



Women's Engineering Society Student Conference

'Transform the Future'



PROGRAMME

8-9th November 2019

Warwick University



Jo Weaver / Events Manager

For emergency enquiries during the conference find Jo in the networking areas or call: 07809 780447



Dawn Childs, WES President

As we come to the end of our Centenary year it seems fitting for one of the final events in 2019 to be firmly focussed on the next 100 years by not only bringing together a group of engineering students but also by focussing on the theme 'Transform the Future'.

As we look to the future it is you, the early career engineers, who hold the key. I am always excited to see the energy and engagement in the panel discussions and networking sessions as you offer up your fresh views and ideas. We also have a wonderful range of speakers who will bring their inspirational experiences and insight to drive discussion and debate around key issues that impact the future of society: 'Climate Change Emergency', 'Risk reduction for a Safer World' and 'Vehicle Automation' are just a few of the subjects being covered. To ensure we are helping you to grow as professional engineers there is also a choice of sessions directed at Professional Development for you to engage with.

We are very grateful for the generous support of Warwick University and our event sponsors. Thank you as well to WES Trustee, Jo Douglas-Harris, for leading the team in organising this fabulous event.

I hope that you all gain valuable insight from the Conference and this helps you to shape your career in engineering so that together we can truly 'Transform the Future'.



Dr Jo Douglas - Harris WES Vice President (conference chair)

A very warm welcome to the WES Student Conference 2019 and thanks for taking time away from University and out of your weekend to be here with us. You may already know that this year is the Centenary of WES, so you join us at a very special time. WES was set up 100 years ago with the aims of promoting the education of women in engineering, advancing education of the public about women in engineering, and relieving poverty amongst women engineers. The theme throughout the centenary year has been to look back at the history of WES and celebrate the past, while looking to the future, and what the next 100 years might look like for WES and for engineering more broadly. In line with this, the theme of this conference is "Transform the Future". Globally, we will face some big challenges in the near future, including climate change, food and water security, adapting to the new digital world, inequality and security threats. As engineers, you could be working at the forefront of these increasingly important challenges, and engineering skills are likely to be in high demand. I hope the amazing presenters giving talks and diverse experts taking part in panel sessions during the conference will inspire you when you go back to University and into the future. Take the opportunity over the next two days to ask lots of questions, network with other attendees, and most importantly have fun.

Programme

Friday 8th November

- 11:00 – 13:00** **Registration/ Sponsor exhibition** – The Slate Building
(Lunch will be served at 12pm)
- 13.00 – 13:30** **Welcome Addresses: Introduction to the conference and WES.**
- Jay Surti** Conference MC, WES Trustee
Dr Jo Douglas-Harris WES Vice President
Jennifer Glover Student Liaison Officer
- 13:30 – 14.00** **Keynote Address: “The Climate Change Emergency: an engineer’s response”**
Sally Sudworth, National Programme Manager for Asset Management and Sustainability Lead - **Environment Agency**
- The Climate Change Emergency has been declared by Parliament and many other organisations. Is the UK up to the challenge? Can we make a difference and what new technologies, tools and processes do we need to help us as engineers play our part in providing the solutions for future generations? The science has been around for a number of decades so why now? Share your views as we debate the role of the engineer in leading the response to this man-made emergency.
- 14.00 – 14:30** **Keynote Address: ‘Reducing risk – towards a safer world’**
Tom Roche, Assistant Vice President, Senior Consultant within the International Codes and Standards Group - **FM Global**
- News headlines from around the world hold stories of hurricanes, floods, fires and cyber-attacks. One may be left thinking that being prepared and deploying resource after an event is the best and only option. However, using engineering skills there is a lot that can be done to mitigate and reduce the impact of these events and build resilience to them. There is a need to for research to build and share knowledge at an international, national and local level to achieve this. FM Global has continued to invest in just that mission, supporting organizations and sharing that knowledge to build towards a world safer from the impacts of these risks.
- Tom’s presentation aims to share FM Global initiatives that are helping to prevent physical threats from turning into real-life catastrophes, using risk engineering to support stakeholders to prepare and protect their assets before disaster strikes.
- 14:30 – 15:30** **Refreshments break**

