

Tackling the Verification Skills challenge in the UK

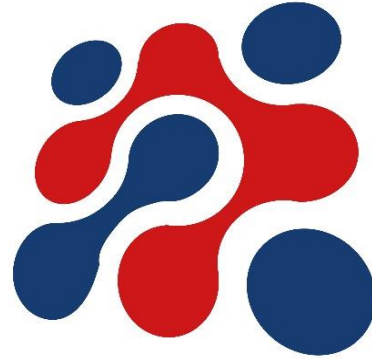
VF2022

8th June 2022

Connecting most capable students from top universities with leading employers



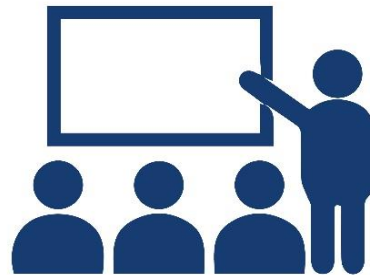
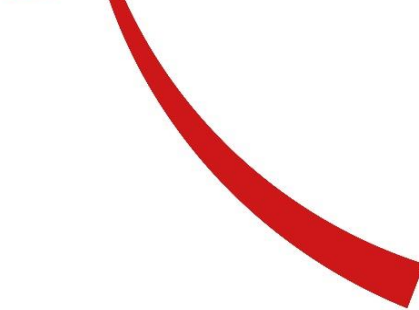
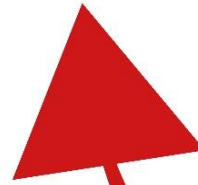
University



**UK Electronics
Skills Foundation**



Industry



School



Encouraging more young people to study Electronics

UKESF Partner Universities 2021



THE UNIVERSITY
of EDINBURGH



Imperial College
London



UK Students University Acceptances



Acceptances from UK Domiciled Students on Engineering & Computer Science Degree Courses 2012-2021¹

	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021
All UK Domiciled Students										
Civil Eng HE Acceptances (H2)	3,100	2,990	2,805	3,115	3,315	3,450	3,440	3,255	3,430	3,485
Mech Eng HE Acceptances (H3)	5,260	5,800	6,070	6,690	6,750	6,515	6,545	6,425	7,030	7,050
E&E Eng HE Acceptances (H6)	3,210	3,425	3,350	3,525	3,510	3,330	3,150	2,965	3,105	3,245
General Engineering (H1)	2,730	3,110	3,780	4,085	4,010	4,165	4,025	4,260	4,115	4,305
Engineering HE Acceptances (H)	19,050	20,660	22,325	24,000	24,015	23,880	23,430	23,215	24,195	24,675
E&E Eng as % of overall	17	17	15	15	15	14	13	13	13	13
Computer Science HE Acceptances (I1)	11,190	12,820	13,825	15,410	15,700	15,620	15,430	15,110	15,975	15,765
UK Females										
<u>Overall</u> HE Engineering	2,245	2,415	2,990	3,510	3,685	3,755	3,840	3,915	4,035	4,240
E&E Eng HE Acceptances	225	240	265	280	310	295	305	255	290	335

Data accessed from: [UCAS Undergraduate sector-level end of cycle data resources 2021 | Undergraduate | UCAS](#)

Experience		Graduate	3 years	5 years	10 years	12+ years
Digital IC Design	<i>Perm (p.a)</i>	£34,000	£42,000	£52,000	£65,000	£75,000+
	<i>Cont (p.h)</i>	-	£42	£48	£50	£52+
Digital IC Verification		£34,000	£42,000	£55,000	£65,000	£80,000+
		-	£42	£48	£52	£55+
Physical Design		£34,000	£42,000	£52,000	£65,000	£75,000+
		-	£40	£46	£50	£52+
FPGA Design		£31,000	£40,000	£47,000	£60,000	£70,000+
		-	£40	£48	£50	£52+
Analog/Mixed Signal IC Design		£34,000	£42,000	£52,000	£65,000	£75,000+
		-	£42	£48	£52	£55+
RF IC Design		£37,000	£45,000	£57,000	£70,000	£85,000+
		-	£42	£48	£52	£55+
Analog / RF Layout		£30,000	£38,000	£41,000	£52,000	£60,000+
		-	£40	£45	£50	£50+
IC Test		£32,000	£38,000	£40,000	£45,000	£60,000+
		-	£45	£50	£55	£60+
IC Process		£32,000	£38,000	£40,000	£45,000	£60,000
		-	-	-	-	-

Taken From IC_Resources End of Year Salary Review: [Salary Review 2021 mid.pdf \(ic-resources.com\)](https://www.ic-resources.com/Salary_Review_2021_mid.pdf)

Electronics

It's down to young people
to enable the digital future

Stewart Edmondson, CEO of the UK
Electronics Skills Foundation (UKESF)

We live in a world where technology is having more of an impact on our lives than ever before.

