

MSc Environmental Analytical Chemistry

Overview

Climate change, and air, water and soil pollution are critical societal problems that will affect most, if not all communities, companies, and countries across the globe over the next 50 years. This programme will train you in cutting-edge environmental analytical chemical techniques that are used to investigate such pollution and guide mitigation and remediation. More widely, this programme will train you in advanced laboratory analysis, statistical and modelling approaches to interrogating and synthesising datasets, and reporting and communicating data. A particular feature of this MSc is the synthesis of data with training in written, oral, and other forms of communication. There will be particular emphasis on the use of such data to develop policy and/or practical recommendations. In the research project, you will be working on current topics drawn from environmental research such as urban air pollution, water quality and sustainable agriculture.

This programme will appeal to a wide range of students with a science and engineering background. Although focused on environmental applications, you will gain a broad training that will facilitate progression to a diversity of future science and engineering-based careers. The need for experts in environmental analysis and remediation is predicted to increase, making graduates of this programme well placed to take up emerging jobs in companies and organisations requiring this type of expertise.

The Organic Geochemistry Unit and the Atmospheric Chemistry Research Group that will run this course are both world-leading in environmental analytical science, being a home to a laboratory of the NERC-funded National Environmental Isotope Facility (NEIF) and a node of the NASA-funded Advanced Global Atmospheric Gases Experiment (AGAGE) project. Therefore, the collection of state-of-the-art chromatography and mass spectrometry platforms (including organic and stable isotope ratio mass spectrometers and an ^{14}C accelerator mass spectrometer) combined with world-leading research is unparalleled. In addition, the School of Chemistry at the University of Bristol is home to the only Centre for Excellence in Teaching and Learning in practical Chemistry (Bristol ChemLabS) founded in 2005 and has pioneered teaching of analytical chemistry through virtual instruments and smart worksheets. Therefore, the combination of leading analytical science and education methods makes this course unique.

Entry requirements

An upper second-class honours degree (or international equivalent) in one of the following degrees: Engineering (e.g Mechanical Engineering, Civil Engineering, Electrical and Electronic Engineering). Unfortunately we cannot consider applicants with Computer Science degrees for this programme. Natural/Physical Sciences (e.g. Chemistry, Physics, Earth Science, Geology, Geographical Sciences, Environmental Sciences, Forensic Science, Food Science). Life Sciences (e.g. Biochemistry, Pharmacology, Molecular Biology, Computational Biology, Biophysics, Cell biology, Molecular biology, Physiology, Anatomy, Zoology, Plant sciences, Neuroscience, Psychology, Virology, Microbiology, Immunology, Medicine, Archaeological Science).

Applicants will also need to demonstrate competency in Maths and Chemistry with at least a grade 6 GCSE or international equivalent (whereupon a short quantitative methods primer course will be needed to be completed at the start of the course) or an A level in mathematics or equivalent at grade C or higher or one undergraduate Maths module at 2.1 or above. Mathematics and Statistics degrees might also be considered.

Applicants will need to achieve a minimum of 5 science modules at 2.1 or above. For applicants who are currently completing a degree, we understand that their final grade may be higher than the interim grades or module/unit grades they achieve during their studies. We will consider applicants whose interim grades are currently slightly lower than the programme's entry requirements. We may make these applicants an aspirational offer. This offer would be at the standard level, so the applicant would need to achieve the standard entry requirements by the end of their degree. Specific module requirements may still apply.

We will consider applicants whose grades are slightly lower than the programme's entry requirements, if they have at least one of the following:

- evidence of significant, relevant work experience with minimum of 6 months working at solving scientific problems or as a technician.
- a relevant postgraduate qualification.

If this is the case, applicants should include their CV (curriculum vitae / résumé) when they apply, showing details of their relevant work experience and/or qualifications.

Career prospects

A hands-on approach, coupled with world-leading virtual instruments provides a comprehensive course that will enable students to pursue further research (for example, a PhD) in analytical science progressing to academic careers. Graduates of this course will be well-prepared for careers in: instrument development in the industrial sector, specialist technical support roles, careers in environmental science

(for example, national environment agencies, private consultancies, and environmental advisory services, such as government policy units and think tanks), and non-science-based careers (for example, training and teaching in data analysis).