Programme

Friday 8th November

15:30 – 18:00

Interactive Workshop: 'Accelerating the pace towards vehicle automation'

Dr Valentina Donzella

WMG, University of Warwick

The recent growth of advanced driving assistance systems (ADAS) and automated features/functions on vehicles, associated with increased demand on safety and comfort, is revolutionising the way we use, and we perceive cars, from mere means of transportation to 'Intelligent Vehicles' (IVs). These workshops will present the state of the art of automation in vehicles and the current engineering challenges from an academic perspective and from an industrial perspective. Participants will carry out some group activities related to the covered topics and present their findings before the wrap up of the workshop.

Group 1 – Workshop times: 15:30 – 16:45

Group 2 – Workshop times: 16:45 – 18:00

(During the time they are not in the workshop, delegates will check in to their accommodation.)

18:30 – 19:15

Networking drinks reception (held in the Radcliffe Lounge)
N.B There will be non-alcoholic drinks served at this reception. There will be a bar available in the Radcliffe if you would like to purchase an alcoholic drink.

19:30 – 20:45

Dinner (held in the Slate Building)

20:45 – 21:15

After dinner speaker

Lisa-Marie Brown

Founder of multi-award winning business Pinkspiration

Programme

Saturday 9th November

- 07:00 – 09:00** **Breakfast** – served in the Radcliffe
- 09:00 – 10:15** **Panel Discussion: WES Young Members' Board**
Chaired by **Victoria Barbour-Smith**, Arup
- The members of the WES Young Members' Board work in a wide range of engineering sectors. In this panel discussion five of the Young Members' Board will talk about their route into engineering, and the work they do today.
- Laura Davies** Design Engineer Dyson Automotive
Kim Everitt Senior Powertrain Calibration Engineer
Aston Martin Lagonda Ltd
Sotira Georgiou Senior Structural Engineer Ramboll UK
Jennifer Glover PhD Research Student
Loughborough University
Susie Little Graduate Electrical Engineer Arup
- 10:15 – 11:00** **Refreshments / Networking**
- 11:00 – 12:30** **CPD Workshops; Part 1**
See workshop briefs on page 7
- 12:30 - 13:30** **Lunch**
- 13:30 – 15:00** **CPD Workshops; Part 2**
See workshop briefs on page 7
- 15:00 – 15:30** **Refreshments/Networking**
- 15:30 – 16:50** **Panel Session: 'The Future of Engineering'** followed by Q&A
Chaired by **Dr Jo Douglas-Harris**
- Madeleine Archer** Operations Manager, Sellafield Ltd
Lorna Bennet Mechanical Engineer, Offshore Renewable
Energy Catapult
Grace Chui Head of Research, Metropolitan Police Service
Dr Helen Meese CEO & founder, The Care Machine Ltd.
- 16:50 – 17:00** **Closing Words**

1. Initial Professional Development/ Professional Registration

Lucy Byrne Registration Engagement Manager, The IET

This workshop will provide introduction to professional registration, expanding upon working towards becoming a professionally registered engineer through a period of Initial Professional Development (IPD), the support that the IET provides from graduation to registration, the requirements for the categories of registration and benefits that professional engineering registration provides.

2. Integrity and Ethics and Unconscious Bias,

Dr Joanna Collingwood, Reader, University of Warwick

The way that we approach our work, and the ways in which we interact with other people in our professional lives, has profound implications for what we can achieve as individuals and as a community. This session will look at the role of integrity and ethics in professional practice, with particular emphasis on guidance from the Royal Academy of Engineering. The session will also provide a brief introduction to the concept of unconscious bias, providing participants with a chance to explore how it might impact them and their decision making now and in their future careers.

3. Building a career based on values & authenticity

Lucky Lowe Independent

This workshop will explore the nature of personal and professional success. A guided conversation and interactive session will draw on Lucky's experience of an international career working in construction and community development. Participants will be encouraged to think about their own career ambitions and many career opportunities that exist worldwide in the engineering professions. We will discuss what it means to be authentic, base career decisions on our values and make choices to maximise the difference we make in the world.

