Programme Specification (Postgraduate) FOR ENTRY YEAR: 2026/27

Date created: Click or tap here to enter text. **Last amended:** 20/01/2025 **Version no.** 1

1. Programme Title(s):

MSc Bioinformatics
Postgraduate Diploma Bioinformatics (available as interim or exit award)

2. Awarding body or institution:

University of Leicester

3. a) Mode of study

Full-time

b) Type of study

Campus-based

4. Registration periods:

The normal period of registration for the MSc in Bioinformatics is 12 months.

The maximum period of registration for the MSc in Bioinformatics is 24 months.

5. Typical entry requirements:

A first or second class Honours degree in Biological Sciences or a related scientific discipline, or an equivalent qualification. Alternatively, several years of appropriate experience in industry. Students are required to demonstrate English proficiency in line with the requirements in Senate Regulation 1 . Students need to achieve a score of 90 in the Test of English as a Foreign Language (TOEFL) or an average score of 6.5 in the International English Language Testing System (IELTS), with a minimum score of 6.0 for writing.

6. Accreditation of Prior Learning:

Accreditation of prior learning (APL) is not accepted for exemptions from modules on the programme.

7. Programme aims:

The programme aims to respond to the need for Bioinformaticians by teaching Biological Sciences graduates the theoretical and practical analytical skills used in Bioinformatics. A four-month project in a University research laboratory, or a joint project with a research institute or industry is an integral part of the course. The course prepares for employment in industry or academia either directly or as the result of subsequent study.

8. Reference points used to inform the programme specification:

- University of Leicester Periodic Developmental Review Report
- External Examiners' reports (annual)
- Education Strategy
- Assessment Strategy [login required]

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9. Programme Outcomes:

Unless otherwise stated, programme outcomes apply to all awards specified in 1.

Intended Learning Outcomes	Teaching and Learning Methods	How Demonstrated?
(a) Discipline specific knowledge and competencies		
Knowledge		
At the end of the course students should be able to demonstrate a core knowledge of the field of bioinformatics.	Lectures, Surgeries, Seminars, Targeted reading, Computer practical classes, Project supervision (MSc only)	Written reports, Programming assignments, Seminar presentation, Research project (MSc only), Dissertation (MSc only), Short-answer examinations, Problem-based examinations, Computer-based exercises, Problem-based exercises
Concepts		
At the end of the course students should be able to demonstrate an in depth knowledge of the role of bioinformatics in biological sciences, with particular reference to data mining, data analysis and data interpretation.	Lectures, Surgeries, Seminars, Targeted reading, Computer practical classes, Project supervision (MSc only)	Written reports , Programming assignments, Research project (MSc only), Dissertation (MSc only), Problem-based examinations, Computer-based exercises, Problem-based exercises
Techniques		
At the end of the course students should be able to apply bioinformatics techniques to a range of problems in biological sciences.	Surgeries, Computer practical classes, Project supervision (MSc only)	Programming assignments, Research project (MSc only), Problem-based examinations, Computer-based exercises, Problem-based exercises
Critical analysis		
At the end of the course students should be able to critically appraise results, critically review the literature and critically review web-based material.	Surgeries, Seminars, Targeted reading, Computer practical classes, Project supervision (MSc only)	Written reports, Research project (MSc only), Dissertation (MSc only), Problem-based exercises
Presentation		
At the end of the course students should be able to present scientific results and participate in scientific discussion.	Lectures, Seminars, Project supervision (MSc only)	Written reports, Seminar presentation, Research project (MSc only), Dissertation (MSc only)
Appraisal of evidence		
At the end of the course students should be able to demonstrate good practice in data mining, data analysis and data interpretation relevant to bioinformatics.	Lectures, Surgeries, Seminars, Computer practical classes, Project supervision (MSc only)	Written reports, Seminar presentation, Research project (MSc only), Dissertation (MSc only), Problem-based exercises

Intended Learning Outcomes	Teaching and Learning Methods	How Demonstrated?
(b) Transferable skills		
Research skills		
At the end of the course students should be able to solve problems, analyse data, and use statistical tests appropriate to typical bioinformatics research questions.	Lectures, Surgeries, Seminars, Computer practical classes, Project supervision (MSc only)	Written reports, Programming assignments, Research project (MSc only), Dissertation (MSc only), Problem-based examinations, Computer-based exercises, Problem-based exercises
Communication skills		
At the end of the course students should be able to write scientific reports effectively, and give effective oral presentations.	Lectures, Surgeries, Seminars, Project supervision (MSc only)	Written reports, Seminar presentation, Dissertation (MSc only), Web-server, Short-answer examinations, Problem-based examinations
Data presentation		
At the end of the course students should be able to use appropriate statistical tests in data analysis and present data effectively.	Lectures, Surgeries, Seminars, Computer practical classes, Project supervision (MSc only)	Written reports, Programming assignments, Dissertation (MSc only), Problem-based examinations, Computer-based exercises, Problem-based exercises
Information technology		
At the end of the course students should be competent in general computing and in bioinformatics computing specifically	Lectures, Surgeries, Computer practical classes, Project supervision (MSc only)	Written reports, Programming assignments, Seminar presentation, Research project (MSc only), Dissertation (MSc only), Short-answer examinations, Problem-based examinations, Computer-based exercises, Problem-based exercises
Problem solving		
At the end of the course students should be able to solve problems effectively.	Lectures, Surgeries, Seminars, Computer practical classes, Project supervision (MSc only)	Written reports, Programming assignments, Research project (MSc only), Dissertation (MSc only), Problem- based examinations, Computer- based exercises, Problem-based exercises
Working relationships		
At the end of the course students should be able to manage projects, display organisational skills and manage time effectively.	Lectures, Surgeries, Seminars, Targeted reading, Computer practical classes, Project supervision (MSc only)	Written reports, Programming assignments, Seminar presentation, Research project (MSc only), Dissertation (MSc only), Short-answer examinations, Problem-based examinations, Computer-based exercises, Problem-based exercises

