

School of Life and Medical Sciences

Title of Programme: MSc Biosciences Programme

Programme Code: LMBIOM

Course Code: **LMMEDMIC**

MSc Medical Microbiology

Programme Specification

This programme specification is relevant to students entering:
21 September 2020

Associate Dean of School (Academic Quality Assurance):
Stefanie Schmeer



Signature

A programme specification is a collection of key information about a programme of study (or course). It identifies the aims and learning outcomes of the programme, lists the modules that make up each stage (or year) of the programme, and the teaching, learning and assessment methods used by teaching staff. It also describes the structure of the programme, its progression requirements and any programme-specific regulations. This information is therefore useful to potential students to help them choose the right programme of study, to current students on the programme, and to staff teaching and administering the programme.

Summary of amendments to the programme

Date	Section	Amendment

If you have any queries regarding the changes please email AQO@herts.ac.uk

Programme Specification MSc Medical Microbiology

This programme specification (PS) is designed for prospective students, enrolled students, academic staff and potential employers. It provides a concise summary of the main features of the programme and the intended learning outcomes that a typical student might reasonably be expected to achieve and demonstrate if he/she takes full advantage of the learning opportunities that are provided. More detailed information on the teaching, learning and assessment methods, learning outcomes and content for each module can be found in Definitive Module Documents (DMDs) and Module Guides.

Section 1

Awarding Institution/Body	University of Hertfordshire
Teaching Institution	University of Hertfordshire
University/partner campuses	College Lane
Programme accredited by	Not applicable
Final Award (Qualification)	MSc
All Final Award titles (Qualification and Subject)	Medical Microbiology
FHEQ level of award	7
Language of Delivery	English

A. Programme Rationale

The programme is designed to provide a postgraduate education in Medical Microbiology for graduates in the Biosciences or Biological Chemistry. A strong practical foundation is provided in the first semester with the study of modules that concentrate on the basic principles and techniques used in modern biosciences investigations, and on aspects of cellular molecular biology and development. In the second semester there is a progression to problem-based learning (PBL) to develop an in-depth understanding and high-level critical analysis skills of the application of medical microbiological approaches to the study of microbial pathogenesis, antimicrobial resistance, and novel approaches to treat and prevent infections. During the final semester, the research project carried out in the state-of-the-art multimillion science facility may include aspects of microbial physiology, antimicrobial resistance, evaluating novel antimicrobials, microbial virulence factor studies, environmental microbiology, and microbial bioinformatics. This course will provide students with the skills they need to have for future opportunities in the fast-growing biotechnology industry, academia and healthcare.

The use of problem based learning approaches is a key feature of the programme and will promote development of investigative skills, the ability to work in a group and confidence in the investigation of new research areas. Another key feature of the programme is the research project which provides training in research methods and hands-on experience of laboratory and bioinformatics techniques including next generation sequencing. Throughout the programme the students will be provided academic and personal support by their personal tutors, programme leader and academic support unit. Where required, students will be further supported to improve their skills in academic English writing through English language classes.

B. Educational Aims of the Programme

The programme has been devised in accordance with the University's graduate attributes of programmes of study as set out in [UPR TL03](#).

Additionally this programme aims to:

- engender a continuing and independent approach to learning, encouraging initiative and self-discipline such that students will be able to comprehend, contribute to, and harness advances in medical microbiology and related areas;

- build and improve on students' cognitive skills, including the ability to think logically and independently; to be reflective and critical of scientific hypotheses, to analyse, synthesise and be creative;
- enable students to develop a systematic understanding and a critical awareness of associated issues, some of which are at the forefront of medical microbiology;
- provide a framework for the acquisition of a comprehensive understanding of medical microbiology techniques applicable to research, equivalent advanced scholarship and commercial situations;
- develop an ability to apply the techniques described above and an understanding of how the results may be used to inform judgements, and develop and advance ideas;
- provide opportunities for the continuing development of transferable skills including communication, mathematical analysis, use of information technology, problem solving both as part of a team and as an individual.

C. Intended Learning Outcomes

The programme provides opportunities for students to develop and demonstrate knowledge and understanding, skills and other attributes in the following areas. The programme outcomes are referenced the Frameworks for Higher Education Qualifications of UK Degree-Awarding Bodies (2014), and relate to the typical student. Additionally, the SEEC Credit Level Descriptors for Further and Higher Education (2016) have been used as a guiding framework for curriculum design.