4. Multi-disciplinary engineering

Cathy Phillips Director, Richardson Phillips Limited

Engineering disciplines are constantly evolving to face the challenges of the world around us. Most kids at school today will be working in jobs that haven't been invented yet. Let's look at the transferrable knowledge we have from our courses and jobs and assess what we need to know to evolve to tackle the challenges of tomorrow. This workshop plans to look at how engineering disciplines have evolved to tackle the issues of the time, and where we can see the need for new disciplinary interactions in the future. It will look at what the common traits are of interdisciplinary working regardless of the project or product being designed and made, and how this has needed to adapt to the changes we see due to climate change and other resource constraints.

5. Leadership Development – Personal Brand, Networking & Presentation Skills

Jay Surti Author and Speaker

Strong leadership skills are an essential component of successful career progression. Being a good leader includes self-leadership as well as an ability to inspire and motivate others. This session will focus on aspects of personal leadership. The workshop will cover the 2 key areas to help you develop as a leader: 1. Personal Development Plan & Goal Setting 2. Personal Brand: Manage your image online and offline, hone your presentation skills, build professional relationships through networking.

Conference Speakers



Madeleine Archer

After graduating from Aston University with a Master's degree in chemical engineering & Applied Chemistry, Madeleine joined Sellafield Ltd on the graduate training scheme in 2012. At Sellafield, Madeleine has undertaken a variety of roles including design engineering, system engineering and operations management. In addition to her day job, Madeleine volunteers as part of the Sellafield emergency response team, crisis management team and mentoring & coaching network. Outside of work Madeleine is a volunteer for the National Youth Advocacy Service (providing support to children in the care system) and Porch Boxes (a food bank charity). In 2017 Madeleine won the Karen Burt Award for the best newly chartered female engineer across all disciplines. She was also shortlisted for Young Chemical Engineer of the Year and featured in the BBC4 documentary 'Inside Sellafield'.



Lorna Bennet

Lorna is a Mechanical Engineer in the Operational Performance directorate at the Offshore Renewable Energy Catapult. Engaging with SMEs, developers, organisations and academia to address industry challenges through technology innovation and working with companies to diversify and transfer their offering to the wind, wave and tidal industries. She coordinates information, access, demonstration and validation testing opportunities around ORE Catapult's Livenmouth offshore Demonstration Turbine. Lorna has a broad range of skills and experience in the design, manufacture, analysis and project management of offshore systems.

She is also responsible for the STEM engagement strategy and engineering intern recruitment in the ORE Catapult Glasgow office. In 2018 she was awarded a Royal Academy of Engineering Ingenious Public Engagement Award to develop a strategy with local primary schools. In collaboration with several local and national charities and organisations she has driven community engagement, promoting engineering across Scotland. This led to Lorna winning the Women's Engineering Society Prize for the best Young Woman Engineer in December 2018; recognised as a top 100 Rising Star 2019 in Science and Engineering in July and being shortlisted for the Scottish Green Energy Awards in the "Contribution to Skills" category (announced in December).

Conference Speakers



Lisa-Marie Brown

Founder of the multi award winning business Pinkspiration which ranks on the Natwest SE100. Nominated as Top 10 Business Woman in Wales an expert working in the construction industry, her career started by re-building one empty room to working on Wales largest road scheme the A465 a £400 million programme. Leading the way to encourage diversity in business and industry her projects are innovative and push the boundaries. Her work has reached more than 20 million worldwide. Written, produced and directed a new TV programme Transforming Spaces: Design Factor featured on ITV, which has re-built 17 empty spaces up skilling more than 28,500 young people and community members supporting them into careers in industry. Working with some of the biggest names in business Richard Branson, Boris Johnson and Kevin McCloud. Appointed as Area Leader for the Federation of Small Businesses in January to support growth. A passion for supporting women and girls into construction, industry, business and sport.



Lucy Byrne

Lucy has worked for the IET since 2011. Providing support and guidance to their members as they embark upon their professional registration journey. She works closely with IET volunteers to ensure that their members are fully supported throughout the application process and beyond. Together with the Registrations, Membership, Initial Professional Development (IPD), Professional Development (PD) and Marketing teams she ensures that the IET is providing their members and registrants with their 'home for life'.



