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**The Faculty of Computing, Engineering and the Built Environment (CEBE) is making major investments in growing the quality and volume of research across its two constituent Schools (Schools of Engineering and the Built Environment, and Computing and Digital Technology) through investments in academic staff and researchers, doctoral students and new labs, workshops and equipment.**

The [Water, Environment and Communities Research Centre](https://www.bcu.ac.uk/computing-engineering-and-the-built-environment/research/water-environment-and-communities) is located in the Faculty of Computing, Engineering and the Built Environment (CEBE) and based at our City Centre Campus. The Centre undertakes applied research on a range of contemporary themes relating to water and the environment reflecting the diversity and interdisciplinary nature of issues concerning the development of resilient communities. The Centre undertakes a portfolio of applied interdisciplinary research, knowledge exchange, education, community engagement and advice for decision makers and policy makers at all levels. The Centre’s work embraces and integrates local, national and international perspectives on water, focusing on environmental challenges towards sustaining resilient communities.

We have a range of PhD studentships now available across the range of disciplines represented in the centre. There are a limited number of funding opportunities available with some studentships including full scholarships while others having partial or self-funding options. Funding will be determined based on the strength of the candidate and quality of the proposal. Some of these projects also include support from our collaborating organisations.

**WIRELESS SENSOR NETWORKS FOR SMART ENHANCED CANAL ENVIRONMENTS.**

**How to apply**

**The closing date for applications is 23.59 on Sunday 1 December 2019.**

To apply, please complete the [project proposal form](http://www.bcu.ac.uk/Download/Asset/1c822112-124b-e911-818d-005056831842) , **ensuring that you quote the project reference,** and then complete the [online application](https://www.bcu.ac.uk/courses/bsbe-research-degrees-phd-2018-19)  where you will be required to upload your proposal in place of a personal statement.

You will also be required to upload two references, at least one being an academic reference, and your qualification/s of entry (Bachelor/Masters certificate/s and transcript/s)

For international applicants, a valid English language qualification, such as International English Language Test System (Academic IELTS) or equivalent with an overall score of 6.5 with no band below 6.0, must be submitted with your application.

These studentships come with full fee waivers for both UK and international candidates. There will also be the opportunity for some paid teaching work of up to 180hrs per academic year. Exceptionally strong candidates may also be offered a bursary. Final funding arrangements will be determined based on the strength of the candidate and quality of the proposal. Some of these projects also include support from our collaborating organisations.

You can find further details on studying for a PhD and details of how to apply [here](https://www.bcu.ac.uk/courses/bsbe-research-degrees-phd-2018-19)

**Project title: WIRELESS SENSOR NETWORKS FOR SMART ENHANCED CANAL ENVIRONMENTS.**

**REF: CEBE-WSNSECE**

**Contact:**

The successful candidate will be supported by an interdisciplinary research team, consisting of Professor Michael Ward, [michael.ward@bcu.ac.uk](mailto:michael.ward@bcu.ac.uk), Prof Wenyan Wu, [Wenyan.wu@bcu.ac.uk](mailto:Wenyan.wu@bcu.ac.uk) and Dr Andy Lim, [Andy.Lim@bcu.ac.uk](mailto:Andy.Lim@bcu.ac.uk). For further information please contact the Director of Studies, Professor Michael Ward, [michael.ward@bcu.ac.uk](mailto:michael.ward@bcu.ac.uk).

**Overview:**

Wireless sensor networks are an exciting field of research that offer many opportunities for enhanced environmental monitoring and quality of life improvements. In this collaborative project, working with the Canal and Rivers Trust we wish to develop a system of wireless sensors that can not only monitor the canal environment, but also modify it creating a welcoming and pleasant urban space.

Using state of the art low power radio systems and energy harvesting technology you will develop a sensor network that can monitor a range of signals from acoustic to vibration and then develop software to identify the state of the canal tow path in terms of human acceptability and comfort. We will also investigate the potential ways in which the sensor network can modify the state of the network by for example, changing the lighting conditions, making audio announcements etc. A key feature of this research will be the need not only to work with and develop technology but also understand the nature of the urban tow path and how it is perceived by its users.

**Person specification:**

For this multidisciplinary project we are ideally we are looking for an engineer or physical scientist with an interest in smart sensor systems and programming, along with an interest in human behaviour and interaction with the built environment. As such planners and social scientists with a keen and demonstrable interest in sensor systems and programming are also encouraged to apply.

MSc or equivalent professional or research experience in engineering, urban flooding, civil engineering, urban planning, water and environmental engineering, computational modelling and / or programming.

**References:**

Carlson, E.A., Cooper, D.J., Merritt, D.M., Kondratieff, B.C. and Waskom, R.M. (2019) Irrigation canals are newly created streams of semi-arid agricultural regions, Science of the Total Environment, Volume 646, 1 January 2019, Pages 770-781

Mann, R.B. (1988) Ten trends in the continuing renaissance of urban waterfronts, Landscape and Urban Planning, Volume 16, Issue 1-2, October 1988, Pages 177-199