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Agenda – Festival of Design and Engineering Business Breakfast



- **09:00-09:20** - Learn how can we assist your business to enhance economic growth and societal wellbeing
- **09:20- 09:30** - Hear about BU's research into advanced materials life prediction
- **09:30- 09:50** – Have an introduction to the MoD Battle Lab
- **10:00** - Visit our 30th annual Degree Show - Meet our student exhibitors to learn more about their projects and what inspired them; and discover new talent

Contents



- Welcome to FoDE
- Introduction to D&E
- BU2025 strategic investment
- Research expertise
- Resources to support collaboration
- Services for Industry
- Q&A

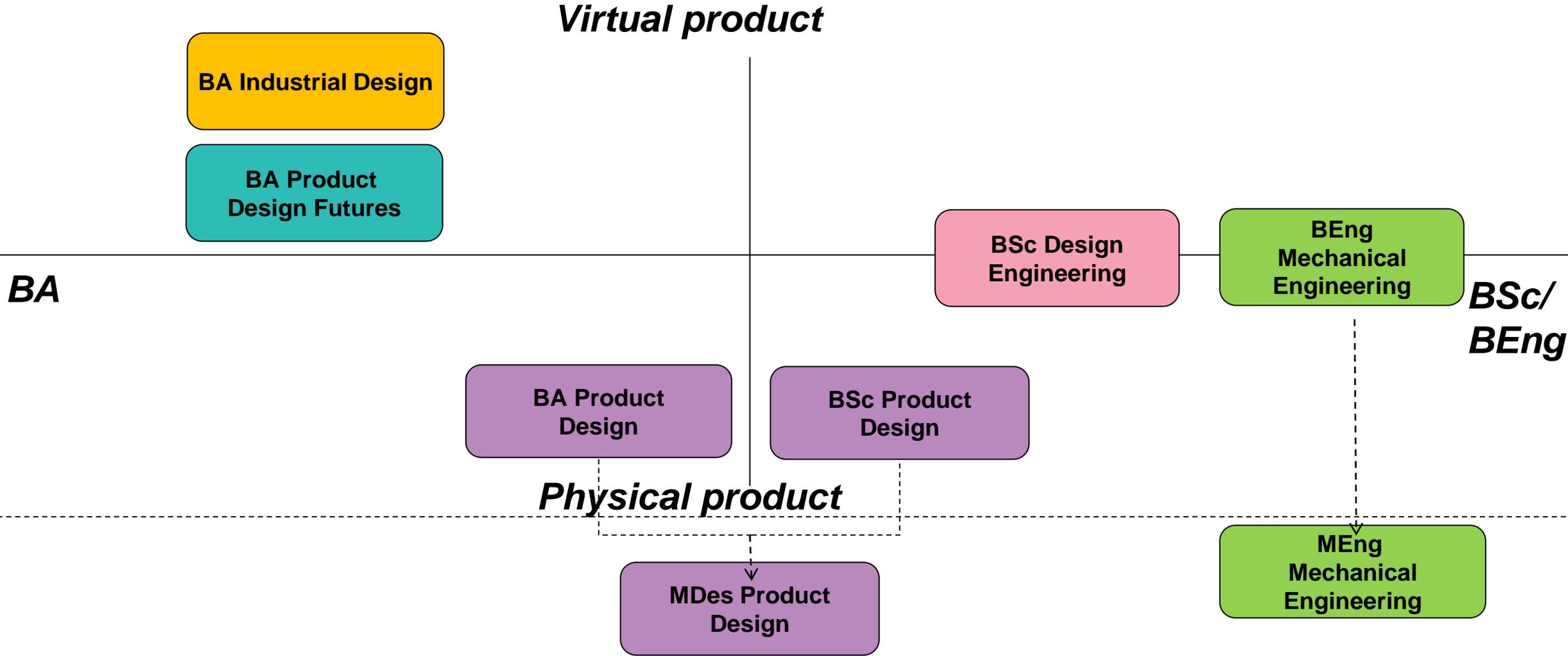


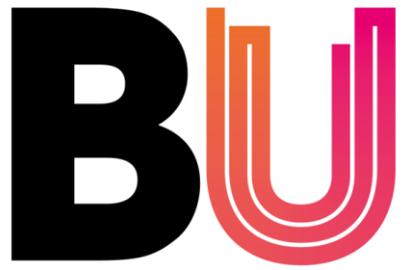
Welcome



- Thank you for your support by attending FoDE
- First physical festival since 2019
- We are so proud of the achievement of our students who have spent two years of their study in a pandemic
- Visit the FoDE website to see details of the student projects:
<https://www.bournemouth.ac.uk/why-bu/bu-events/festival-design-engineering>
- We hope you enjoy the show!

