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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.

**DESIGN PLANNING AND MODELLING OF URBAN AREA IN MITIGATING THE RISK OF FLOOD AND DROUGHT WITH THE APPLICATION OF CFD**

**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: DESIGN PLANNING AND MODELLING OF URBAN AREA IN MITIGATING THE RISK OF FLOOD AND DROUGHT WITH THE APPLICATION OF CFD.**

**Reference: CEBE-URBCFD**

**Contact:**

The successful candidate will be supported by an interdisciplinary research team, consisting of Dr Andy Lim, Andy.lim@bcu.ac.uk, Prof Wenyan Wu, Wenyan.wu@bcu.ac.uk and Prof David Proverbs, David.proverbs@bcu.ac.uk. For further information please contact the Director of Studies, Dr Andy Lim, Andy.lim@bcu.ac.uk.

**Overview:**

The rapid development of urban area and climate change are becoming a major concern in threatening the increased intensity and frequency of flooding and drought. Such act will be exacerbating more impacts to businesses and residents especially on the affected areas. There is a need of improving the catchment area and connectivity of the water transport system in mitigating the issue of surface water flood that could channel to a storage for later use during drought season. With the advancement of Computational Fluid Dynamics (CFD), this proposed research project is motivated to incorporate the numerical techniques of CFD in the design and planning process of mitigating the issue of flooding and drought. The study covers the analysis of surface water flooding and improvement of water transport system during the occurrence of flood in the urban area with the potential of integrating artificial waterway as an alternative solution to drought. At such, this research project will brings great relevance within the West Midland regions especially in the urban areas that are known to be at high risk from flooding and drought.

**Person specification:**

MSc or equivalent professional or research experience in flood and drought risk management, urban flooding, civil engineering, water and environmental engineering and computational modelling or closely related fields having the knowledge of computational fluid dynamics (CFD), finite volume method and programming.

**References:**

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Rabih Ghostine, Georges Kesserwani, José Vazquez, Nicolas Rivière, Abdellah Ghenaim, Robert Mose, “*Simulation of supercritical flow in crossroads: Confrontation of a 2D and 3D numerical approaches to experimental results*”, Computers & Fluids, 2009.

S. Haider, A. Paquier, R. Morel, and J.-Y. Champagne, “*Urban flood modelling using computational fluid dynamics*”, Proceedings of the Institution of Civil Engineers – Water and Maritime Engineering, 2003.