Intended Learning Outcomes	Teaching and Learning Methods	How Demonstrated?
Managing learning		
At the end of the course students should be able to develop new skills, manage information and develop specialisation and interests.	Lectures, Surgeries, Seminars, Targeted reading, Computer practical classes, Project supervision (MSc only)	Written reports, Programming assignments, Seminar presentation, Research project (MSc only), Dissertation (MSc only), Problem-based exercises
Career management		
At the end of the course students should be able to confidently apply to positions relevant to the subject of for further study.	Career services session	Monitoring of employability.

10. Special features:

Laptop included in course fee, prize for best student

10a. Research-inspired Education

Students on this programme will advance through the four quadrants of the University of Leicester Research-inspired Education Framework as follows:

RiE Quadrant	Narrative
	The programme provides programme-specific practical experience and knowledge. This also includes critical thinking, data analysis and independent research skills with additional interaction with current literature and ongoing research in the University of Leicester.
Research-briefed Bringing staff research content into the curriculum.	Research-briefed: Lectures are taught by staff actively involved in research. These may contain current research outcomes or techniques widely used in research. Proficiency in lab skills is examined by practical assessment. Departmental seminars and subject-specific guest speakers add to the research content of the curriculum.
Research-based Framed enquiry for exploring existing knowledge.	Research-based: Students use active learning to explore the concepts introduced in the lectures and using some of the techniques in laboratory/computer-based practicals to address a research question. The students analyze the results of their own experiments to generate written reports and compare outcomes to published literature.
Research-oriented Students critique published	Research-oriented: A knowledge of the structure of scientific publications is gained and research is critiqued. Current published research is used to construct a research proposal and/or construct the background to their project dissertation, alongside research and professional skills and regulatory considerations.

research content and process. **Research-apprenticed** Experiencing the research process and methods; building new knowledge.	Research-apprenticed: The students will design and undertake research outlined in their proposals as part of a full-time research project. During this time students will appreciate that research is collaborative and cumulative. Students are invited to attend and be involved in lab meetings and departmental seminars to experience the research process.

As part of studying at a research-intensive university, students on this programme have the following extra or co-curricular opportunities available to them to gain exposure to research culture:

Departmental, University and external speaker seminars are an important way that scientists disseminate their research outcomes. Students are invited to attend these seminars to experience the research process. Many students attend the seminars which help them to see the breadth of research in their subject area. The student research projects are embedded into research groups where students are surrounded by other research staff with whom they can discuss the current research being performed and engage with the full research process and environment.

Teaching on this programme will be research-informed (it draws consciously on systematic inquiry into the teaching and learning process itself) in the following way:

The School supports all staff involved in teaching to gain an accredited Higher Education teaching qualification, in which they demonstrate their use of teaching theory to support their own practice and reflect on their current teaching and continuing professional development.

Programme module convenors attend a seminar group that supports teaching activities across the school. This supports educational best practice with talks from external speakers and sharing of evaluations and projects on teaching practice.

11. Indications of programme quality:

External Examiners' reports, Destination Survey

12. Scheme of Assessment

As defined in Senate Regulation 6: Regulations governing taught postgraduate programmes of study.

13. Progression points

As defined in Senate Regulation 6: Regulations governing taught postgraduate programmes of study.

In cases where a student has failed to meet a requirement to progress he or she will be required to

withdraw from the course and a recommendation will be made to the Board of Examiners for an intermediate award where appropriate.

14. Rules relating to re-sits or re-submissions:

As defined in Senate Regulation 6: Regulations governing taught postgraduate programmes of study.

The following module on this programme must be passed at the first attempt:

- BS7130 - Independent Research Project

The Board of Examiners may, at its discretion, permit students to resubmit one or more assessed coursework elements of this module if doing so would enable them to achieve an overall pass mark for the module by improving their mark in individual coursework components. However, there are no resit opportunities permitted for missed non-mitigated practical elements.

15. Additional information

n/a

Appendix 1: Programme structure (programme regulations)

MSc Bioinformatics

The overall structure of the MSc is as follows:
Taught modules 120 credits
Research project 60 credits
All modules are core modules.

Module code	Module title	Credits
	Taught modules:	
BS7101	Gene and Genome Analysis	15
BS7102	Proteins: Structure and Bioinformatics	15
BS7105	Bioinformatics Programming and Advanced Topics in Bioinformatics	30
BS7120	Steered Research Project	30
CO7100	Algorithms for Bioinformatics	15
CO7093	Big Data and Predictive Analytics	15
	Research Project:	
BS7130	Independent Research Project	60

Appendix 2: Module Specifications

See module specification database https://le.ac.uk/study/postgraduates/courses [log-in required]