Courses Presenting at FoDE





**Bournemouth
University**



**Design &
Engineering**

Introduction to Design and Engineering at BU

Design and Engineering



Faculty of Science & Technology

3000 Undergraduates
120 Postgraduates
160 Research Students

Department of
**Design &
Engineering**

Department of
**Computing &
Informatics**

Department of
Psychology

Department of
**Archaeology,
Anthropology and
Forensic Sciences**

Department of
**Creative
Technology**

Department of
**Life and
Environmental
Sciences**

Design and Engineering Department



- 22 Academic Staff
- 570 undergraduate and taught postgraduate students
- 19 PhD students and 8 Research Associates
- Annual income £4M
- Supported by course administrators, demonstrators, workshop technicians, placement and careers advisers, subject librarians

Recognition of our success

- The Economist has BU Engineering ranked **3rd in the UK** for boosting graduate salaries
- Based on entry standards, student satisfaction, research quality and graduate prospects, the Complete University Guide 2021 has ranked BU **Art and Design 12th, Engineering 24th and Materials Technology 13th** in the UK Subject League Tables
- BU has been ranked **9th** for Engineering in the Guardian 2021 league table

The
Economist



The
Guardian



- Design & Engineering received the **Athena SWAN bronze award** in 2021 in recognition of their commitment to working towards gender equality in higher education.
- The **Women in STEM Society** is a platform of opportunities offering general support to networking opportunities, but many social events organised by WiSTEM are open to everyone!



BU2025 - Strategic Investment Areas



Strategic Fusion Investment

- Inter-disciplinary developments based on Academic Principles and strengths
- Areas of future growth and funding
- Flexible pace, timing and funding
- Targeted investment in intellectual capital, specialist and shared physical capital



Animation, Simulation & Visualisation



Assistive Technology



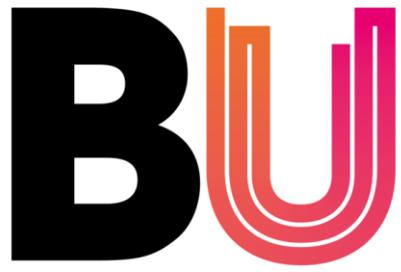
Sustainability/ Low-carbon Technology/
Materials Science



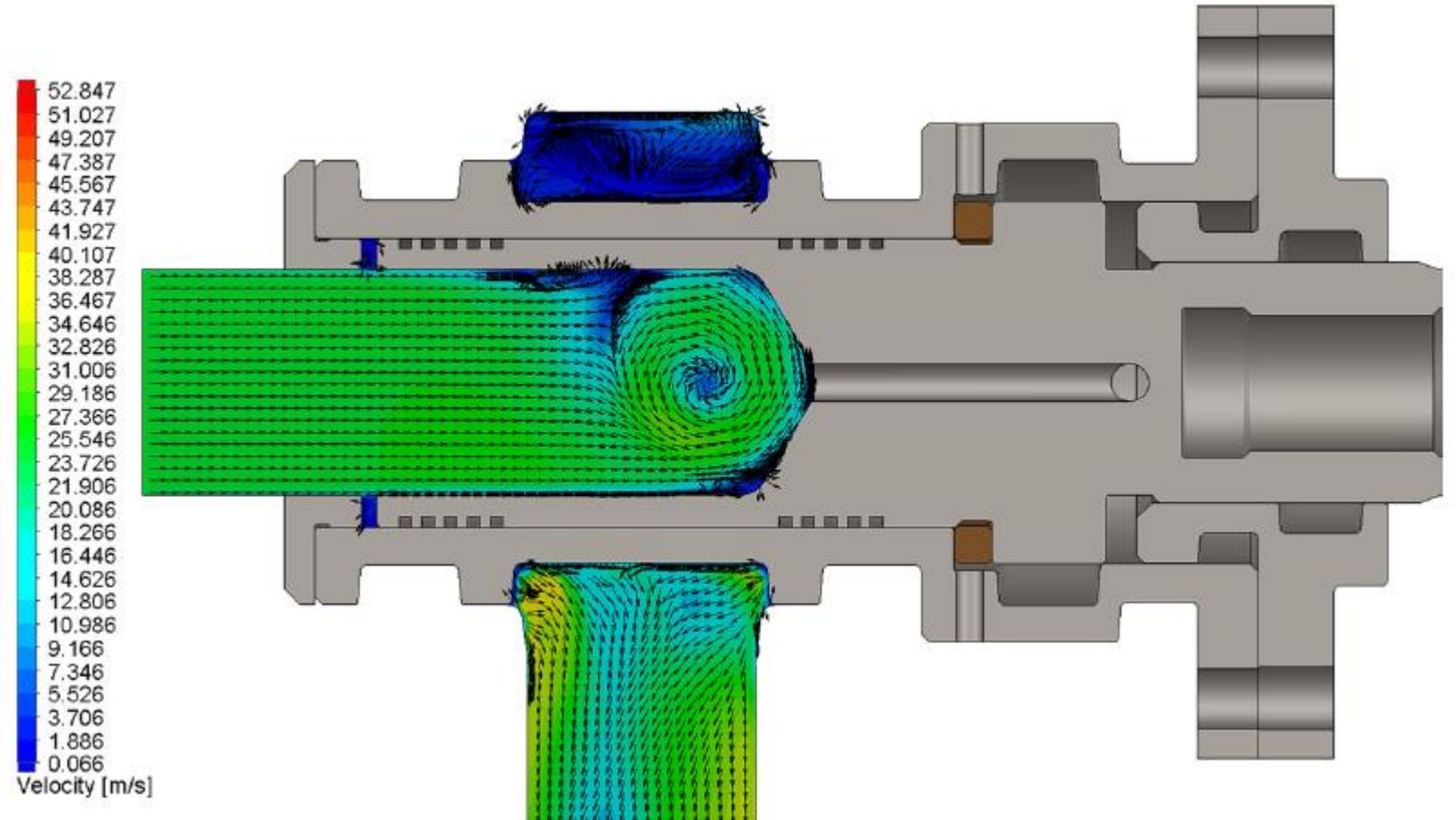
Medical Science

Challenges to Address





**Bournemouth
University**



Research Expertise

Research & Enterprise



Our key themes:

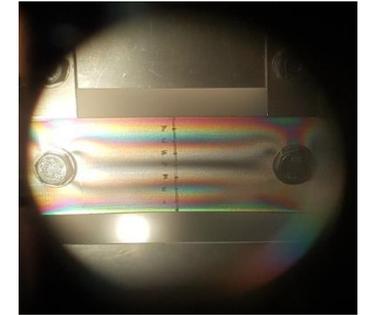
- *Biomedical Engineering*
- *Creative Design*
- *Design & Engineering Education*
- *NanoCorr, Energy & Modelling*
- *Tribology & Design*
- *Advanced Materials*
- *Additive Manufacturing*
- *Very High Cycle Fatigue*



Biomedical Engineering Research - Visualisation, simulation and animation/assistive technology/medical science

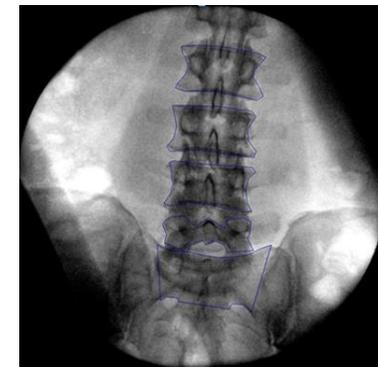


Developing the next generation of prosthetic sockets



Providing new insight into the spinal motion characteristics of unilateral below knee amputees

Investigating biomechanical manipulation and image biomarkers to better understand lower-back pain



Assistive Technology Research



investigating (and improving) the design and development process of prosthetic limbs used for sport and physical activity



Assistive Technology Research



Design and development of wearable assistive technologies for long-term monitoring of mental and emotional health and well-being in order to bring awareness about the early signs of issues and provide biofeedback for stress management



User Centred Design - better usability and inclusivity of assistive technology - psychological, social and aesthetic aspects



AiBle: An upper-limb rehabilitation exoskeleton robot based on AI and cloud computing



Innovation

AiBle is a 3-year UK/France cross-border EU Interreg project to improve the recovery experience of stroke patients with better treatment effects and efficiency by developing an upper-limb rehabilitation exoskeleton robot based on AI and cloud computing

Total budget: €4,875,139.99 of which €3,333,849.26 has been co-financed by the European Regional Development Funds

Project Duration: 3 years

The project is co-financed by the European Regional Development Fund



NIHR Project: Commercialisation of a Patented Point-of-Care Neuropathy Assessment Device

Point-of-care evaluation of vibration perception – an indicator of nerve function

Step 1: Probe applied to region of interest



Step 2: Level of vibration perception recorded



Step 3: Wi-Fi & Bluetooth Data Transmission

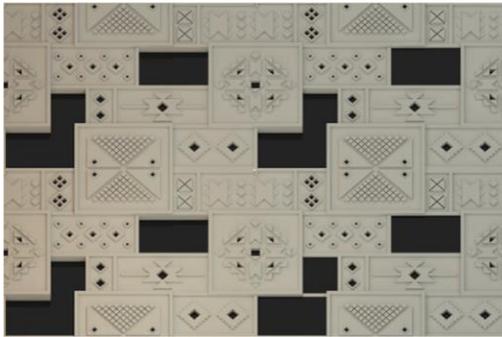


Creative Design Research – Tools to enhance design visualisation

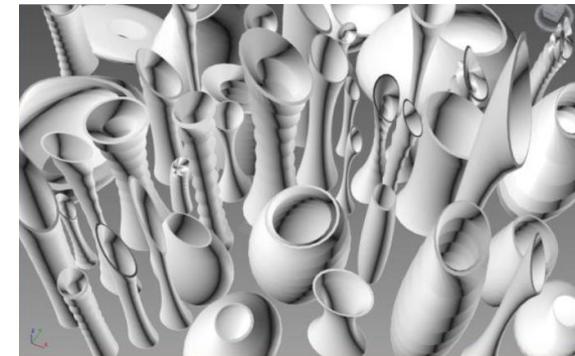


Colour Semiotics: A.I. design tool to propose colour concepts for designed products

OCEAN Cool Fresh Deep Aqua	CEREAL Nutrition Vitamin Wholesome Energy	SURGEON Clinical Sterile Medical Hygiene	EXECUTIVE City Business Commerce Metro
VOLCANO Fire Burning Lava Eruption	NEON Luminous Electric Lightning Bright	MONA LISA Classical Traditional Historical Antique	WASP Toxic Poison Hazard Sting
LEAF Lush Fresh Crisp Clean	ASTRONAUT Cosmos Astral Space-age Lunar	MOULDY Rotten Decay Rancid Putrid	CIGAR Luxury Business Power Boss