Smart phones, electric vehicles, robots, high-speed wireless communications, space tech: these are just a few examples of recent innovations that are changing our lives. And they have one important thing in common: they depend on Electronics. Our devices and tech products wouldn't be able to work without the electronic components, computer processors and electronic circuits and software that lie under the surface of their often shiny exteriors. And it's down to Electronic Engineers to develop these processors, design the circuits and write the embedded software code.

Did you know that the UK Electronics industry is one of the largest in the world? It is also growing quickly, but the one hurdle in its path is that fewer young people are choosing to study Electronics-based degrees at Uni. This means that this hugely important sector will be threatened by a massive skills shortage in the very near future.

At the UKESF, our mission is to get more young people into these careers by providing them with the skills and support they need to succeed! But what's in it for you? There are plenty of reasons to think about a career in Electronics... and here are six of them:

1. You're moulding the future with your hands...

Exciting developments in Electronics means that we are constantly developing innovative products and helping to transform the way humanity lives: from evolutions in healthcare to entertainment. In the near future, we will see 'smart' cities with transportation, energy consumption, security and water use all improved thanks to Electronics.

2. Let's be honest, technology is very cool...

We live in an increasingly high-tech world. Electronic engineers are working at the cutting-edge, creating amazing solutions to tackle global problems. From the AI that so many of us now have in our homes and on our smartphones to augmented reality games to driverless cars, the tech that was once only in movies is now a real part of our lives. Advances in Electronic technology have been rapid over the last few decades, but there is so much more to come.

3. Electronics isn't all Maths and Science...

Of course, mathematics and scientific principles are a big part of working in Electronics, but without creative flair and an ingenious touch, a product or solution will not be attractive to its users. Electronics is all about using creativity to bring ideas together and design fabulous products.

4. Electronics has fantastic job prospects all over the UK...

The UK has the 6th largest Electronics industry in the world, with around 10,000 companies in every region of the UK. For example, because of a growth in Electronics businesses, South Wales is rapidly developing into the UK's own version of Silicon Valley! All around the country, it is a vibrant and growing sector with a massive economic impact. In fact, Electronics has £98bn annual turnover and contributes 6% of the nation's GDP.

5. High salary and job security? Don't mind if I do...

As Electronic designers and engineers are in demand, employers pay high salaries. Unemployment in the sector is very low and grads can expect to start with a salary of at least £27K - graduate-jobs.com estimates that the average graduate starting salary is £19-22K. Then, the mean full-time salary in Electronics grows to over £46K, with Chartered Engineers earning, on average, over £68K!

6. You'll get the opportunity to travel the world...

Electronics is a truly global profession; there are many opportunities around the world. Electronics plays such a big role across a whole range of technologies and products - collaborations between different teams of designers and manufacturers in different countries are commonplace.

Still don't believe me? Check out some testimonials from some of our "real model" young Electronics professionals:



Name: Patryk

Company sponsor: Renesas
University: University of Nottingham

Course: MEng Electrical and Electronic Engineering

"It's actually incredible to discover how data is stored, processed and then relayed to a human in a form that is readable, in barely a blink of an eye!"



Name: Eve

Company sponsor: Leonardo (Edinburgh)

University: University of Glasgow

Course: MEng Electronics & Electrical Engineering

"In my early school years, engineering was marketed just like Yorkie bars: not for girls. I ate a lot of Yorkie bars growing up!"

Name: Mekhola

Company sponsor: Rolls-Royce

University: University of Sheffield

Course: MEng Electronics & Electrical Engineering

"I am so happy with my placement as I get to be part of an interdisciplinary team that works on something that affects the future lives of many."

Some Quick Facts:

Over 90% of smartphones contain electronics designed in the UK.

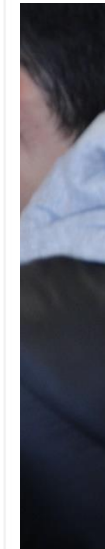
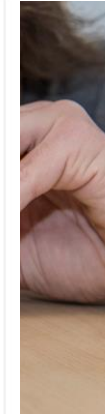
£46,567 is the mean full-time salary for Electronic Engineers in the UK.

66% of employers in the Electronics sector are currently recruiting engineering and technology staff.

14 of the world's leading 20 semiconductor companies have a design and/or manufacturing site in the UK.

