



UNIVERSITY OF
BIRMINGHAM

BIOINFORMATICS

MSc/PGDip/PGCert

Jointly delivered by the College of Medical and Dental
Sciences and College of Life and Environmental Sciences

Bioinformatics

MSc/PGDip/PGCert

This course will place you at the forefront of the recent genomics and bioinformatics revolution now driving precision medicine. This cross-college, interdisciplinary programme, draws on expertise from a range of academic staff working within the College of Medical and Dental Sciences and the College of Life and Environmental Sciences, with access to the University of Birmingham's cutting edge facilities. Bioinformatics is one of the fastest growing fields in industry and academia, and demand for people with these skills far outstrips supply; making our graduates highly employable and sought after.



FACT FILE

Start Date: September

Duration: 1 year full-time,
2 years part-time

Format: Full-Time or Part-Time

Fees for 2020–21: MSc, full-time:

UK/EU £9,250, International £23,310

For full fee information see the web pages (including part-time and PGDip/PGCert).

Entry requirements: 2:1 or equivalent in Biology, Mathematics, Computer Science or other related subjects. English to IELTS 6.5 (with no less than 6.0 in any band).

- Explore the frontiers of bioscience, from precision medicine to precision agriculture, and emerging fields, including molecular ecosystems biology and topological data analysis
- Learn how to analyse predominant omics data-types – including next generation sequencing, mass spectrometry, emerging single molecule techniques, genome engineering, imaging and integrative analysis toolsets to enable science at the intersection of these and other measurement modalities
- Gain a foundation in statistical machine learning to prepare for a career in the information sciences
- Discover new opportunities in one of the fastest growing industrial and academic fields in the United Kingdom, and beyond

Core Modules

Why choose Birmingham?

- A unique place where we integrate across disciplines including Biology, Medicine, Mathematics, Statistics, Computer Science thanks to the Centre for Computational Biology's cross-college nature
- Learn from lead researchers in the field
- Opportunities to expand our foundational understanding of human genome biology by working with health science experts in the West Midlands Genomic Medicine Centre, University Hospital Birmingham, a major contributor to the 100,000 Genomes Project

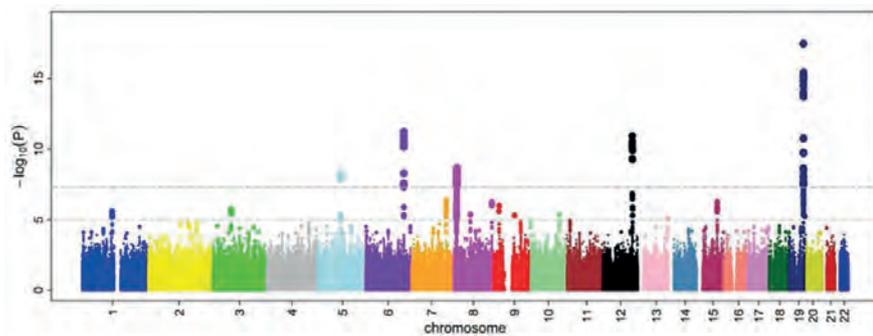
- Essentials of Biology, Mathematics and Statistics
- Genomics and Next Generation Sequencing
- Data Analytics and Statistical Machine Learning
- Metabolomics and Advanced (omics) Technologies
- Computational Biology for Complex Systems
- Interdisciplinary Bioinformatics Group Project
- Individual Project

More about the course

This course is composed of five taught modules, one group project and one independent project. Beginning with a fast-paced introduction to essential capabilities, the taught modules prepare you with vital foundational knowledge. You will develop skills in statistics, computer programming and molecular biology, enabling you to understand and participate in the ongoing revolution in biological data science.

You will learn how to analyse high-throughput sequencing data from platforms including Illumina, PacBio and Oxford Nanopore, and how to use these technologies to study the dynamic molecular processes that coordinate gene expression in space and time. You will gain a foundation in recent advances in mass spectrometry and nuclear magnetic resonance spectroscopy for metabolomics – the study of all small molecules, or metabolites present in a system, and will learn how to integrate these datatypes with high-content imaging, mapping molecular changes onto four-dimensional representations of complex systems; including the human nervous system and fresh-water ecologies.

Closely supervised individual projects will prepare you to tackle real-world research, or industrial problems, at scale. Highly interactive group projects provide training for students to work in teams to tackle challenges too complex for individuals. Projects are developed in collaborations with our world-leading faculty, and multiple industry partners in the West Midlands, ensuring that students are equally prepared for academic or industry career paths.