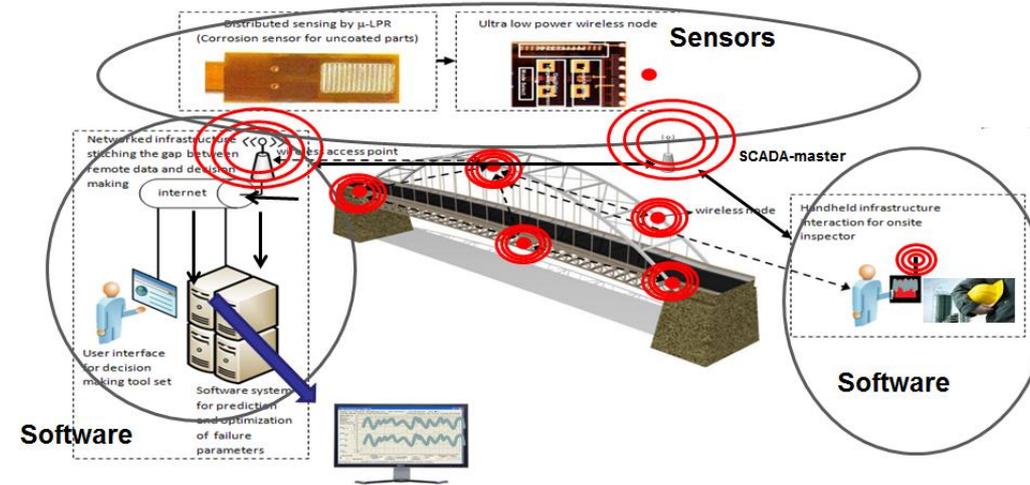


Cultural Identity Design: shape grammar design tool to identify and modify a design style

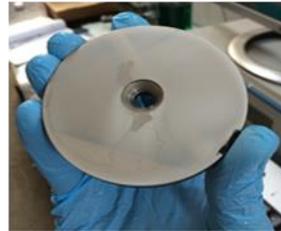


Design and Emotion: design tool to create seemingly-random emotional design concepts

NanoCorr, Energy & Modelling



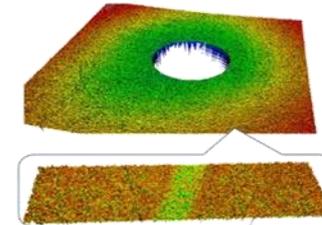
Nanocoatings manufacturing



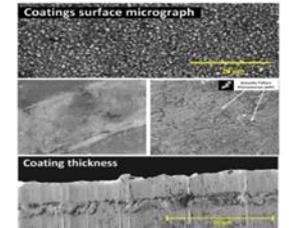
Tribo testing



3D surface profiling



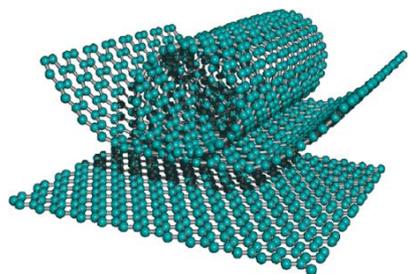
Coatings surface analysis



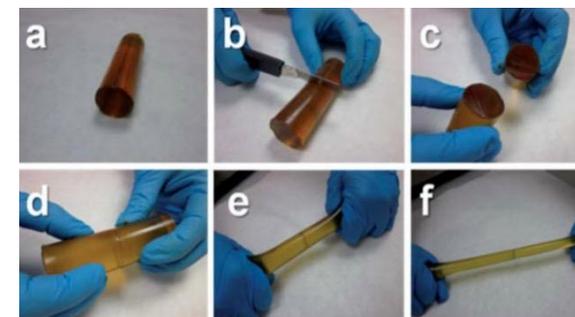
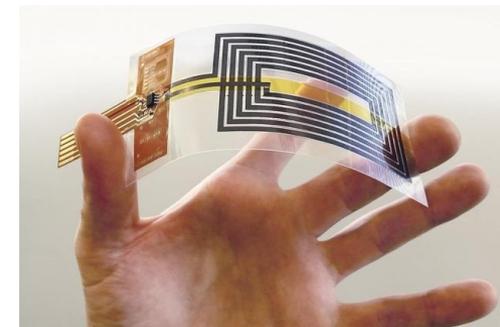
Advanced Materials