Find out more by visiting our #TurnOnToElectronics website: www.turnontoelectronics.org

“Electronics Everywhere”



Tweet



Grey Court Comp Sci
@GreyCourtCS



A very big thank you [@theUKESF](#) for our logic and arithmetic kits. Our Year 13s have started the handbook today. Such a great opportunity and they're all so engrossed. [#alevel](#) [#computerscience](#) [@OCR_ICT](#)

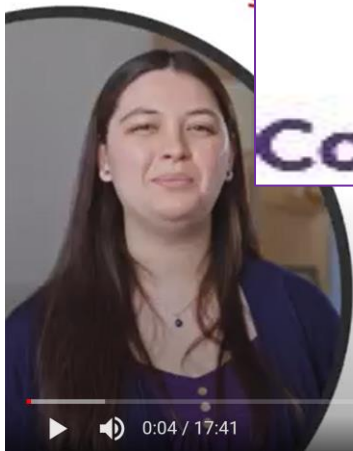


11:45 am · 31 Jan 2022 · Twitter for Android

Classroom sets provided to 550 schools

CATAPULT

Compound Semiconductor Applications



GIRLS
INTO ELE
FOUR STOP

Girls into Electronics Host Universities – Planned for 2022

1. Aston
2. Bristol
3. Cardiff
4. Heriot-Watt
5. Imperial
6. Liverpool
7. Newcastle
8. Royal Holloway, University of London
9. Sheffield
10. Southampton

The second video features Dr Sohini Das and Eleftheria Safarika (UKESF Scholar sponsor)



Girls into Electronics discussion 2



Watch on YouTube

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scored an impressive average of the most highly rated sessions being 'Using World Problems' and the Q&A with speakers. In their written feedback, many students said they enjoyed the variety of activities that kept them engaged and that they were inspired to study electronics. As one student said: "I was really inspired by all as how inspiring they found hearing from male engineers."

who spoke on the course, the people who provided to us as I learnt a lot from it! It was really inspiring and has really made me consider studying

and I was really involved in this course. I honestly enjoyed it so much. I would recommend Electronics as something that I could do and I would love to do it!"

Thank you to all the staff and guest speakers as they were really helpful. I enjoyed all along the course and the speeches and the Q&A sessions!"



Design Verification

How to Increase Interest Among Students



A Discussion Paper for NMI's Design Verification Forum

Introduction There is a fundamental problem for the UK. Our participation in and leadership of technological advances is being limited by a chronic skills shortage in Electronic Engineering. Over a number of years, too few students have been studying Electrical & Electronic Engineering and this means that there are insufficient graduate engineers to drive forward innovation and progress. This shortage is particularly acute in the sphere of Design Verification (DV), where the situation is compounded by a lack of awareness among students.

Recommendations:

- Raise awareness of careers in Design Verification (DV) among students.
- Promote closer engagement between universities and employers.
- Provide opportunities for students to develop their interest in DV.

Recommendations

Role Models Marketing and Promotion. Students need to see and hear from more young engineers working in DV.

Competition(s) National competition(s) for students to raise awareness and interest in DV. .

Engagement Improve engagement between DV employers and individual universities.

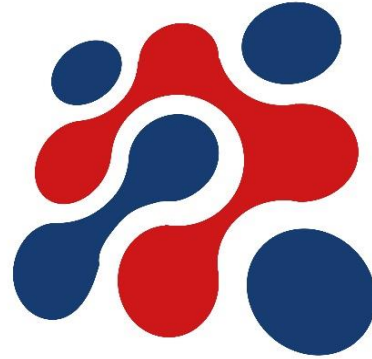
- participation in departmental Industrial Advisory Boards.
- offering to provide guest lectures on DV to students on relevant modules of degree courses.
- providing design projects for MEng/MSc those on courses.

Placements Provide work placements for students in order to give practical experience in a real work environment

Connecting most capable students from top universities with leading employers



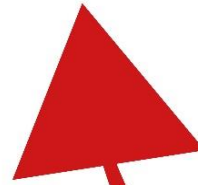
University



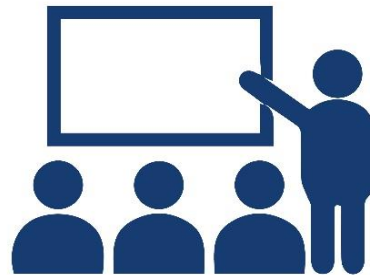
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Industry

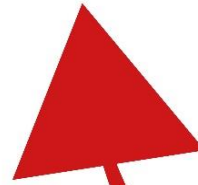


Connecting most capable students from top universities with leading employers



School

Encouraging more young people to study Electronics



Thank You

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