Knowledge and Understanding:	Teaching/learning methods & strategies	Assessment
A1 relate gene expression to the phenotype of an organism via an understanding of gene and protein structure and function, developmental biology and the influence of the environment on gene expression	Acquisition of A1 and A2 is through a combination of lectures, laboratory classes, tutorials and guided reading in <i>Molecular Cell Biology and Immunology</i> and <i>Core Genetics and Protein Biology</i> . These outcomes will also be reinforced and developed in the problem-based learning (PBL) exercises in semester B.	Knowledge and understanding are assessed through a combination of unseen tests (A1- A4) data interpretation exercises (A3, 4) oral presentations (A1, A2), laboratory records (A1, A2), <i>viva voce</i> examinations (A3, A4), PBL assignments (A3, A4), and the design, execution and reporting of a research project (A2-A4)
A2 critically evaluate the methodologies of gene mapping, recombinant DNA technology and introductory bioinformatics and apply them to the investigation and deconstruction of biological systems.	A2 and A3 are achieved through the lecture programme in the PBL-based modules: Contemporary Topics in Medical Microbiology and Genome Science	
A3 evaluate translational effects of resistance to antimicrobial agents and understand the molecular mechanisms that underpin them in bacteria, viruses, and fungi.	A4 is achieved through the lecture programme, and problem-based learning (PBL) exercises.	
A4 critically evaluate the molecular mechanisms that underpin antimicrobial	Throughout, the learner is encouraged to undertake independent study both to supplement and consolidate what is being taught/learnt and to broaden their individual knowledge and understanding of the subject.	

resistance in microorganisms and evaluate mechanisms to circumvent them.		
Intellectual skills:	Teaching/learning methods & strategies	Assessment
<p>B1 evaluate the applications of microbiological methods in fundamental research, clinical microbiology, and industry.</p> <p>B2 demonstrate a critical approach in enquiry and hypothesis testing and critically evaluate scientific literature and experimental data.</p>	<p>Acquisition of B1 is through the laboratory classes, the <i>ResearchProject with Research Methods</i>, and PBL exercises.</p> <p>Acquisition of B2 is through the <i>Medical Microbiology Project with Research Methods</i>, PBL exercises and in <i>Genome Science</i>.</p> <p>Throughout, the learner is encouraged to develop intellectual skills further by independent study</p>	Intellectual skills are assessed through using laboratory reports, viva voce examinations, the project and PBL assignments.
Practical skills:	Teaching/learning methods & strategies	Assessment
C1 design, execute, interpret and report investigations (practical and theoretical) of molecular biology problems and molecular genetics of disease, critically evaluate the contribution made to current knowledge and propose avenues for future study.	Practical skills are developed through laboratory classes, the PBL exercises, <i>ResearchProject with Research Methods</i> .	Practical skills are assessed through laboratory reports viva voce examinations the PBL assignments, the project proposal and project.
Transferable skills:	Teaching/learning methods & strategies	Assessment
<p>D1 effectively communicate analyses of case studies in both the written and spoken word and defend the findings of their work.</p> <p>D2 demonstrate self-direction and originality in tackling and solving problems and act autonomously in planning and executing tasks.</p> <p>D3 contribute effectively to the functioning of a group and reflect on the learning experience.</p> <p>D4 demonstrate numeracy and manipulate, analyse and present data.</p> <p>D5 apply appropriate information technology to</p>	<p>Transferable skills are developed throughout the programme:</p> <p>Acquisition of D1 is achieved in the PBL modules and the <i>Medical Microbiology Project with Research Methods</i>.</p> <p>Acquisition of D2 is through the <i>Research Project with Research Methods</i>, PBL and the supporting mentoring programme operated in Semester A.</p> <p>Acquisition of D3 is achieved through the PBL modules</p> <p>Acquisition of D4 and D5 is achieved in the PBL exercises, bioinformatics practicals in <i>Molecular Cell Biology and Immunology</i> and the <i>Research Project with Research Methods</i>.</p>	Transferable skills are assessed through laboratory reports (D1, D4); viva voce examinations (D1 and D2); seminars (D1) PBL reports (D1, D3, D4, D5) and the project (D1, D2, D4, D5)

the recovery, analysis and reporting of data.