Graphene technology

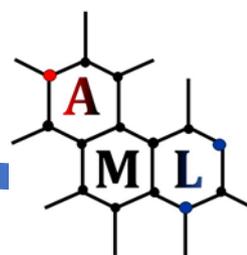


Flexible electronics



Energy storage materials

Self-healing materials



Advanced Materials Lab

Additive Manufacturing



Design for Additive Manufacturing



Understanding Fatigue of metallic AM parts

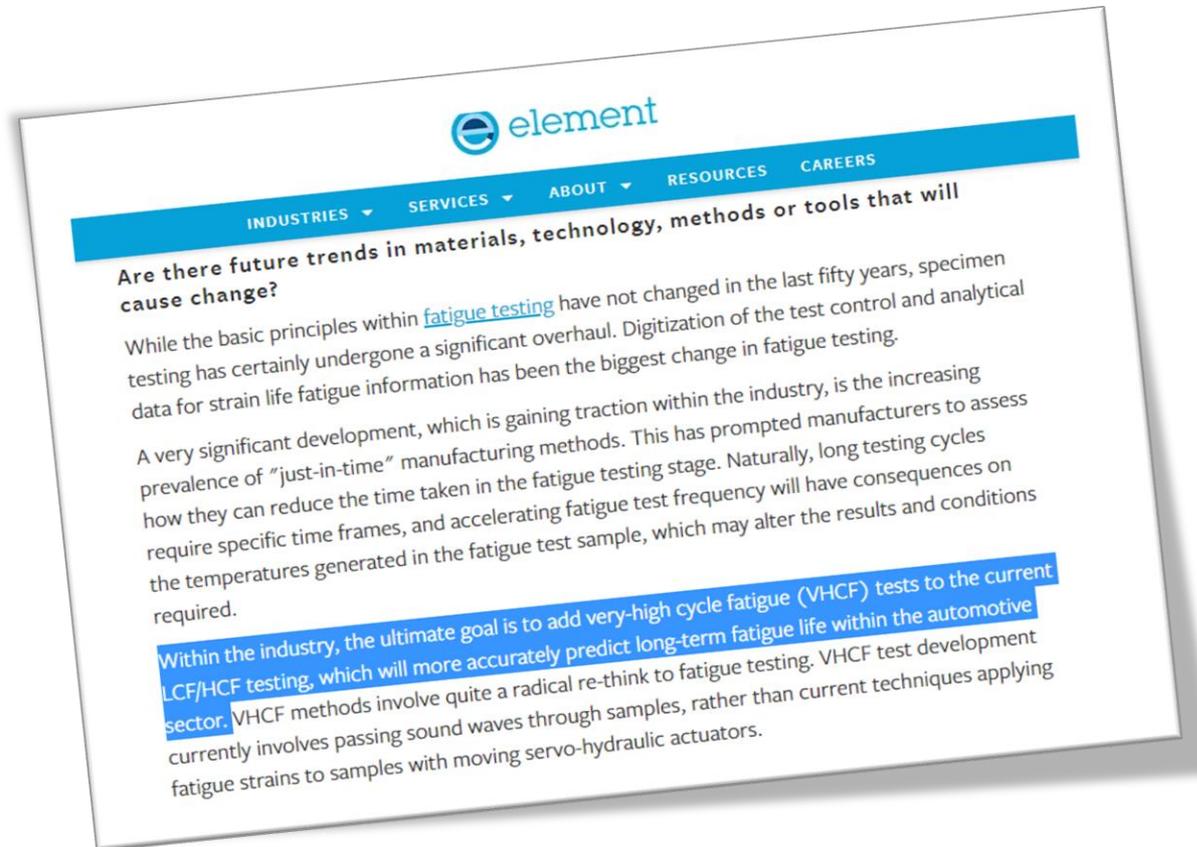


Rapid & Digital Prototyping

3D Printing • CAD • Virtual Reality

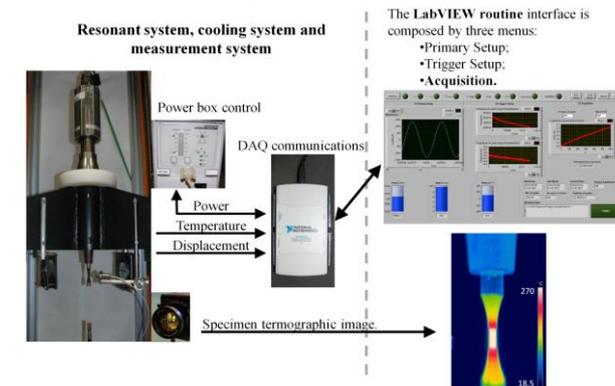


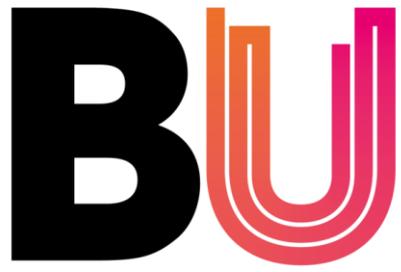
Why is Ultrasonic Fatigue Testing (UFT) and Very High Cycle Fatigue (VHCF) Game Changing?



[Fatigue Testing in the Automotive Industry | Element](#)

