenticeships at

http://www.uk.leonardocompany.com/people-careers/apprenticeships

VOCATIONAL COURSES

Sometimes, a purely academic route to employment might not be for you. Engineering jobs will always require qualifications, so a vocational scheme that gives you an NVQ, BTEC or a Diploma is a sensible start. These tend to focus on specific employment skills, but still give you options to follow other academic courses later.

UNIVERSITY

With a mix of maths and science "A" levels you can take through university into electrical engineering.

There you will gain a good understanding about what's required to get some of the best jobs in the industry. Your time at university will give you a Bachelors degree (BEng) and maybe a Masters (MEng) later. You will usually spend a year out getting valuable work experience.

As a graduate Electrical Engineer, your knowledge and decision-making will keep the world's key systems and technologies ticking over. You will work alongside other professionals, like civil engineers, architects and IT professionals. You will enjoy superb financial rewards and get great job satisfaction.

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TIPS FOR GETTING A JOB

The experts at Leonardo have provided us with some top tips to help you on the path to a career in electrical engineering.

- Make sure you study the right subject academic subjects, Maths and Physics are key skills for an electrical/electronics engineer.

- Think about a more practical subject that compliments the academic learning like technical drawing or computing.

- Take opportunities to be creative and innovative. Engineering is about applying science to great ideas. Good electrical /electronic engineers are both scientific and creative at the same time.

- Think about activities that can give you practical skills. There are lots of great kits out there for building electronics based on Raspberry Pi and Arduino hardware or building your own custom computer.

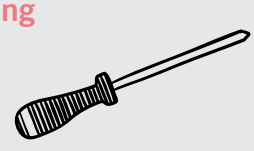
- Learn how to fix broken tech from Ifixit.com. This website gives you a great insight into how everyday technology like phones and cameras are put together.

- Be curious about how and why things thing work. Always take the opportunity take apart a broken piece of electronics to see what inside before disposing

- Short periods of work experience and or Job shadowing in the industry can give you a great insight to what electronics engineers really do.

- Consider applying for the Engineering Development Trust (EDT) schemes like Go4SET, Headstart and Year in Industry.

- Get your school set up in a Young Engineers Club. Young Engineer Clubs get involved in exciting activities like Leonardo Rampaging Chariots.



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Apprentice Case Study

Jillian Thomas

FIRMWARE ENGINEER @ LEONARDO

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Jillian Thomas
Firmware Engineer At Leonardo

HAVE YOU ALWAYS WANTED TO WORK IN ENGINEERING?

I would say from quite a young age. I always had an interest in how things worked and I was good at Maths. When I went to high school I got a chance to do Tech and that gave me the chance to look at programming and electronics and things like that. So it call kind of came from that.

WHAT DOES YOUR POSITION ENTAIL?

I am a Firmware Engineer and I work as part of the Antenna Delivery Team. The project I am currently working on is a next generation surveillance radar and I work on the powering control. So I work on the memory interfaces and that sort of thing on a day to day basis.

WHAT HAVE YOU LEARNT FROM WORKING AT LEONARDO?

It's really just seeing a complete system design, I think that's one of the things that really stands out is that my friends work in engineering companies where you make one device and that it, but here there's such a range of products. And it's just not Software Engineers, it goes from concept right through to delivery. I think that's a great thing about working here.

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WHAT IS THE WORKING ENVIRONMENT LIKE AT LEONARDO?

There's a clear hierarchy that whenever you come in the door you've got a graduate in the year above assigned to you, so if you've got issues you have help. And the team they put you in there's a lot of support comes from them in terms of your development as a technical person.

At every stage they make sure that no one gets left behind. Especially when you start you don't really know what you're doing. It's good they take a number of students and graduate on at the same time so you immediately have this kind of pre-built family of people who are all in the same position. Because they do it year on year it has a very defined structure and everybody knows that you're new and go out of their way to help you out.

HAVE LEONARDO HELPED YOU PROGRESS?

There's a lot of training opportunities on offer and I think each time I have come back they have given me something progressively more difficult but also more interesting, giving me a different idea of different elements of the business.

WHERE DO YOU SEE YOURSELF IN FIVE YEARS?

I would like to think I would be a Senior Engineer. I'd be working towards me Chartership if I haven't already obtained it by that point, but that is really the next big milestone.
What advice would you give to someone looking to apply to Leonardo?
I would just say don't be afraid to put yourself forward and if you do get the opportunity to do it, take it. Put yourself out there and take any opportunity that goes your way.

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Apprentice Case Study

Seamus Somerville

TECHNICAL ENGINEER @ LEONARDO

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Seamus Somerville
Technical Apprentice At Leonardo

WHAT DOES YOU POSITION ENTAIL?