Grace Chui

Grace Chiu is the Head of Research at the Metropolitan Police Service, where she is interested in all things that can aid the work of law enforcement. She has over 10 years of experience in research and development and has held senior technical posts in the security sector. Her real passion is being "that techie in the dark corner" and can often be found wandering around InfoSec conferences like a moth drawn to a LED.

In her free time Grace is a chartered engineer assessor for the British Computer Society and is passionate about the various opportunities that a career in engineering can bring.

Conference Speakers



Dr Joanna Collingwood

Joanna originally studied Physics (MPhys at University of York; PhD University of Warwick), and is an analytical scientist with an interest in developing understanding of transition metal distribution and trafficking in the human brain in health and disease. She established the Trace Metals in Medicine Laboratory in the School of Engineering in 2011, and has since developed a thriving research group. Alongside her research and undergraduate and postgraduate teaching, she led the School of Engineering to Athena SWAN Bronze in 2015, and subsequently to Silver in 2019. She contributes to University-level work on equality and diversity as the chair of the Gender Task Force.



Dr Valentina Donzella

Dr Valentina Donzella, Associate Professor in the Intelligent Vehicles group at WMG, University of Warwick, is the Director of WMG's MSc in Smart Connected and Autonomous Vehicles, managing a suite of modules in automotive sensors, sensor fusion, automotive embedded system V&V and robustness, machine intelligence, human technology interaction and communications. Dr Donzella's current research interests are: intelligent vehicle sensors, LiDARs, optical sensing, integrated optics, automotive electronics and test techniques. She currently supervises a number of doctoral, masters and undergraduate project students.

Valentina completed her Ph.D. (with honours) in Innovative Technologies for Communication and Information Engineering from SSSUP (Pisa, Italy). Before joining WMG, she was a postdoctoral researcher and then MITACS fellow at the University of British Columbia (Vancouver, BC), working on Silicon Photonics integrated optical sensors.



Dr Jo Douglas-Harris

Dr Jo Douglas-Harris is a Product and Applications Scientist at Venator, specialising in the development of titanium dioxide pigments for coatings. Prior to this, she worked for British Sugar as a Process Scientist.

Jo completed a Master's degree in Chemistry in 2013 at the University of Edinburgh and a PhD in Chemical Engineering in 2017 at the University of Bath. Her PhD was sponsored by Unilever researching fabric cleaning and laundry detergents.

Conference Speakers



Jennifer Glover

Jennifer is studying for a PhD at Loughborough University researching jet engine noise reduction through sound proofing panels. Jennifer has a Master's degree in Aeronautical Engineering and a Diploma in Industrial Studies from Loughborough. She is a very active member of the Women's Engineering Society on the Council, Young Members' Board and the Student Groups Liaison Officer. Jennifer's work for the charity focuses on supporting and promoting student members and student run groups. As a STEM ambassador Jennifer is passionate about encouraging all students into engineering, promoting a better understanding of what engineers do and inclusivity for minorities including women and those with dyslexia like herself.



Lucky Lowe

Lucky was the first woman to graduate with a BSc (Hons) Building from PCL in 1987. Since those early years as a London based site manager she has worked in Asia, Africa and Latin America in building materials, shelter and infrastructure delivery, research and policy making. Increasingly interested in the attitudes and cultural norms that influence social inclusion and development. Since ill-health struck her family, Lucky's leisurely lifestyle as a volunteer and consultant has been overtaken by the duties of a full-time carer.



Dr Helen Meese

Helen is an Electro-Mechanical Power Engineer with over 20 years' experience in both academia and industry. She studied for her PhD in Mechanical Engineering at Loughborough University. Helen spent many years in the defence industry before joining the IMechE in 2013 as Head of Engineering in Society. She became Head of Healthcare in 2015, managing its programme on medical technology, across all aspects of health and social care; with focus on impact to UK and global communities. Helen has appeared on TV and radio as well as writing numerous reports, policy statements and articles on health-related matters. Now as CEO of The Care Machine Ltd, Helen provides innovative technology solutions to medtech start-ups and SMEs. She continues to deliver thought leadership across the medtech sector, championing the importance of biomedical, pharmaceutical and mechanical engineering in medicine. She is also a Trustee of the IMechE and Vice-Chair of the Biomedical Engineering Division and an active STEM ambassador.