Schematic of the machine being built at BU





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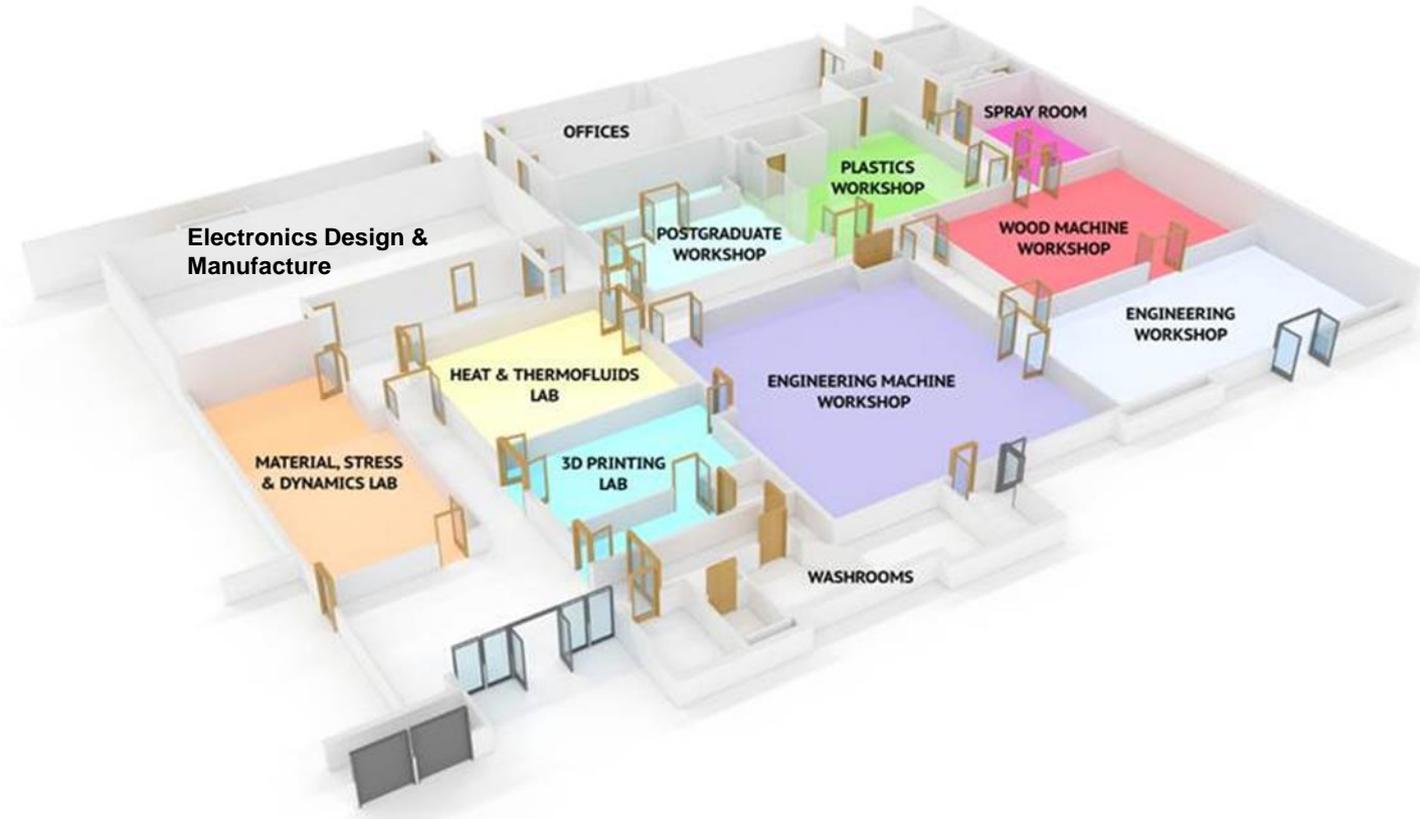
**Design &
Engineering**

**Resources to support
collaboration**

Design and Engineering Innovation Centre



- Showcase Innovation Centre
- Extensive design facilities – from concepts to virtual and physical working prototypes



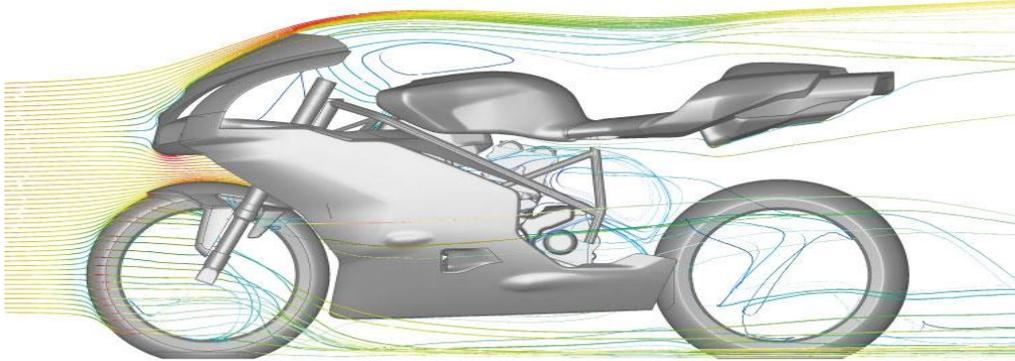
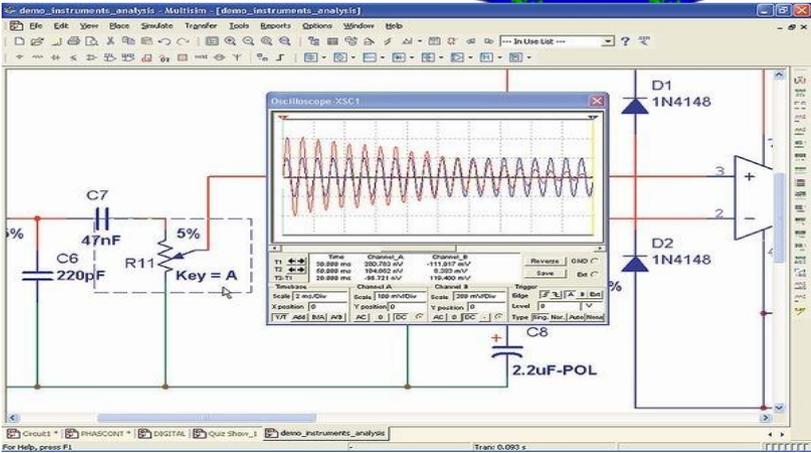
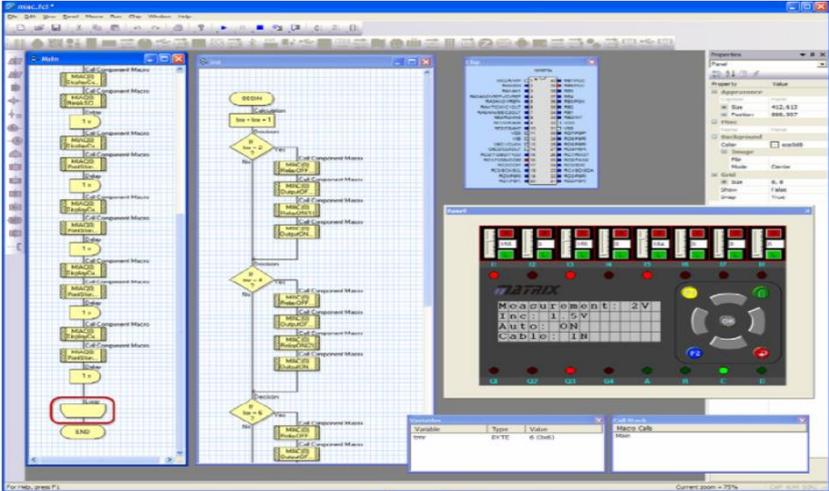
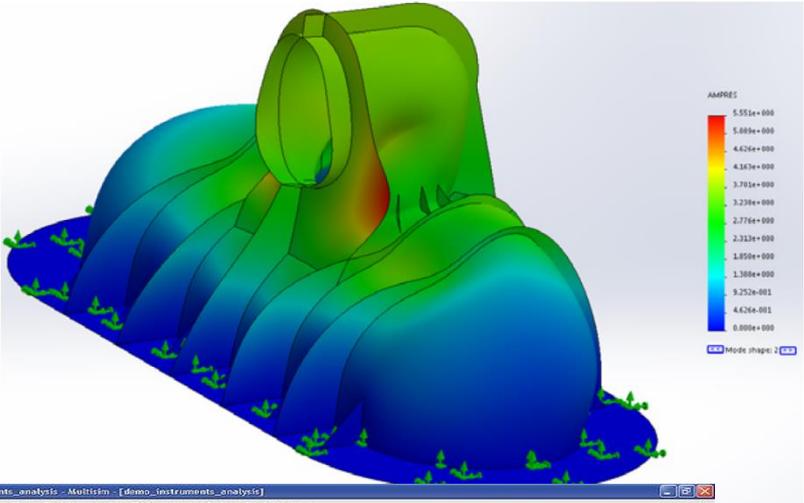
Design and Engineering Innovation Centre



