

Programme Specification: Post Graduate Taught

For students starting in Academic Year 2023/24

1. Course Summary

Names of programme and award title(s)	MSc Biomedical Science (Blended)
Award type	Taught Masters
Mode of study	Full-time Part-time
Framework of Higher Education Qualification (FHEQ) level of final award	Level 7
Normal length of the programme	1 year full-time or 2 years part-time
Maximum period of registration	The normal length as specified above plus 3 years
Location of study	Keele Campus Online
Accreditation (if applicable)	This programme will seek accreditation by the Institute of Biomedical Science (IBMS)
Regulator	Office for Students (OfS)
Tuition Fees	<p>UK students:</p> <p>Full-time fee for 2023/24 is £10,000</p> <p>Part-time fee for 2023/24 is £5,500 per year*</p> <p>International students:</p> <p>Full-time fee for 2023/24 is £18,800</p>

How this information might change: Please read the important information at <http://www.keele.ac.uk/student-agreement/>. This explains how and why we may need to make changes to the information provided in this document and to help you understand how we will communicate with you if this happens.

* We reserve the right to increase fees in subsequent years of study by an inflationary amount. Please refer to the accompanying Student Terms & Conditions for full details. Further information on fees can be found at <http://www.keele.ac.uk/studentfunding/tuitionfees/>

2. Overview of the Programme

The overarching educational aim of this programme is to take a detailed exploration of core disciplines within a typical Pathology Laboratory; Infection Science (Microbiology, Virology and Serology) and Blood Science (Clinical Biochemistry, Medical Immunology and Haematology are often merged into a larger Blood Science department). As such, you will be exploring the kind of laboratory tests and analysis that take place in these key areas. You will learn how to critically evaluate and assess each of the techniques and understand how they relate to the diagnosis and monitoring of disease states. You will also investigate the clinical and research implications of Biomedical Science.

3. Aims of the programme

Alongside this core academic basis, the programme also aims to develop key professional skills and nurture new attitudes to the approach, integration and application of new knowledge and problem solving. Particular

emphasis will be placed on developing critical thinking, innovation, autonomous learning and communication skills to really help prepare you for a lifetime of continued professional development.

4. What you will learn

The intended learning outcomes of the programme (what students should know, understand and be able to do at the end of the programme), can be described under the following headings:

- Subject knowledge and understanding
- Subject specific skills
- Key or transferable skills (including employability skills)

Subject knowledge and understanding

Successful students will be able to:

- To develop students' knowledge and understanding of different theoretical perspectives, methodological approaches, research interests and practical applications within Biomedical Science.
- To explore and explicitly critique the clinical, diagnostic and research implications within the fields of Medical Microbiology, Virology, Clinical Biochemistry, Medical Immunology, Haematology and Transfusion Science, and to place this in the context of a clinical laboratory, fully considering the potential implications for patients, health workers and research.
- To support student autonomy and innovation by providing opportunities for students to demonstrate originality in developing or applying their own ideas.

Subject specific skills

Successful students will be able to:

- To direct students to integrate a complex knowledge base in the scrutiny and accomplishment of professional problem-solving scenarios and project development.
- To enable student acquirement of high-level analytical skills.

Key or transferable skills (including employability skills)

Successful students will be able to:

- To promote and sustain communities of practice that allow students to share best practice, encourage a multi-disciplinary approach to problem solving and to develop extensive communication skills, particularly their ability to convey complex, underpinning knowledge alongside their personal conclusions and rationale to specialist and non-specialist listeners.
- To provide students with a wide range of learning activities and a diverse assessment strategy to fully develop their employability and academic skills, ensuring both professional and academic attainment.

Keele Graduate attributes

Engagement with this programme will enable you to develop your intellectual, personal and professional capabilities. At Keele, we call these our ten Graduate Attributes and they include independent thinking, synthesizing information, creative problem solving, communicating clearly, and appreciating the social, environmental and global implications of your studies and activities. Our educational programme and learning environment is designed to help you to become a well-rounded graduate who is capable of making a positive and valued contribution in a complex and rapidly changing world, whichever spheres of life you engage in after your studies are completed.

