1. **Programme title(s):**

    MSc Bioinformatics and Molecular Genetics

    Postgraduate Diploma Bioinformatics and Molecular Genetics*

    *Available as an EXIT award ONLY

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 and Molecular Genetics is 12 months fulltime

    The maximum period of registration for the MSc in Bioinformatics and Molecular Genetics is 24 months fulltime

5. **Typical entry requirements:**

    Candidates should typically have at least a second class honours degree or equivalent in a biological or biomedical science, and an interest in computing and bioinformatics. The candidate's interest in computing and bioinformatics is assessed in an interview. Students are required to demonstrate English proficiency in line with the requirements of 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 equip students with a broad set of molecular genetics and bioinformatics skills, and experience of bioinformatics research. On completing the course students will be well qualified for positions involving both the use and development of bioinformatics tools in biomedical research and commercial contexts.

8. **Reference points used to inform the programme specification:**

    -   QAA Master's Degree Characteristics Statement 2015
    -   University of Leicester Learning Strategy
    -   Annual and Periodic Developmental Review Report (2012)
    -   External Examiners' reports
    -   Destination Survey

- Student feedback by student reps and surveys

9. Programme Outcomes:

Unless otherwise stated, programme outcomes apply to all awards specified in 1. Programme title(s).

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 and the applications of bioinformatics to molecular genetics.	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), 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, Research project (MSc only), 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, Seminar presentation, Research project (MSc only), Dissertation (MSc only), Short-answer examinations, 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), Short-answer examinations, Problem-based examinations, Computer-based exercises, 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.	Excursion to the European Bioinformatics Institute (biggest employer of Bioinformaticians in the UK), Career services session	Monitoring of employability. The existing MSc Bioinformatics and MSc Molecular Genetics have an excellent track record

10. **Special features**

   Combination of computational skills and modern molecular genetics laboratory techniques; Laptop included in course fee; study visit to the European Bioinformatics Institute

11. **Indicators of programme quality**

   Programme quality will be monitored by an annual developmental review process and the report of the external examiner.

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. Where appropriate a recommendation will be made to the Board of Examiners for a postgraduate diploma as an exit award only on completion of the required number of credits.

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

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

15. **Additional features** (e.g. timetable for admissions)

   Timetable for admissions as for the MSc Molecular Genetics.

16. **External Examiners**

   The details of the External Examiner(s) for Bioinformatics and the most recent External Examiners' reports can be found here .
   The details of the External Examiner(s) for Molecular Genetics and the most recent External Examiners' reports can be found here.

Appendix 1

MSc Bioinformatics and Molecular Genetics (2017/18):
Appendix 1: Programme structure (programme regulations)

The overall structure of the MSc is as follows:
Taught modules   150 credits
Research project 30 credits
All modules are core modules.

Module code	Module title	Credits
	Taught modules:	
MB7211	Introduction to techniques in molecular genetics and data analysis	30
MB7212	Experimental Design and Application of molecular techniques to research	30
CO7100	Algorithms for Bioinformatics	15
CO7101	Java and Databases for Bioinformatics	15
BS7101	Gene and Genome Analysis	15
BS7102	Proteins: Structure and Bioinformatics	15
BS7105	Bioinformatics Programming and Advanced Topics in Bioinformatics	30
	Research Project:	
BS7140	Bioinformatics Research Project	30