Conference Speakers



Cathy Philips

Cathy is a mechanical and materials engineer, who migrated into the multidisciplinary fields of reliability and risk engineering, then safety engineering, ecoengineering and chemical engineering. She now runs her own consultancy.



Tom Roche

Tom Roche is Assistant Vice President, Senior Consultant within the International Codes and Standards Group for FM Global, one of the world's largest commercial property insurers. Based in the UK, Tom works to share FM Global's knowledge and expertise to influence building codes and loss prevention standards.

Prior to his current appointment, Tom served in a variety of engineering and engineering management roles across the UK. He has travelled extensively to support clients across the world to establish loss prevention policies and implement risk strategies all aimed at improving the resilience of their businesses to property risks. This has ranged from large projects for new facilities to adapting existing facilities and processes. He joined FM Global in 1993 as a field engineer based in the Manchester Office.

Tom works extensively within the field of loss prevention. Through this role he promotes work on active fire protection systems and supports the review of regulations that impact fire safety within the wider Built Environment. He is the current Secretary of the Business Sprinkler Alliance, an organisation that promotes the use of automatic sprinklers in Industrial and Commercial premises. He is also the current Active Protection Director within the Fire Sector Federation.

Tom holds both a bachelor's and master's degree in mechanical and electronics engineering from Lancaster University.

Conference Speakers



Sally Sudworth

Sally is a chartered engineer and chartered environmentalist. She is National Programme Manager for Asset Management at the Environment Agency and is also Sustainability Lead for her directorate. Sally is a trustee and Hon. Sec. at WES and chaired the WES Centenary Conference earlier this year. She is also a director at Engineers for Overseas Development, another engineering charity that helps young engineers and technicians become professionally qualified through the design and construction of community projects in sub-Saharan Africa. Sally is a Fellow of the Institution of Civil Engineers, a Fellow of WES and a member of the Chartered Institute of Water and Environmental Management.



Jay Surti

Jay Surti is an internationally published author, speaker and consultant. Having practised as a lawyer for 17 years, she realised that many professionals struggle with presenting and public speaking - something which was a big problem for her personally and led to a missed career opportunity in Civil Engineering.

She now works with executives, teams and MBA candidates to help them transform their presentations to make sure they engage with the audience and get their message across. Jay has served as an Executive Board Member of Women in Banking and Finance and is currently Head of Mentoring. She is a Board Member of the University of Dundee as well as a Council Member for the Women's Engineering Society. Jay has written a number of books on presentation skills - the most recent is *Ultimate Presentations* (Kogan Page).



Young Members' Board



Victoria Barbour-Smith

Structural Engineer, Arup



Laura Davies

Design Engineer, Dyson Automotive



Kim Everitt

Senior Powertrain Calibration Engineer Aston
Martin Lagonda Ltd



Sotira Georgiou

Senior Structural Engineer Ramboll UK



Susie Little

Graduate Electrical Engineer, Arup



Vera Ngosi

Water Engineer, Arup

We would like to thank our Young Members' Board for supporting this conference. They will be on-hand throughout the event to help with any queries or questions.

Please say hello!

Event Sponsors & Thank you

A big thank you
to our event sponsors:



Thank you

It is my pleasure to thank everyone involved in bringing so many engineering students together to the WES Student Conference during our Centenary year. Many thanks to Warwick Conferences for the venue and for looking after us. Thanks to all the volunteers and staff who have worked so hard to make the Conference a success. A special thanks to our sponsors, Virgin Atlantic, BAE Systems, FM Global, Leonardo, Continental, NSIRC, National Grid, Direct Line and Cundall for their support, without whom we wouldn't be able to hold the Student Conference. And finally, many thanks to all students attending the Conference who will without doubt have a great experience, make new friends and expand your network which will support you throughout your engineering career.

Elizabeth Donnelly

Chief Executive Officer, Women's Engineering Society