Further information about the Keele Graduate Attributes can be found here: <http://www.keele.ac.uk/journey/>

5. How is the programme taught?

The programme is delivered through a series of taught modules that comprise a range of learning and teaching activities designed to promote skill development and attitudes for life. This includes digital activities, workshops, seminars, small group activities, case-based learning, laboratory activities, academic skills training, student-driven talks and extended research projects. Digital materials have been designed for online consumption, giving you more flexibility to decide how, when and where to study. This can include the provision of short videos, directed reading, key learning outcomes and Forms that allow you to ask questions anonymously.

In semesters 1 and 2, modules are structured so that course content is released asynchronously weekly. This content is then supported by weekly online synchronous active learning sessions that can include workshops, seminars and student-driven presentations. This is supplemented by an optional week-long residential around the middle of each semester supporting academic, practical and professional skills development, and networking opportunities. The residential sessions will cover a range of activities, which may include; designated time to enhance your laboratory skills, further develop your academic research skills, opportunities to network with those working at different levels in your area of study, a framework to consolidate the clinical and technical knowledge you have applying this to individual and community-based case studies and enable you to develop the knowledge and skills required for specialist lead/supervisory roles in laboratories.

Part-time students will complete one module per semester. This is designed to allow you greater flexibility to meet both University and work-based needs.

In the final stage of your programme, you will complete an independent student project. The contact and attendance arrangements for this will vary from project to project but will require a full-time commitment throughout semester 3 for full-time students. Part-time students are expected to complete this project within the workplace under academic supervision and guidance

For full-time students, semester 1 will focus on clinical and diagnostic implications for patients and healthcare workers, with the major emphasis being on Medical Microbiology, Clinical Biochemistry and Immunology. All core content will be made available asynchronously. The synchronous sessions are an opportunity to:

- Establish communities of practice to learn cooperatively, recognise the opportunities presented by such forums of active learning, discussion and debate and develop the ability to establish and sustain such forums through small group activities, group discussion and case-based learning.
- Develop a structured approach for the critical analysis of underpinning theory and practical applications through group activities and journal clubs.
- Develop communication skills through case-based learning and student-led talks.
- Discuss current topics in Biomedical Science with healthcare practitioners and researchers currently practising in the field.
- Integrate complex knowledge and understanding to fully investigate patient-driven case studies through case-based learning.

Semester 2 will also focus on clinical and diagnostic implications for patients and healthcare workers, with the major emphasis being on the treatment and control of infectious diseases at the public and global level, Haematology and Transfusion Science. All core content will be made available asynchronously. The synchronous sessions are an opportunity to consolidate and develop the learning opportunities and skills presented in semester one as well as:

- To consider the application of new or existing knowledge to novel and current problems within Biomedical Science or within new innovative contexts through seminars, workshops and group activities.
- Share best practice and develop communication and group collaboration skills through a series of student-led talks.

Semester 3 is when you will complete your extended research project. This is the capstone experience of the programme and allows you to consolidate and apply your practical and/or analytical skills to solve current problems working alongside experts either within the University or NHS/Life Science sector employers. This provides excellent training within the specialist professional area and allows a range of employability skills to be developed. For those students currently working in the healthcare/life sciences sector, there may be an opportunity for you to complete your project at work with academic supervision from a member of Keele staff.

Further support is provided through a variety of self-study materials including traditional text-based and electronic resources. The Keele Learning Environment (KLE) and Teams platforms will provide a virtual resource to support learning and teaching activities, enhance student development and provide a forum for the exchange of ideas and discussion of issues that may arise during programme delivery.

Students starting in January would join the September cohort to study semester 2, complete their project in semester 3 and then complete the programme with semester 1.

6. Teaching Staff

The programme is taught by expert academics with active research interests in the field of Biomedical Science and Health Care and Professions Council registrants that are professional practitioners working within clinical and academic settings. All current Keele tutors are either Fellows of the Higher Education Academy or working towards that qualification.

