Build resilient infrastructure, promote sustainable industrialisation and foster innovation

TEACHING AND STUDENTS

Warwick Innovation and Entrepreneurship Programme

The Warwick Innovation and Entrepreneurship Programme is designed to foster the ability to think like an entrepreneur and develop innovative products and services, it equips students with the skills to drive innovation in organizations and teams, embrace risk and learn how to generate, pivot and execute ideas. It has been created by experienced enterprise educators and is supported by Student Innovation Fellows. The course is free and open to all students and covers topics such as idea generation, target audience, pitching and financing.

Graduate Accelerator Programme

The Graduate Accelerator Programme, funded by the QO-UnInn Enterprise Fund, provides an opportunity for five business teams to develop their entrepreneurial skills, test, launch and pitch their business ideas to industry buyers within 12-months. Along the way, participants clarify their vision, strengthen their mindset and evaluate market opportunities in order to build and launch their business idea. Teams can benefit from up to £10,000 awarded by the QO-UnInn Enterprise Fund, access to a physical co-working space, 1:1 results coaching and exclusive access to the University of Warwick's most successful graduate entrepreneurs.

Visa Start-Up Scheme

The University of Warwick Start-up Scheme gives overseas graduates with a viable, innovative and scalable business idea the opportunity to remain in the UK and develop their business under a Start-up visa for 2 years. The scheme is run in conjunction with the Home Office, and aims to identify, nurture and develop graduate entrepreneurs with a business idea they wish to develop in the United Kingdom.

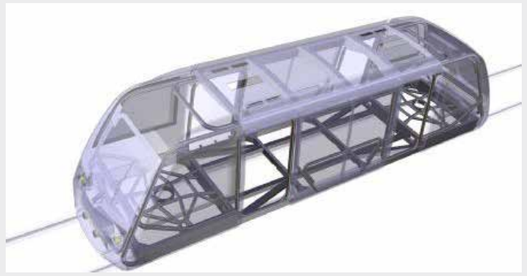
Student Enterprise Fund

The Student Enterprise Fund is available for current students at Warwick, successful applicants can receive up to £1,000 per academic year and a support package.

RESEARCH

Woven Light Rail

The BRAINSTORM project saw partners from Far-UK, Composite Braiding, TDI and WMG create a woven braided carbon fibre composite frame for a Very-Light Rail, and won gold at the JEC World 2020 Innovation awards in the Category "Railway Vehicles and Infrastructure." The frame is unique as it can be easily assembled by adhesive and simple welding, can be repaired if damaged, and



recycled or reused in other structures at its end of life. The reduced mass leads to a lower requirement for power and lowers the stress placed on the track system. This opens up significant cost saving opportunities in light rail systems. The technology ensures that the vehicle is tough for a long life in service, easily repairable and strong enough to protect the passengers on board.

DIG-BIO-RAIL

The EU funded DIG-BIO-RAIL project aims to improve the resiliency of railway earthwork infrastructure and mitigate potential economic, life, and property losses resulting from failure to apply a systematic approach. The project addresses critical gaps remaining in understanding of the life cycle performance of biopolymer-reinforced railway earthworks and interaction with the soil ecosystem.

Application of Expansive Geopolymers

Expansive geopolymers have been used for strengthening and relevelling of soil in residential projects for several decades. The process is carbon neutral, highly sustainable and is used as an alternative to established techniques such as the use of Portland Cement. The process has however not been widely adopted in the infrastructure market. Despite the demand for such a solution the market has been slow to adopt due to the lack of a recognised design methodology and application specifications. Researchers in the School of Engineering have been working with the UK's leading Geopolymer Contractor (Geobear) to develop clear scientific principles which can be adopted on future projects using expansive geopolymers.

Slipform Tunnelling

Research carried out at Warwick into slipform tunnelling aims to bring together innovative technologies which will halve the cost of tunnel construction. In the UK alone it is conservatively estimated that this would represent a saving in the region of £5bn per annum. In addition to substantial cost savings, slipform tunnelling will deliver substantial time savings and utilise a far more sustainable lining system.

It is anticipated that the technology will cut carbon dioxide emissions by over 80% and result in tunnels that will remain serviceable for hundreds of years. Furthermore, in sensitive urban environments, tunnel construction can often lead to damage to the existing built environment or to the expenditure of large sums of money to mitigate for the effects of ground movements associated with the tunnelling process. Slipform tunnelling will eliminate many of the factors that lead to ground movements, thereby reducing disruption and further reducing overall project costs.

OPERATIONS

Postgraduate Award in Technology Enhanced Learning

The PGS TEL is a fully funded project based course open exclusively to all colleagues from both academic and professional services departments at the University. Successful completion of the course leads to 20 or 30 CATs and Associate Fellowship or Fellowship of the HEA depending upon the pathway chosen. The course is project based and colleagues are encouraged to share innovative ideas and discussions through a lens of design, technology and pedagogy. The course fosters the development of a community of practice in the process of designing, developing, implementing and evaluating a technology enhanced intervention within their own teaching and learning context. Participants support each other and build networks that often extend beyond the duration of the course. The PGA TEL also hosts workshops from experts across the institution who share their experiences and practice.

PUBLIC ENGAGEMENT

Pint of Science

Coventry and Warwickshire Pint of Science was launched in 2018 to highlight the innovative and impactful research that is carried out in the area. The public engagement team aims to share research with the wider public, reaching new audiences who wouldn't normally attend science events. The May 2019 event took place over three nights and consisted of short, fun and informative talks from researchers at both Warwick and Coventry universities. Topics covered included:

- Are batteries our heroes or villains?
- Plastics of the future; and
- Powering the future with Thermo Electrics.

SPARK Festival Hong Kong

The University contributed to the British Council's SPARK: The Science of At and Creativity festival in January 2019. It was represented by the Warwick Institute for Science of Cities who, along with Hong Kong University, hosted an Ideas Café on Solving Urban Challenges through Big Data. Achieving smart sustainable city life is high on the agenda of Hong Kong and by sharing research it was demonstrated how collaborative, university-led collation and analysis of big data can help solve pressing real-world challenges. The lively discussions included, disaster risk management and green infrastructure.

Warwick Enterprise

Warwick Enterprise (WE) foster innovation by partnering with, and supporting, enterprise-related societies. WE officially support the Warwick Enactus Society who make a real impact through social enterprise. The UNSDG's form the basis of each Enactus project. From local projects such as Food Intercept (a local food re-purposing project) and The Gateway (enhancing employability skills/livelihoods for local refugees and asylum seekers in Coventry), to International projects such as Project Baala (created to reduce the trade-off between food, education and sanitary products that prevails in India (and financially supported through Warwick Enterprise's Lord Rootes Memorial Fund)) and more recently I-Cycle (repurposing plastic into eye wear in India to uplift livelihoods and reduce plastic waste issues (supported through Warwick Enterprise's Student Enterprise Fund). The University are extremely proud of the work that Enactus and other (enterprising) societies do across the University, which supports our civic aims and the fact that we have the largest Enactus team within the UK, showcases our students commitment to making a positive social/environmental impact difference both locally and internationally.