Throughout, the learner is encouraged to develop transferable skills by maintaining a record of evidence and completing a personal development plan.

D. Programme Structures, Features, Levels, Modules, and Credits

The programme is offered in full-time mode (Semester A intake) and leads to the award of an MSc in Medical Microbiology. Entry is normally at level 7.

The programme is also offered as a part time 2-year course. Part-time students will study the 30 CP Molecular Cell Biology and Immunology (MCBI) module in semester A of year 1 and then Genome Science in Sem B. In year 2 students will study Genetics and Protein Biology in Sem A and Contemporary Topics in Medical Microbiology in Sem B. In semester C, the Research Project will be completed either in the work place (supervised by industrial supervisor and university supervisor) or at UH supervised by a UH supervisor. Students will also study Research Methods both in year 2 as an integral part of the research project (60 CP).

Professional and Statutory Regulatory Bodies

None

Work-Based Learning, including Sandwich Programmes

Not Applicable

Programme Structure

The programme structure and progression information below (Table 1a and 1b) is provided for the award. Any interim awards are identified in Table 1b. The Programme Learning Outcomes detailed above are developed and assessed through the constituent modules. Table 2 identifies where each learning outcome is assessed.

Table 1a Outline Programme Structure

Mode of study Full Time

Entry point Semester A

Compulsory Modules Module Title	Module Code	Credit Points	Language of Delivery	% Examination	% Coursework	% Practical	Semesters
Molecular Cell Biology and Immunology	7LMS0279	30	English	0	100	0	A
Genetics and Protein Biology	7LMS0269	30	English	0	100	0	A
Genome Science	7LMS0276	30	English	0	100	0	B
Contemporary Topics in Medical Microbiology	7LMS0272	30	English	0	100	0	B
Research Project with Research Methods	7LMS0278	60	English	0	100	0	ABC

The award of an MSc requires 180 credit points passed at level 7. Although the modules are assessed by coursework, this will also include some in-class tests.

Table 1b Final and interim awards available

The programme provides the following final and interim awards:

Final Award	Award Title	Minimum requirements	Available at end of (normally):	Programme Learning Outcomes developed (see above)
Masters	Medical Microbiology	180 credit points including at least 150 at level 7	3 Semesters	All programme learning outcomes (see Table 2)
Interim Award	Award Title	Minimum requirements	Available at end of Level	Programme Learning Outcomes developed (see above)
Postgraduate Diploma	Medical Microbiology	120 credit points, including at least 90 at level 7	2, 3 Semesters	A1, A2, A3, A4, B1, B2, C1, D1, D2, D3, D4, D5
Postgraduate Certificate		60 credit points, including at least 45 at level 7	1-2 Semesters	For untitled awards: See UPR AS11, section 13: http://sitem.herts.ac.uk/secreg/upr/AS11.htm

Masters and Diploma awards can be made "with Distinction" or "with Commendation" where criteria as described in [UPR AS14](#), Section D and the students' handbook are met.

Programme-specific assessment regulations

The programme is compliant with the University's academic regulations (in particular, [UPR AS11](#), [UPR AS12/UPR AS13](#) (delete as applicable) and [UPR AS14](#)) with the exception of those listed below, which have been specifically approved by the University:

- None

Further points of clarification and interpretation relevant to this specific programme are given below:

- For the award of Postgraduate Certificate and Postgraduate Diploma in Medical Microbiology the 60 or 120 credit points must include either 7LMS0269 *Genetics and Protein Biology* (30 credit points) or 7LMS0272 *Contemporary Topics in Medical Microbiology* (30 credit points)
- You are expected to attend all classes including lectures, workshops and practicals and attendance will be monitored for each module.

E. Management of Programme & Support for student learning

Management

The programme is managed and administered through:

- Dean of School
- Deputy Dean of School
- Associate Deans (Academic Quality Assurance and Education)
- A Programme Leader who is responsible for the day to day management of the programme and admissions tutor who is responsible for the admissions
- A designated Programme Administrator to deal with day to day administration associated with the programme
- Module Coordinators who are responsible for individual modules

- A Programme Committee with the following membership: Programme Leader (chair), a Programme Administrator, Module Coordinators, School Learning Information Services Consultant, lecturing staff who have a substantial input into the programme, and student representatives.

