**An integrated approach to improve hydraulic and hydrologic design of constructed wetlands**

**Reference: EBE-052019-PhD-2**

**How to apply**

**The closing date for applications is 23.59 on Wednesday 5th January 2020.**

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 as a pdf document.

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).

International applicants must submit 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.

You can find 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).

**Contact:**

For informal academic enquiries please contact the academic supervisor, Dr Vasiliki Ioannidou ([vasiliki.ioannidou@bcu.ac.uk](mailto:vasiliki.ioannidou@bcu.ac.uk)) of the Environment & Policy Research Group, Centre of Engineering, School of Engineering and the Built Environment, Faculty of Computing, Engineering and the Built Environment, Birmingham City University.

For all administrative enquiries please contact Bernadette Allen ([bernadette.allen@bcu.ac.uk](mailto:bernadette.allen@bcu.ac.uk)) from the Doctoral College, Faculty of Computing, Engineering and the Built Environment, Birmingham City University.

**Overview:  
Subject description**: The research subject Integrated Approach to Improve Hydraulic and Hydrologic Design of Constructed Wetlands includes the study of processes related to hydraulic criteria and mixing patterns for optimization of constructed wetlands efficiency and prediction of pollution mitigation into downstream waterways through quantification of hydrodynamics and transport processes.

**Project Description**: We are recruiting a PhD student on optimization of hydraulic criteria and hydrologic design of constructed wetlands. The student is expected to generate a unique database about treatment, mixing and physical characteristics of the systems obtained through field experiments, including tracer studies. Numerical modelling tools are to be applied on the validated obtained datasets of mixing, treatment and physical parameters.

The project will require field visits to collect data, analyses of data and development of a model to optimize the hydraulic design of the systems and the prediction of reduction of pollutant load based on the empirical datasets. It provides an excellent opportunity for the student to establish an international research profile through national and international projects and through our industrial collaborations with our external partners, including The Coal Authority, Constructed Wetland Association, Severn Trent, Thames21, and other partners.

**Duties:** The project will be conducted by the PhD student, together with supervisors and technical support personnel.

**Person specification:**

We are looking for an enthusiastic and highly motivated candidate who should have or be in the process of obtaining an excellent first degree (good 2:1 or above) or MSc degree with Distinction preferably in a relevant engineering discipline (e.g. Civil, Environmental or Chemical Engineering), or in Mathematics/Physics, or in Physical Geography, or in a related discipline. The role will involve field visits to obtain primary datasets through tracer tests, analyses of data, and development of a model.

Thus applicants should demonstrate:

* Good knowledge of maths, hydraulics and hydrology.
* Experience in analysing datasets.
* Good written and oral communication skills are essential.
* Knowledge and experience of lab/field work, and numerical/programming skills would be an advantage.

**Funding Notes:**

The opportunity is open to Home, EU and International applicants who meet the required Birmingham City University eligibility criteria. The PhD studentship includes a full stipend, paid for a period of 3 years at RCUK rates (in 2019/20 this is £15,009 pa) and fees at Home/EU rate. This studentship will start in September 2019 and no later than January 2020. International applicants are eligible to apply for this studentship but must meet the shortfall on fees between Home/EU and International rate.

**Indicative references**

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Nepf, H.M. (2012). Flow and transport in regions with aquatic vegetation. Annual Review of Fluid Mechanics, 44, 123-142.

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