The University will attempt to minimise changes to our core teaching teams, however, delivery of the programme depends on having a sufficient number of staff with the relevant expertise to ensure that the programme is taught to the appropriate academic standard.

Staff turnover, for example where key members of staff leave, fall ill or go on research leave, may result in changes to the programme's content. The University will endeavour to ensure that any impact on students is limited if such changes occur.

7. What is the structure of the programme?

Table 1: Modular structure of the programme

Semester 1	Module 1 LSC-40081 Clinical Biochemistry & Immunology (30 credits)	Module 2 LSC-40079 Medical Microbiology (30 credits)
Semester 2	Module 3 LSC-40085 Haematology & Transfusion Science (30 credits)	Module 4 LSC-40083 Infectious Diseases (30 credits)
Semester 3	Module 5 LSC-40059 Biomedical Science Research Project (60 credits)	

*Part-time students will complete modules 1 and 3 in the first year of study, and modules 2 and 4 in the second year of study.

Year	Compulsory	Optional		Electives	
		Min	Max	Min	Max
Level 7	180	0	0	0	0

Module Lists

Level 7

Compulsory modules	Module Code	Credits	Period
Medical Microbiology (blended)	LSC-40079	30	Semester 1
Clinical Biochemistry and Immunology (blended)	LSC-40081	30	Semester 1
Infectious Disease (blended)	LSC-40083	30	Semester 2
Haematology and Transfusion Science (blended)	LSC-40085	30	Semester 2
Biomedical Science Research Project	LSC-40059	60	Semester 3

Learning Outcomes

The table below sets out what students learn in the programme and the modules in which that learning takes place. Details of how learning outcomes are assessed through these modules can be found in module specifications.

Level 7

Subject Knowledge and Understanding	
Learning Outcome	Module in which this is delivered
Develop a critical awareness of current issues and important insights in Biomedical Science Critically appraise scientific publications and test methodologies Demonstrate self-direction and dedication to independent learning Demonstrate effective time management and work to deadlines Communicate personal findings and conclusions to specialist and non-specialist listeners using a variety of methods such as verbal presentations, written documents and information technology Act autonomously in implementing and managing academic activities	Biomedical Science Research Project - LSC-40059 Haematology and Transfusion Science (blended) - LSC-40085 Infectious Disease (blended) - LSC-40083 Clinical Biochemistry and Immunology (blended) - LSC-40081 Medical Microbiology (blended) - LSC-40079

Subject Specific Skills	
Learning Outcome	Module in which this is delivered
Use scientific research principles to develop novel research questions and/or hypotheses.	Biomedical Science Research Project - LSC-40059
Identify a current problem in a personal area of interest and use research literature to construct an evidence-based review of that problem. Apply a comprehensive understanding of the analytical approach to new scientific problems.	Biomedical Science Research Project - LSC-40059
Report the results of an empirical study applying appropriate skills of presentation, data analysis, interpretation and discussion. Acquire independent laboratory competencies.	Clinical Biochemistry and Immunology (blended) - LSC-40081 Medical Microbiology (blended) - LSC-40079 Infectious Disease (blended) - LSC-40083 Haematology and Transfusion Science (blended) - LSC-40085 Biomedical Science Research Project - LSC-40059
Use scientific research principles to select appropriate techniques of experimental design and analysis to solve research questions or hypotheses. Competently plan, organise and execute independent experimental work.	Biomedical Science Research Project - LSC-40059

Intellectual skills	
Learning Outcome	Module in which this is delivered
Critically evaluate current professional practice within Clinical Biochemistry, Immunology, Haematology and Transfusion Science and Infection Science	Haematology and Transfusion Science (blended) - LSC-40085 Infectious Disease (blended) - LSC-40083 Clinical Biochemistry and Immunology (blended) - LSC-40081 Medical Microbiology (blended) - LSC-40079
Critically reflect on the ways that conceptual theory and methodological design can impact patients, healthcare workers and research interests.	Infectious Disease (blended) - LSC-40083 Clinical Biochemistry and Immunology (blended) - LSC-40081 Medical Microbiology (blended) - LSC-40079 Haematology and Transfusion Science (blended) - LSC-40085