- Virtual Reality - Room scale wireless VR
- Rapid Prototyping Centre – FDM, Stereolithography
- Metal Component printing
- Electronics Design, Simulation and Manufacture Centre
- Mechanics, Dynamics, Materials, Heat and Thermofluids labs
- Nano-coating techniques and Nanoscale characterisation
- Contact mechanics testing
- Advanced materials lab



Design and Engineering Innovation Centre – Simulation Tools



How can we collaborate?



- We have expertise in animating, simulating, mathematical modelling, visualising and testing the physical behavior of systems/devices
- We can manufacture and test virtual and physical prototypes
- We can develop, test and increase understanding of advanced materials

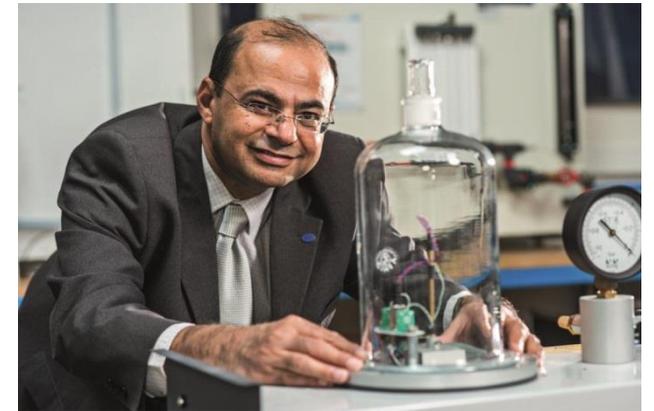


KTP@40

40 Years of Knowledge Transfer Partnerships



CAREERS AND
EMPLOYABILITY



Services for Industry



Course Overview

- For students in engineering employment – developed with employers
- HNC and FdEng has four pathways (**Mechanical Design, Electronic Design, Marine Technologies or Manufacturing Management**)
- BEng can be tailored via the selection of option units towards the four pathways
- HNC and FdEng taught through day release
- BEng taught via on-line flexible learning supported by discussion forums and academic tutorial support delivered both face to face and on-line
- Projects are work based

Course Overview – Apprenticeship Standards



Two standards, already approved for delivery, have been adopted to deliver the degree apprenticeship.

