Royal Academy of Engineering

THIS IS ENGINEERING

CODE AND RESCUE

CASE STUDY:

Sara Salim

Job title: Radio Spectrum Engineer
Employer: Ofcom

What does a radio spectrum engineer do?

They monitor and maintain the radio spectrum – all the unseen signals. We go out and solve interference problems and regulate communication. We solve problems for the police, ambulances, broadcasters, aeroplanes and major mobile phone companies.

Do you protect the spectrum for safety reasons as well?

The emergency services and aircrafts all have their own spectrum. These services are prioritised. A case might come in that's a matter of life and death, where the ambulance crew can't receive a signal on their phone – it's our job to go and resolve the problem.

Can you describe an average day in your job?

There's no average day for us. One day you could be going on a life-or-death job where the police have problems with their radio. They might not be getting any signal so we'd be tracing it and finding the direction of the signal.

ENGINEER'S TOOLKIT

- **Adapting**
- **Systems thinking**
- **Creative problem solving**

Royal Academy of Engineering

THIS IS ENGINEERING

CODE AND RESCUE

What advice would you give to someone if they wanted to do your job?

First of all, you need to have the right mindset if you want to go into engineering. You should build it up inside first by thinking "I want to do it and I can do it".

You can turn your engineering skills to any discipline and tailor it to your interests like I did with radio. You can be a broadcast engineer, or you can be an engineer working in photography, if you like photography.

What's your favourite part of the job?

I like most of my job. I enjoy travelling and I enjoy meeting different engineers all over the country. I loved working at the 2012 Olympics where I helped maintain their spectrum. It was both fascinating and challenging.

How did you get the job you do now?

I was an apprentice – now I've finished and I'm a qualified engineer. I went on to complete a degree – Bachelor of Engineering (BEng) in Telecommunications at Blackburn College. And I have, very recently, been granted my CEng (Chartered Engineer) with my professional institution, the Institution of Engineering and Technology.

Sara holding up a sign showing that women make up just 9% of the engineering work force.

She is a strong advocate for encouraging more females into engineering.

ENGINEER'S TOOLKIT

Adapting
- Critical thinking
- Evaluating

Systems thinking
- Connecting
- Pattern-making

Creative problem solving
- Collaborating
- Generating ideas

Royal Academy of Engineering

THIS IS ENGINEERING

CODE AND RESCUE

CASE STUDY:

Joshua Macabuag

Job title: Research Engineer
Employer: Earthquake and People Interaction Centre

Tell us about your job. What do you do?

I am a researcher at the Earthquake and People Interaction Centre (EPICentre), University College London, applying my passion and knowledge of engineering to investigate methods to calculate and limit damage to urban environments due to tsunamis.

What does an average day look like for you?

It's fairly varied. If I'm at my desk then an 'average day' might consist of modelling on a computer how the structure of a building is affected by a tsunami, or I might be analysing damage on the many tens of thousands of buildings affected by the Tohoku tsunami in Japan in 2011.

What made you want to be an engineer?

I first became interested in engineering as a possible profession through my love of maths and science at school. I became hooked when I learned of the roles that engineers can have in humanitarian and relief work which demonstrated the real impact that engineers can have on people's lives.

ENGINEER'S TOOLKIT

- **Visualising**
- **Problem-finding**
- **Creative problem solving**

Royal Academy of Engineering

THIS IS ENGINEERING

CODE AND RESCUE

There are a number of different routes you can take into a career in engineering. What route did you take and why?

I spent a pre-university gap year working in the research and development department of Arup, the engineering company in London. I then studied engineering science (MEng) at the University of Oxford, working throughout the summer breaks to build my experience. After graduation I spent a year volunteering in a town in rural South Africa before moving back to work in London again.

What do you like most about engineering?

I enjoy working on real projects around the world that have a direct impact on people's lives and society as a whole. But the most enjoyable aspect of the job is the constant interaction with people, from colleagues and design teams to the people that we work with from other organisations.

What personal qualities are important for being an engineer?

To me, the most important quality to stay on top of all of your responsibilities is a strong enjoyment of learning, being part of a team and enjoying a challenge!

What advice would you give a young person who was considering engineering as a future career?

Understand that engineering will require you to actively continue learning throughout your entire career. Learn to enjoy learning and you'll love your job!

Check out the video interview with Josh at www.thisisengineering.org.uk/meet-the-engineers/josh/

ENGINEER'S TOOLKIT

Visualising

- Modelling
- Thinking out loud

Problem-finding

- Investigating
- Checking and clarifying

Creative problem solving

- Collaborating
- Generating ideas

Royal Academy of Engineering

THIS IS ENGINEERING

CODE AND RESCUE

CASE STUDY:

Sophia Rozario

Job title: Critical Care Paramedic
Employer: Hampshire and Isle of Wight Air Ambulance

Describe an average day

A day shift on the helicopter begins with loading equipment onto the aircraft and completing a checklist as a team. The pilot takes the aircraft out of the hanger once this is complete. After that, we have a brief to discuss weather conditions, the weight we can carry and air restrictions that day. We then have a medical brief to clarify our roles in certain medical emergencies. All the HEMS paramedics are trained to assist the pilot with navigation, so when I get a shout over the radio, we get a six figure grid reference we note and use to plot our route to the scene.

What's your favourite part of the job?

That's a tricky question! My favourite part has to be hearing from patients the team treat who have a good outcome. It's especially touching when its someone I've been to. I got a thank you from a man we resuscitated for a long time and he made a full recovery. His wife wrote in to say thank you and I later saw a picture of him smiling in his garden with his wife. I was speechless, I'm still buzzing from that and it was months ago! The feeling of achievement is priceless.

ENGINEER'S TOOLKIT

- **Adapting**
- **Creative problem solving**
- **Visualising**

Royal Academy of Engineering

THIS IS ENGINEERING

CODE AND RESCUE

Was there anything that surprised you about your job role?

Yes, I didn't realise how much the clinical team are involved with the aircraft and navigation aspect. When we began, The HEMS Paramedics sat a technical crew course.

We learnt about the mechanics of the aircraft and physics of aviation, weather formation and map reading.

This is so I can sit 'up front' with the pilot and assist with navigation to the scene of an incident. I never expected I'd be able to understand the technical parts of the helicopter, Its really exciting and something completely new to me.

What advice would you give someone if they wanted to do your job?

Go for it! If your determine to join a critical care team, any experience in the sciences, communication, health care or teamwork really helps.

Persist, and never see any fall backs as a failure, its experience to improve for the next chance. Its full on at times, but so rewarding.

ENGINEER'S TOOLKIT

Adapting
- Critical thinking
- Evaluating

Creative problem solving
- Collaborating
- Generating ideas

Visualising
- Thinking out loud
- Modelling