Support

Students are supported by:

- An induction period at the beginning of the academic session
- An extensive Learning Resources Centre, incorporating a library and computer centre
- A Programme Leader to give advice on the programme regulations
- Personal tutors to provide pastoral and academic support and mentoring
- A mentor to support the acquisition of study skills and report writing
- Project tutors
- Module guides providing module information and study guidance
- Online module information provided via the University's managed learning environment "Canvas" a University-wide system for study support
- A student handbook
- Comprehensive feedback on assessed assignments
- Student representatives on the Programme Committee
- An English Language Teaching Centre
- A substantial Student Centre that provides advice on issues such as finance, University regulations, legal matters etc
- An Accommodation Office
- An Overseas Student Orientation course
- A Mathematics Drop-in Centre
- A Disabled Student Co-ordinator
- An Equal Opportunities Officer
- The Students' Union
- Careers, Enterprise and Employment Service

F. Other sources of information

In addition to this Programme Specification, the University publishes guidance to registered students on the programme and its constituent modules:

- A Programme (or Student) Handbook;
- A Definitive Module Document (DMD) for each constituent module;
- A Module Guide for each constituent module.
- University of Hertfordshire Course website:
<http://www.herts.ac.uk/courses/>
- SEEC Credit Level Descriptors for Further and Higher Education (2016): <http://www.seec.org.uk/wp-content/uploads/2016/07/SEEC-descriptors-2016.pdf>
- Information on Programme and Module External Examiners
<http://www.studynet1.herts.ac.uk/ptl/common/studentcentre.nsf/Teaching+Documents/184A221E5EECA6B780257A5C00250BA9?OpenDocument>

The [Ask Herts](#) website provides information on a wide range of resources and services available at the University of Hertfordshire including academic support, accommodation, fees, funding, visas, wellbeing services and student societies.

As a condition of registration, all students of the University of Hertfordshire are required to comply with the University's rules, regulations and procedures. These are published in a series of documents called 'University Policies and Regulations' (UPRs). The University requires that all students consult these documents which are available on-line, on the UPR web site, at: <http://www.herts.ac.uk/secreg/upr/>. In particular, [UPR SA07](#) 'Regulations and Advice for Students' Particular Attention - Index' provides information on the UPRs that contain the academic regulations of particular relevance for undergraduate and taught postgraduate students.

In accordance with section 4(5) of the Higher Education and Research Act 2017 (HERA), the UK Office for Students (OfS) has registered the University of Hertfordshire in the register of English higher education providers. The Register can be viewed at: <https://www.officeforstudents.org.uk/advice-and-guidance/the-register/the-ofs-register/>. Furthermore, the OfS has judged that the University of Hertfordshire delivers consistently outstanding teaching, learning and outcomes for its students. It is of the highest quality found in the UK. Consequently, the University received a Gold award in the 2018 Teaching Excellence and Student Outcomes (TEF) exercise. This award was made in June 2018 and is valid for up to 3 years. The TEF panel's report and conclusions can be accessed at: <https://www.officeforstudents.org.uk/advice-and-guidance/teaching/tef-outcomes/#/provider/10007147>

G. Entry requirements

“For current entry tariff point requirements, please refer to the relevant page for the Course on the University website or on the online prospectus”.

The normal entry requirements for the programme are:

- i. a first or second class Honours Degree in Biosciences or Biological Chemistry with a final classification grade of a minimum 55%; or
- ii. a professional qualification accepted as equivalent to the above; or
- iii. a qualification in veterinary science, medicine or dentistry or
- iv. a first or second class Honours Degree in disciplines other than those described above with a final classification grade of a minimum of 55% but where the applicant, in the opinion of the Programme Leader, would benefit from, and succeed on, the programme

In addition, all international students are required to demonstrate an English Language capability of IELTS 6.5 (with no less than 6.0 in any band) or equivalent qualification.

Non-Standard Entry

Applicants not within the categories described above, but who can demonstrate by other means, as specified below, that they can succeed on the programme will be considered on an individual basis.