One day a week we are in college doing an HND and the other days when we are actually in work we do seven week placements in different departments of the business. You can be in a support place where you are writing procedures or doing spreadsheets or you can be more hands on with the products, putting them together or testing them for faults or looking after equipment. Various different things.

WHAT ARE YOU CURRENTLY DOING?

I am currently doing a final integration test where they test the software on the radars before they go out.

WHAT HAVE YOU ENJOYED DOING MOST SO FAR?

The work I am doing now is good. It's very technical, because I am very interested in electronics getting to find out how certain radars work is quite good.

HAVE YOU ALWAYS WANTED TO BE AN ENGINEER?

Yeah. Most apprentices start at about 17 or 18 but I am actually 23. I went to university to start off with to do civil engineering but that wasn't really for me. When you go to school you don't really know 100% what you want to do. I wish I had done more mechanical or electronic engineering to start off with but I went into civil engineering. After two years I decided it wasn't for me, came out and worked full-time in Wickes . Now I have got this apprenticeship and it is always what I want to do, mechanical and electronic engineering.

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WHAT MADE YOU CHANGE YOUR DIRECTION AND APPLY FOR THE APPRENTICESHIP?

I always thought that engineering would be about designing products but with civil engineering was more about where to put concrete and stuff, which is still interesting but wasn't right for me. I applied for a couple of apprenticeships but the Leonardo one seemed to be the best because it actually has mechanical and electronic engineering. Some of the other apprenticeships were putting up power lines or doing maintenance on windmills or something but Leonardo is very technical and has the stuff I am interested in.

ARE THEY ACCOMMODATING TO YOU WHILE YOU LEARN?

Yes, totally. Everyone here is really interested in teaching the apprentices because they see it as bringing in the next generation. Everyone here who is older is very keen to pass on their knowledge and teach us the best way to do things. It's a good environment.

WHAT IS LIKE WORKING AT LEONARDO?

There are a lot of benefits, like flexitime coming in. Between 7 and half 9 you can come in and you can leave between half 3 and 6, just as long as you complete your hours for the week you can leave when it suits you. We get a half day on Friday as well, and everyone's really friendly so it is a really good environment.

WHAT'S YOUR BEST MEMORY OF YOUR PLACEMENT AT LEONARDO?

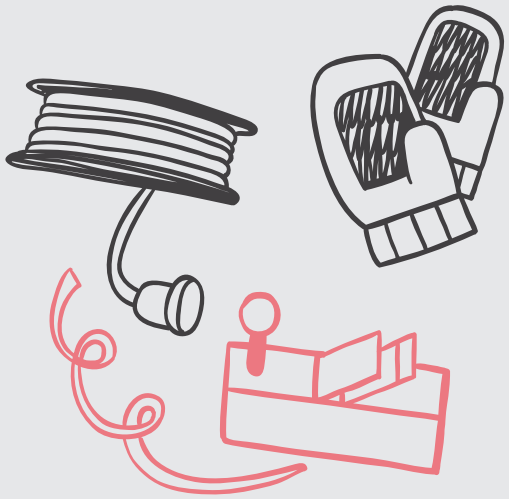
I got to go on a trip to an RAF base in Waddington to actually see some of the equipment we worked on being used in the field. We got to see our end product actually being used and to do annual maintenance on it as well. So it was quite good to get away and see our stuff in the field.

Apprentice Case Study

WHERE DO YOU SEE YOURSELF IN 5 YEARS?

I am six months into an apprenticeship so I have 3 and a half years left of that. After that, the last year of the apprenticeship you get a final placement so you can be on the one you want and I am hoping Leonardo will sponsor me to go to university. If not, I'll go to university myself because the HND will be equivalent to the first and second year of university so I hope to do my third year either in my spare time or if Leonardo let me do it on day release.

They are very about continued personal development, but it depends on whether the department you're in would require it and have the budget for you to do it. You have to do a 15 minute presentation to make your case and prove whether your degree is worth it or not.



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More useful resources

Need more help with your careers choices? You can find a wealth of help and opportunities at the following places:

LEONARDO

THEBIGCHOICE.COM

Find quality advice and opportunities in apprenticeships, part-time jobs and training on this youth careers portal.

SCHOOL LEAVERS GUIDE

This interactive app guide brings together expert advice, guidance on career steps and positions from top employers via your tablet or smartphone.

NATIONAL CAREERS SERVICE

The official place for careers advice and information in the UK.

NATIONAL APPRENTICESHIP SERVICE

Everything you need on apprenticeships and the best vacancies on offer.