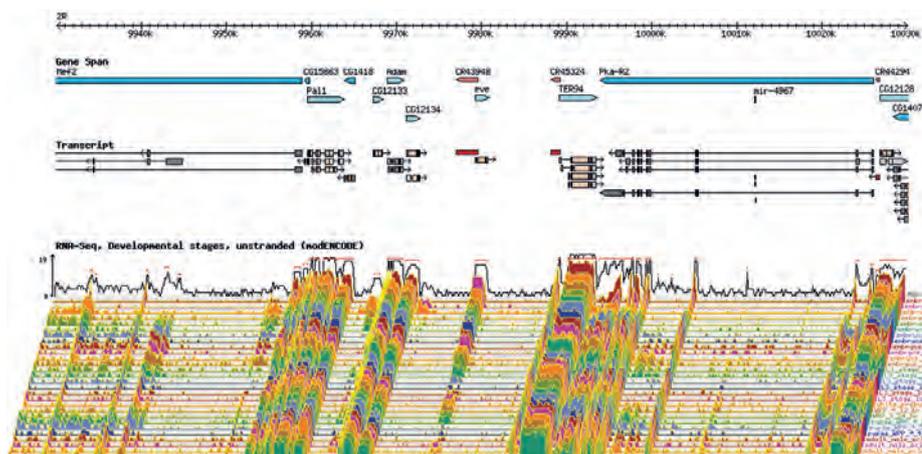
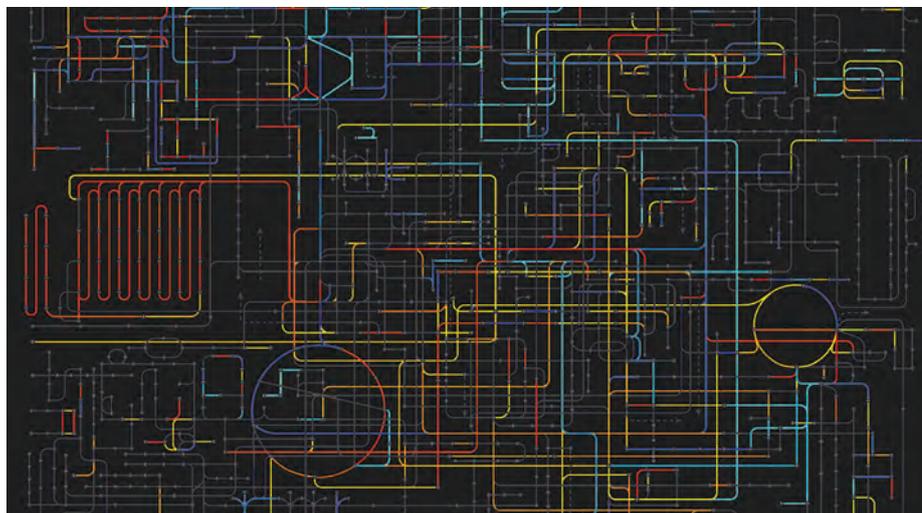
Learning and teaching environment

With access to world-leading academics and researchers, you will be challenged and encouraged to become independent and self-motivated learners. You will be based in the heart of the University of Birmingham, in the Centre for Computational Biology (CCB).

The CCB provides an opportunity to combine many of the field's components, from both development and application. The Centre is a hub for cross-college collaborative research, teaching and shared resources; linking the Colleges of Medical and Dental Sciences, Life and Environmental Sciences, and Engineering and Physical Sciences.

Teaching is located in the CCB and you will have opportunities to interact with postdoctoral bioinformaticians currently working at the University of Birmingham; sharing their experience, knowledge and passion for this field.

The CCB boasts dedicated teaching rooms, equipped with advanced multimedia technology. Throughout your time with us you will be taught using a variety of methods; lectures, seminars, practical workshops, as well as group and individual projects. We emphasize effective communication, and progressively train you to present in written and oral forms.



LEARN MORE

For full module information and an online application, please visit our dedicated web pages or contact our programme staff with your questions.

Programme Administrator: Hanan Fara
 Email: bioinformatics@contacts.bham.ac.uk
www.birmingham.ac.uk/ccb
 Facebook: MScBioinformaticsUoB
 Twitter: @UoB_CCB

Enhance your personal skills and professional prospects, with postgraduate study at the University of Birmingham

Postgraduate study has both an inherent and transferable value, supporting you to develop as a person, boost your career prospects and even change direction in your career.

You will be taught by experts in their fields and work alongside supportive and innovative academics in our world-leading centres. You will work in an environment in which excellence, innovation and delivery are made possible by brilliant people, outstanding facilities and strong collaborative networks. Within this nurturing academic community, you will be able to shape policy, change lives, influence society and gain the skills you need to put you ahead in a competitive job market.

Supporting you to achieve a challenging and rewarding career

As a postgraduate student you are likely to have specific requirements when it comes to planning for your next career step. Our Careers Network offers a range of events and support services designed to help you maximise your employability:

from networking opportunities and career coaching workshops, to our effective-careers-strategy toolkit and one-to-one guidance.

We also offer subject-specific careers consultants and advisers for each college and a dedicated careers website for international students.

POSTGRADUATE OPEN DAYS

Come and speak to us about our courses at our Postgraduate Open Days on our beautiful campus. Find out more www.birmingham.ac.uk/pgopenday

COLLEGE GRADUATE SCHOOL

The College Graduate School undertakes the vital roles of providing you with support, advice, and information, as well as training and funding opportunities. Find out more www.birmingham.ac.uk/mds-graduate-school



This leaflet was written several months in advance of the start of the academic year. It is intended to provide prospective students with a general picture of the programmes and courses offered by the School. Please note that not all programmes or all courses are offered every year. Also, because our research is constantly exploring new areas and directions of study some courses may be discontinued and new ones offered in their place.

Please note the information in this brochure is correct at time of publication but may be subject to change (November 2019).

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