- i. at least 5 years experience of working full-time in a biosciences-related discipline.

Applicants will be interviewed in order to establish their suitability based upon the criteria

The applicant will be rated on a 5 point scale for their ability to demonstrate:

1. an advanced knowledge in the field of Medical Microbiology and how this has been developed during employment.
2. critical awareness of current issues in Medical Microbiology, in particular the impact of these on recent developments in the discipline.
3. practical experience in a range of laboratory techniques relevant to the biosciences.

The programme is subject to the University's Principles, Policies and Regulations for the Admission of Students to Undergraduate and Taught Postgraduate Programmes (in [UPR SA03](#)), along with associated procedures. These will take account of University policy and guidelines for assessing accredited prior certificated learning (APCL) and accredited prior experiential learning (APEL).

If you would like this information in an alternative format please contact:

Amy Grogan, Student Administrator: a.grogan@herts.ac.uk

If you wish to receive a copy of the latest Programme Annual Monitoring and Evaluation Report (AMER) and/or the External Examiner's Report for the programme, please email a request to aqo@herts.ac.uk

MSc Medical Microbiology

Table 2: Development of Intended Programme Learning Outcomes in the Constituent Modules

This map identifies where the programme learning outcomes are assessed in the constituent modules. It provides (i) an aid to academic staff in understanding how individual modules contribute to the programme aims (ii) a checklist for quality control purposes and (iii) a means to help students monitor their own learning, personal and professional development as the programme progresses

		Programme Learning Outcomes (as identified in section 1 and the following page)												
		Knowledge & Understanding				Intellectual Skills		Practical Skills	Transferable Skills					
Module Title	Module Code	A1	A2	A3	A4	B1	B2	C1	D1	D2	D3	D4	D5	
Molecular Cell Biology and Immunology	7LMS0279	x	x			x	x	x				x	x	
Genetics and Protein Biology	7LMS0269	x	x			x	x	x				x	x	
Genome Science	7LMS0276	x	x			x	x	x	x	x	x	x	x	
Contemporary Topics in Medical Microbiology	7LMS0272		x	x	x	x	x	x	x	x	x	x	x	
Research Project with Research Methods	7LMS0278		x	x	x	x	x	x	x	x		x	x	

KEY TO PROGRAMME LEARNING OUTCOMES

Knowledge and Understanding

- A1. relate gene expression to the phenotype of an organism via an understanding of gene and protein structure and function, developmental biology and the influence of the environment on gene expression
- A2. critically evaluate the methodologies of gene mapping, recombinant DNA technology and introductory bioinformatics and apply them to the investigation and deconstruction of biological systems.
- A3. evaluate translational effects of resistance to antimicrobial agents and understand the molecular mechanisms that underpin them in bacteria, viruses, and fungi.
- A4. critically evaluate the molecular mechanisms that underpin antimicrobial resistance in microorganisms and evaluate mechanisms to circumvent them.

Intellectual Skills

- B1. evaluate the applications of microbiological methods in fundamental research, clinical microbiology, and industry.
- B2. demonstrate a critical approach in enquiry and hypothesis testing and critically evaluate scientific literature and experimental data.

Practical Skills

- C1. design, execute, interpret and report investigations (practical and theoretical) of molecular biology problems and molecular genetics of disease, critically evaluate the contribution made to current knowledge and propose avenues for future study.

Transferable Skills

- D1. effectively communicate analyses of case studies in both the written and spoken word and defend the findings of their work.
- D2. demonstrate self-direction and originality in tackling and solving problems and act autonomously in planning and executing tasks.
- D3. contribute effectively to the functioning of a group and reflect on the learning experience.
- D4. demonstrate numeracy and manipulate, analyse and present data.
- D5. apply appropriate information technology to the recovery, analysis and reporting of data.

Section 2

Programme management

Relevant QAA subject benchmarking statements	None
Type of programme	Taught Postgraduate
Date of validation/last periodic review	February 20
Date of production/ last revision of PS	
Relevant to level/cohort	Level 7 entering September 2020
Administrative School	School of Life and Medical Sciences

Table 3 Course structure

Course details		
Course code	Course description	HECOS
LMMEDMIC	MSc Medical Microbiology	100907