Key or Transferable Skills (graduate attributes)	
Learning Outcome	Module in which this is delivered
Evaluate complex scientific data.	Infectious Disease (blended) - LSC-40083 Biomedical Science Research Project - LSC-40059 Haematology and Transfusion Science (blended) - LSC-40085 Clinical Biochemistry and Immunology (blended) - LSC-40081 Medical Microbiology (blended) - LSC-40079
Integrate complex knowledge to solve problems and assess potential implications for patients and healthcare professionals. Work in small groups to share best practice, provide mutual support and promote an environment of active learning.	Haematology and Transfusion Science (blended) - LSC-40085 Infectious Disease (blended) - LSC-40083 Medical Microbiology (blended) - LSC-40079 Clinical Biochemistry and Immunology (blended) - LSC-40081
Demonstrate innovation and originality in the understanding and application of new knowledge.	Biomedical Science Research Project - LSC-40059

8. Final and intermediate awards

Master's Degree	180 credits	You will require at least 180 credits at Level 7
Postgraduate Diploma	120 credits	You will require at least 120 credits at Level 7
Postgraduate Certificate	60 credits	You will require at least 60 credits at Level 7

9. How is the Programme Assessed?

The wide variety of assessment methods used on this programme at Keele reflects the broad range of knowledge and skills that are developed as you progress through the degree programme. Teaching staff pay particular attention to specifying clear assessment criteria and providing timely, regular and constructive feedback that helps to clarify things you did not understand and helps you to improve your performance.

This programme has a rich and varied assessment strategy to ensure development of key employability and academic skills. This will provide you the opportunity to demonstrate both professional and academic attainment. Assessment design is largely driven by several key principles which include promotion of independent learning, student autonomy, responsibility for personal learning, acknowledgement of the internationalisation perspective within Biomedical Science and development of innovation and originality within your chosen area of interest.

For example, the in-course assessment for all taught modules encompasses a range of assessments designed to demonstrate a broad range of skills. Your knowledge and understanding and insight to the clinical content will be assessed through a series of **online tasks** throughout the module, consolidating your learning and evidencing your ability to tackle problems in a time constrained, independent manner. You will then be asked to present your findings to the group via **small group presentations** to not only demonstrate acquisition of key skills but also to share best practice and promote an environment of student-centred learning. To do this you will need to critically appraise current literature and integrate your new knowledge into a structured argument.

In each of the taught modules, you will be required to submit a specific component of a **Lab report** e.g., introduction, methods etc. Laboratory reports allow you to focus on the critical appraisal of scientific study design, test methodologies and analyse outcomes, promoting an integrated approach to theoretical knowledge, understanding and practical implications of your work.

The residential sessions will provide additional opportunities for you to demonstrate your communication and networking skills, and develop additional practical, academic and professional skill. All work performed during the residential weeks for the taught modules will be formative.

The bespoke professional skills training sessions will be offered during the residential sessions in the areas of training, health and safety, quality assurance and governance. This is reflective of the knowledge, skills and

attributes future leaders in healthcare and associated industries require.

The **dissertation**, including an assessed element of **personal engagement**, represents the culmination of the programme, providing an opportunity for you to put together several key learning outcomes from across the programme and to begin to take true responsibility for the formulation, management, execution and final interpretation and presentation of a new piece of scientific research or clinical audit. You will have the opportunity to communicate the main findings of your research to your peers and tutors at a **conference presentation**.

A full assessment brief is available via the Keele Learning Environment (KLE). All summative forms of assessment are fully supported by a variety of formative assessment activities and academic guidance.

Marks are awarded for summative assessments designed to assess your achievement of learning outcomes. You will also be assessed formatively to enable you to monitor your own progress and to assist staff in identifying and addressing any specific learning needs. Feedback, including guidance on how you can improve the quality of your work, is also provided on all summative assessments within three working weeks of submission, unless there are compelling circumstances that make this impossible, and more informally in the course of tutorial and seminar discussions.