- Product Design and Development Engineer degree apprenticeship
 - For Mechanical Design and Marine Technologies routes
- Manufacturing Engineer degree apprenticeship
 - For Manufacturing Management and Electronic Design routes

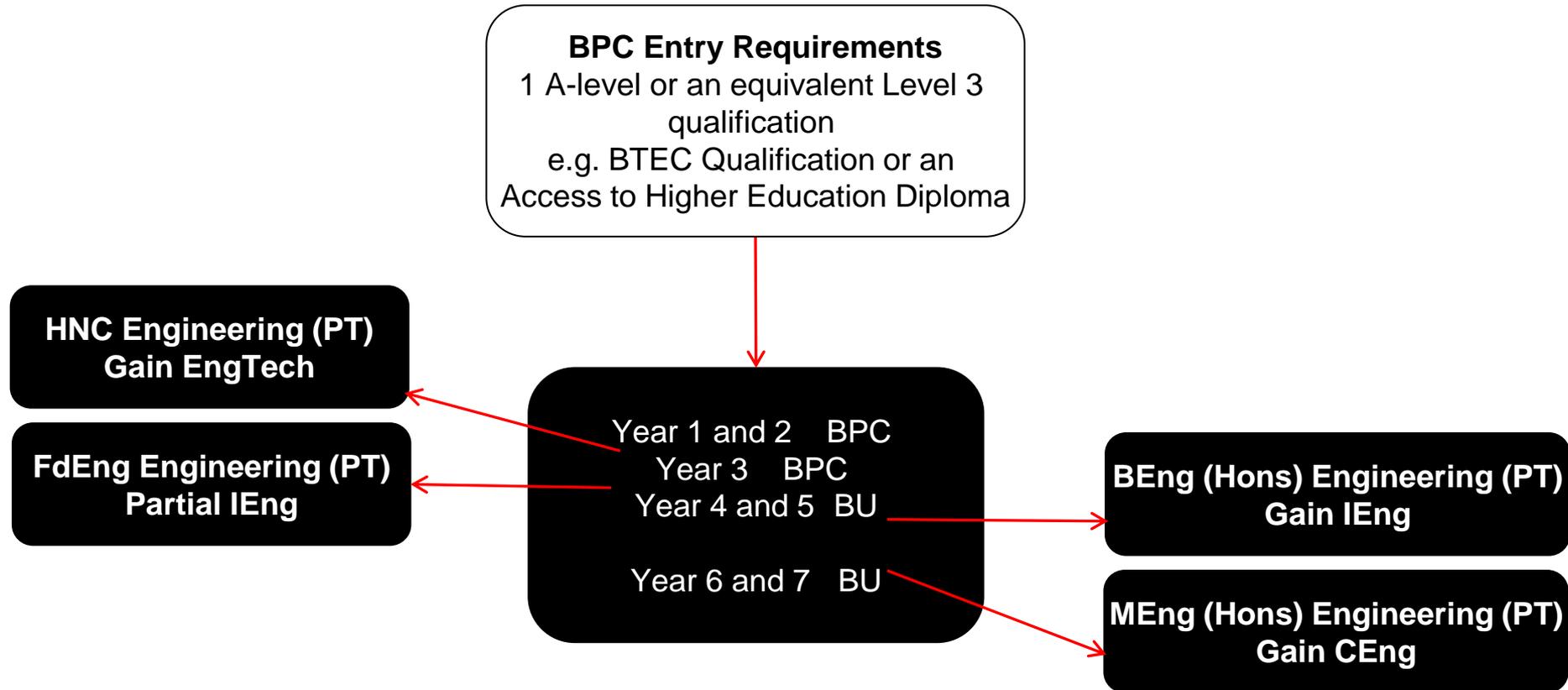
Professional Accreditation



- Accredited by the **Institution of Engineering Designers (iED)**
- Accredited by the **Institution of Mechanical Engineers (IMechE)**



Course Structure



Degree Apprenticeship Cost



- Full cost £27,000 paid through the levy
- 20% of cost covers the end-point assessment

Further Info



General:

Tel 01202 205500

apprenticeships@bpc.ac.uk

Engineering Apprenticeship:

Craig Robinson

Tel 01202 205704

Mobile 07792949977

robinsonc@bpc.ac.uk

Engineering Programmes:

Matthew White

Tel 01202 205638

whitemj@bpc.ac.uk

Placements – Benefits to your organisation



- Every student has the option to do a minimum of 30 weeks Placement
- You will have the opportunity to recruit someone who:
 - Will bring a new perspective and a fresh approach to your organisation
 - Is cost effective, with the added bonus of zero recruitments costs
 - Can form the basis of your graduate recruitment
 - Is able to undertake a variety of projects to support your business, with added specialist skills
 - Is available to start in June and work through until they return to university the following year

Contact: Jane Moody – moodyj@bournemouth.ac.uk

Knowledge Transfer Partnerships

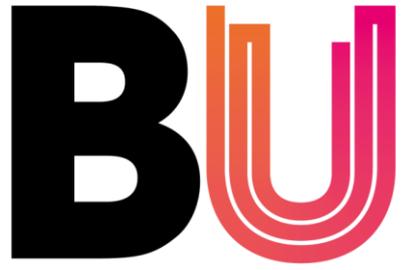


- UK-wide programme to improve a businesses competitiveness and productivity through the better use of knowledge, technology and skills
- Company focussed project partly funded by the government - For both SMEs and large companies
- KTP Associate within the company
- Academic Supervisor and access to university facilities
- High Success rate

Research & Enterprise – Want to find out more?



- Talk to us about:
 - KTPs
 - match-funded studentships
 - research collaborations
 - use of our facilities
 - access to our expertise
- Contact: Dr Bryce Dyer – Deputy Head of Department (brdyer@bournemouth.ac.uk)



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University**

Thank you

Questions?