10. Accreditation

This programme will seek accreditation by the Institute of Biomedical Science (IBMS) as the professional body of Biomedical Scientists. As such it will partially fulfil the criteria set by the IBMS for attainment of the title 'Chartered Scientist'.

IBMS accreditation also means that this programme will be recognised by NHS employers and forms part of the criteria required for Specialist Biomedical Scientists to be promoted into the role of Senior Biomedical Scientist.

11. University Regulations

The University Regulations form the framework for learning, teaching and assessment and other aspects of the student experience. Further information about the University Regulations can be found at:

<http://www.keele.ac.uk/student-agreement/>

If this programme has any exemptions, variations or additions to the University Regulations these will be detailed in an Annex at the end of this document titled 'Programme-specific regulations'.

12. What are the typical admission requirements for the Programme?

See the relevant course page on the website for the admission requirements relevant to this programme:

<https://www.keele.ac.uk/study/>

Recognition of Prior Learning (RPL) is considered on a case-by-case basis and those interested should contact the Programme Director. The University's guidelines on this can be found here:

<https://www.keele.ac.uk/ga/programmesandmodules/recognitionofpriorlearning/>

13. How are students supported on the programme?

The Programme Director will hold an introduction and induction session towards the beginning of each semester to provide general guidance and advice to programme delivery and lines of accountability, student support services and representation from Keele's Postgraduate Association. The Programme Director will also be available either directly or indirectly via email and Teams for advice on specific problems that you may encounter at any point throughout the programme.

Module leaders are available either directly or indirectly via email and Teams for module-specific problems. One-to-one meetings can be arranged as necessary for student consultation. It is the responsibility of module leaders to ensure that appropriate feedback is provided to all students regarding both formative and summative assessment. They will ensure that such feedback is of a high quality and delivered in a timely fashion.

The optional residential week held during semesters 1 and 2 provide additional opportunities for you to discuss elements of your programme with your tutors and other Life Sciences staff.

Each student will be appointed a named academic mentor from the academic teaching team for general academic guidance. Academic mentors may ask to meet you as a group during programme induction and will be available for addition alone-to-one consultations as and when you require. They can be contacted by email or Teams.

All students will also have access to a senior academic mentor who is independent of the teaching team should you wish to discuss any academic problems in confidence outside of the direct teaching team.

Individual project supervisors can provide additional academic guidance on research-related issues.

All students are entitled and encouraged to make use of all central university services, including the Keele Postgraduate Association and a range of central services including pastoral, health, welfare and financial support available from Student Services

Each year, the student cohort is asked to nominate up to two individuals to represent them on the Student: Staff Voice Committee. Each Student Voice Representative is also invited to both the programme teaching team meetings and the School Learning and Teaching Committee.

Additional academic skills support is available through the Keele Institute for Innovation and Teaching Excellence. This includes podcasts, online resources, skills workshops and 1:1 sessions. Keele's Language Centre also provides individual and group language and academic skills guidance for international students at all levels.

14. Learning Resources

This blended programme combines bespoke a synchronous clinical content with weekly online synchronous active learning sessions further supplemented with optional residential sessions to allow you the flexibility to manage your learning around other commitments. The asynchronous clinical content is designed to cover all the core material required for each taught module with explicit guidance on where to find additional resources alongside a means to communicate and feedback to tutors and other students. The weekly live sessions will enhance understanding of the material, applying the content to a patient case/scenario or workplace. The residentials will provide you with further opportunities for collaboration and networking, deliver enhanced academic skills workshops and opportunities for professional skills development for the future leaders of the workforce.

All students will have access to the Keele Learning Environment, Microsoft Teams and Keele Library. Individual module handbooks will provide a recommended reading list that comprises both traditional text-based resources and a range of electronic, multimedia resources as appropriate. Discussion boards available on KLE and Teams will also be used to enhance student support during the period of engagement and provide a forum for the exchange of ideas and discussion of issues that arise.

You will have a choice regarding what type of project you wish to complete for your dissertation. Options include lab-based, bioinformatics and systematic reviews. Each project type will be supervised by an academic supervisor, and you will be guided through your project whilst still providing an authentic student-led capstone experience.

The programme content is designed and delivered is combination with professional working within industry or healthcare to provide a more clinical and diagnostic context to the learning and teaching environment. This typically includes Senior Biomedical Scientists, Clinical Scientists, Medical Consultants and world-leading researchers. You are encouraged to make full use of the opportunities to interact with these external professionals during residentials, live sessions and via email to answer any questions you may have on their area of expertise or general career advice.

15. Other Learning Opportunities

Within the School of Life Sciences there are a wide range of seminar opportunities that attract several expert researchers both locally (e.g., Keele University, hospitals or research groups) and internationally from around the world. Such seminars maybe on campus or online through Teams. All Biomedical Science students are encouraged to take full advantage of the opportunities these seminars provide and are more than welcome to attend as many of these sessions as you feel to be appropriate. Such seminars are widely advertised by staff.

16. Additional Costs

As to be expected there will be additional costs for inter-library loans and potential overdue library fines, print and graduation. We do not anticipate any further costs for this programme.

17. Quality management and enhancement

The quality and standards of learning in this programme are subject to a continuous process of monitoring, review and enhancement.

- The School Education Committee is responsible for reviewing and monitoring quality management and enhancement procedures and activities across the School.
- Individual modules and the programme as a whole are reviewed and enhanced every year in the annual programme review which takes place at the end of the academic year.
- The programmes are run in accordance with the University's Quality Assurance procedures and are subject to periodic reviews under the Revalidation process.

Student evaluation of, and feedback on, the quality of learning on every module takes place every year using a variety of different methods:

- The results of student evaluations of all modules are reported to module leaders and reviewed by the Programme Committee as part of annual programme review.
- Findings related to the programme from the annual Postgraduate Taught Experience Survey (PTES), and from regular surveys of the student experience conducted by the University, are subjected to careful analysis and a planned response at programme and School level.
- Feedback received from representatives of students on the programme is considered and acted on at regular meetings of the Student Staff Voice Committee.

The University appoints senior members of academic staff from other universities to act as external examiners on all programmes. They are responsible for:

- Approving examination questions
- Confirming all marks which contribute to a student's degree
- Reviewing and giving advice on the structure and content of the programme and assessment procedures

Information about current external examiner(s) can be found here:

<http://www.keele.ac.uk/qa/externalexaminers/currentexternalexaminers/>

18. The principles of programme design

The MSc in Biomedical Science(blended) has evolved from Keele's MSc Biomedical Science programme to provide an additional pathway with greater flexibility for students, particularly those working within the healthcare/Life sciences sector. The MSc Biomedical Science programme was the result of collaboration between Keele University and both Biomedical Scientist and Clinical Scientist practitioners based at the Royal Stoke University Hospital. This collaborative, adaptive approach remains in this expanded provision. It has been designed in accordance with current and proposed career strategies for Healthcare Scientists and revised with reference to, and in accordance with, the guidance set out in the following documents:

a. UK Quality Code for Higher Education, Quality Assurance Agency for Higher Education:

<http://www.qaa.ac.uk/quality-code>

b. Keele University Regulations and Guidance for Students and Staff: <http://www.keele.ac.uk/regulations>

c. Criteria and Requirements for the Accreditation and Re-accreditation of MSc Degrees in Biomedical Science, Institute of Biomedical Science 2016.

d. HCPC Standards of Education and Training, Health and Care Professions Council 2017

e. HCPC Standards for Continuing Professional Development, Health and Care Professions Council 2018.

Version History

This document

Date Approved: 17 July 2023

What's Changed

Minor revisions to wording relating to the optional residential weeks in each semester. This is being consolidated into one week of activity per semester, to reduced time commitment from students and improve efficiency of delivery. Wording around the content of the residential week is also being amended to give greater flexibility on typical content.

Previous documents

Version No	Year	Owner	Date Approved	Summary of and rationale for changes
1	2023/24	REBECCA HARRISON	18 April 2023	